N00236_004009
ALAMEDA POINT
SSIC NO. 5090.3.A

SAP Worksheet #1—Title and Approval Page

Final

Addendum to Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Expanded Site Inspection for Transfer Parcels EDC-12, EDC-17, FED-1A, FED-2B, and FED-2C

Alameda Point
Alameda, California

Contract Task Order FZN0

July 2012

Document Control Number: CH2M-1000-FZN0-0004.A1/F

Prepared for:
Department of the Navy
Naval Facilities Engineering Command - Southwest
San Diego, California 92132-5190

Under the

NAVFAC CLEAN 1000 Program
Contract N62470-08-D-1000

Prepared by

CH2MHILL

Oakland, California

Review Signature: Anita Dodson 7/12/12
Anita Dodson Date
Program Quality Assurance Officer

Approval Signature: Joseph Michalowski July 12, 2012
Joseph Michalowski Date
Acting NAVFAC SW Navy Quality Assurance Officer

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N00236_004009
ALAMEDA POINT
SSIC NO. 5090.3

FINAL
EXPANDED SITE INSPECTION WORK PLAN
TRANSFER PARCELS EDC-12, EDC-17,
FED-1A, FED-2B, AND FED-2C

DATED 01 MARCH 2010

THIS RECORD IS ENTERED IN THE DATABASE AND FILED AS

RECORD NO. N00236_003668

Executive Summary

ES.1 Introduction and Objective

The Sampling and Analysis Plan (SAP) addendum to the Final SAP (Field Sampling Plan and Quality Assurance Project Plan) Expanded Site Inspection for Transfer Parcels Economic Development Conveyance (EDC)-12, EDC-17, FED-1A, FED-2B, and FED-2C, Alameda Point, Alameda, California (CH2M HILL 2010) was prepared to add the collection of seven grab groundwater samples for total dissolved solids (TDS) analysis. The TDS data will be included in a groundwater exception letter requesting that the groundwater in the southeastern portion of Alameda Point (including Transfer Parcels EDC-12 and EDC-17), be excluded as potential drinking water source. Receipt of the exception letter is necessary to issue the final Addendums to the Final Site Inspection Reports for Transfer Parcel EDC-12 and Transfer Parcel EDC-17.

The following SAP worksheets were revised to incorporate project staff changes and the sampling of groundwater for TDS analysis and are included in this addendum:

- SAP Worksheet # 1 – Title and Approval Page
- SAP Worksheet #2 – SAP Identifying Information
- SAP Worksheet #3 – Distribution List
- SAP Worksheet #4 – Project Personnel Sign-off Sheet
- SAP Worksheet #5 – Organizational Chart
- SAP Worksheet #6 – Communication Pathways
- SAP Worksheet #7 – Personnel Responsibilities and Qualifications Table
- SAP Worksheet #9f – Project Scoping Session Participants Sheet
- SAP Worksheet #10d-1 – Southeast Portion of Alameda Point (including EDC-12 and EDC-17) – Total Dissolved Solids in Shallow Groundwater Problem Definition
- SAP Worksheet #11 – Project Quality Objectives/Systematic Planning Process
- SAP Worksheet #12-16 – Measurement Performance Criteria Table/Field Quality
- SAP Worksheet #13 – Secondary Data Criteria and Limitations Table
- SAP Worksheet #14 – Summary of Project Tasks
- SAP Worksheet #15-15 – Reference Limits and Evaluation Table
- SAP Worksheet #17 – Sampling Design and Rationale
- SAP Worksheet #18 – Sampling Locations and Methods/SOP Requirements Table

- SAP Worksheet #19 – Analytical SOP Requirements Table
- SAP Worksheet #23 – Analytical Instrument Calibration Table
- SAP Worksheet #25 - Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table
- SAP Worksheet #28-9 – Laboratory QC Samples Table
- SAP Worksheet #30 – Analytical Services Table
- SAP Worksheet #31 – Planned Project Assessment Table
- SAP Worksheet #36 – Analytical Data Validation (Steps IIa and IIb) Summary Table

The Final SAP (Field Sampling Plan and Quality Assurance Project Plan) Expanded Site Inspection for Transfer Parcels EDC-12, EDC-17, FED-1A, FED-2B, and FED-2C, Alameda Point, Alameda, California (CH2M HILL 2010) is included as Attachment 1 of this addendum (provided on CD only). The Department of Defense Environmental Laboratory Accreditation Program certificate for Curtis and Tompkins, LLC is included as Attachment 2 of this addendum.

Acronyms and Abbreviations

BCT	BRAC Cleanup Team
bgs	below ground surface
BRAC	Base Realignment and Closure
CS	Contract Specialist
DTSC	California Department of Toxic Substances Control
EDC	Economic Development Conveyance
EIS	Environmental Information Specialist
EPA	United States Environmental Protection Agency
FTL	Field Team Leader
mg/L	milligram per liter
OU	Operable Unit
POC	Point of Contact
QAM	Quality Assurance Manager
QAO	Quality Assurance Officer
QA/QC	quality assurance/quality control
RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan
SI	Site Inspection
TDS	total dissolved solids
Water Board	San Francisco Bay Regional Water Quality Control Board

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SAP Worksheet #2—SAP Identifying Information

- **Dates of Scoping Sessions:**

Scoping Session	Date
Scoping Session – Agenda Item in Base Realignment and Closure Cleanup Team (BCT) meeting	February 29, 2012

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SAP Worksheet #3—Distribution List

Name of SAP Recipients	Title/Project Role	Organization	Telephone Number (Optional)	E-mail Address or Mailing Address	D	DF	F
Cecily Sabedra	Remedial Project Manager (RPM)	Navy	(619) 532-0972 (619) 532-0983 (FAX)	Cecily.sabedra@navy.mil	A	A	A
Don Hatchett	Contract Specialist (CS)	Navy	(619) 532-0931 (619) 532-0983 (FAX)	don.hatchett@navy.mil	CL	CL	CL
Joseph Michalowski	Acting NAVFAC SW Quality Assurance Officer (QAO)	Navy	(619) 532-4125	joseph.michalowski@navy.mil	A	A	A
Joe Sterling	Field Team Leader (FTL)	CH2M HILL	510) 587-7716 (510) 316-3644 (cell)	joe.sterling@CH2M.com	A	A	A
Pankaj Arora	RPM	United States Environmental Protection Agency (EPA) Region IX	(415) 972-3040	75 Hawthorne Street San Francisco, California 94105-3901	A	A	A
James Fyfe	RPM	Department of Toxic Substances Control (DTSC)	(510) 540-3850	700 Heinz Avenue, Suite 200 Berkeley, CA 94710	A	A	A

Notes:
A = All, CL = Cover Letter, CD = Compact Disc, D = Draft, DF = Draft Final, F = Final, HC = Hard Copy

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SAP Worksheet #4—Project Personnel Sign-off Sheet

Name	Organization/Title/Project Role	Telephone Number (optional)	Signature/ email receipt	SAP Section Reviewed	Date SAP Read
Cecily Sabedra	NAVFAC SW/RPM/ Lead Agency Point of Contact (POC)	(619) 532-0972	Cecily.sabedra@navy. mil		
Desiree Tetrault	Curtis and Tompkins	(510) 204-2221			
Joe Sterling	CH2M HILL/FTL	(510) 587-7525 (505) 239-1519(cell)			

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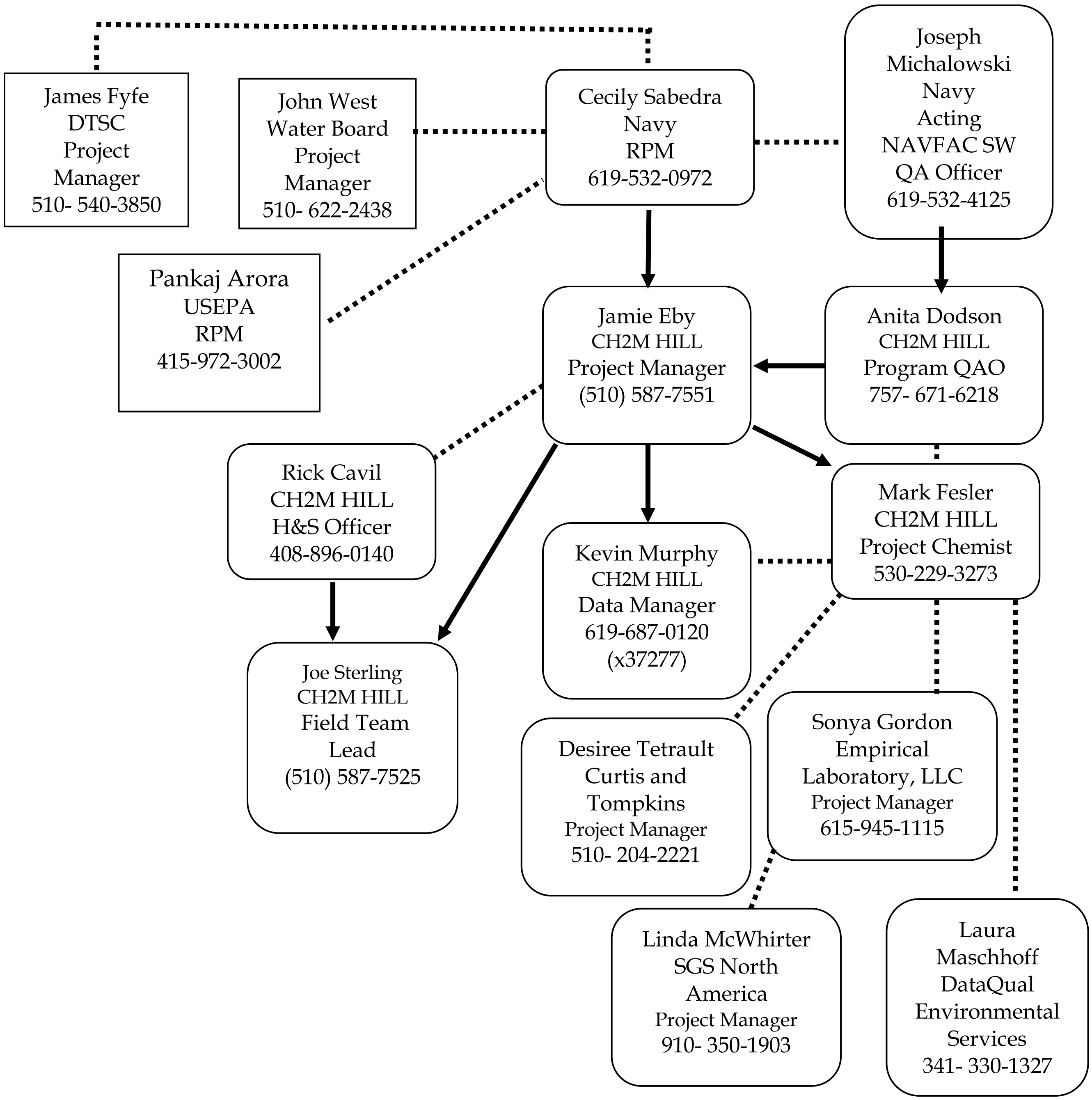
SAP Worksheet #5—Organizational Chart

Lines of Authority: Lines of Communication:



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SAP Worksheet #6—Communication Pathways

Communication Drivers	Responsible Affiliation	Name	Phone Number and/or e-mail	Procedure
Point of Contact for Navy quality issues	Acting NAVFAC SW QAO	Joseph Michalowski	(619) 532-4125	QAO will review and approve this SAP and all amendments to this SAP. Communicates with CH2M HILL AQM (Artemis Antipas)
Manages all project phases	NAVFAC SW/RPM/ Lead Agency POC	Cecily Sabedra	(619) 532-0972	Primary POC for Navy (via e-mail, telephone, hardcopy, or in-person, as warranted); can delegate communication to other internal or external POCs. Communicates the results of the investigation to interested parties.
Coordination and communication of fieldwork activities related to sampling	CH2M HILL FTL	Joe Sterling	(510) 587-7525 (505) 239-1519(cell)	Documentation of deviations from work plan made in field logbooks and rationale for deviations; deviations made only with approval from contractor PM and/or environmental manager. FTL will communicate relevant field information to the project manager and analytical coordinator. FTL will also report all drilling or sampling equipment problems to the project manager immediately via phone or e-mail.
Daily Field Progress Reports	CH2M HILL FTL	Joe Sterling	(510) 587-7525 (505) 239-1519(cell)	FTL will e-mail or fax daily field progress reports to RPM and CH2M HILL project manager weekly; telephone communication with RPM and CH2M HILL project manager on as-needed basis
Submittal of samples to the laboratory	CH2M HILL FTL	Joe Sterling	(510) 587-7525 (505) 239-1519(cell)	Sampling personnel will package and ship samples in accordance with this SAP.
Daily chain-of-custody records and shipping documentation	CH2M HILL FTL	Joe Sterling	(510) 587-7525 (505) 239-1519(cell)	Chain-of-custody records and shipping documentation will be submitted via fax or e-mail to the Environmental Information Specialist (EIS) at the end of each day that samples are collected.
Sample shipping/receipt issues	Laboratory (Empirical Laboratories, LLC) PM (Curtis and Tompkins Laboratories) PM for TDS samples only	Sonya Gordon Desiree Tretault	(615) 345-1115 510- 204-2221	The laboratory project manager will report all sample shipping and receipt issues associated with the investigation to CH2M HILL EIS within 2 business days. SGS North America will communicate directly with Empirical Labs on any sampling shipping/receipt issues.

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SAP Worksheet #6—Communication Pathways (continued)

Communication Drivers	Responsible Affiliation	Name	Phone Number and/or e-mail	Procedure
Reporting lab data quality issues	Laboratory (Empirical Laboratories, LLC) PM (Curtis and Tompkins Laboratories), PM for TDS samples only	Sonya Gordon Desiree Tretault	(615) 345-1115 510- 204-2221	All quality assurance/quality control (QA/QC) issues with project field samples will be reported by the lab to the EIS, project chemists, and QAO via e-mail within 2 business days. 0SGS North America will communicate directly with Empirical Labs on any data quality issues.
Field corrective actions (CAs)	CH2M HILL FTL	Joe Sterling	(510) 587-7525 (505) 239-1519(cell)	The FTL will immediately notify the Quality Assurance Manager (QAM) in writing of any field procedures that were not performed in accordance with this SAP. The FTL, in coordination with the QAM, will complete documentation of the non-conformance and corrective actions to be taken. The FTL will verify that the corrective actions have been implemented. See original SAP Worksheets #32, Assessment Findings and CA Responses, and Worksheet #32a, CA Form. The EPA, DTSC, and Water Board will be notified when significant correction actions occur.
Ensure staff H&S in the field	CH2M HILL Site Safety Coordinator (SSC)	Joe Sterling	(510) 587-7525 (505) 239-1519(cell)	Daily safety tailgates; daily observations; real-time discussions of observations and changes to be implemented with field staff.
Minor Deviations from SAP procedures identified during field activities	CH2M HILL FTL	Joe Sterling	(510) 587-7525 (505) 239-1519(cell)	The FTL will prepare a field change request for any minor changes in sampling procedures that occur as a result of conditions in the field. This request will be submitted to the QAM for approval before the change is initiated.

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SAP Worksheet #7—Personnel Responsibilities and Qualifications Table

Name	Title	Organizational Affiliation	Responsibilities	Education and Experience Qualifications[1]
Cecily Sabedra	RPM	Navy	Environmental restoration program activities implemented under this SAP	
Joseph Michalowski	Acting NAVFAC SW QAO	Navy	Responsible for all QA issues for all Navy work. Provides government oversight of the QA program including review and sign-off on SAPs and any future modifications to the plans; provides quality-related direction through the Navy RPM to the Primary Navy contractor POC and CH2M HILL QAM; and has authority to suspend affected project activities if approved quality requirements are not adequately met.	
Joe Sterling	FTL and SSC	CH2M HILL	Supervises field sampling and coordinates all field activities; ensures onsite compliance with work plan; oversees and ensures safety of onsite personnel	
Desiree Tretault	Project Manager – TDS analyses	Curtis and Tompkins Laboratory	Laboratory POC and overall manager for TDS analytical work. Responsible for oversight, QC and data review of laboratory results.	

Notes:
[1] Resumes are maintained by the individuals' organizations and are available upon request; upon execution of the project, staff may be removed (if unnecessary to project execution) and other staff may be added or substituted, as necessary and available.

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SAP Worksheet #9f—Project Scoping Session Participants Sheet

Project Name: Expanded SI for transfer Parcels FED-1A, 2B, and 2C; EDC-12; and EDC-17 at Alameda Point					
Projected Date(s) of Sampling June 2012			**Site Name:** Alameda Point Naval Air Station		
PM: Jamie Eby			**Site Location:** Alameda, California		
Date of Session: February 29, 2012 **Scoping Session Purpose: Discuss groundwater designation in areas of Parcels 12 and 17 and proposed additional sampling for total dissolved solids to address spatial gaps in TDS data for this area.**.					
Name	**Title**	**Affiliation**	**Phone #**	**E-mail Address**	**Project Role**
Cecily Sabedra	RPM	Base Realignment and Closure Project Management Office (BRAC PMO)-West	619-532-0972	cecily.sabedra@navy.mil	Primary Navy POC for SI
Bill McGinnis	Lead RPM	BRAC PMO-West	(619) 532-2296	william.mcginnis1@navy.mil	Primary Navy POC for base
Jacques Lord	RPM	BRAC PMO-West,	(619) 532-0972	jacques.lord@navy.mil	Navy POC for base
James Fyfe	RPM	DTSC	(510) 540-3850	700 Heinz Avenue, Suite 200 Berkeley, CA 94710	BCT member
Peter Russell	Navy Contractor	Alameda Reuse Redevelopment Authority	(415) 902-3123	NA	Primary Redevelopment POC
Xuan-Mai Tran	RPM	USEPA	(415) 972-3002	NA	BCT Member
John West	RPM	San Francisco Bay Regional Water Quality Control Board (Water Board)	(510) 622-2438	jwest@waterboards.ca.gov	BCT Member
Pankaj Arora	RPM	USEPA	NA	NA	BCT Member
Mary Parker	RPM (via telephone)	BRAC PMO West	NA	NA	Technical input and review
Curtis Moss	RPM (via telephone)	BRAC PMO West	NA	NA	Technical input and review.
Dennis Kelly	Navy Contractor	TtEMI	NA	NA	Meeting Attendee
Ray Seamons	Navy Contractor	TtEMI	NA	NA	Meeting Attendee
Betty Schmucker	Navy Contractor	Trevet, Inc.	NA	NA	Meeting Attendee
Comments/Decisions: See meeting minutes in Draft Alameda Point (AP) BRAC BCT Monthly Tracking Meeting After Action-Report 9AAR) dated March 20, 2012 with excerpts below.					
Consensus Decisions: See summary below.					

Note:
NA – Not available

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SAP Worksheet #9f—Project Scoping Session Participants Sheet (continued)

Summary from the February 29, 2012 BCT Meeting:

The Navy submitted a request letter to the Water Board for the groundwater use exception for the southeast portion of AP. At the request of the Water Board additional information, such as cross-sections, was provided by the Navy. The Water Board agreed with the conceptual site model that shows interconnection among the water-bearing zones underlying the southeast corner of Alameda Point, however, the data set does not cover the area comprehensively. The Navy relied on inland wells, not shoreline wells, to reach its conclusions, and the Economic Development Conveyance (EDC) Parcels 12 and 17 areas lacks total dissolved solids (TDS) sample locations at the deeper depths.

The Navy agreed to address the data gaps and proposed six or seven additional locations for sampling in the deeper (50-foot below ground surface (bgs)) groundwater interval. The goal is to collect samples quickly following the existing Expanded Site Inspection WP and Sampling and Analysis Plan (SAP).

The requested sampling is presented in SAP Worksheet 10d-1.

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SAP Worksheet #10d-1—Southeast Portion of Alameda Point (including EDC 12 and EDC 17) –Total Dissolved Solids in Shallow Groundwater Problem Definition

The Expanded Site Inspection (SI) also includes an assessment of TDS in groundwater in the vicinity of these parcels to provide additional spatial information on TDS concentrations. The data is required in order to demonstrate that groundwater is not a suitable drinking water resource.

Background

Shallow groundwater beneath all or portions of the southeast portion of Alameda Point (including EDC 12 and EDC-17) is currently considered a potential drinking water resource for municipal in accordance with the California State Water Quality Control Board Basin Plan for the San Francisco Bay Region (http://www.swrcb.ca.gov/rwqcb2/basin_planning.shtml) updated in 2011. The basin plan states that: *Unless otherwise designated by the Water Board, all groundwater is considered suitable, or potentially suitable, for municipal or domestic water supply (MUN). In making any exceptions, the Water Board will consider the criteria referenced in State Water Board Resolution No. 88-63 and Water Board Resolution No. 89-39, "Sources of Drinking Water," where:*

- *The total dissolved solids exceed 3,000 milligrams per Liter (mg/L) (5,000 microSiemens per centimeter, µS/cm, electrical conductivity), and it is not reasonably expected by the Water Board that the groundwater could supply a public water system; or*
- *There is contamination, either by natural processes or by human activity (unrelated to a specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices; or*
- *The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day; or*
- *The aquifer is regulated as a geothermal energy-producing source or has been exempted administratively pursuant to 40 Code of Federal Regulations Part 146.4 for the purpose of underground injection of fluids associated with the production of hydrocarbon or geothermal energy, provided that these fluids do not constitute a hazardous waste under 40 Code of Federal Regulations Part 261.3.*

The Navy has presented data to support that TDS concentrations in shallow groundwater (i.e., groundwater above the Yerba Buena Mud) in the southeast portion of Alameda Point exceed 3,000 mg/L and therefore the shallow groundwater is not of sufficient quality to be considered a future potential municipal or domestic water source pursuant to State Water Resources Control Board Resolution No. 88-63 and State Water Board Resolution No. 89-39, "Sources of Drinking Water". The Navy intends to request that the Water Board concur that groundwater does not meet municipal and domestic supply criteria for the southeast portion of Alameda Point. The Water Board's concurrence is termed an "exception letter". The southeast portion includes the following areas: operable units (OU)-2A (IR Sites 9, 13, 19, 22, 23), OU-2B (IR Sites 3, 4, 11, and 21), OU-1 (IR Site 16), OU-6 (IR Site 27), and Transfer Parcels EDC-12 and EDC-17 (Figure 1A).

However, based on discussions with the Water Board and other regulatory agencies, the Navy agreed to perform some additional sampling and testing of shallow groundwater to provide more complete spatial coverage of TDS concentrations in the southeast portion of Alameda Point, specifically EDC 12, EDC-17, and IR sites 16 and 27. The Navy is proposing to collect 7 additional hydropunch samples at a depth of 50 feet bgs within EDC-12, EDC-17, IR Site 16, and IR Site 27 to

SAP Worksheet #10d-1—Southeast Portion of Alameda Point (including EDC 12 and EDC 17) –Total Dissolved Solids in Shallow Groundwater Problem Definition (continued)

enhance the TDS data set for these areas (see Figure 1A). Results from these new data points are not expected to change the overall conclusions of the exception letter.

If the Water Board concurs that the shallow groundwater is not a suitable drinking water resource then the drinking water exposure pathway is no longer applicable, vapor intrusion risk would drive the cleanup goals for any CERCLA sites requiring a response action.

Synopsis of Secondary Data

The Navy has compiled TDS data from eleven IR Sites (3, 4, 9, 11, 13, 16, 19, 21, 22, 23, and 27) in addition to Parcel EDC-12. TDS from 157 groundwater monitoring wells and 19 hydropunch/Geoprobe wells are available. The sample locations and TDS data in the southeast area are shown on Figure 1A.

Based on historical groundwater data (February 1994 through June 2010), TDS values range from 135 mg/L to 62,600 mg/L with an average TDS of approximately 14,800 mg/L. A TDS weighted average with equal distribution of measurements taken from the shallow interval (well screen depths less than 20 feet bgs), mid-interval (well screen depths between 20 and 50 feet bgs) and deep interval (well screen depths greater than 50 feet bgs) was calculated. The average TDS weighted proportionally for measurements taken from the three intervals is 14,800 mg/L. These averages include monitoring well and Hydropunch data. Hydropunch TDS data are as accurate as monitoring well data because the EPA Method (160.1) and Standard Method (2540C) filter the sample in the lab to ensure an accurate dissolved measurement.

The average TDS value and weighted average TDS value exceeds both the Water Board (3,000 mg/L) and U.S. EPA (10,000 mg/L) potential beneficial use standards. Most of the southeast area of Alameda Point is reclaimed tideland or bay, and the high TDS values are representative of historical infilling of the San Francisco Bay.

Problem Definition

Existing data for TDS indicates that shallow groundwater in the southeast portion of Alameda Point is not a potentially suitable drinking water resource; however there is a lack of TDS data in portions of the southeast. Therefore, the Expanded SI includes 7 locations in the southeast area for collection and analysis of TDS in shallow groundwater as discussed with the regulatory agencies. This data will provided additional information on TDS to assess whether shallow groundwater is a potentially suitable drinking water resource. This assessment will be incorporated into the exception letter.

SAP Worksheet #10d-1—Southeast Portion of Alameda Point (including EDC 12 and EDC 17) –Total Dissolved Solids in Shallow Groundwater Problem Definition (continued)

Environmental Questions to be Answered by the Expanded SI:

1. **What are the concentrations of TDS in the southeast area of Alameda Point where there is no existing data?**

Seven locations within EDC 12, EDC 17 and IR Sites 16 and 17 were selected to provide more complete spatial coverage of TDS. A hydropunch will be used to obtain shallow groundwater at an approximate depth of 50 feet below ground surface. Soil lithology adjacent to each hydropunch sample will be documented using a geoprobe to collect core samples for logging of the soil. During logging the soil will be screened for odors and organic vapors consistent with the other activities in the Expanded SI.

This question will be answered by reviewing the laboratory TDS concentrations.

2. **Are the concentrations of TDS consistent with existing data that indicates that concentrations exceed 3,000 mg/L and therefore, the shallow water does not meet Water Board beneficial use criteria and an exception letter from the Water Board is appropriate?**

This question will be answered by reviewing the laboratory TDS concentrations along with the prior data summarized in the Navy's request for the Water Board to provide an exception to the beneficial use designation. If the new TDS weighted average for the deep interval (well screen depths greater than 50 feet bgs) exceeds 3,000 mg/L and is within the range of prior data then the exception letter remains appropriate. If the new TDS weighted average for the deep interval does not exceed 3,000 mg/L, the Navy will consult with the Water Board and assess whether other criteria for determining a potential drinking water resource are sufficient to approve the exception.

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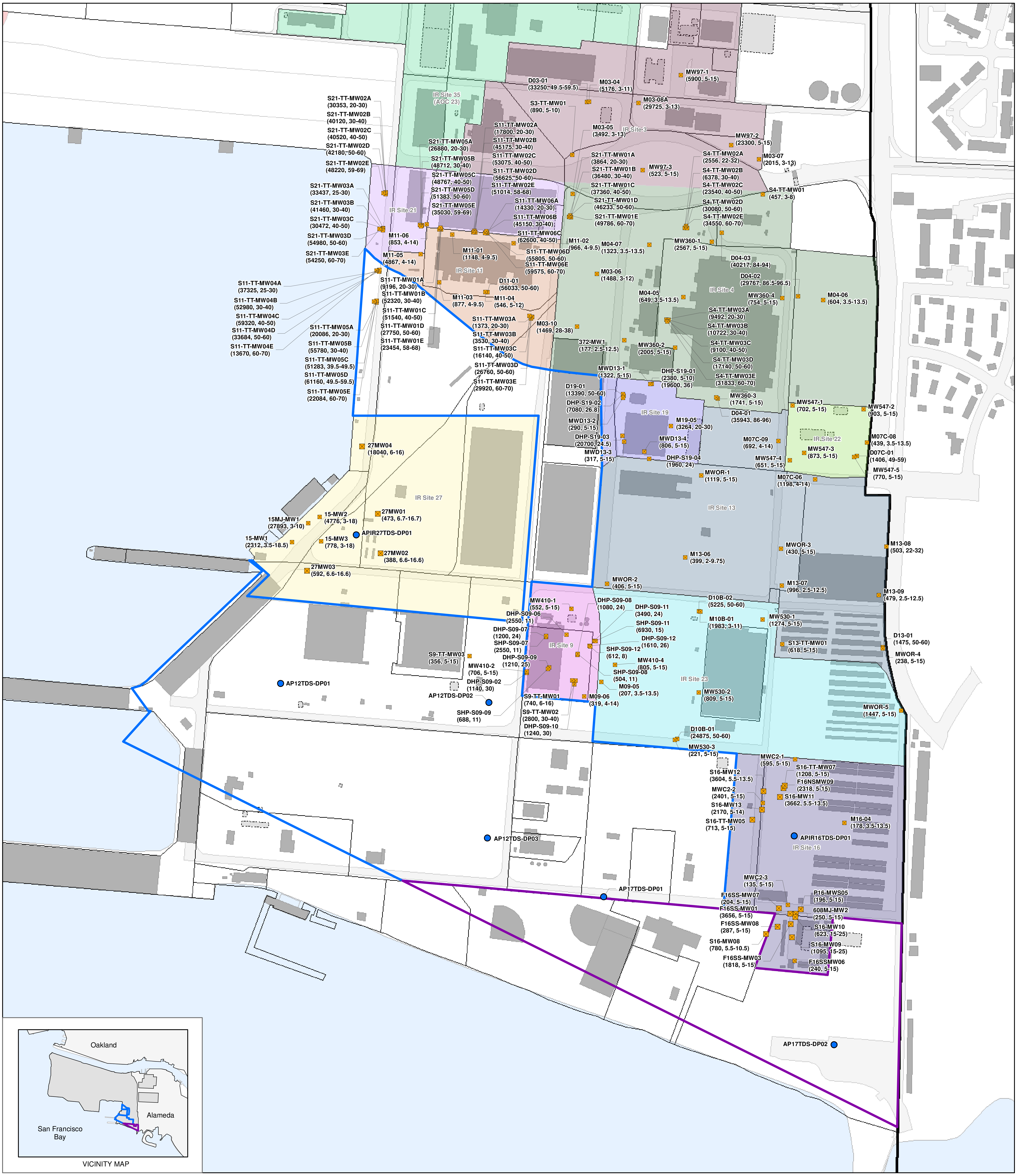

LEGEND

- Proposed Hydropunch Sample Location (50' BGS)
- Groundwater TDS Sample Locations
- EDC-12
- EDC-17
- IR Site 11
- IR Site 13
- IR Site 16
- IR Site 19
- IR Site 21
- IR Site 22
- IR Site 23
- IR Site 27
- IR Site 3
- IR Site 35 (AOC 21)
- IR Site 35 (AOC 23)
- IR Site 4
- IR Site 9
- Parcel Boundary
- Alameda Point NAS Property Boundary
- Building or Structure (Removed)
- Building or Structure (Present)

Notes:

MWC2-3 (135, 5-15) Well ID (Concentration in mg/L, well screen interval in feet)

mg/L = milligrams per liter
TDS = Total Dissolved Solids

Groundwater samples were collected from monitoring wells and hydropunch locations

0 200 400
Feet

N

FIGURE 1A
PROPOSED GROUNDWATER TDS SAMPLE LOCATIONS

Alameda Point, Alameda, California

CH2MHILL

\\ZINFANDEL\TEST\NAVYFAC\NAVYCLEAN\383512\GIS_FILES\MAPFILES\2012\TDS_PROPOSED_HISTORICAL_CSIZE.MXD TDS_HISTORICAL_DSIZE.MXD RRATHNAY 5/4/2012 4:02:31 PM

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SAP Worksheet #11—Project Quality Objectives/Systematic Planning Process Statements

1. What are the Project Action Limits (PALs)?

The PALs are defined below and are listed, by constituent group and medium, in **Worksheet #15**. In general, the PALs are:

- USEPA National Secondary Drinking Water Regulations for nuisance chemicals (TDS) (USEPA, 2009) and Water Board criteria for TDS concentrations (3,000 mg/L or less) for beneficial use as a potential drinking water resource (Water Board, 2011).

2. Who will collect and generate the data? How will the data be reported?

CH2M HILL and its subcontractors will collect the data. Curtis and Tompkins, Inc. a CA NELAP number 01107CA will perform the TDS analysis. This data will be evaluated and reported in a separate letter to the Navy.

TDS Evaluation

The 7-step decision analysis process applies to all sites in the Expanded SI phase. The TDS evaluation will be used to assess whether shallow groundwater is a potentially suitable drinking water resource. If TDS weighted averages exceed 3,000 mg/L and are consistent with currently existing data, then this finding affects the evaluation of the Expanded SI chemical analysis data as follows:

- Screening levels for drinking water standards are not applicable for cleanup level goals.
- The pathway of human health exposure via drinking of shallow groundwater will not be a reasonable exposure pathway.

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SAP Worksheet #12-16—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Groundwater

Analytical Group: TDS

Concentration Level/Method: "Low" (SM2540C)

Measurement Performance Criteria Table – Field Quality Control Samples

Quality Control Sample	Analytical Group[1]	Frequency	Data Quality Indicators	Measurement Performance Criteria	Quality Control Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
Lab Duplicate	TDS	One for each group of 20 samples of a similar matrix	Precision	RPD < 20%	A
Field Duplicate	TDS	One per 10 samples	Precision	RPD < 20%	S & A
Equipment Blank	TDS	One per day	Bias/Contamination	No analytes detected > 10 mg/L	S & A
Cooler temperature indicator	TDS	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte

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SAP Worksheet #13—Secondary Data Criteria and Limitations Table (continued)

Secondary Data	**Data Source (Originating Organization, Report Title, and Date)**	**Data Generator(s) (Data Types, Data Generation/ Collection Dates)**	**How Data Will Be Used**	**Limitations on Data Use**
EDC 12, EDC 17, IR Site 16 and IR Site 27				
Historical Data: TDS data in southeast area of Alameda Point including eleven IR Sites (3, 4, 9, 11, 13, 16, 19, 21, 22, 23, and 27) and Parcel EDC-12. TDS from 157 groundwater monitoring wells and 19 hydropunch/Geoprobe wells	Prepared by Tetra Tech EM for the Navy. Report titled: *Final Determination of Beneficial Uses of Groundwater Alameda Point, Alameda, California*. Date: July 2000. Prepared by Tetra Tech EC, Inc. for the Navy Report titled. Final *Technical Memorandum for Data Gap Sampling at Operable Units 2A and 2B*. Alameda Point, Alameda, California. Date: July 2009. Remaining TDS data pulled from Naval Installation Restoration INformaiton Solution database. These data were presented in various reports from 1994 to 2010.	Various Navy contractors collected groundwater samples for analysis of TDS between 1994 and 2010.	Data from this report will be incorporated, as appropriate, into comprehensive data set for use in obtaining exception letter finding that shallow groundwater in southeast area is not likely a suitable drinking water source due to TDS greater than 3,000 mg/L	Spatial coverage of TDS is not sufficient to obtain regulatory agency concurrence that shallow groundwater is not a suitable drinking water resource due to TDS concentrations. Historical data is useable in combination with this new data to demonstrate that TDS weighted average is greater than 3,000 mg/L throughout the southeast area of Alameda Point.

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SAP Worksheet #14—Summary of Project Tasks (continued)

Southeast Portion of Alameda Point (including EDC 12 and EDC 17) –Total Dissolved Solids in Shallow Groundwater

Hydropunch Groundwater Sampling: A hydropunch (or equivalent technology) will be pushed downward to desired sampling depth (50 feet bgs) using a truck-mounted hydraulic percussion hammer. The hydopuch (or equivalent technology) will be retracted, and a discrete direct-push sample will be collected from each of the boreholes; specific sample intervals are presented in **Worksheet #17**. For additional details see **Worksheet #17.**If inadequate amount of groundwater cannot be collected by the hydropunch, the sampling rods will be removed from the ground and a temporary monitoring well will be installed by inserting a 5-foot section of a 1-inch diameter polyvinyl chloride-slotted well screen (0.01-inch slot size) fitted with an end cap into the borehole. The upper sections of the wells will be solid polyvinyl chloride pipes.

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SAP Worksheet #15-15—Reference Limits and Evaluation Table

Matrix: Groundwater

Analytical Group: TDS

Analyte	CAS	RSLs Residential	Background (µg/L)	Eco SSSBs (µg/L)	NRWQC (µg/L)	RSLs-Tap (GW) (µg/L)	CLP RLs (µg/L)	Water Board Criteria (mg/L)	EPA Secondary DW Regs (mg/L)	PAL (mg/L)	PAL Reference[1]	PQL Goal (mg/L)	Laboratory-specific[2] PQLs (mg/L)	Laboratory-specific[2] MDLs (mg/L)
Total Dissolved Solids	N/A	--	--	--	--	--	--	3,000	500	500	EPA	10	10	NA[3]

Notes:

µg/L = micrograms per liter; mg/L = milligrams per liter; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; GW = groundwater; MDL = Method Detection Limits; PAL = Project Action Limits; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmarks.

[1] USEPA National Secondary Drinking Water Regulations (EPA). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.

[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method.

[3]The laboratory does not perform MDL studies or determine limits of detection for residual solids analyses. Laboratory will report results to the PQL only.

-- No screening level value was available

N/A Not applicable

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SAP Worksheet #17—Sampling Design and Rationale (continued)

Southeast Portion of Alameda Point (including EDC 12 and EDC 17) –Total Dissolved Solids in Shallow Groundwater.

To assess whether TDS concentrations exceed Water Board Criteria of 3,000 mg/L throughout the southeast portion of Alameda Point, groundwater samples will be collected by hydropunch (or equivalent technology) at 7 locations. The samples will be collected at a depth of approximately 50 feet and each sample will be analyzed for TDS. Sample locations are shown on Figure 1A. Adjacent (within 10 feet) to each hydropunch location, a geoprobe will be advanced to 50 feet to obtain lithologic information to complement the TDS groundwater data and support the TDS assessment.

For the above sampling approach, the rationale for the matrices to be sampled and screening levels are discussed in **Worksheets #10, #11, #14, and #15**.

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SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference
Southeast Portion of Alameda Point (including EDC 12 and EDC 17) –Total Dissolved Solids in Shallow Groundwater						
AP12TDS-DP01	AP12TDS-DP01-49-50-MMYY	Water	49-50	TDS	1	See Worksheet 21
AP12TDS-DP02	AP12TDS-DP02-49-50-MMYY	Water	49-50	TDS	1	See Worksheet 21
AP12TDS-DP03	AP12TDS-DP03-49-50-MMYY	Water	49-50	TDS	1	See Worksheet 21
AP17TDS-DP01	AP17TDS-DP01 -49-50-MMYY	Water	49-50	TDS	1	See Worksheet 21
AP17TDS-DP02	AP17TDS-DP02-49-50-MMYY	Water	49-50	TDS	1	See Worksheet 21
APIR16TDS-DP01	APIR16TDS-DP0149-50-MMYY	Water	49-50	TDS	1	See Worksheet 21
APIR27TDS-DP01	APIR27TDS-DP01-49-50-MMYY	Water	49-50	TDS	1	See Worksheet 21

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SAP Worksheet #19—Analytical SOP Requirements Table (continued)

Matrix	Analytical Group	Analytical and Preparation Method / SOP Reference[1]	Containers (number, size, and type)	Sample volume (units)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time[3] (preparation / analysis)
Groundwater	TDS	SM2540C	500 milliliter plastic	100 milliliter	Cool to 4°C	7 days

[1] Specify the appropriate reference letter or number from the Analytical SOP References table (**Worksheet #23**).
[2] Provide the minimum sample volume or mass requirement if it differs from the container volume.
[3] Maximum holding time is calculated from the time the sample is collected to the time the sample is prepared/extracted.

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SAP Worksheet #23—Analytical SOP References Table (continued)

Lab SOP Number	Title, Revision Date, and / or Number	Definitive or Screening Data	Matrix and Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work?[1] (Y/N)
C&T TDS_rv10	Total Dissolved Solids (Total Filterable Residue) Dried at 180ºC SMWW 2540C	Definitive	Inorganic/TDS	Lab Balance	Curtis and Tompkins	N

Notes:
[1] If yes, then specify the modification that has been made. Note that any analytical SOP modification made relative to project specific needs must be reviewed and approved by the Navy QAO.

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SAP Worksheet #25—Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table (continued)

Instrument / Equipment	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	CA	Responsible Person[2]	SOP Reference[1]
Laboratory Balance	Perform balance re-calibration as necessary	TDS	Check balance operation using NIST traceable weights	Daily, or whenever in use	≤0.1% difference	Recalibrate balance. Re-check operation. Reanalyze affected data	Analyst/ Supervisor	C&T TDS_rv10

[1] Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).
[2] Name or title of responsible person may be used.

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SAP Worksheet #28-9—Laboratory QC Samples Table

Matrix Groundwater

Analytical Group TDS

Analytical Method / SOP Reference SM 2540C/TDS_rv10

Quality Control Sample	Frequency / Number	Method / SOP Quality Control Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator	Measurement Performance Criteria
Method Blank	One per prep batch of twenty or fewer samples of similar matrix	No analyte detected > 10 mg/L (absolute value < 10 mg/L)	Investigate source of contamination. Evaluate the samples and associated QC: if blank results are above 10 mg/L, report sample results which are < 10 mg/L or > 10X the blank concentration. Re-analyze blank and samples >10 mg/L and < 10X the blank	Analyst/Supervisor	Bias/Contamination	Same as quality control Acceptance Limits
Laboratory Control Sample	One per prep batch of twenty or fewer samples of similar matrix	Recovery within 80 – 120%	Evaluate and reanalyze if possible. If the LCS recoveries are high but the sample results are < 10 mg/L narrate. Otherwise re-digest and re-analyze	Analyst/Supervisor	Accuracy/Bias	Same as quality control Acceptance Limits
Lab Duplicate	One per prep batch of twenty or fewer samples of similar matrix	Relative Percent Difference (RPD): ≤20%	Flag results for affected analytes for all associated samples with “J”	Analyst/Supervisor	Accuracy/Bias	Same as quality control Acceptance Limits

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SAP Worksheet #30—Analytical Services Table (continued)

Matrix	Analytical Group [1]	Sample Locations/ ID Number	Analytical Method	Data Package Turnaround Time	Laboratory / Organization[1] (name and address, contact person and telephone number)	Backup Laboratory / Organization[1] (name and address, contact person and telephone number)
Groundwater	TDS	7	TDS by SM 2540C	28 calendar days	Curtis and Tompkins, Inc 2323 Fifth St. Berkeley, CA 94710 Desiree Tetrault 510-204-2221	Empirical Laboratories, LLC 227 French Landing Dr. Nashville, TN 37228 Sonya Gordon 615-345-1115

Notes:
[1] Analytical Groups:
TDS = total dissolved solids

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SAP Worksheet #31—Planned Project Assessments Table

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment (title and organizational affiliation)	Person(s) Responsible for Responding to Assessment Findings (title and organizational affiliation)	Person(s) Responsible for Identifying and Implementing CA (title and organizational affiliation)	Person(s) Responsible for Monitoring Effectiveness of CA (title and organizational affiliation)
DoD ELAP audit (Laboratory)	Prior to sampling activities	External	American Association for Laboratory Accreditation (A2LA)	Peter Unger/CEO A2LA	Carolyn Brizzolara Curtis and Tompkins	Carolyn Brizzolara Curtis and Tompkins	Mark Fesler CH2M HILL

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SAP Worksheet #36—Analytical Data Validation (Steps IIa and IIb) Summary Table

Step IIa / IIb	Matrix	Analytical Group	Validation Criteria	Data Validator
IIa	Groundwater, Surface Water, Surface Soil, Subsurface Soil, Sediment, Concrete	TDS	Per NAVFACSW Environmental Work Instruction #1 all data (except waste disposal data) will be validated at the following level: 20% at level IV and 80% at Level III. All data within the data set are independently validated using the DQOs established in Worksheets 12, 15, and 28. The data sets will be comprised of individual sample delivery groups (SDGs) established by the laboratory for samples received on a daily basis. Twenty percent of the SDGs are subjected to a Level IV validation and the remaining eighty percent of the SDGs are validated per Level III procedures. The 20% portion of the data set should be comprised of routine field samples, and field QC samples such as field duplicates, field blanks, trip blanks, and equipment rinsates. The validator must perform calculation checks for these data and the data for associated QC samples 20% of the samples will be chosen at random during sample collection to be designated for Level IV validation. Analytical Methods and laboratory SOPs as presented in this SAP will be used to evaluate compliance against QA/QC criteria presented in this SAP and DOD QSM. Should adherence to QA/QC criteria yield deficiencies, data may be qualified. The data qualifiers that may be used are those presented in the *National Functional Guidelines for Organic Data Review* (USEPA, 1999) and *National Functional Guidelines for Inorganic Data Review* (USEPA, 2004). National Functional Guidelines will not be used for data validation; however, the specific qualifiers listed therein may be applied to data should non-conformances against the QA/QC criteria as presented in this SAP be identified.	Data Validation Subcontractor: Laura Maschhoff/DataQual Environmental Services
IIb	Groundwater, Surface Water, Surface Soil, Subsurface Soil, Sediment, Concrete	TDS	The PC will verify that the project QLs are being met. See project limits in Worksheet #15.	PC: Mark Fesler/CH2M HILL

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References

_______. 2006b. *National Recommended Water Quality Criteria, Office of Water, Office of Science and Technology*. Online: http://www.epa.gov/waterscience/criteria/wqcriteria.html

_______. 2008. *Regional Screening Levels for Chemical Contaminants at Superfund Sites.* Online: http://www.epa.gov/region09/superfund/prg/pdf/master_sl_table_run_APRIL2009.pdf.

_______. 2009. *National Secondary Drinking water Regulations.* Online: http://water.epa.gov/drink/contaminants/secondarystandards.cfm.

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Attachment 1

Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Expanded Site Inspection for Transfer Parcels ECD-12, EDC-17, FED-1A, FED-2B, and FED-2C Alameda Point, Alameda, California **(on enclosed CD-Rom)**

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SAP Worksheet #1—Title and Approval Page

Final

Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) Expanded Site Inspection for Transfer Parcels EDC-12, EDC-17, FED-1A, FED-2B, and FED-2C

Alameda Point
Alameda, California

Contract Task Order FZN0

March 2010

Document Control Number: CH2M-1000-FNZ0-0004

Prepared for:
Department of the Navy
Naval Facilities Engineering Command - Southwest
San Diego, California 92132-5190

Under the

NAVFAC CLEAN 1000 Program
Contract N62470-08-D-1000

Prepared by

CH2MHILL

Oakland, California

Review Signature: Anita Dodson — 3/11/2010
Anita Dodson
Program Quality Assurance Officer
Date

Approval Signature: Narciso Ancog — 3/12/2010
Narciso Ancog
Navy Quality Assurance Officer
Date

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SAP Worksheets

Diagram

Appendix

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Acronyms and Abbreviations

°C	degrees Celsius
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
AFCEE	Air Force Center for Engineering and the Environment
AFWBZ	Alameda Formation Water-Bearing Zone
AOC	area of concern
APP	Accident Prevention Plan
ARAR	applicable or relevant and appropriate requirement
ARRA	Alameda Reuse Redevelopment Authority
AST	aboveground storage tank
ASTM	American Society for Standards and Materials
BCT	BRAC Cleanup Team
BEC	BRAC Environmental Coordinator
BEI	Bechtel Environmental, Inc.
bgs	below ground surface
BRAC	Base Realignment and Closure
BSU	Bay Sediment Unit
CA	corrective action
CAA	corrective action area
CA NELAP	California National Environmental Laboratory Program
Cal/EPA	California Environmental Protection Agency
CAS	Chemical Abstract Number
CCV	continuing calibration verification
CDHS	California Department of Health Services
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CLEAN	Comprehensive Long-term Environmental Action—Navy
CLP	Contract Laboratory Program
COC	chemical of concern
COPEC	chemical of potential ecological concern
CPR	cardiopulmonary resuscitation
CS	Contract Specialist
CSM	conceptual site model
CSO	Caretaker Site Office
CTO	contract task order
CVAA	cold vapor atomic absorption spectroscopy
CWA	Clean Water Act
DDD	dichlorodiphenyldichloroethane

DDE	dichlorodiphenyldichloroethene
DDT	dichlorodiphenyltrichloroethane
DFG	California Department of Fish and Game
DoD	Department of Defense
DON	Department of the Navy
DQE	data quality evaluation
DQI	data quality indicator
DRO	diesel range organics
DTSC	California Department of Toxic Substances Control
DX/FN	dioxins/furans
EB	equipment blank
ECD	electron capture detector
EBS	Environmental Baseline Survey
EDC	Economic Development Conveyance
EDM	Environmental Data Management
EE/CA	Engineering Evaluation/Cost Analysis
EIS	Environmental Information Specialist
EPC	exposure point concentration
ERSL	United States Environmental Protection Agency Regional Screening Levels
ESL	environmental screening level
ESV	ecological screening value
EXP	explosives
FD	field duplicate
FED	Federal Agency
FID	flame ionization detector
FS	Feasibility Study
FTL	Field Team Leader
FWBZ	first water-bearing zone
g	gram
GAP	generator accumulation point
GC	gas chromatograph
GRO	gasoline range organic
GWMP	Groundwater Monitoring Program
H&S	health and safety
HAZWOPER	Hazardous Waste Operations and Emergency Response
HERD	Human and Ecological Risk Division
HEX CR	hexavalent chromium
HI	hazard index
HHRA	Human Health Risk Assessment
HPLC	high performance liquid chromatography
HSO	Health and Safety Officer
HSP	Health and Safety Plan
IC/UV	ion chromatography/ultraviolet (detectors)

ICP/MS	inductively-coupled plasma
ID	identification number
IDW	investigation-derived waste
IDW	Investigation-derived Waste Management Plan
IR	Installation Restoration
IS	internal standard
LCS	laboratory control sample
LIMS	Laboratory Information Management Systems
LRPM	Lead Remedial Project Manager
MCL	maximum contaminant level
MDL	method detection limit
mg/kg	milligrams per kilogram
ml	milliliter
MPC	measurement performance criteria
MS	mass spectrometer
MS/MSD	matrix spike/matrix spike duplicate
MTBE	methyl tert-butyl ether
N/A	not applicable
NACIP	Navy Assessment and Control of Installation Pollutants
NADEP	Naval Aviation Depot
NAS	Naval Air Station
NAVFAC	Naval Facilities Engineering Command
Navy	Department of the Navy
NEESA	Naval Energy and Environmental Support Activity
NFA	no further action
NFESC	Naval Facilities Engineering Service Center
NIRIS	Navy Installation Restoration Information System
NMCPHC	Navy and Marine Corps Public Health Center
NPL	National Priorities List
NRWQC	National Recommended Water Quality Criteria
OU	Operable Unit
OVA	Organic Vapor Analyzer
OVM	organic vapor monitor
PA/SI	Preliminary Assessment/Site Inspection
PAH	polycyclic aromatic hydrocarbon
PAL	project action limit
PC	Project Chemist
pCi/g	picocurie per gram
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PDF	portable document format
PID	photoionization detector
PM	Project Manager
PMO	Project Management Office

POC	point of contact
ppm	parts per million
PQL	project quantitation limit
PQO	project quality objective
PRG	preliminary remediation goal
PT	proficiency testing (previously known as performance evaluation [PE] sample)
PVC	polyvinyl chloride
QA	quality assurance
QAM	Quality Assurance Manager
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QSM	Quality Systems Manual
QC	quality control
QL	quantitation limit
RASO	Radiological Affairs Support Office
RF	response factor
RI	Remedial Investigation
RL	reporting limit
ROD	Record of Decision
ROICC	Resident Officer in Charge of Construction
RPD	relative percent difference
RPM	Remedial Project Manager
RSD	relative standard deviation
RSL	regional screening level
RV	recreational vehicle
SAP	Sampling and Analysis Plan
SERA	Screening-level Ecological Risk Assessment
SI	Site Inspection
SOP	standard operating procedure
SOW	scope of work
SPCC	system performance check compound
SSC	Site Safety Coordinator
SSC-HW	Site Safety Coordinator—Hazardous Waste
SSSB	Subsurface Soil Screening Benchmark
SVOC	semivolatile organic compound
SW	Southwest Division
SWBZ	second water-bearing zone
SWMU	solid waste management unit
TAL	United States Environmental Protection Agency Contract Laboratory Program Target Analyte List
TB	trip blank
TCA	trichloroethane
TCE	trichloroethene

TCL	United States Environmental Protection Agency Contract Laboratory Program Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TCRA	Time-critical Removal Action
TOC	total organic carbon
TPH	total petroleum hydrocarbon
TSCA	Toxic Substances Control Act
TtEMI	Tetra Tech EM Inc.
UCL	upper confidence level
UFP	Uniform Federal Policy
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VA	Veterans Administration
VOA	volatile organic analyte
VOC	volatile organic compound
Water Board	San Francisco Bay Regional Water Quality Control Board
WD	washdown
YBM	Yerba Buena Mud

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SAP Worksheet #2—SAP Identifying Information

Site Name/Number: Transfer Parcels Federal Agency (FED)-1A, 2B, and 2C; Economic Development Conveyance (EDC)-12; and EDC-17 at Alameda Point.

Operable Unit (OU): Transfer Parcel FED-1A—EBS Parcel 5 (Area of Concern [AOC]-1 and AOC-2), EBS Parcel 24 (AOC-3), Installation Restoration (IR) Site 33, 13 Solid Waste Management Units (SWMUs) AST-407A/407B/467B/483A/483B/485B/488/496/495A/495B/499/599A/599B, Building 100

Transfer Parcel FED-2B

Transfer Parcel FED-2C

Transfer Parcel EDC-12—Environmental Baseline Survey (EBS) Parcels 140 (AOC-1), EBS Parcels 150, 150B, and 153 (AOC-2), EBS Parcels 151, and 150B) (AOC-3), EBS Parcels 151 and 154 (AOC-4), EBS Parcel 159 (AOC-5), EBS Parcel 202 (AOC-6), Transfer Parcel EDC-17, EBS Parcel 165 (AOC-1), EBS Parcel 169 (AOC-2 and AOC-3)

Contractor Name: CH2M HILL

Contract Number: N62470-08-D-1000

Contract Title: Navy Comprehensive Long-term Environmental Action—Navy (CLEAN) Program 1000

Work Assignment Number (optional): Contract Task Order (CTO) FZN0

- **This SAP was prepared in accordance with the requirements of the**
  - *Uniform Federal Policy for Quality Assurance Plans (UFP-QAPP)* (USEPA, 2005)
  - *Guidance for QAPPs, USEPA QA/G-5, Quality Assurance Management Section* (USEPA, 2002)
- **Regulatory program:**
  - Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- **This SAP is a <u>project-specific</u> SAP**
- **Dates of Scoping Sessions:**

Scoping Session	Date
Scoping Session –Agenda Item in BRAC Cleanup Team (BCT) meeting	April 15, 2008
Scoping Session –Agenda Item in BCT meeting	August 19, 2008
Scoping Session –Agenda Item in BCT meeting	September 16, 2008
Scoping Session –Agenda Item in BCT meeting	December 12, 2008
Scoping Session – BCT Site Walk	July 28, 2009

SAP Worksheet #2—SAP Identifying Information (continued)

- **Dates and titles of any SAP documents written for previous site work that are relevant to the current investigation.**

Title and Author	Date
Final Work Plan for Basewide Groundwater Monitoring Program, Alameda Point, Alameda, California. (Shaw Environmental and Infrastructure, Inc.)	2004

- **Organizational partners (stakeholders) and connection with lead organization:**

  The Base Realignment and Closure (BRAC) Cleanup Team (BCT) consists of the following:

  – **BRAC Environmental Coordinator (BEC)—**The BEC chairs the BCT meetings and is responsible for coordinating environmental restoration and compliance programs and updating the BRAC Cleanup Plan for Alameda Point.

  – **United States Environmental Protection Agency (USEPA) Project Manager (PM), California Department of Toxic Substances Control (DTSC) PM, and San Francisco Bay Regional Water Quality Control Board (Water Board) PM—**These agency PMs are responsible for overseeing and monitoring the progress of the Site Investigations at Alameda Point and its conformance with the requirements.

- **Lead organization (see SAP Worksheet #7 for detailed list of data users):**

  – Department of the Navy (Navy).

- **The omitted SAP elements excluded and provide an explanation for their exclusion below:**

  – Crosswalk table is excluded as all required information is provided in this SAP.

SAP Worksheet #3—Distribution List

Name of SAP Recipients	Title/Project Role	Organization	Telephone Number (Optional)	E-mail Address or Mailing Address	D	DF	F
William McGinnis	Lead Remedial Project Manager (LRPM)	Navy	(619) 532-2296	william.mcginnis1@navy.mil	A	A	A
T. June Wheaton	Remedial Project Manager (RPM)	Navy	(619) 532-0902 (619) 532-0983 (FAX)	thelma.wheaton.ctr@navy.mil	A	A	A
Brian Griffin	Contract Specialist (CS)	Navy	(619) 532-0944 (619) 532-0983 (FAX)	brian.d.griffin@navy.mil	CL	CL	CL
Derek Robinson	BRAC Environmental Coordinator (BEC)	Navy	(619) 532-0951	derek.j.robinson1@navy.mil	A	A	A
Doug DeLong	Caretaker Site Office (CSO) Representative	Navy	(415) 743-4713 (510) 772-8832 (Cell) (415) 743-4700 (FAX)	douglas.delong@navy.mil 410 Palm Ave. Bldg 1 Ste 161 San Francisco, CA 94130	A	A	A
Gregory Grace	Resident Officer in Charge of Construction (ROICC)	Navy	(510) 749-5940 (510) 755-5884 (Cell)	gregory.grace@navy.mil 2450 Saratoga Street, Bldg. 114, Ste 200 Alameda, CA 94501	A	A	A
Matthew Slack	Radiological Affairs Support Office (RASO) point of contact (POC)	Navy	(757) 887-4692 (757) 887-3235 (FAX)	matthew.slack@navy.mil	A	A	A
Mario Erasquin	Naval Facilities Engineering Command (NAVFAC) Southwest Division (SW) Environmental Safety Office POC	Navy	(619) 532-2532	almario.erasquin@navy.mil	CD	CD	CD
Don Coons	Navy and Marine Corps Public Health Center (NMCPHC) POC	Navy	(757) 953-0936 (757) 953-0675 (FAX)	donald.coons@med.navy.mil	CD	CD	CD
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Keith Sheets	Technical Lead	CH2M HILL	(510) 587-7601 (510) 541-8542 (Cell) (510) 622-9101 (FAX)	keith.sheets@ch2m.com	A	A	A
Anna-Marie Cook	Remedial Project Manager (RPM)	United States Environmental Protection Agency Region IX		75 Hawthorne Street San Francisco, California 94105-3901	A	A	A

SAP Worksheet #3—Distribution List (continued)

Name of SAP Recipients	Title/Project Role	Organization	Telephone Number (Optional)	E-mail Address or Mailing Address	D	DF	F
Anita Dodson	Program Chemist	CH2M HILL	(757) 671-6218 (757) 284-9208 (Cell)	Anita.dodson@ch2m.com	A	A	A
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John West	RPM	Regional Water Quality Control Board		1515 Clay Street, Suite 1400 Oakland, CA 94612	A	A	A
Karla Brasaemle	US EPA Contractor	Tech Law, Inc		90 New Montgomery Street, Suite 1010 San Francisco, CA 94105	A	A	A
Michelle Dalrymple	RPM	Department of Toxic Substances Control		700 Heinz Avenue, Suite 200 Berkely, CA 94710	A	A	A
Mark Berscheid	RPM	Department of Toxic Substances Control		8800 California Center Drive Sacramento, CA 95826-3200	A	A	A
Debbie Potter (w/o enclosure)	PM	Alameda Reuse and Redevelopment Authority		950 West Mall Square, Building 1 Alameda, CA 94501	A	A	A
Peter Russell	Navy Contractor	Russell Resources, Inc.		440 Nova Albion Way San Rafael, CA 94903	A	A	A
Dale Smith (CD only)	Co-Chair	RAB Community		2935 Otis Street Berkeley, CA 94703	A	A	A

Notes:
A = All, CL = Cover Letter, CD = Compact Disc, D = Draft, DF = Draft Final, F = Final, HC = Hard Copy

SAP Worksheet #4—Project Personnel Sign-off Sheet

Name	Organization/Title/Project Role	Telephone Number (optional)	Signature/ email receipt	SAP Section Reviewed	Date SAP Read
T. June Wheaton	NAVFAC SW/RPM/ Lead Agency POC	(619) 532-0902			
Brett Doerr	CH2M HILL/ CLEAN UFP-SAP Reviewer	(757) 671-6219			
Jamie Eby	CH2M HILL/Contractor PM/Logistics and Administration	(510) 587-7551			
Rick Cavil	CH2M HILL/Contractor Health and Safety (H&S) Lead/Health and Safety Officer	(408) 436-4909			
Mark Fesler	CH2M HILL/Project Chemist (PC)	(530) 229-3273			
Bryan Jones	CH2M HILL/Environmental Information Specialist (EIS)/Data Tracking and Management	(530) 243-5886			
Kevin Murphy	CH2M HILL/Data Manager	(619) 687-0120 (x37277) (619) 200-0163 (cell)			
Keith Sheets	CH2M HILL/ Technical Lead	(510) 587-7601 (510) 541-8542 (cell)			
Sonya Gordon	Empirical Laboratories, LLC	(615) 345-1115			
Linda McWhirter	SGS North America, Inc	(910) 350-1903			
Laura Maschhoff	DataQual Environmental Services	(314) 330-1327			
Stephen Quayle	CH2M HILL/Field Team	510) 587-7716 (510) 316-3644 (cell)			

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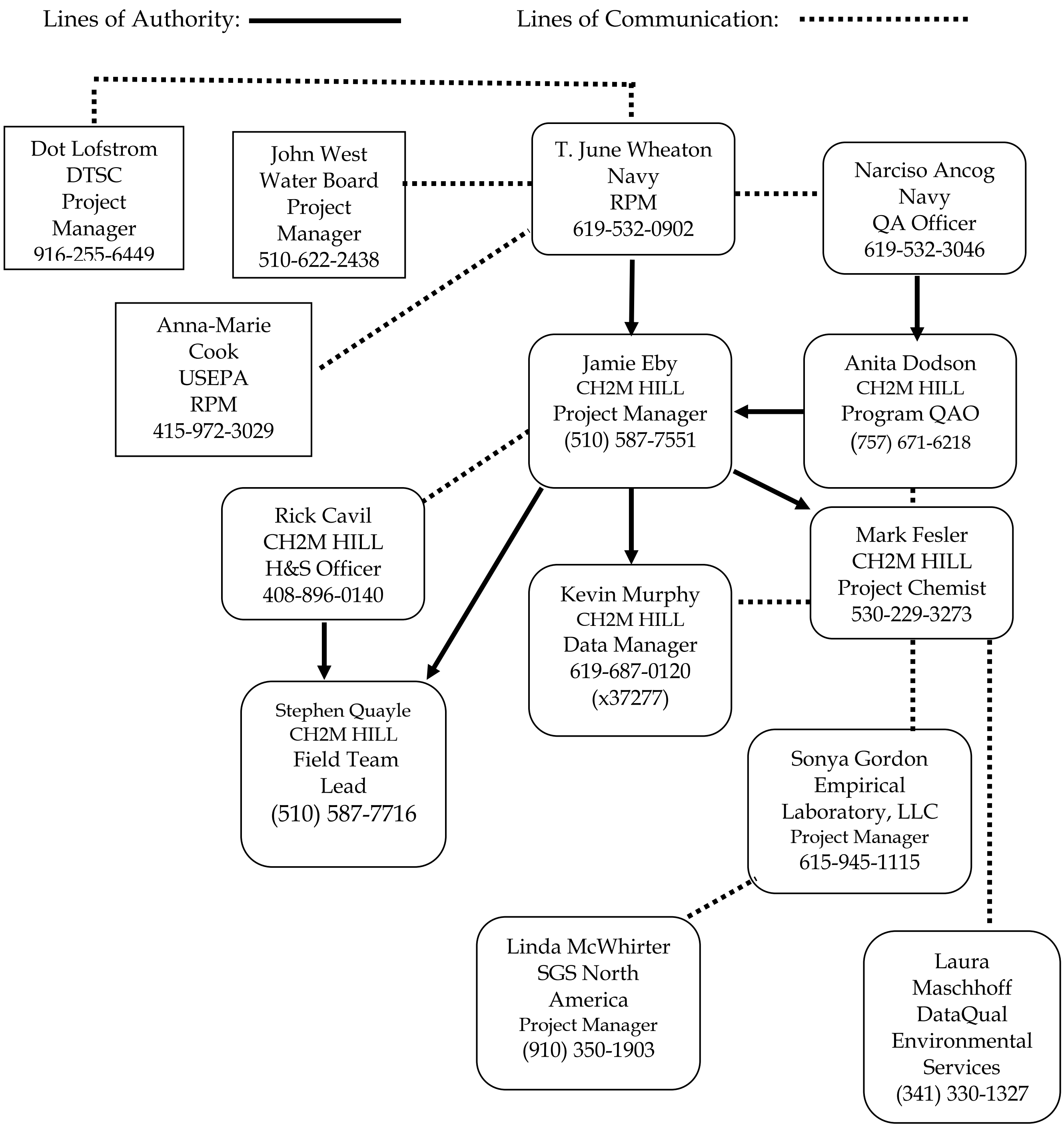
SAP Worksheet #5—Organizational Chart



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SAP Worksheet #6—Communication Pathways

Communication Drivers	Responsible Affiliation	Name	Phone Number and/or e-mail	Procedure
Point of Contact for Navy quality issues	NAVFAC SW QAO	Nars Ancog	(619) 532-3046	QAO will review and approve this SAP and all amendments to this SAP. Communicates with CH2M HILL AQM (Artemis Antipas)
Manages all project phases	NAVFAC SW/RPM/ Lead Agency POC	T. June Wheaton	(619) 532-0902	Primary POC for Navy (via e-mail, telephone, hardcopy, or in-person, as warranted); can delegate communication to other internal or external POCs. Communicates the results of the investigation to interested parties.
Quality Control Manager	CH2M HILL QAO	Anitia Dodson	(757) 671-6218	Ensures implementation of SAP by performing on-site field QC audits, as appropriate. QAO will be the point of contact with the NAVFAC SW QAO for quality-related matters.
Project management	CH2M HILL PM	Jamie Eby	(510)- 587-7551	Direct communication (via e-mail, telephone, hardcopy, or in-person, as warranted) to/from Navy contractor project staff to ensure appropriate project implementation. Project manager will manage field and project personnel, and serve as liaison to the Navy, team memebers, and all subcontractors.
Coordination and communication of fieldwork actvities related to sampling	CH2M HILL Field Team Leader (FTL)	Stephen Quayle	(510)- 587-7716 (510) 316-3644 (Cell)	Documentation of deviations from work plan made in field logbooks and rationale for deviations; deviations made only with approval from contractor PM and/or environmental manager. FTL will communicate relevant field information to the project manager and analytical coordinator. FTL will also report all drilling or sampling equipment problems to the project manager immediately via phone or e-mail.
Daily Field Progress Reports	CH2M HILL FTL	Stephen Quayle	(510)- 587-7716 (510) 316-3644 (Cell)	FTL will e-mail or fax daily field progress reports to RPM and CH2M HILL project manager weekly; telephone communication with RPM and CH2M HILL project manager on as-needed basis
Coordination of laboratory supplies for field activities	CH2M HILL Project Chemist	Mark Fesler	(530) 229-3273	The Project Chemist will contact the laboratory to provideall necessary sample containers and appropriate shipping materials (such as coolers and bubble wrap) to be delivered on site before field sampling begins and throughout the project.
Submittal of samples to the laboratory	CH2M HILL FTL	Stephen Quayle	(510)- 587-7716 (510) 316-3644 (Cell)	Sampling personnel will package and ship samples in accordance with this SAP.
Daily chain-of-custody records and shipping documentation	CH2M HILL FTL	Stephen Quayle	(510)- 587-7716 (510) 316-3644 (Cell)	Chain-of-custody records and shipping documentation will be submitted via fax or e-mail to the EIS at the end of each day that samples are collected.

SAP Worksheet #6—Communication Pathways (continued)

Communication Drivers	Responsible Affiliation	Name	Phone Number and/or e-mail	Procedure
Sample shipping/receipt issues	Laboratory (Empirical Laboratories, LLC) PM	Sonya Gordon	(615) 345-1115	The laboratory project manager will report all sample shipping and receipt issues associated with the investigaiton to CH2M HILL EIS within 2 business days. SGS North America will communicate directly with Empirical Labs on any sampling shipping/receipt issues.
Reporting lab data quality issues	Laboratory (Empirical Laboratories, LLC) PM	Sonya Gordon	(615) 345-1115	All quality assurance/quality control (QA/QC) issues with project field samples will be reported by the lab to the EIS, project chemists, and QAO via e-mail within 2 business days. 0SGS North America will communicate directly with Empirical Labs on any data quality issues.
Analytical corrective actions (CAs)	CH2M HILL EIS	Bryan Jones	(530) 243-5886	The EIS will immediately notify the QAM in writing of any analytical procedures that were not performed in accordance with this SAP. The EIS, in coordination with the QAM, will complete documentation of the non-conformance and corrective actions to be taken. The EIS will verify that the corrective actions have been implemented. See SAP Worksheets #24, #25, and #28 for analytical CAs. The USEPA, DTSC, and Water Board will be notified when significant correction actions occur.
Field corrective actions (CAs)	CH2M HILL FTL	Stephen Quayle	(510)- 587-7716 (510) 316-3644 (Cell)	The FTLwill immediately notify the QAM in writing of any field procedures that were not performed in accordance with this SAP. The FTL, in coordination with the QAM, will complete documentation of the non-confromance and corrective actions to be taken. The FTL will verify that the corrective actions have been implemented. See SAP Worksheet #32, Assessment Findings and CA Responses, and SAP Worksheet #32a, CA Form. The EPA, DTSC, and Water Board will be notified when significant correction actions occur.
Ensure staff H&S in the field	CH2M HILL Site Safety Coordinator (SSC)	Stephen Quayle	(510)- 587-7716 (510) 316-3644 (Cell)	Daily safety tailgates; daily observations; real-time discussions of observations and changes to be implemented with field staff.
Minor Deviations from SAP procedures identified during field activities	CH2M HILL FTL	Stephen Quayle	(510)- 587-7716 (510) 316-3644 (Cell)	The FTL will prepare a field change request for any minor changes in sampling procedures that occur as a result of conditions in the field. This request will be submitted to the QAM for approval before the change is initiated.
SAP Amendments	CH2M HILL QAO	Anita Dodson	(757) 671-6218	Any substantive changes to the SAP may require CH2M HILL to prepare an addendum that will be approved by the NAVFAC SW QAO before any field activities begin.

SAP Worksheet #7—Personnel Responsibilities and Qualifications Table

Name	Title	Organizational Affiliation	Responsibilities	Education and Experience Qualifications[1]
T. June Wheaton	RPM	Navy	Environmental restoration program activities implemented under this SAP	
Nars Ancog	Navy QAO	Navy	Responsible for all QA issues for all Navy work. Provides government oversight of the QA program including review and sign-off on SAPs and any future modifications to the plans; provides quality-related direction through the Navy RPM to the Primary Navy contractor POC and CH2M HILL QAM; and has authority to suspend affected project activities if approved quality requirements are not adequately met.	
Brett Doerr	CLEAN UFP-SAP reviewer	CH2M HILL	Review of SAP	
Anita Dodson	Program QAO/Program Chemist	CH2M HILL	Primary Navy contractor POC, review of SAP	
Paul Favara	Project QAM	CH2M HILL	Oversees compliance with program and project-specific quality requirements	
Jamie Eby	PM	CH2M HILL	Project administration; coordinates staffing; monitors project performance; directs and oversees project staff	
Mark Fesler	PC	CH2M HILL	Establishes laboratory scope of work (SOW); ensures selected laboratory can meet project-required analytical protocol; primary communications with laboratory and data validator; performs data quality evaluation to determine availability of analytical data	
Keith Sheets	Technical Lead	CH2M HILL	Assists in data evaluation and interpretation; reviews report.	
Stephen Quayle	FTL and SSC	CH2M HILL	Supervises field sampling and coordinates all field activities; ensures onsite compliance with work plan; oversees and ensures safety of onsite personnel	
Rick Cavil	HSO	CH2M HILL	Responsible for overall Navy CLEAN Program H&S performance; reviews project-specific HSP; interacts with SSC to ensure project-specific safety of field personnel	
Stephen Quayle	FTL and SSC	CH2M HILL	Supervises field sampling and coordinates all field activities; ensures onsite compliance with work plan; oversees and ensures safety of onsite personnel	
Bryan Jones	EIS	CH2M HILL	Manages sample tracking; coordinates assimilation of data from field collection through analysis, validation, and upload to environmental database; performs data queries for data evaluation and report writing	

SAP Worksheet #7—Personnel Responsibilities and Qualifications Table (continued)

Name	Title	Organizational Affiliation	Responsibilities	Education and Experience Qualifications[1]
Kevin Murphy	Data Manager	CH2M HILL	Uploads validated data to environmental database	
Sonya Gordon	PM	Empirical Laboratories, LLC	Laboratory POC and overall manager for analytical work. Empirical Laboratories will also be the point of contact for any issues related with subcontractor (SGS North America)	
Randy Ward	QAO	Empirical Laboratories, LLC	Responsible for laboratory QA program and review of QC data	
Marcia McGinnity	Organics Department Manager	Empirical Laboratories, LLC	Responsible for oversight, QC, and data review of organics laboratory	
Betty Deville	Inorganics Department Manager	Empirical Laboratories, LLC	Responsible for oversight, QC, and data review of inorganics laboratory	
Ken Blum	NORCAL Geophysical Consultants, Inc.	Geophysics Subcontractor	Responsible for utility clearance at proposed borehole locations.	
Dahilia Lugo	CAL VADA Surveying, Inc.	Surveying Subcontractor	Responsible for horizontal coordinate and vertical elevation surveying of sampling locations	
Derrik Sandberg	Resonatsonic International	Drilling Subcontractor	Responsible for performing direct-push, or similar means for soil and discrete direct-push groundwater sampling.	
Laura Maschhoff	DataQual Environmental Services	Data Validation Subcontractor	Responsible for validating analytical data in accordance with project-specific UFP-SAP	
Melissa Roach	Dillard Environmental Service	Investigation-derived Waste (IDW) Subcontractor	Responsible for transport and disposal of IDW deemed necessary for offsite disposal	

Notes:
[1] Resumes are maintained by the individuals' organizations and are available upon request; upon execution of the project, staff may be removed (if unnecessary to project execution) and other staff may be added or substituted, as necessary and available.

SAP Worksheet #8—Special Personnel Training Requirements Table

No special personnel training will be required for this project. The following are the routine training requirements for the sampling personnel.

Project Function	Specialized Training by Title or Description of Course	Training Provider	Training Date	Personnel/Groups Receiving Training	Personnel Titles/ Organizational Affiliation	Location of Training Records/Certificates
Field activities	Hazardous Waste Operations and Emergency Response (HAZWOPER) 40-hour Training, 8-hour refreshers, as applicable	Various qualified training organizations	Training of CH2M HILL and subcontractors will be verified as current prior to starting field activities by SSC	All field personnel	FTLs, field team members, and SSC (CH2M HILL personnel); geophysical subcontractor drilling subcontractor; IDW subcontractor; and surveying subcontractor	CH2M HILL Human Resources Department for CH2M HILL personnel; subcontractor organizations for field subcontractors
Field activities	CPR/First Aid Training	Various qualified training organizations	Training will be verified as current prior to starting field activities	CH2M HILL SSC	CH2M HILL SSC	CH2M HILL Human Resources Department
Field activities	SSC-hazardous waste (SSC-HW) training	Various qualified training organizations	Training will be verified as current prior to starting field activities by SSC.	CH2M HILL SSC	CH2M HILL SSC	CH2M HILL Human Resources Department

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SAP Worksheet #9a—Project Scoping Session Participants Sheet

Project Name: Expanded Site Inspection (SI) for transfer Parcels FED-1A, 2B, & 2C; EDC-12; and EDC-17 at Alameda Point					
Projected Date(s) of Sampling: January 2010 – March 2010				**Site Name:** Alameda Point Naval Air Station	
PM: Jamie Eby				**Site Location:** Alameda, California	
Dates of Session: April 15, 2008 **Scoping Session Purpose: Begin to evaluate SI in preparation of identifying data gaps**					
Name	**Title**	**Affiliation**	**Phone #**	**E-mail Address**	**Project Role**
T. June Wheaton	RPM	BRAC Project Management Office (PMO)-West	(619) 532-0902	thelma.wheaton.ctr@navy.mil	Primary Navy POC.
Patrick Brooks	BEC	BRAC PMO-West	(619) 532-0907	george.brooks@navy.mil	Primary Navy POC for Base
John Kowalczyk	LRPM	BRAC PMO-West	(619) 532-0972	John.kowalczyk@navy.mil	Navy Base POC
Michelle Dalrymple	RPM	DTSC	(510) 540-3926	MDalrymp@dtsc.ca.gov	Technical input and review.
Dot Lofstrom	RPM	DTSC	(916) 255-6449	DLofstro@dtsc.ca.gov	BCT member
Peter Russell	Navy Contractor	Alameda Reuse and Redevelopment Authority (ARRA)	(415) 902-3123	NA	Primary Redevelopment POC
Xuan-Mai Tran	RPM	USEPA	(415) 972-3002	NA	BCT Member
John West	RPM	Regional Water Quality Control Board (Water Board)	(510) 622-2438	jwest@waterboards.ca.gov	BCT Member
Frances Fadullon	RPM	BRAC PMO-West	(619) 532-0935	frances.fadullon.ctr@navy.mil	Technical input and review.
Catharine Haran	RPM	BRAC PMO-West (teleconference)	NA	NA	Technical input and review.
Michelle Hurst	RPM	BRAC PMO-West (teleconference)	NA	NA	Technical input and review.
Curtis Moss	RPM	BRAC PMO-West (teleconference)	NA	NA	Technical input and review.
Mary Parker	RPM	BRAC PMO-West (teleconference)	NA	NA	Technical input and review.
Derek Robinson	RPM	BRAC PMO-West	(619) 532-0951	derek.j.robinson1@navy.mil	Technical input and review.
Heather Wochnick	RPM	BRAC PMO-West (teleconference)	NA	NA	Meeting Attendee.
Janet Argyres	PM	Bechtel Environmental, Inc. (BEI)	NA	NA	Meeting Attendee.
Craig Hunter	Navy Contractor	Tetra Tech EM Inc. (TtEMI)	NA	NA	Meeting Attendee.

SAP Worksheet #9a—Project Scoping Session Participants Sheet (continued)

Project Name: Expanded Site Inspection (SI) for transfer Parcels FED-1A, 2B, & 2C; EDC-12; and EDC-17 at Alameda Point					
Projected Date(s) of Sampling: January 2010 – March 2010				**Site Name:** Alameda Point Naval Air Station	
PM: Jamie Eby				**Site Location:** Alameda, California	
Dates of Session: April 15, 2008 **Scoping Session Purpose: Begin to evaluate SI in preparation of identifying data gaps**					
Name	**Title**	**Affiliation**	**Phone #**	**E-mail Address**	**Project Role**
Jessica Woloshun	Navy Contractor	Sullivan International Group, Inc.	NA	NA	Meeting Attendee.
Comments/Decisions: The purpose of the review of the draft SI was to begin identifying data gaps.					
Action Items: See BCT meeting summary below					
Consensus Decisions:					

Note:
NA – Not available

SAP Worksheet #9a—Project Scoping Session Participants Sheet (continued)

Excerpt from the April 15, 2008 Base Closure Team Meeting Minutes

FED Parcels Site Inspection (SI) Preview

Ms. Wheaton introduced the presentation on Transfer Parcels FED-1A, FED-2B, and FED-2C. She said the site designation indicated that the transfer was from one federal agency to another federal agency and that this presentation was a preview of the SI Report. She said the objective was to evaluate current environmental conditions and suitability for transfer at the FED parcels.

Ms. Wheaton discussed the SI evaluation process and said that historical sampling data for soil, sediment, groundwater, and surface water were compiled from 28 previous investigations, and she described the screening criteria used to evaluate the historical sampling results. She reviewed the SI findings for FED-1A, FED-2B, and FED-2C. Ms. Wheaton described the general and specific SI recommendations and said an aircraft parking and staining evaluation was recommended for all of the parcels. She said three AOCs were identified in the SI.

Mr. Russell asked about IR Site 33 and Ms. Wheaton responded that polycyclic aromatic hydrocarbons (PAHs) were detected at concentrations above screening criteria in the portion of IR Site 33 not within parcel FED-2B.

Ms. Argyres said that IR Site 33 was not well defined and that the boundary was drawn to include the PAHs detected at concentrations above criteria. She said PAHs detected above screening criterion in EBS Parcel 23 will be retained for IR Site 33, and transfer parcel FED-2B (PAHs in samples not above screening criterion) will be excluded from IR Site 33.

Ms. Lofstrom said a memorandum from Dr. Jim Polisini (DTSC Human and Ecological Risk Division [HERD]) was distributed to the Navy in July 2006 in which he suggested that background levels for metals in soils should be reevaluated.

Dr. Polisini reiterated his comments in the Site 34 Remedial Investigation (RI) but acknowledged that the outcome of the assessment for that site was not affected. She asked if the Navy would anticipate similar comments and perform a similar reevaluation for the Transfer Parcels SI. Mr. Kowalczyk said the Navy had not decided how they would account for Dr. Polisini’s suggestion globally at Alameda Point other than responding to his 2006 memorandum. He said many completed RI reports include the existing background levels and may not be revised; however the Navy would reevaluate the effect of his comments on the Transfer Parcels SI.

SAP Worksheet #9b—Project Scoping Session Participants Sheet

Project Name: Expanded SI for transfer Parcels FED-1A, 2B, and 2C; EDC-12; and EDC-17 at Alameda Point					
Projected Date(s) of Sampling January 2010 – March 2010			**Site Name:** Alameda Point Naval Air Station		
PM: Jamie Eby			**Site Location:** Alameda, California		
Date of Session: August 19, 2008 **Scoping Session Purpose: Begin to evaluate SI in preparation of identifying data gaps**.					
Name	**Title**	**Affiliation**	**Phone #**	**E-mail Address**	**Project Role**
T. June Wheaton	RPM	BRAC PMO-West	(619) 532-0902	thelma.wheaton.ctr@navy.mil	Primary Navy POC for SI
Patrick Brooks	BEC	BRAC PMO-West	(619) 532-0907	george.brooks@navy.mil	Primary Navy POC for base
John Kowalczyk	LRPM	BRAC PMO-West,	(619) 532-0972	John.kowalczyk@navy.mil	Navy POC for base
Jose Salcedo	NA	DTSC			Technical input and review.
Dot Lofstrom	RPM	DTSC	(916) 255-6449	DLofstro@dtsc.ca.gov	BCT member
Peter Russell	Navy Contractor	ARRA	(415) 902-3123	NA	Primary Redevelopment POC
Xuan-Mai Tran	RPM	USEPA	(415) 972-3002	NA	BCT Member
John West	RPM	Water Board	(510) 622-2438	jwest@waterboards.ca.gov	BCT Member
Catharine Haran	RPM	BRAC PMO-West (teleconference)	NA	NA	Technical input and review.
Curtis Moss	RPM	BRAC PMO-West (via telephone)	NA	NA	Technical input and review.
Derek Robinson	RPM	BRAC PMO-West	(619) 532-0951	derek.j.robinson1@navy.mil	Technical input and review.
Heather Wochnick	RPM	BRAC PMO-West (via telephone)	NA	NA	Technical input and review.
Lona Pearson	Navy Contractor	TtEMI	NA	NA	Meeting Attendee
Murray Einarson	Navy Contractor	AMEC	NA	NA	Meeting Attendee
Lester Feldman	Navy Contractor	AMEC	NA	NA	Meeting Attendee
Craig Hunter	Navy Contractor	TtEMI	NA	NA	Meeting Attendee
Peter Guerra	Navy Contractor	AMEC	NA	NA	Meeting Attendee
Linda Henry	Navy Contractor	Brown and Caldwell	NA	NA	Meeting Attendee
Janet Argyres	Navy Contractor	Bechtel Environmental, Inc	NA	NA	Meeting Attendee
John McMillan	Navy Contractor	Shaw Group	NA	NA	Meeting Attendee
Comments/Decisions: See meeting minutes from August 19, 2008 BCT Meeting below.					
Action Items: See meeting minutes from August 19, 2008 BCT Meeting below.					
Consensus Decisions: See meeting minutes from August 19, 2008 BCT Meeting below.					

Note:
NA – Not available

SAP Worksheet #9b—Project Scoping Session Participants Sheet (continued)

Excerpts from the August 19, 2008 BCT Meeting Minutes

FED Parcels SI Review, Comments and Responses

Ms. Wheaton said the presentation is a preview of comments and response to the FED Parcels SI. She said the goal of the presentation is to facilitate a discussion among the BCT members to work through the comments. She noted that Ms. Argyres (Bechtel Environmental, Inc. [BEI]) and Ms. Henry (Brown and Caldwell) would be assisting in the presentation.

Mr. Brooks provided a brief update that relates to comments received from DTSC on the negotiations with the Veterans Administration (VA). He said one comment recommends that the United States Fish and Wildlife Service (USFWS) provide a biological assessment, which is in progress. He noted there are no plans for any development in the wetlands area. The VA plans to develop a clinic and benefits center in the northern portion of the transfer parcel.

Ms. Lofstrom noted her concern for the comment about radiological characterization. She said the SI stated that there was some uncertainty in the detection limits for the original radiological work and the Navy resampled some areas but not all areas. Ms. Wheaton replied that the Navy did not necessarily determine that the data were bad, but did determine that there was incomplete backup information needed to support the data. Mr. Slack said the Navy made the assumption that the data were generated using gamma spectroscopy. However there were no data qualifiers such as count time and minimum detectable concentration. The Navy assumed that because the data were so old, it was most likely not associated with a detection level of 1 picocurie per gram (pCi/g); the Navy also assumed that the persons who collected the data reported the result only if they detected activity. Because the Navy had no way to determine if the reported radium count was the minimum detection limit or an actual detection, it was decided to resample to confirm the results. He added the logic was if there was no result for radium, then the Navy assumed there were no detections. The original samples were probably looking for concentrations higher than 1 pCi/g over background.

Ms. Lofstrom agreed with Mr. Slack's explanation and she requested he add it to his response.

Ms. Lofstrom said her other comment addressed the VA long-term care facility. Ms. Wheaton said she believes the VA is no longer considering a long-term care facility. Ms. Henry said the risk assessment results are protective enough because the USEPA and California Environmental Protection Agency (Cal/EPA) process is designed to be protective of sensitive populations. She added that the majority of the risk is associated with ingestion of soil which is not likely to be a completed exposure pathway for patients at a long-term care facility.

Ms. Lofstrom asked if Ms. Henry could add that to her response and Ms. Henry agreed.

SAP Worksheet #9b—Project Scoping Session Participants Sheet (continued)

Ms. Wheaton noted a few issues identified as potential data gaps will be evaluated further, which could include sampling. Some issues can be evaluated in the SI and some may need to be deferred to an Expanded SI report.

Ms. Lofstrom asked if Site 33 would move to RI. Mr. Kowalczyk said planning for next year is next on the agenda. He said there is a line item to implement some set of recommendations, but unsure what they will be.

Ms. Tran said she sent in a lot of comments. Ms. Argyres said that the Navy has reviewed the EBS and other historical documents to retrieve the information to support the decision of no more sampling. Ms. Tran said she would wait for the response to comments.

Ms. Wheaton noted she is looking for specific areas of concern from the regulators to try and determine the level of assessment and whether to move to RI. Ms. Lofstrom suggested a pre-response to comments technical meeting and noted she would speak with Jim Polisini (DTSC HERD) on his availability to attend.

Mr. Brooks said there is an issue with polychlorinated biphenyls (PCBs) sampling in soil near Building 100. A historical review was completed, and found that the electrical equipment did not contain PCBs. He said there are areas where there is information that the contaminant was not present. He said the Navy does not want to go back to these areas and sample. Mr. Salcedo asked if and when the transformers were traded out. Mr. Brooks said he was not sure, and he would investigate the matter further.

Mr. Brooks said another comment addresses sediment removals in the storm drains. He said that such removals were completed a few years back and verified with closed-circuit camera equipment. He added that there are no further plans to remove sediment from the storm drains.

Mr. Brooks said the types of fire-fighting foam used in fire training activities are unknown. The Navy will try to identify constituents in the foams. He asked if anyone had experience with soil sampling analysis for fire-fighting foam. He added more sampling can be completed to fill the data gaps.

SAP Worksheet #9c—Project Scoping Session Participants Sheet

Project Name: Expanded SI for transfer Parcels FED-1A, 2B, & 2C; EDC-12; and EDC-17 at Alameda Point					
Projected Date(s) of Sampling January 2010 – March 2010			**Site Name:** Alameda Point Naval Air Station		
PM: Jamie Eby			**Site Location:** Alameda, California		
Date of Session: September 16, 2008 **Scoping Session Purpose: Identify Data Gaps and review approach**					
Name	**Title**	**Affiliation**	**Phone #**	**E-mail Address**	**Project Role**
T. June Wheaton	RPM	BRAC PMO-West	619-532-0902	thelma.wheaton.ctr@navy.mil	Primary Navy POC for SI
Patrick Brooks	BEC	BRAC PMO-West	(619) 532-0907	george.brooks@navy.mil	Primary Navy POC for base
John Kowalczyk	LRPM	BRAC PMO-West,	(619) 532-0972	John.kowalczyk@navy.mil	Navy POC for base
Dot Lofstrom	RPM	DTSC	(916) 255-6449	DLofstro@dtsc.ca.gov	BCT member
Peter Russell	Navy Contractor	ARRA	(415) 902-3123	NA	Primary Redevelopment POC
Anna-Marie Cook	RPM	USEPA	(415) 972-3029	cook.anna-marie@epamail.epa.gov	BCT Member
Xuan-Mai Tran	RPM	USEPA	(415) 972-3002	NA	BCT Member
John West	RPM	Water Board	(510) 622-2438	jwest@waterboards.ca.gov	BCT Member
Mary Parker	RPM (via telephone)	BRAC PMO West	NA	NA	Technical input and review
Curtis Moss	RPM (via telephone)	BRAC PMO West	NA	NA	Technical input and review.
Craig Hunter	Navy Contractor	TtEMI	NA	NA	Meeting Attendee
Lona Pearson	Navy Contractor	TtEMI	NA	NA	Meeting Attendee
John McMillan	Navy Contractor	Shaw Group	NA	NA	Meeting Attendee
Radhika Sreenivasan	Navy Contractor	St. George Chadux Corp	NA	NA	Meeting Attendee
Jacqualyn Forrest	Navy Contractor	St. George Chadux Corp	NA	NA	Meeting Attendee
Comments/Decisions: See meeting minutes from September 16, 2008 BCT below.					
Action Items: See below					
Consensus Decisions: See below					

Note:
NA – Not available

SAP Worksheet #9c — Project Scoping Session Participants Sheet (continued)

Excerpts from the BCT Meeting Summary on September 16, 2008.

Fed Transfer Parcels 1A, 2B, and 2C SI Report Review

Mr. Brooks said the federal transfer parcels presentation will provide an update on the work proposed and comments addressed. Ms. Wheaton said that the BEI contract ends on September 19, 2008, and the Draft Final SI Report will be completed by a different contractor under a new contract.

Ms. Wheaton noted that the change would delay the schedule. Ms. Lofstrom asked about the length of the delay. Mr. Brooks replied that the contractors would take 2 to 3 months to prepare the document after the contract is funded. Ms. Wheaton noted an approximate 4-month delay.

Ms. Wheaton discussed the VA proposed reuse plans. Mr. Brooks said the Navy funds the USFWS to maintain the California least tern colony; after the federal parcel transfer, the VA would fund USFWS to maintain the property. Ms. Cook asked why USFWS was not self-funded. Mr. Brooks explained that the Navy funded USFWS areas because it is the Navy's property; the VA has agreed to fund the USFWS after transfer.

Mr. West asked for clarification on plans not to develop the runway wetlands. Mr. Brooks replied that the VA will have a surplus of land after transfer and will not need all 400 acres to support the VA clinic and columbarium. The least tern colony and Site 2 landfill will be transferred with the rest of the property, but development is planned only in the northern part of the parcel. The remaining land will be managed as-is with no plans to develop the runway wetlands.

Ms. Lofstrom wanted confirmation on whether the VA plans to develop a long-term care facility. Ms. Wheaton said that the SI will be revised to state the current proposed uses by the VA. She noted that VA no longer intends to construct a long-term care facility. Ms. Cook said that USEPA would impose restrictions on a VA hospital, depending on the extent of cleanup at the area. Mr. Russell asked Ms. Cook if USEPA could impose restrictions without going through the Record of Decision (ROD) process. Ms. Cook responded that restrictions are themselves a CERCLA remedy and would therefore need a ROD. She noted that with a federal-to-federal transfer, the property can be transferred before a remedy is in place. Mr. Brooks said that the Navy has included restrictions in its memorandum of understanding with the VA.

Ms. Wheaton explained the additional evaluation and sampling that was based on the response to comments. The basewide Groundwater Monitoring Program (GWMP) does not include much water elevation data for the area, but the groundwater scenario can be understood based on the available data. Ms. Wheaton said that the GWMP Report is at its internal draft stage and can be provided if needed, and noted that the latest version would be submitted soon. Mr. Kowalczyk added that the agency review for the GWMP is on October 16, 2008.

SAP Worksheet #9c—Project Scoping Session Participants Sheet (continued)

Ms. Wheaton said that the SI did not provide a geological cross-section map, but instead includes a schematic figure from the Work Plan. A representative cross-section could not be drawn because available data points at the site are very shallow.

Ms. Cook asked whether sampling for analysis of PAHs was extensive. Mr. Brooks replied that a number of samples have been collected. Ms. Cook suggested taking geological information from the sampling data. Ms. Wheaton added that only a limited cross-section could be prepared for the SI, as data are limited. She said that the Navy will investigate and review the dark area on the aerial photograph and propose additional evaluation to fill any data gaps. All 12 SWMUs will be reviewed for lead-based paint contamination and additional analysis of metals, such as cadmium and chromium evaluated. Potential sources of PCBs will be evaluated, such as transformers and switches at Building 100 and hydraulic equipment. Additional sampling will be proposed as necessary.

The vicinity of Washdown (WD) area 259 will be evaluated for groundwater contaminants. Mr. Brooks noted that the Navy has found groundwater contamination in other WD areas.

Ms. Wheaton said that the Navy will assess sediments from the manhole catch basins and the storm water to confirm they are not a source. Mr. Brooks' initial review showed that the storm water and the sediments were not a problem. Ms. Wheaton added that a more thorough assessment will be completed although sediment does not appear to be a source.

Ms. Wheaton said that historical locations of munitions storage and fire-fighting training areas will be evaluated and sampled as necessary. Fire-fighting foam will be evaluated for potential chemicals of concern (COCs) and screening levels will be established. She added that firefighting foam has been examined at other sites at the base. Mr. Brooks asked Ms. Wheaton whether screening levels from the other sites were available for review. Ms. Cook said that the constituent at Site 14 was dioxin (from burning) and the site was remediated to low ecological levels. The removal action was three times the original size that was estimated because it was difficult to achieve low levels. Mr. Brooks said that the Department of Defense (DoD) is researching fire-fighting foam for emergent chemicals. Ms. Wheaton said that the Navy was not planning to sample for analysis of dioxins in the area. Ms. Cook asked if anything was burned in the firefighting area. Ms. Wheaton replied that the Navy would research past use of the area and what burning activity may have occurred. Ms. Cook noted that a variety of items are usually burned in fire training areas. She added that it would be necessary to consider dioxins given the low ecological level that needs to be maintained. Ms. Wheaton said dioxins will be added to the list.

Mr. Brooks said that the first step in the process would be to identify firefighting training areas. Ms. Cook added that when these areas are found, a few samples should be collected in representative locations that would give worst-case results. She added that a site tour would help identify the sampling locations.

SAP Worksheet #9c — Project Scoping Session Participants Sheet (continued)

Ms. Wheaton said that the Navy would analyze the drainage patterns at WD-259. Ms. Cook asked whether the surface water drained into the runway wetlands. Ms. Wheaton replied that she was not sure but would research the question.

Ms. Cook asked whether the extent of radiological contamination at Site 2 was being defined properly. Ms. Wheaton replied that the Navy is confident that the radiological extent is defined properly based on use of Site 2. Ms. Cook asked if any soil samples will be collected at the edge of Site 2 to check for radiological anomalies. Mr. Brooks replied that the Navy would review the old data, consult with the Navy RASO, and then decide on the need for more samples.

Ms. Lofstrom asked Ms. Wheaton whether the Navy will explain in the SI why the panhandle area is removed from Sites 1 and 2. Ms. Wheaton replied that research indicated the panhandle area was never included in Sites 1 and 2, and the wording on the SI will be changed appropriately. She added that the area did not appear to have been used as the Site 1 landfill based on aerial photographs of Sites 1 and 2.

Ms. Wheaton said that the SI has proposed to remove the lower portion of Site 33 from the IR Program. There were two issues that comprised the Site 33 area: PAHs in the northern portion and potential ecological risk in the southern portion. She added that there were some uncertainties with the previous ecological risk evaluation, which recommended no further ecological evaluation, that were addressed in the SI. It was concluded in the SI that the magnitude of the noted uncertainties was small and the conclusions of the previous ecological risk evaluation are not likely to change; hence, the whole runway wetland area is proposed to be removed, and Site 33 will consist of the northern portion within Parcel 1A. Ms. Lofstrom said that the SI did not show the original shape of Site 33, so it was difficult to identify the proposed change. Ms. Wheaton showed the proposed changed area, excluding the runway wetland area.

Ms. Cook asked why high levels of PAHs are found in the area. Mr. Russell said that data were obtained from the basewide PAH sampling. Ms. Lofstrom asked whether Site 33 would be continued as an Installation Restoration site and whether an RI would be completed. Ms. Wheaton said that she was not sure. Mr. Kowalczyk added that the current plan was to complete an SI; actions beyond an SI would need to be considered. He added that the Navy would also research EDC parcels 12 and 17, as mentioned in Ms. Lofstrom's email.

Ms. Wheaton asked whether the runway wetland report should be provided as an attachment to the SI or if it would suffice if the report was made available. Ms. Lofstrom responded that DTSC would need a copy of the report and it does not need to be included as an attachment to the SI.

SAP Worksheet #9c — Project Scoping Session Participants Sheet (continued)

Mr. Brooks explained the radium-226 results in groundwater. He noted a review of historical data shows that radium is below the maximum contaminant level (MCL) in shallow groundwater (M108-A) in the first water-bearing zone (FWBZ) but increases at depth above the MCL (M108-B) in the second water-bearing zone (SWBZ). Data for soil were available, and the radium results in the soil are at background levels. Mr. Russell said that he reviewed the data for MW028C at Site 1; the results showed that shallow soil did not contain radium, but levels in deeper groundwater were above the MCL and the Navy attributed it to regional radium. Mr. Brooks said that it is not uncommon to detect radium in soil and groundwater, but in the case of M108-B, radium in groundwater was found at depth, with no apparent source in shallow soil or groundwater. He concluded that radium did not result from a spill or release. Mr. West asked Mr. Brooks if he was indicating that there was not sufficient background for radium. Ms. Wheaton replied that a shallow soil study was conducted for radium where removal actions are underway, and thus the area is not representative of deeper groundwater zones.

Ms. Lofstrom said that a general follow-up on background of radium and whether it leaves a residue should be initiated. Mr. Brooks said that radium is a Group II metal, so it will readily adsorb to soil. Mr. Russell added that the M028-C well is located within the high solvent zone at Site 1 and it is unlikely to transport radium and not solvents. Mr. Brooks asked Mr. Russell for the name of the location. Mr. Russell replied that M028-C is located between the highest spot in the groundwater plume in the FWBZ and the shoreline. The location is part of quarterly groundwater monitoring. Ms. Wheaton showed sample locations M108-A, M108-B and DRA-01 on the map. Mr. Brooks said DRA-01 is 35 to 45 feet below ground surface (bgs). He added that the Navy is waiting for the removal action report from Tetra Tech EC that was scheduled to be submitted in October 2008.

Ms. Wheaton presented the human health risk evaluation. She said that all parties had agreed to use the 2004 preliminary remediation goals (PRGs) to finalize the SI. Mr. West said that he read that the 2008 PRGs have been certified, and asked why they were not being used. Ms. Lofstrom said that DTSC has not accepted the 2008 PRGs. Mr. Russell asked if a list has been assembled of differences between the 2004 and 2008 PRGs. Ms. Tran said that Dr. Stan Smucker from USEPA usually describes the major differences but did not know whether documentation was available. Ms. Wheaton said that the updated table from Weston for Site 17 had changed extensively. Mr. Russell asked about the source of the California modified values in the 2004 PRGs. Mr. Hunter replied that USEPA calculated them from DTSC's toxicological factor. Ms. Wheaton added that if the USEPA difference was four times or more, then the California modified values are used, which is the criterion for California modified values. Mr. Wheaton asked Ms. Cook whether USEPA Region 9 is accepting the table. Ms. Cook said that it is a collaborative effort of multiple regions and thinks that the values were in negotiation. Region 9 is typically more conservative, and compliance with applicable or relevant and appropriate requirements (ARARs) requires using the more stringent numbers. Ms. Lofstrom said that DTSC currently will not accept the 2008 PRGs. Ms. Cook suggested DTSC send a formal letter that the 2004 PRGs will be

SAP Worksheet #9c — Project Scoping Session Participants Sheet (continued)

used. Ms. Lofstrom will speak to Ms. Tracy Torus; a toxicologist at DTSC, who had compared the two PRGs, and ask if she could send a formal letter. Ms. Wheaton said that the residential exposure scenario was used in the majority of risk assessments. The maximum detection concentration in soil from 0–10 feet was used for the screening level. The evaluation took sensitive populations into account. Ms. Lofstrom was not confident that sampling was adequate and was concerned with the number of samples collected versus the results. She asked if the process needed to continue to an RI if people are living there. Ms. Cook said that Site 33 is driven by PAHs because of the extensive PAH sampling conducted compared with any other constituent sampling. She recommends more tightly spaced sampling for a complete suite of analytes. Mr. Brooks said that the high density sampling would not normally be proposed for the runway area. Ms. Cook said that many constituents were found in the northern area of Sites 34 and 32. She said PAHs usually become less of an issue toward the western end of the island, but this site does not follow that trend.

Mr. Brooks said that the risk evaluation includes tables that analyze the number of samples collected and the frequency of detection. Ms. Lofstrom read a comment by Mr. Jim Polisini (DTSC HERD) stating that he "recommends risk management regarding no future actions based on the HHRA [Human Health Risk Assessment] results that are within the risk management range"; Polisini also recommended that "these decisions be given special consideration [with regard to the] potential for the development of extended care facilities for patients in compromised health."

Ms. Wheaton said that Mr. Polisini must be discussing a risk factor of 10^{-5} for PAHs and 10^{-6} for non-PAHs. Ms. Lofstrom clarified his comment that caution is needed in making a risk management decision on a range, and that the risk evaluation should consider the presence of patients in a compromised health condition. Ms. Wheaton said that a risk factor of 10^{-5} is in the risk management range and that all non-PAHs were conservative at 10^{-6} and a hazard index (HI) of 1, but she will review the information further.

Ms. Wheaton said the three federal parcels were reviewed for sensitive receptors, and only two out of the three moved forward to the screening level ecological risk assessment. Chemicals of potential ecological concern (COPECs) present negligible risk and are similar to background concentrations. She noted no need to review ecological risk further.

The Navy will add a description of assessment and measurement endpoints to the SI report.

The VA will be preparing the biological assessment, and USFWS will be asked to submit a biological opinion. Ms. Cook suggested that both the agencies reviewing the SI should give their opinion. She added that the VA should provide comments since the outcome will directly affect them. Mr. Brooks said that they have not received comments from the VA but have received comments from the California Department of Fish and Game (DFG).
Ms. Wheaton said that all documents have been sent to the VA for comments. Mr. Brooks noted that the VA has employed environmental consultants. Ms. Cook said that the consultants should also be sent a copy of the document.

SAP Worksheet #9c — Project Scoping Session Participants Sheet (continued)

Ms. Lofstrom said that the comment about using the United States Army Corps of Engineers (USACE) criteria for wetland delineation came from DFG. DFG wants to use the USFWS delineation criteria, which are more stringent. Ms. Lofstrom asked why the USACE criteria were used for wetland delineation. Mr. Hunter replied that the USFWS process is to identify a wetland and the USACE was specified under the federal Clean Water Act (CWA) to delineate a wetland. The USACE uses three criteria to designate an area as a wetland, while the USFWS requires only one criterion of three.

The USFWS approach to wetlands is biological, whereas USACE has regulatory authority to designate. Ms. Cook further explained that USACE has established criteria to designate the wetland but is not required to maintain or protect the wetland after designation. USFWS does not consider contaminants or cleanup of groundwater to protect the wetland. Mr. Hunter said that wetland designation is in force for only 5 years; even if a delineation was completed historically, it might not be valid. Ms. Lofstrom said that both HERD and DFG requested that the USFWS process be used and that she would return the comments. Mr. Hunter said that it must first be delineated as a wetland according to the USACE criteria, and any construction would need a wetland development permit. Mr. West added that this permit is under the CWA Section 404. Ms. Cook asked if the Site 15 wetland was delineated. Mr. Hunter said that the Site 15 wetland was delineated with USACE criteria and a removal action was proposed. Mr. Russell asked whether the wetlands at Site 1 were formally delineated. Mr. Hunter replied that he did not see a wetland delineation report.

Ms. Lofstrom asked whether the report will state that the VA prepares the biological assessment and the USFWS will provide an opinion. Mr. Brooks confirmed and said the VA assessment should be nearly complete.

SAP Worksheet #9d—Project Scoping Session Participants Sheet

Project Name: Expanded SI for transfer Parcels FED-1A, 2B, & 2C; EDC-12; and EDC-17 at Alameda Point					
Projected Date(s) of Sampling January 2010 – March 2010			**Site Name:** Alameda Point Naval Air Station		
PM: Jamie Eby			**Site Location:** Alameda, California		
Date of Session: December 12, 2008 **Scoping Session Purpose: Identify Data Gaps and review approach**					
Name	**Title**	**Affiliation**	**Phone #**	**E-mail Address**	**Project Role**
T. June Wheaton	RPM	BRAC PMO-West	(619) 532-0902	thelma.wheaton.ctr@navy.mil	Primary Navy POC for SI
Patrick Brooks	BEC	BRAC PMO-West	(619) 532-0907	george.brooks@navy.mil	Primary Navy POC for base
John Kowalczyk	Lead RPM	BRAC PMO-West,	(619) 532-0972	John.kowalczyk@navy.mil	Navy POC for base
Dot Lofstrom	RPM	DTSC	(916) 255-6449	DLofstro@dtsc.ca.gov	BCT member
Michelle Dalrymple	RPM	DTSC	(510) 540-3926	MDalrymp@dtsc.ca.gov	BCT member
Mark Berscheid	RPM	DTSC	NA	NA	BCT member
Peter Russell	Navy Contractor	ARRA	(415) 902-3123	NA	Primary Redevelopment POC
Anna-Marie Cook	RPM	USEPA	(415) 972-3029	cook.anna-marie@epamail.epa.gov	BCT Member
Xuan-Mai Tran	RPM	USEPA	NA	NA	BCT Member
John West	RPM	Water Board	(510) 622-2438	jwest@waterboards.ca.gov	BCT Member
Curtis Moss	RPM (via telephone)	BRAC PMO West	NA	NA	Meeting Attendee.
Craig Hunter	Navy Contractor	TtEMI	NA	NA	Meeting Attendee.
June Yi T	Navy Contractor	Tetra Tech EC	NA	NA	Meeting Attendee.
Caspin Wanyoike	Navy Contractor	Earth Tech	NA	NA	Meeting Attendee.
Jeff Stanek	Navy Contractor	Earth Tech	NA	NA	Meeting Attendee.
Tom Mulder	Navy Contractor	TN and Associates	NA	NA	Meeting Attendee.
Greg Lowry	Navy Contractor	Carnegie Mellon University (via telephone)	NA	NA	Meeting Attendee.
John McMillan	Navy Contractor	Shaw Group	NA	NA	Meeting Attendee.
Radhika Sreenivasan	Navy Contractor	St. George Chadux Corp	NA	NA	Meeting Attendee.
Jim French	Navy Contractor	Earth Tech	NA	NA	Meeting Attendee.
Karla Brasaemle	USEPA Contractor	Tech Law	NA	NA	Technical input and review
Mark Losi	Navy Contractor	Tetra Tech EC	NA	NA	Meeting Attendee.
Comments/Decisions: See meeting minutes from December 12, 2008 BCT below.					
Action Items: See below					
Consensus Decisions: See below					

Note:
NA – Not available

SAP Worksheet #9d—Project Scoping Session Participants Sheet (continued)

Excerpts from the BCT Meeting Summary on December 12, 2008.

General Planning Discussion from Meeting Wrap Up

Mr. Kowalczyk said that EDC-12 and EDC-17 will be further investigated concurrently with the FED Parcels because they are combined into one contract. Dr. Russell asked if the SI was a data gap sampling. Mr. Kowalczyk said that recommendations were made in the EDC-12 and EDC-17 SIs to fill data gaps at existing AOCs and at uninvestigated areas. Ms. Cook asked if it was an RI-level investigation. Mr. Kowalczyk responded that the additional work is to determine whether releases have occurred and is not considered an RI. Ms. Cook suggested moving these documents to some sort of timeframe that can be met. Mr. Brooks said that there is a time-frame for the FED Parcels that includes EDC-12 and EDC-17.

SAP Worksheet #9e—Project Scoping Session Participants Sheet

Project Name: Expanded SI for transfer Parcels FED-1A, 2B, and 2C; EDC-12; and EDC-17 at Alameda Point					
Projected Date(s) of Sampling January 2010 – March 2010			**Site Name:** Alameda Point Naval Air Station		
PM: Jamie Eby			**Site Location:** Alameda, California		
Date of Session: July 28, 2009 **Scoping Session Purpose: Discuss proposed sampling approach at various areas of concerns within Transfer Parcels FED-1A, FED-2B, and FED-2C**.					
Name	**Title**	**Affiliation**	**Phone #**	**E-mail Address**	**Project Role**
T. June Wheaton	RPM	BRAC PMO-West	619-532-0902	thelma.wheaton.ctr@navy.mil	Primary Navy POC for SI
Patrick Brooks	BEC	BRAC PMO-West	(619) 532-0907	george.brooks@navy.mil	Primary Navy POC for base
Derek Robinson	LRPM	BRAC PMO-West	(619) 532-0951	derek.j.robinson1@navy.mil	Navy POC for base
Doug DeLong	CSO	BRAC PMO-West	(510) 772-8832	douglas.delong@navy.mil	Navy CSO Representative
Peter Russell	Navy Contractor	ARRA	(415) 902-3123	NA	Primary Redevelopment POC
Dot Lofstrom	RPM	DTSC	(916) 255-6449	DLofstro@dtsc.ca.gov	BCT member
Michelle Dalrymple	RPM	DTSC	(510) 540-3926	MDalrymp@dtsc.ca.gov	BCT member
Xuan-Mai Tran	RPM	USEPA	NA	NA	BCT Member
Anna-Marie Cook	RPM	USEPA	(415) 972-3029	cook.anna-marie@epamail.epa.gov	BCT Member
Karla Brasaemle	USEPA Contractor	Tech Law	NA	NA	Technical input and review
Stephen Quayle	PM	CH2M HILL	510-587-7716	stephen.quayle@ch2m.com	Technical input and review.
Jamie Eby	Work Plan Author	CH2M HILL	(510) 587-7551	jamie.eby@ch2m.com	Technical input and review.
Comments/Decisions: See summary below.					
Action Items: See summary below.					
Consensus Decisions: See summary below.					

Note:
NA – Not available

SAP Worksheet #9e—Project Scoping Session Participants Sheet (continued)

The following are decisions made during the BCT Site Walk on July 28, 2009 adding additional sampling to this SAP:

- BCT members requested that three HydroPunch® groundwater samples are collected in the northeast apron area of EBS Parcel 23 in Transfer Parcel FED-1A where significant staining in areas of aircraft parking is observed in historical aerial photographs. BCT members suspect that solvents may have been used to wash down aircraft in this area; therefore, samples collected in this area should be analyzed for VOCs. The requested sampling was added to this SAP and is presented in **SAP Worksheet #10c-1**.
- BCT members requested that wipe samples or concrete chip samples are collected inside Building 100 if sampling did not occur during the removal of the switches inside the building. Wipe or concrete chips sample results were not found for Building 100; therefore, sampling will occur within Building 100 as presented in **SAP Worksheet #10c-7**.
- At Washdown 259, BCT members requested an additional two downgradient discrete direct-push samples (south and east of the washdown area as originally proposed in the USEPA comments to the 2008 Draft Transfer Parcels FED-1A, FED-2B, and FED-2C SI Report [BEI, 2008]), sampling within the drainage trench located in the middle of the washdown area, and determine where the washdown area drain discharges. The requested sampling was added to this SAP and is presented in **SAP Worksheet #10c-8**.

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SAP Worksheet #10—Problem Definition

General

In general, the objective of a site inspection (SI) is "release assessment." More specifically, an SI is intended to:

- Determine whether a release of hazardous waste or hazardous constituents has occurred from past CERCLA-related activities, and if so,
- Determine whether a suspected release warrants further evaluation or action.

An Expanded SI has generally the same objective as an SI, but differs in that historical data collected during previous investigations and reviewed during the SI suggest that additional data are necessary to draw the release assessment conclusions with sufficient certainty.

Base and Regulatory Background

Alameda Point is a former Naval Air Station (NAS) located on the west side of Alameda Island, located at the base of a gently westward-sloping plain that extends from the Oakland-Berkeley Hills in the east to the shore of San Francisco Bay in the west, as shown on **Figure 1** (all references to Figures in this SAP refer to the figures in the main Work Plan document to which this SAP is an attachment). Alameda Point is bounded on the north by Oakland Inner Harbor, to the east by the city of Alameda, and to the south and west by San Francisco Bay. There are no naturally occurring streams at Alameda Point, and the only naturally occurring ponds are at the southwestern end of the island (Installation Restoration [IR] Site 2).

An initial assessment study conducted by the Navy (Naval Energy and Environmental Support Activity [NEESA], 1983) identified 12 sources of potentially hazardous waste at NAS Alameda; 4 of these sites were recommended for further investigation under the Navy Assessment and Control of Installation Pollutants (NACIP) program. In 1988, the California Department of Health Services (CDHS) issued a Remedial Action Order to the Navy requiring additional investigation at Alameda Point (CDHS, 1988). In compliance with this order, the Navy identified 34 IR Sites between 1988 and 2004 (TtEMI, 2003). In September 1993, the United States Congress and BRAC Commission designated NAS Alameda for closure, and naval operation ceased in April 1997. As part of the closure process, an Environmental Baseline Survey was conducted and Alameda Point was divided into 209 EBS parcels. On July 22, 1999, Alameda Point was placed on the National Priorities List (NPL) (64 Federal Register 140, 39878-39885, Final Rule, July 22, 1999).

The Navy is currently in the process of transferring the land to the City of Alameda and to other federal agencies. The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) identification number (ID) for NAS Alameda is CA2170023236.

The following Alameda Point Transfer Parcels are included in this SAP, shown on **Figure 2**:

- Transfer Parcel EDC-12
- Transfer Parcel EDC-17
- Transfer Parcels FED-1A, FED-2B, and FEB-2C

SAP Worksheet #10—Problem Definition (continued)

Transfer Parcel EDC-12

Transfer parcel EDC-12 is located in the southeastern portion of Alameda Point and is bounded by Transfer Parcel EDC-10 to the north; Transfer Parcels EDC-10 and EDC-11 to the east; Transfer Parcels EDC-17, Terminal 1, and San Francisco Bay to the south; and Seaplane Lagoon to the west, as shown on **Figure 3**. This transfer parcel is approximately 54 acres in area and is 75 percent open space (mostly paved areas with no buildings). Historically, the Navy used this transfer parcel for material, fuel, and aircraft storage; aircraft maintenance; and utility supply (air and steam plant) (BEI, 2007a). According to the 2006 Preliminary Development Concept (ROMA, 2006) and 2008 Draft Alameda Point Redevelopment Plan (SunCal Properties, 2008), the anticipated future land use for this transfer parcel is mixed use (i.e., residential, high and low density commercial, civic, and parks). The 2008 Draft Alameda Point Redevelopment Plan is still pending approval by stakeholders.

Transfer Parcel EDC-12 consists of EBS Parcels 134, 138, 139, 140, 141, 150, 150B, 151, 153, 154, 155, 155C, 159, 160, 164, 199, 201, and 202. The environmental conditions of 15 of the EBS Parcels within Transfer Parcel EDC-12 (EBS parcels 141, 150, 150B, 151, 153, 164 and 199, and portions of EBS Parcels 134, 140, 154, 155, 159, 160, 201, and 202) were evaluated in an SI Report (BEI, 2007a).

The SI Report was prepared for Alameda Point Transfer Parcel EDC-12 in October 2007 to characterize potential environmental contamination in soil and groundwater, estimate the potential for human health exposure, and identify the presence of any special-status species and/or potential exposure pathways for ecological receptors (BEI, 2007a). The 2007 Transfer Parcel EDC-12 SI Report identified the following six AOCs for further evaluation and also recommended that an aircraft parking and staining evaluation be conducted at this transfer parcel (**Worksheet #10a-1**):

- AOC 1—Former Storage Yards (**Worksheet #10a-2**)
- AOC 2—SWMU Generation Accumulation Point (GAP) 621/Drum Storage Area Evaluation and TPH Delineation EBS Parcels 150A/150B (**Worksheet #10a-3**)
- AOC 3—Total Petroleum Hydrocarbon (TPH) Delineation EBS Parcels 150B/151 and Semivolatile Organic Compounds (SVOCs) at Former Wood-Treatment Area (**Worksheet #10a-4**)
- AOC 4—Building 167 and Surrounding Area in EBS Parcel 154 (**Worksheet #10a-5**)
- AOC 5—Washdown Area in Southern Portion of EBS Parcel 159 (**Worksheet #10a-6**)
- AOC 6—SWMU Aboveground Storage Tank (AST) 584 (**Worksheet #10a-7**)

SAP Worksheet #10—Problem Definition (continued)

Transfer Parcel EDC-17

Transfer Parcel EDC-17 includes approximately 17 acres in the southeastern portion of Alameda Point and consists of five EBS parcels (EBS Parcels 163, 165, 166, 1671 and 169). Transfer Parcel EDC-17 is bounded by Transfer Parcels EDC-11 and EDC-12 to the north, City of Alameda public property to the east, Transfer Parcel Terminal 1 and San Francisco Bay to the south, and Transfer Parcel Terminal 1 to the west, as shown on **Figure 4**. Prior to 1970, the majority of EDC-17 was used for aircraft parking. From 1970 to 1993, the Navy used the land for industrial and recreational purposes (BEI, 2007b). According to the 2006 Preliminary Development Concept (ROMA, 2006) and 2008 Draft Alameda Point Redevelopment Plan (SunCal Properties, 2008), the anticipated future land use for this transfer parcel is mixed use (i.e., residential, high and low density commercial, civic, and parks). The 2008 Draft Alameda Point Redevelopment Plan is still pending approval by stakeholders.

The SI Report was prepared for Alameda Point Transfer Parcel EDC-17 in September 2007 to characterize potential environmental contamination in soil and groundwater, estimate the potential for human health exposure, and identify the presence of any special-status species and/or potential exposure pathways for ecological receptors (BEI, 2007b). The 2007 Transfer Parcel EDC-17 SI Report identified the following three AOCs for further evaluation and also recommended that an aircraft parking and staining evaluation be conducted at this transfer parcel (**Worksheet #10b-1**):

- AOC 1—TPH Delineation in EBS Parcel 165 (**Worksheet #10b-2**)
- AOC 2—Building 402 Evaluation (**Worksheet #10b-3**)
- AOC 3—Volatile Organic Compounds (VOCs) in Groundwater in EBS Parcel 169 (**Worksheet #10b-4**)

Transfer Parcels FED-1A, FED-2B, and FED-2C

Transfer Parcels FED-1A, FED-2B, and FED-2C are located in the southwestern portion of Alameda Point and are bounded by Transfer Parcels EDC-13 (IR Site 1), EDC-3, and PBC-1A to the north; Transfer Parcels EDC-15 (IR Site 26) and EDC-9 to the east; and Transfer Parcels FED-2A (IR Site 2) and FED-1B (San Francisco Bay) to the south and west, as shown on **Figure 5**. Transfer Parcels FED-1A, FED-2B, and FED-2C occupy approximately 400, 27, and 12 acres, respectively.

Transfer Parcel FED-1A consists of EBS Parcels 5, 23, and 24. Historically, the Navy used this transfer parcel for aircraft runways, aircraft taxiways, support service facilities (aircraft-arresting devices, compass pads, and lighting vaults), and magazines (BEI, 2008). Transfer Parcel FED-2B consists of EBS Parcels 25, 26, and 27. This transfer parcel is unpaved open space that includes coastal scrub and wetlands habitat. Transfer Parcel FED-2C is entirely paved open space and serves as a buffer zone between Transfer Parcel FED 1A and IR Site 26. According to the 2006 Preliminary Development Concept (ROMA, 2006), the anticipated future reuse for this transfer parcel is a wildlife refuge; however, these three transfer parcels were not part of the 2008 Draft Alameda Point Redevelopment Plan (SunCal Properties, 2008) as they are proposed for a federal agency to federal agency transfer with the anticipated future uses of a columbarium, hospital, offices, and open space.

SAP Worksheet #10—Problem Definition (continued)

The environmental conditions of Transfer Parcels FED-1A, FED-2B, and FED-2C were evaluated in the 2008 Draft SI Report (BEI, 2008). The report recommended an aircraft parking and staining evaluation for all three Transfer Parcels. Additional evaluation beyond the aircraft parking and staining evaluation was recommended in the SI Report for Transfer Parcel FED-1A only. The report identified three AOCs within Transfer Parcel FED-1A for further evaluation and also recommended further evaluation at two sites within Transfer Parcel FED-1A that are currently incorporated in existing programs (soils which are part of IR Site 33; and SWMU former AST 488, which is part of the Petroleum Program). USEPA comments to the 2008 Draft SI Report also recommended further evaluation of all 13 former ASTs, Building 100, and Washdown 259 area in Transfer Parcel FED-1A. Based on the recommendations in the 2008 Transfer Parcels FED-1A, FED-2B, and FED-2C Draft SI Report and agency comments, the following areas were recommended for further investigation:

- Transfer Parcels FED-1A, FED-2B, and FED-2C—Aircraft Parking and Staining Evaluation (**Worksheet #10c-1**)
- AOC 1—Pesticide and PCB evaluation (**Worksheet #10c-2**)
- AOC 2—Vinyl chloride in groundwater (no sampling proposed in this SAP as described in **Work Plan Section 3.3.3**)
- AOC 3—PAHs and metals in groundwater (no sampling proposed in this SAP as described in **Work Plan Section 3.3.4**)
- 13 SWMU ASTs—TPH, PCBs, metals in soil (**Worksheet #10c-3**)
- IR Site 33—PAHs in soil (**Worksheet #10c-4**)
- Transfer Parcel FED-1A - Munitions in soil in Former Munitions Storage Area (**Worksheet #10c-5)**
- Transfer Parcel FED-1A - Firefighting Training Area Evaluation (**Worksheet #10c-6**)
- Transfer Parcel FED-1A – Building 100 PCB Evaluation **(Worksheet #10c-7)**
- Transfer Parcel FED-1A – Washdown 259 Evaluation (**Worksheet #10c-8**)

Alameda Island Geology

Alameda Island sedimentary deposits consist of five units. From oldest to youngest, they are the Franciscan Formation, the Alameda Formation (alluvial deposits and upper clay-rich portion), the San Antonio Formation (lower and upper units), the Merritt Sand Formation, and the Bay Sediment Unit (BSU). These sediments overlie bedrock consisting of metamorphosed sandstone, siltstone, shale, greywacke, and igneous bedrock of Jurassic to Cretaceous age, all of which represent the Franciscan Formation (Rogers and Figuers, 1991).

Alameda Point is located in the northwest portion of Alameda Island. Most of the sedimentary deposits at Alameda Point are overlain by fill material. Fill material thickness generally decreases from west to east across Alameda Point. Up to 40 feet of fill soil is present at the western margin of Alameda Point where offshore areas were filled to create new land. As little as 3 to 5 feet of fill soil

SAP Worksheet #10—Problem Definition (continued)

is present at the eastern margin of Alameda Point where tidal marshes and estuarine channels were filled. The fill material is predominantly poorly graded, fine- to medium-grained sand with silt and clay.

In the eastern portion of Alameda Point (Transfer Parcels EDC-12 and EDC-17 are located in this area), a Marsh Crust Horizon (2 to 6 inches thick) exists just beneath the fill layer and overlies the BSU. The Marsh Crust Horizon contains elevated levels of petroleum-related chemicals, including VOCs and SVOCs. A Remedial Action Plan/ROD was prepared for the Marsh Crust Horizon and was signed and approved by the Navy, USEPA, and DTSC (Department of the Navy [DON], 2001) Additional geologic information, including site specific information, is presented in the Final Transfer Parcel EDC-12 and Transfer Parcel EDC-17 SI Reports (BEI, 2007a and 2007b) and the Draft Transfer Parcels FED-1A, FED-2B, and FED-2C SI Report (BEI, 2008).

Hydrogeology

Alameda Island is underlain by two primary aquifers: the shallow Merritt Sand aquifer, which yields saline water, and the deeper Alameda aquifer, which yields freshwater (TtEMI, 2000). These aquifers are separated by the San Antonio aquitard, which is approximately 55 to 90 feet thick and consists of three units:

- Yerba Buena Mud
- Other estuarine deposits
- The upper clay-rich portion of the Alameda Formation

The Merritt Sand Formation is a semiconfined aquifer at Alameda Island (TtEMI, 1999). Regionally, groundwater recharge occurs at outcrop areas of the Merritt Sand located in the southeastern portion of Alameda Point, as well as east of Alameda Point. Shallow groundwater recharge is from irrigation, precipitation, and possibly leaking water-supply lines, sewer lines, and storm drains (TtEMI, 1999). There is no hydraulic communication between the shallow aquifer systems on Alameda Island and the Oakland mainland because of the barrier created by the Oakland Inner Harbor (TtEMI, 1999).

The Alameda aquifer is the principal regional aquifer. Depth to the top of the Alameda aquifer ranges from 180 feet bgs at Alameda Point to 220 feet beneath the surface of the sediment in Oakland Inner Harbor. The thickness of the Alameda Formation is between 230 and 800 feet (Hickenbottom and Muir, 1988).

Five distinct hydrostatic zones have been recognized at Alameda Point, as follows:

- **First Water-Bearing Zone (FWBZ)**—Shallow unconfined groundwater in artificial fill, the coarse-grained BSU and locally, the upper Merritt Sand. Divided into two hydrologically distinct subintervals in some areas (Transfer Parcels EDC-12 and EDC-17): FWBZ-upper (artificial fill) and FWBZ-lower (BSU sands and upper Merritt Sand). First encountered groundwater in the FWBZ is found at depths 2 to 8 feet bgs.. The FWBZ is tidally influenced for approximately 250 to 300 feet inland on the northern and southern sides of Alameda Island, and approximately 1,000 to 1,500 feet inland on the west side.

SAP Worksheet #10—Problem Definition (continued)

- **BSU**—Semiconfining layer in areas where silts and clays of the BSU are of sufficient thickness, the unit acts as a confining to semi-confining layer between the FWBZ and the underlying Second Water-Bearing Zone (SWBZ). This is true in the area of Transfer Parcels FED-1A, FED-2B, and FED-2C. The BSU is not an effective aquitard in the southeastern portion of Alameda Point (near Transfer Parcels EDC-12 and EDC-17), where it is thin or not present at all.
- **Second Water-Bearing Zone (SWBZ)**—Confined to semiconfined groundwater in Merritt Sand (where present) and the upper unit of the San Antonio Formation. Divided into two hydrogeologic subintervals: SWBZ-upper (Merritt Sand) and SWBZ-lower (Upper San Antonio Formation). Where the BSU is thin or absent, hydrologic isolation between the FWBZ and SWBZ has not been clearly established. Where the BSU is significantly thickened (representing deposition within paleochannels in the central in the central portion of Alameda Point), the FWBZ-SWBZ zones are not clearly defined. The SWBZ is strongly tidally influenced in the vicinity of Seaplane Lagoon in the central, southwest, and southeast portions of Alameda Point.
- **Yerba Buena Mud (YBM) Aquitard**: A regionally continuous layer that forms a well-known regional aquitard. At Alameda Point, the unit is approximately 35 feet thick and is encountered at depths between 80 and 120 feet bgs. The YBM is an effective confining layer between the relatively saline groundwater of the SWBZ and the underlying freshwater Alameda Formation Water-Bearing Zone.
- **Alameda Formation Water-Bearing Zone (AFWBZ)**: Deep groundwater (freshwater) underlying the YBM Aquitard in Alameda Formation sediments. Little is known about the hydraulic properties of the deep aquifer system at Alameda Point.

Additional hydrogeologic information, including site-specific information, is presented in the Final Transfer Parcel EDC-12 and Transfer Parcel EDC-17 SI Reports (BEI, 2007a and 2007b) and the Draft Transfer Parcels FED-1A, FED-2B, and FED-2C SI Report (BEI, 2008).

Conceptual Site Model Development

A conceptual site model (CSM) for human health is used to identify ways in which people might come into contact with chemicals of potential concern in soil or groundwater. CSMs were developed as part of the human health evaluations included in the Final Transfer Parcels EDC-12 and EDC-17 SI Reports (BEI, 2007a and 2007b) and the Draft Transfer Parcels FED-1A, FED-2B, and FED-2C SI Report (BEI, 2008).These CSMs were used to identify ways in which people might come into contact with chemicals of potential concern in soil or groundwater at each of the sites. The following paragraphs are the CSMs from the SI reports as presented in the Final Transfer Parcels EDC-12 and EDC-17 SI Reports (BEI, 2007a and 2007b) and the Draft Transfer Parcels FED-1A, FED-2B, and FED-2C SI Report (BEI, 2008).

SAP Worksheet #10—Problem Definition (continued)

Transfer Parcel EDC-12 Conceptual Site Model

Current land use at Transfer Parcel EDC-12 is divided between an area of light industrial activity in the paved southern and eastern portions of the site and a vacant lot (Corrective Action Area [CAA]-11B) in the northwestern portion of the site. The former Navy hangar and other buildings are currently occupied and used for boat repair and similar activities. The vacant lot at CAA-11B is not currently in use. Therefore, the current receptors in this area are adult workers. The proposed future use of Transfer Parcel EDC-12 is a recreational area with a marina and parks. Currently complete exposure pathways for workers are largely limited to inhalation of vapors that might migrate from soil or groundwater through the pavement, except in CAA-11B, which is not in daily use. Future soil exposure pathways for children and adults could also include ingestion, dermal contact, inhalation of vapors in indoor and outdoor air, and inhalation of dust in outdoor air.

Transfer Parcel EDC-17 Conceptual Site Model

Transfer Parcel EDC-17 has equal portions of paved and unpaved areas and is currently used mainly for recreational purposes. The western portion of the site includes picnic tables, a soccer field, and other sport courts (e.g., volleyball and tennis courts), and the eastern portion of the site is mostly open space. One building that is no longer in use is present in the central portion of the transfer parcel. Therefore, the current receptors include recreational users (children and adults) and adult workers. The proposed future use of Transfer Parcel EDC-17 is as a recreational area. Currently completed exposure pathways for current and future recreational users include contact with soil (ingestion, dermal contact, and inhalation of vapors and dust in outdoor air) and contact with vapors from groundwater in outdoor air. Although the building is not currently in use, there could also be contact with vapors from soil and groundwater in the indoor air in the building.

Transfer Parcels FED-1A, FED-2B, and FED-2C Conceptual Site Model

Transfer Parcels FED-1A, FED-2B and FED-2C encompass approximately 439 acres, most of which is unpaved and unused open space. Limited exposure pathways exist within select areas for current site workers. Potential exposure pathways for current workers include direct contact with soil and inhalation of vapors from soil or groundwater. Future soil exposure pathways for children and adults could also include exposure via contact with soil (ingestion, dermal contact, inhalation of vapors in indoor and outdoor air, and inhalation of dust in outdoor air) in addition to exposure via contact with groundwater (ingestion, inhalation of vapors in indoor air, and inhalation while showering).

Data collected during the Expanded SI (as well as relevant historical data) will be compared to default conservative human health and ecological screening values (ESVs) (**Worksheet #15**). If exceedances are identified, more refined evaluations will be conducted (if possible) using the above listed site-specific receptors. Examples of more refined evaluations would be conducting human health and ecological risk evaluations. These would include using exposure point concentrations (EPCs) that represent areal averages, determining receptors based on current and future land use, and defining complete exposure pathways for the receptors to assess potential

SAP Worksheet #10—Problem Definition (continued)

human health and ecological risk. This information would then be discussed in site-specific sections of the associated report.

To assess the potential for a vapor intrusion pathway at sites with areas of VOC-contaminated soil or shallow groundwater, historic soil and shallow groundwater sample results will be screened against the 2005 Water Board Environmental Screening Levels (ESLs) for soil and groundwater protective of indoor air (Tables E-1a and E-1b of Water Board, 2005). This SAP may be modified (i.e., to propose soil gas samples or additional soil samples) based on the findings of this screening.

SAP Worksheet #10a-1—Transfer Parcel EDC-12 (Aircraft Parking/Staining Evaluation) Problem Definition

Background and Potential Release History

Transfer Parcel EDC-12 is shown on **Figure 3**. Historical use of this transfer parcel included material, fuel, and aircraft storage; aircraft parking; aircraft maintenance; and utility supply (air and steam plant) (BEI, 2007a).

In order to identify areas of Transfer Parcel EDC-12 with the highest likelihood of impact from aircraft parking and staining, where aircraft washdown and maintenance activities may have occurred, aerial photographs between 1930 and 1963 were reviewed as part of the Final Transfer Parcel EDC-12 SI Report (BEI, 2007a).

The following is a summary of conclusions for the aerial photograph review presented in the Final Transfer Parcel EDC-12 SI Report. The northern and eastern portions of Transfer Parcel EDC-12 likely were used solely for aircraft parking, with no significant staining observed. Maintenance activities appear to have been conducted south of Building 167 (EBS Parcel 154) and in the area to the west and south of IR Site 9 (currently included in the IR Site 9 investigation). Additionally, significant staining was observed in the southern portions of EBS Parcels 159 and 160. Based on these findings, the highest likelihood of impact from historic aircraft washdown and maintenance activities was identified as being located in EBS Parcels 154, 159, and 160 (**Figure 3**).

In response to regulatory agency concerns, further evaluation was recommend for areas where aircraft parking and staining may have occurred (including EBS Parcels 154, 159, and 160) at Transfer Parcel EDC-12. As a result, AOC 4 has been expanded to include the area east, west, and south of Building 167 at EBS Parcel 154, including the area downgradient of the building. Additionally, AOC 5 has been added to include the southern portion of EBS Parcel 159 and northeastern corner of EBS Parcel 160. AOCs 4 and 5 are recommended for sampling to further evaluate the potential impacts to soil and groundwater beneath Transfer Parcel EDC-12 as a result of historic aircraft maintenance and washdown. Further evaluation of these parts of EDC-12 is discussed in Worksheets #10a-5 (AOC 4) and #10a-6 (AOC 5). In addition, the Final Transfer Parcel EDC-12 SI Report (BEI, 2007a) also recommended further evaluation of aircraft parking and staining areas across Transfer Parcel EDC-12.

Synopsis of Secondary Data

No sampling has been conducted in areas of significant staining identified in the historical aerial photograph review.

Problem Definition

Based on the above information, an Expanded SI is necessary to assess whether a CERCLA-related release from aircraft parking, maintenance, and washdown activities occurred at Transfer Parcel EDC-12 and, if so, whether the release warrants further investigation or action.

SAP Worksheet #10a-1—Transfer Parcel EDC-12 (Aircraft Parking/Staining Evaluation) Problem Definition (continued)

Environmental Questions to be Answered by the Expanded SI:

1. **Was there a release(s) of hazardous constituents from historical use of the transfer parcel for aircraft parking, maintenance, and washdown?**

Available historical aerial photographs of Transfer Parcel EDC-12 will be reviewed to identify additional areas (i.e., areas other than those already included within AOCs 4 and 5) of aircraft parking and maintenance and/or areas showing signs of staining. Once these areas have been identified, a search of historical metals, TPH, VOC, and PAH data within and surrounding these areas will be conducted to assess whether there are sufficient existing data to draw conclusions about the potential for a CERCLA-related release has occurred from historical use of these areas for aircraft parking, maintenance, and washdown. Stains identified during the aerial photograph review will be verified by a site reconnaissance. The findings of the aerial photograph survey, historical data review, and site reconnaissance (including copies of the aerial photographs and figures with suspect areas plotted along with historical data) will be included in the SI Report addendum.

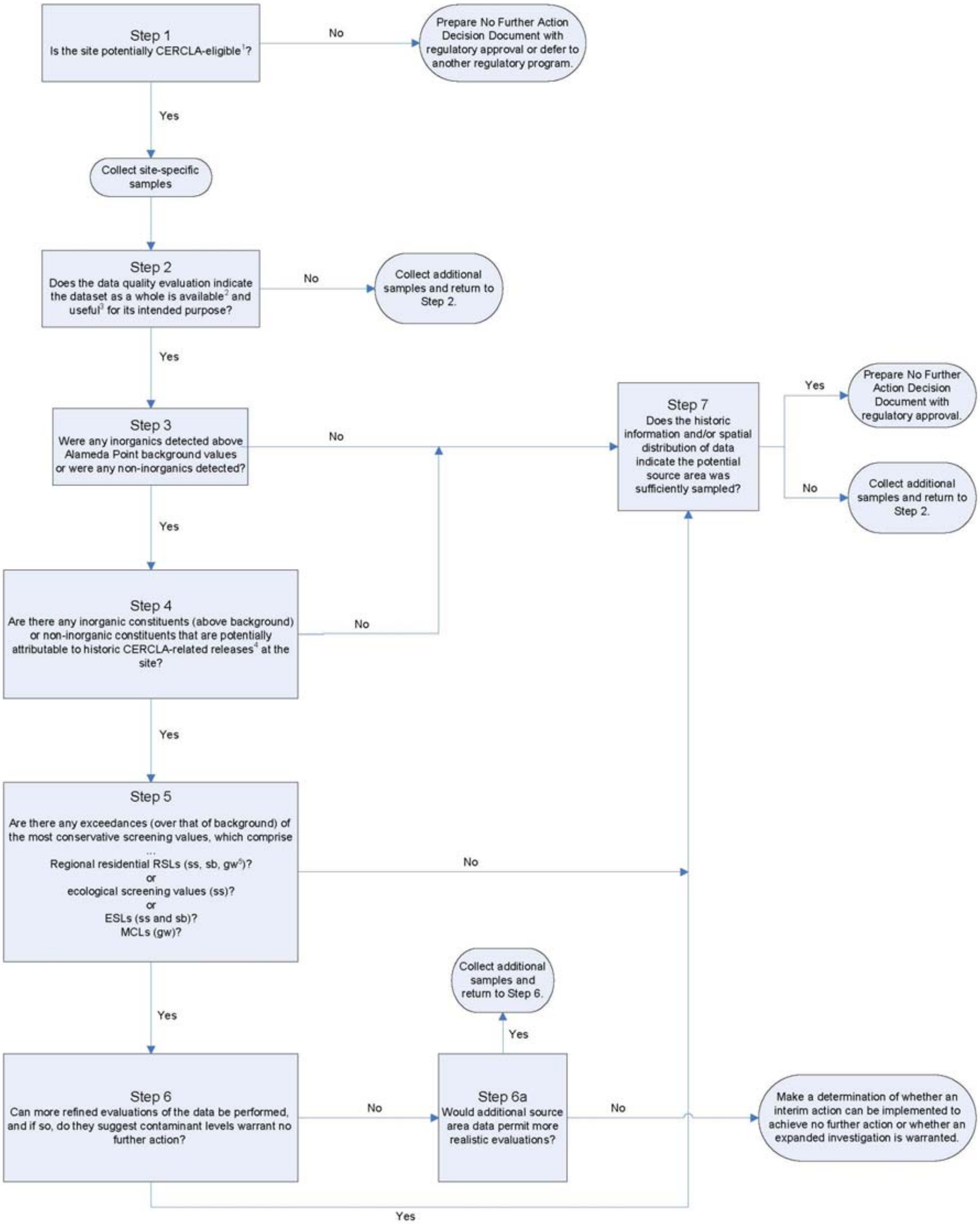
If, based on the historical aerial photograph review, data review, and site reconnaissance it is determined that the apparent staining was not from aircraft washdown or maintenance activities (e.g., wearing/exposed asphalt, tar asphalt patch, or tire marks) or that the staining was a result of aircraft washdown or maintenance activities, but historic sample results within and around the stained area do not suggest a potential CERCLA-related release has occurred, then no sampling will be necessary in this stained area and justification for this decision will be included in the SI Report addendum.

If the staining is determined to be from aircraft washdown or maintenance activities and no or insufficient historic sample results are available, or if historic sample results suggest that a potential CERCLA-related release has occurred in the identified area, then sampling will occur following the general sampling protocol outlined below. The exact number of boreholes and their locations will not be determined until after the historical aerial photograph review, historic data review, and site reconnaissance have been completed. Soil and discrete direct-push samples will be collected as described in **Worksheet #17**. Soil and groundwater samples will be analyzed for United States Environmental Protection Agency Target Analyte List (TAL) metals, petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), USEPA Contract Laboratory Program Target Compound List (TCL) VOCs, and TCL PAHs. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. **If a CERCLA-related release is identified, is further investigation or action warranted?**

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1**.

DIAGRAM 1
Expanded SI Evaluation Decision Tree



Notes:
The decision makers associated with this decision tree are the Navy, USEPA, DTSC, and Water Board.
1 Determination of CERCLA eligibility is described in **Worksheet #11**
2 "Available" data are described in **Worksheet #37**
3 "Useful" data are described in **Worksheet #37**
4 CERCLA-related releases are defined in **Worksheet #11**
5 ss = surface soil; sb = subsurface soil; sw = surface water; sd = sediment; gw = groundwater
6 Examples of the types of more realistic evaluations that may be performed are described in **Worksheet #11**.

SAP Worksheet #10a-2—Transfer Parcel EDC-12 AOC 1 (Former Storage Yards) Problem Definition

Background and Potential Release History

AOC 1 is located within EBS Parcel 140 as shown on **Figure 3**. As recommended by the Final Transfer Parcel EDC-12 SI Report, AOC 1 was established to further evaluate two former storage yards north of Building 168 that were identified during the 1994 EBS. The exact location and what was stored in these storage yards are unknown. During the 1994 EBS open space survey, the only staining observed at AOC 1 was associated with vehicle parking; however, the southernmost storage yard north of Building 168 was noted to have been paved (BEI, 2007a). Historically, Building 168 has been used for storage of fuel transfer and loading equipment, cable storage, and an area for preparing and packaging of chemical for transport to ships (IT, 2001).

Synopsis of Secondary Data

No sampling has been conducted at this AOC.

Problem Definition

No sampling has occurred at AOC 1 and the contents of the former storage yards are unknown. Although there are no records of past releases and there was no evidence of past releases observed during the 1994 EBS open space survey, the potential presence of CERCLA-related hazardous substances cannot be ruled out without sample collection due to the nature of the historical activities at this area. Therefore, an Expanded SI is necessary to evaluate if a CERCLA-related release occurred at AOC 1 and, if so, whether the release warrants further investigation or action.

Environmental Questions to be Answered by the Expanded SI:

1. **Was there a release(s) of hazardous constituents from historical use of the AOC for storage of unknown items?**

Four boreholes will be advanced across the AOC (approximately 50 to 100 foot spacing), as shown on **Figure 6.** Soil samples will be collected from each borehole as described in **Worksheet #17**. Discrete direct-push samples will be collected from one borehole as described in **Worksheet #17**. Based on historical use and the uncertainty of what was stored in the yards, soil and groundwater samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL VOCs, TCL SVOCs, TCL PAHs, TAL metals, TCL PCBs, and TCL pesticides. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1.**

2. **If a CERCLA-related release is identified, is further investigation or action warranted?**

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1.**

SAP Worksheet #10a-3—Transfer Parcel EDC-12 AOC 2 (SWMU GAP 621/Drum Storage Area Evaluation and TPH Delineation EBS Parcels 150A/150B) Problem Definition

Background and Potential Release History

AOC 2 is located within EBS Parcels 150A and 150B as shown in **Figure 3**. As recommended in the Final Transfer Parcel EDC-12 SI Report, AOC 2 was established to further evaluate hazardous-waste accumulation area SWMU GAP 621 and a drum storage area south of Building 621 within EBS Parcel 150A, and to delineate elevated TPH concentrations in soil adjacent to EBS Parcel 150B. Historical use of EBS Parcel 150A included aircraft parking, material and equipment storage, industrial machine shop, and a hazardous material storage area SWMU GAP 621, which contained paint cans and oil-soaked rags. SWMU GAP 621 was located in the northeastern corner of EBS Parcel 150A, outside Building 621. A drum storage area was located on the south side of Building 621; the drums contained oil-soaked rags and unknown materials. Historical use of EBS Parcel 150B includes administrative and support activities for housing maintenance, aircraft parking, IDW staging area, aircraft scrap-yard, aircraft parts storage, former railroad tracks, and general open space (BEI, 2007a).

Synopsis of Secondary Data

During the 1994 EBS, the following samples were collected within or adjacent to AOC 2, as shown on **Figure 7:**

- Two subsurface soil samples (150-0001 and 150-0002M) were collected around SWMU GAP 621 and analyzed for VOCs.
- Three subsurface soil samples (150-0003, 150-0004M, and 150-0005M) were collected in the drum storage area south of Building 621 and analyzed for VOCs.
- Three surface soil samples (150-0016M, 150-0007, and 150-0027) were collected next to the former railroad tracks in EBS Parcel 150B and analyzed for TPH, SVOCs, PCBs, and lead.

Appendix Table A-2 of the Final Transfer Parcel EDC-12 SI Report (BEI, 2007a) summarizes the constituents detected in AOC 2 soil samples. VOCs were not detected in any of the samples collected around SWMU GAP 621 or the drum storage area. Limitations of the secondary data can be found in **Worksheet #13**.

TPH-motor-oil was detected above the Water Board industrial and residential ESLs at surface soil sample location 150-0016M collected along the former railroad tracks. Chemical concentrations of remaining analytes in this sample were either below screening criteria or not detected. It should be noted that the sample location 150-0016M is located approximately 100 feet east of SWMU GAP 621, where oil-soaked rags were stored. No analytes were detected above screening criteria at sample locations 150-0007 and 150-0027; however, these sample locations are approximately 300 feet south of sample location 150-0016M, south of AOC 2, as shown on **Figure 7**.

SAP Worksheet #10a-3—Transfer Parcel EDC-12 AOC 2 (SWMU GAP 621/Drum Storage Area Evaluation and TPH Delineation EBS Parcels 150A/150B) Problem Definition (continued)

Problem Definition

The data collected during the EBS near the SWMU GAP 621 and drum storage area suggest there has not been a CERCLA-related release in these areas that has resulted in contamination of soil; however, the analytical suite did not account for all potential hazardous constituents that may have been stored in this area of AOC 2, so these data are inadequate to draw this conclusion with certainty. Therefore, this Expanded SI is necessary to further clarify whether there was a release of hazardous constituents at AOC 2 near SWMU GAP 621 and drum storage area and, if so, whether the release warrants further investigation or action.

In addition, TPH-motor-oil has been detected at one sample location within AOC 2 above residential and industrial ESLs. No other samples collected near this location were analyzed for petroleum constituents (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil). Therefore, the area of potential TPH contamination near sample location 150-0016M has not been defined. As a result, the spatial coverage of this sample is inadequate to assess whether or not a release has occurred, and if so, whether the release resulted in contamination at concentrations that would pose a potential for unacceptable risk to human or ecological receptors or leaching concern for groundwater. Therefore, an Expanded SI is necessary to evaluate the area of release of TPH contamination at previous sample location 150-0016M in AOC 2, and whether the release warrants further investigation or action.

Environmental Questions to be Answered by the Expanded SI:

1. **Have there been releases of hazardous constituents from storage of oil-soaked rags, paint cans, and unknown materials at SWMU GAP 621 and the drum storage area south of Building 621 in AOC 2?**

Four boreholes will be advanced, two on either side of SWMU GAP 621 and two in the former drum storage area, as shown on **Figure 7**. Soil samples will be collected from each borehole as described in **Worksheet #17**. Because the historical analytical suite did not account for all potential hazardous constituents that may have been stored in these areas of AOC 2, soil samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL SVOCs, TCL PAHs, TAL metals, TCL PCBs, and TCL pesticides. VOCs have been excluded, as soil samples in these areas have already been analyzed for VOCs, which were not detected. This question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10a-3—Transfer Parcel EDC-12 AOC 2 (SWMU GAP 621/Drum Storage Area Evaluation and TPH Delineation EBS Parcels 150A/150B) Problem Definition (continued)

2. What is the area of release of TPH contamination surrounding sample location 150-0016M?

This question will be answered by advancing four step-out boreholes 25 feet to the north, east, south, and west of previous sample location 150-0016M, as shown on **Figure 7**. Soil samples will be collected from each borehole as described in **Worksheet #17**. Because TPH was the only constituent detected in previous sample 150-0016M above a screening criterion, soil samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil). These data will be evaluated through Step 4 of the decision analysis process, as shown on **Diagram 1**.

3. If a CERCLA-related release is identified, is further investigation or action warranted?

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10a-4—Transfer Parcel EDC-12 AOC 3 (TPH Delineation EBS Parcels 150B/151 and SVOCs at Former Wood-Treatment Area) Problem Definition

Background and Potential Release History

AOC 3 is located within EBS Parcels 150B and 151 as shown in **Figure 3**. As recommended in the Final Transfer Parcel EDC-12 SI Report, AOC 3 was established to delineate TPH concentrations in soil exceeding screening criteria in the central portion of EBS Parcel 150B and eastern portion of EBS Parcel 151, and to recollect soil samples in the former wood-treatment area for SVOC and PAH analyses (detection limit for these analyses in previous samples were above the screening criteria) (BEI, 2007a). Historical use of EPS Parcels 150B and 151 encompassed by AOC 3 includes aircraft scrap yard, aircraft parts storage, general open space, aircraft parking, hazardous material storage area (drum storage), treated-timber storage, and covered material storage. Large telephone poles and timber treated with creosote and copper green preservative were stored in the wood-treatment area within AOC 3. During the 1994 EBS, a strong creosote odor was noted in this area and small stains were noted on the ground beneath the timbers.

Synopsis of Secondary Data

During the 1994 EBS, the following samples were collected within AOC 3, as shown in **Figure 7**:

- One surface soil sample (150-0020) was collected in the open space area in AOC 3 and analyzed for TPH.
- Four surface soil samples (151-0009, 151-0010M through 151-0012M) and four near-surface (approximately 1 to 2 feet bgs) soil samples (151-0013, 151-0014M through 151-0016M) were collected in the former hazardous material storage area (drum storage) and analyzed for TPH, VOCs, and SVOCs.
- Eight subsurface soil samples (151-0001M through 151-0007M and 151-0008) collected in the former wood-treatment area and analyzed for SVOCs and metals.

Appendix Table A-2 of the Final Transfer Parcel EDC-12 SI Report (BEI, 2007a) summarizes the constituents detected in AOC 3 soil samples. TPH as motor-oil was detected above the residential and industrial ESLs at sample locations 151-0009 and 151-0012M collected in the drum storage area and 150-0020 collected in the open space area. Concentrations of TPH-motor-oil in subsurface samples 151-0013 and 151-0016M (collected beneath samples 151-0009 and 151-0012M, respectively) were not above residential or industrial ESLs. Chemical concentrations of remaining analytes in the eight soil samples collected in the drum storage area and one soil sample collected in the open space area were either below screening criteria or not detected. Limitations of the secondary data can be found in **Worksheet #13**.

Semivolatile organic compounds, including PAHs, were either not detected above detection limits or reported below screening criteria in soil samples collected in the former wood-treatment area; however, detection limits for SVOCs and PAHs at these locations were above the screening criteria. Limitations of the secondary data can be found in **Worksheet #13**.

SAP Worksheet #10a-4—Transfer Parcel EDC-12 AOC 3 (TPH Delineation EBS Parcel 151 and SVOCs at Former Wood-Treatment Area) Problem Definition (continued)

Problem Definition

Total petroleum hydrocarbons as motor-oil has been detected at sample locations 150-0020, 151-0009, and 151-0012M within AOC 3 above residential and industrial ESLs. No other soil samples have been collected near these three locations and analyzed for petroleum constituents (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil). Therefore, the area of TPH releases near these three sample locations has not been defined. As a result, the spatial coverage of these samples are inadequate to assess whether or not releases have resulted in contamination at concentrations that would pose a potential for unacceptable risk to human or ecological receptors or leaching concern for groundwater. Therefore, an Expanded SI is necessary to evaluate the area of potential TPH releases at AOC 3.

In addition, the data collected during the 1994 EBS suggest there has not been a CERCLA-related release at the former wood treatment area of the site that has resulted in contamination of soil; however, the detection limits used in the EBS for SVOC and PAHs were above screening criteria. As a result, the spatial coverage of the samples analyzed for SVOCs and PAHs was inadequate to draw this conclusion with certainty. Therefore, an Expanded SI is necessary to evaluate if there was a release of SVOCs and PAHs at AOC 3 in the former wood-treatment area, and if so, whether the release warrants further investigation or action.

Environmental Questions to be Answered by the Expanded SI:

1. **<u>What is the area of release of TPH contamination surrounding sample locations 150-0020 151-0009, and 151-0012M?</u>**

This question will be answered by advancing four step-out boreholes 25 feet north, east, south, and west of each the previous sample locations 150-0020, 151-009 and 151-0012M, as shown on **Figure 7**. Soil samples will be collected from each borehole as described in **Worksheet #17**. Because TPH was the only constituent detected in previous samples 150-0020, 151-009, and 151-0012M above a screening criterion, oil sample will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil). The TPH data will be evaluated through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. **<u>Have there been releases of SVOCs or PAHs from wood-treatment/storage activities in AOC 3?</u>**

Five boreholes will be advanced near previous soil sample locations within the former wood-treatment area, as shown on **Figure 7.** Soil samples will be collected from each borehole as described in **Worksheet #17**. Because the historical SVOC including PAH analytical data collected in AOC 3 had detection limits greater than the screening criteria, soil samples will be analyzed for TCL SVOCs and the composite soil samples will be analyzed for TCL PAHs. In addition, surface soil samples will be analyzed for dioxins/furans. This question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10a-4—Transfer Parcel EDC-12 AOC 3 (TPH Delineation EBS Parcel 151 and SVOCs at Former Wood-Treatment Area) Problem Definition (continued)

3. If a CERCLA-related release is identified, is further investigation or action warranted?

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10a-5—Transfer Parcel EDC-12 AOC4 (Building 167 and Surrounding Area in EBS Parcel 154) Problem Definition

Background and Potential Release History

AOC 4 is located within EBS Parcel 154 as shown in **Figure 3**. As recommended in the Final Transfer Parcel EDC-12 SI Report (BEI, 2007a), AOC 4 was established to address the following concerns:

- Delineate TPH concentrations in soil exceeding screening criteria around Building 167
- Collect soil samples at two SWMUs located at Building 167 (Naval Aviation Depot [NADEP] GAPs 67 and 69) where no historical samples have been collected
- Further evaluate sediment in the storm sewer segment south of Building 167 (no sampling proposed in this SAP as described in **Work Plan Section 3.1.5**)
- Assess potential impacts to soil and groundwater from historical maintenance and washdown of aircraft and other vehicles that may have occurred in the vicinity of Building 167

Historical use of EBS Parcel 154 encompassed by AOC 4 included chemical, equipment, and materials storage, vehicle parking, administrative offices, and aircraft maintenance hanger (Building 167). Activities conducted in Building 167, the aircraft maintenance hanger, reportedly included painting, resin mixing, parts washing in solvent dip tanks, metals treatment, metals machining, paint stripping/sandblasting, aircraft defueling, and replacing or filling of lubrication and hydraulic fluids. Several aboveground dip tanks containing various oils, acids, and solvent were identified during the 1994 EBS inspection. A hazardous materials locker containing acids, bases, and halogenated and non-halogenated solvents was also observed during the inspection. Several SWMUS were formerly located within Building 167, including NADEP GAPS 67, 68, and 71. Wastes generated in the building were transferred to SWMUS located outside the building, including NADEP GAPs 69 and 72 and NAS GAP 28.

Documented spills within Building 167 included a 50-gallon nitric acid spill that was neutralized and cleaned with absorbents. Undocumented spills of lubricants, solvents, acids, alkalis, and heavy metals solutions were also reported to have potentially occurred throughout the building.

The open space south of Building 167 was noted to be heavily stained in aerial photographs reviewed during the 1994 EBS.

Synopsis of Secondary Data

During the 1994 EBS, the following samples were collected within AOC 4, as shown in **Figure 8**:

- Three surface soil samples (154-0001, 154-0002M, and 154-0003M) and nine subsurface soil samples (154-0004M through 154-0008M and 154-0021, 154-0022M, 154-0023M, and 154-0029M) were collected from eight locations at Building 167 (to assess SWMUs NADEP GAPs 68, 71, and 72) and analyzed for VOCs, SVOCs, TPH, and metals.

SAP Worksheet #10a-5—Transfer Parcel EDC-12 AOC4 (Building 167 and Surrounding Area in EBS Parcel 154) Problem Definition (continued)

- Three subsurface soil samples (154-0031, 154-0032, and 154-0034) and three discrete direct-push samples (154-0033, 154-0035, 154-0039) were collected inside Building 167 near areas of elevated TPH-diesel and detected VOCs concentrations in soil and analyzed for TPH and VOCs.
- One surface soil sample (154-0009) and one subsurface soil sample (154-0010M) were collected adjacent to heavy staining adjacent to hazardous materials storage area and SWMU NADEP GAP 72 and analyzed for VOCs, SVOCs, TPH, and metals.
- Four surface soil samples (154-0011, 154-0012, 154-0013M and 154-0014M) and four subsurface soil samples (154-0024, 154-0025, 154-0026M and 154-0027M)were collected near SWMU NAS GAP 28 located in the open space south of Building 167 and analyzed for VOCs, SVOCs, TPH, and metals.
- Three subsurface soil samples (154-0015M through 154-0017M) were collected in the open space area used to store hazardous materials and analyzed for TPH, VOCs, SVOCs, and metals.
- One subsurface soil sample (154M-001) was collected adjacent to a storm sewer line and analyzed for TPH, butyl tin, metals, VOCs, pesticides, and PCBs.
- One subsurface soil screening sample (154S-002M) was collected adjacent to a sanitary sewer line and analyzed for TPH, VOCs and metals.

Appendix Tables A-1 and A-2 of the Final Transfer Parcel EDC-12 SI Report (BEI, 2007a) summarize the constituents detected in AOC 4 groundwater and soil samples, respectively.

TPH-diesel was detected above residential and industrial ESLs in soil samples 154-003M and 154-0023M collected from one sample location adjacent to heavy staining near the hazardous material storage area and SWMU NAPDEP GAP 72. Two VOCs (1,1,1-trichloroethane [1,1,1-TCA] and tetrachloroethene [PCE]) were detected in the samples collected from this location; however, the concentrations were below the screening criteria. Concentrations of the remaining chemicals in soil samples collected from theses sample locations were either not detected or reported below screening criteria. However, data for TPH as diesel in soil at three step-out soil samples (154-0032, 154-0034, and 154-0039) near previous sample locations 154-0003M and 154-0023M were rejected during the validation process due to calibration errors; therefore, these rejected TPH data are not suitable for use in evaluating potential releases at the site. Chemicals were either not detected, or if detected, were below screening criteria in the remaining soil or groundwater samples collected within AOC 4. Limitations of the secondary data can be found in **Worksheet #13**.

Problem Definition

Total petroleum hydrocarbons as motor-oil has been detected above the residential and industrial ESLs in soil samples154-0003M and 154-0023M collected from one borehole within AOC 4. Three step-out soil samples were collected near previous sample locations 154-0003M and 154-0023M, but were rejected and are not suitable for use in evaluating potential releases at the site. Therefore, the area of release of TPH contamination near these two sample locations has not been defined. As a result, the spatial coverage of this sample is inadequate to assess whether or not a release has

SAP Worksheet #10a-5—Transfer Parcel EDC-12 AOC4 (Building 167 and Surrounding Area in EBS Parcel 154) Problem Definition (continued)

occurred, and if so, whether this release resulted in contamination at concentrations that would pose a potentially unacceptable risk to human or ecological receptors or leaching concern for groundwater. Therefore, an Expanded SI is necessary to evaluate the area of release of TPH contamination around the historical sample location at AOC 4.

The remaining data collected during the 1994 EBS suggest there has not been a CERCLA-related release elsewhere at the site that has resulted in contamination of soil; however, no soil or groundwater samples were collected to assess potential CERCLA-related releases from hazardous materials storage at SWMU NADEP GAPs 67 and 69 and from historical maintenance and washdown of aircraft and other vehicles near Building 167. As a result, the spatial coverage of the samples analyzed was inadequate to draw this conclusion with certainty. Therefore, an Expanded SI is necessary to evaluate if there was a release of hazardous constituents at the SWMU NADEP GAPs 67 and 69 and Building 167 areas of AOC 4 and, if so, whether the release warrants further investigation or action.

Environmental Questions to be Answered by the Expanded SI:

1. **<u>What is the area of release of TPH in soil at locations 154-0003M and 154-0023M?</u>**

This question will be answered by advancing three boreholes at previous step-out sample locations 154-0031, 154-0032, and 154-0034 (TPH-diesel data previously collected at these locations were rejected during the validation process), as shown on **Figure 8**. Soil samples will be collected from each borehole as described in **Worksheet #17**. Because TPH was the only constituent rejected in previous samples 154-0031, 154-0032, and 154-0034, soil samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil). The TPH data will be evaluated through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. **<u>Have there been releases of hazardous constituents at SWMU NADEP GAPs 67 and 69 and from historical maintenance and washdown of aircraft and other vehicles near Building 167 in AOC 4?</u>**

Eight soil boreholes will be advanced, one at each of the two NADEP GAPS and one borehole on each of the three sides of Building 167 (east, south, and west; the north side of the building is being investigated as part of IR Site 27) and three boreholes in the open space areas where maintenance and washdown of aircraft and other vehicles may have occurred, as shown on **Figure 8**. Soil and discrete direct-push samples will be collected from each borehole as described in **Worksheet #17**.

Based on historical use as NADEP GAPS, aircraft parking, possible aircraft washdown, and possible aircraft and vehicle maintenance, soil and groundwater samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL VOCs, TCL SVOCs, TCL PAHs, TAL metals, TCL PCBs, and TCL pesticides. This question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

3. **<u>If a CERCLA-related release is identified, is further investigation or action warranted?</u>**

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1.**

SAP Worksheet #10a-6—Transfer Parcel EDC-12 AOC 5 (Washdown Area in Southern Portion of EBS Parcel 159) Problem Definition

Background and Potential Release History

AOC 5 is located in the southern portions of EBS Parcel 159 and northeastern corner of EBS Parcel 160 as shown in **Figure 3.** As recommended in the Final Transfer Parcel EDC-12 SI Report, AOC 5 was established to assess possible impact to groundwater as a result of historical aircraft and other vehicle maintenance and washdown activities in the southern portion of EBS Parcel 159 (BEI, 2007a). Historical use of EBS Parcels 159 and 160 encompassed by AOC 5 included aircraft parking and for general open space. Historical aerial photographs were reviewed to identify areas within EBS Parcels 159 and 160 with the highest likelihood of impact from historical use of aircraft parking and possibly maintenance, and washdown. Significant staining was observed in the southern portion of EBS Parcel 159 and northeastern corner of EBS Parcel 160.

Synopsis of Secondary Data

No sampling has been conducted at this AOC.

Problem Definition

No sampling has occurred at AOC 5. Significant staining was observed in the southern portion of EBS Parcel 159 and northeastern corner of EBS Parcel 160, which has historically been used for aircraft parking and possibly for aircraft maintenance and washdown. The potential presence of CERCLA-related hazardous substances cannot be ruled out without sample collection due to the nature of the historical activities at this AOC. Therefore, an Expanded SI is necessary to evaluate if a CERCLA-related release occurred at AOC 5 and, if so, whether the release warrants further investigation or action.

Environmental Questions to be Answered by the Expanded SI:

1. **Was there a release(s) of hazardous constituents from historical use of the AOC for aircraft parking/maintenance?**

Fifteen boreholes will be advanced spaced approximately 150 feet apart across the site, as shown on Figure 9**. Soil and discrete direct-push samples will be collected from each borehole as described in Worksheet #17.** Based on historical use as aircraft parking, possible aircraft washdown, and possible aircraft and vehicle maintenance, soil and groundwater samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL VOCs, TCL SVOCs, and TCL PAHs. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. **If a CERCLA-related release is identified, is further investigation or action warranted?**

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10a-7—Transfer Parcel EDC-12 AOC 6 (SWMU AST 584) Problem Definition

Background and Potential Release History

AOC 6 is located within EBS Parcel 202 as shown in **Figure 3**. As recommended in the Final Transfer Parcel EDC-12 SI Report, AOC 6 was established to assess possible release of corrosion-inhibiting chemicals that may have been used at SWMU AST 584 (BEI, 2007a). SWMU AST 584 was used to store industrial wastewater, specifically condensate from a heater that contained corrosion-resistant chemicals (Sultech, 2004).

Synopsis of Secondary Data

No sampling has been conducted at this AOC.

Problem Definition

No sampling has occurred at AOC 6. Although there are no records of past releases and there was no evidence of past releases observed during the 1994 EBS inspection, the potential presence of CERCLA-related hazardous substances cannot be ruled out without sample collection due to the nature of the historical activities at this AOC. Therefore, an Expanded SI is necessary to evaluate if a CERCLA-related release occurred at AOC 6 and, if so, whether the release warrants further investigation or action.

Environmental Questions to be Answered by the Expanded SI:

1. **Was there a release(s) of hazardous constituents from historical use of corrosion-inhibiting chemicals at the AOC?**

Two soil boreholes will be advanced, on either side of SWMU AST 584, as shown on **Figure 9**. Soil samples will be collected from each borehole as described in **Worksheet #17**. Discrete direct-push samples will be collected from one borehole as described in **Worksheet #17.** Based on historical use of corrosion-inhibiting chemicals, soil and groundwater samples will be analyzed for TCL SVOCs, TCL PAHs, TAL metals, and hexavalent chromium. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. **If a CERCLA-related release is identified, is further investigation or action warranted?**

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10b-1—Transfer Parcel EDC-17(Aircraft Parking/Staining Evaluation) Problem Definition

Background and Potential Release History

Transfer Parcel EDC-17 is shown on **Figure 4**. Historical use of this transfer parcel included recreational playing fields, tank truck unloading and fueling, maintenance shop activities, sandblasting, aircraft parking, and drum, chemical, and material storage (BEI, 2007b).

In order to identify areas of Transfer Parcel EDC-17 with the highest likelihood of impact from aircraft parking and staining where aircraft washdown and maintenance activities may have occurred, aerial photographs between 1930 and 1994 were reviewed as part of the Final Transfer Parcel EDC-17 SI Report. The following is a summary of conclusions for the aerial photograph review presented in the Final Transfer Parcel EDC-17 SI Report.

Aircraft parking was observed on Transfer Parcel EDC-17 from approximately 1947 to 1972. The parking was limited to EBS Parcels 165, 166, 167, and 169 in the 1947 and 1959 photographs. By 1963 and 1975, aircraft parking was limited primarily to EBS Parcel 169. Consistent with the findings in the EBS, minor staining was observed in the southern portion and more significant staining was observed along the northern boundary of EBS Parcel 169, north of Building 402 in the 1959, 1963, and 1969 aerial photographs. The Final SI report recommended further evaluation of aircraft parking and staining areas across Transfer Parcel EDC-17 (BEI, 2007b).

Synopsis of Secondary Data

No sampling has been conducted in areas of significant staining identified in the historical aerial photograph review.

Problem Definition

Significant staining was observed north of Building 402 in EBS Parcel 169, which has historically been used for aircraft parking and possibly for aircraft maintenance and washdown. No samples have been collected in this area. As a result, the potential presence of CERCLA-related hazardous substances cannot be ruled out in this area without sample collection due to the nature of the historical activities at this transfer parcel. Therefore, an Expanded SI is necessary to evaluate if a CERCLA-related release occurred in northern portion of EBS Parcel 169 and, if so, whether the release warrants further investigation or action.

Environmental Questions to be Answered by the Expanded SI:

1. **Was there a release(s) of hazardous constituents from historical use of the transfer parcel for aircraft parking/maintenance in the stained area north of Building 402 in EBS Parcel 169?**

Three boreholes will be advanced along the northern boundary of EBS Parcel 169, north of Building 402 where significant staining was observed, as shown on **Figure 11**. Soil and discrete direct-push samples will be collected from each borehole as described in **Worksheet #17**. Based on historical use as aircraft parking, possible aircraft washdown, and possible aircraft maintenance, soil and groundwater samples will be analyzed for TAL metals, petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL VOCs, and TCL PAHs. The

SAP Worksheet #10b-1—Transfer Parcel EDC-17 (Aircraft Parking/Staining Evaluation) Problem Definition (continued)

question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. **Was there a release(s) of hazardous constituents from historical use of other areas of the transfer parcel for aircraft parking, maintenance, and washdown?**

Available historical aerial photographs of Transfer Parcel EDC-17 will be reviewed to identify additional areas (i.e., areas other than the area just north of Building 402) of aircraft parking and maintenance and/or areas showing signs of staining. Once these areas have been identified, a search of historical metals, TPH, VOC, and PAH data within and surrounding these areas will be conducted to assess whether there are sufficient existing data to draw conclusions about the potential for a CERCLA-related release has occurred from the historical use of these areas for aircraft parking, maintenance, and washdown. Stains identified during the aerial photograph review will be verified by a site reconnaissance. The findings of the aerial photograph survey, historical data review, and site reconnaissance (including copies of the aerial photographs and figures with suspect areas plotted along with historical data) will be included in the SI Report addendum.

If, based on the historical aerial photograph review, data review, and site reconnaissance it is determined that the apparent staining was not from aircraft washdown or maintenance activities (e.g., wearing/exposed asphalt, tar asphalt patch, or tire marks) or the staining was a result form aircraft washdown or maintenance activities, but historic sample results within and around the stained area do not suggest a potential CERCLA-related release has occurred, then no sampling will be necessary in this stained area and justification for this decision will be included in the SI Report addendum.

If the staining is determined to be from aircraft washdown or maintenance activities and no or insufficient historic sample results are available or if historic sample results suggest that a potential CERCLA-related release has occurred in the identified area as a result of aircraft parking, maintenance, or washdown activities, then sampling will occur following the general sampling protocol outlined below. Exact number of boreholes and their location, will not be determined until after the historical aerial photograph review, historic data review, and site reconnaissance have been completed. Soil and discrete direct-push sampes will be collected as described in **Worksheet #17**. Soil and groundwater samples will be analyzed for TAL metals, petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL VOCs, and TCL PAHs. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

3. **If a CERCLA-related release is identified, is further investigation or action warranted?**

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10b-2—Transfer Parcel EDC-17 AOC 1 (TPH Delineation in EBS Parcel 165) Problem Definition

Background and Potential Release History

AOC 1 is located within EBS Parcel 165 as shown in **Figure 4**. As recommended in the 2007 Transfer Parcel EDC-17 SI Report, AOC 1 was established to delineate TPH contamination in the northwestern portion of EBS Parcel 165. Historically, EBS Parcel 165 was used as a recreation area, material storage area, and as a tank truck or car unloading facility and fueling station at Building 438 (BEI, 2007b). AOC 1 is located near the northwest corner of EBS Parcel 165 and near Building 438. Building 438 was used as a fueling facility since the late 1950's.

A former AST 342C was also located in the northwest corner of EBS Parcel 165. The 500-gallon AST was historically used to store diesel fuel. No staining was observed near this former AST and one post-removal sample was collected near the former AST (approximately 25 feet northwest of the AST) did not have concentrations of TPH above the screening criteria. Therefore, additional sampling of this AST was not recommended in the Transfer Parcel EDC-17 SWMU Evaluation Report (SulTech, 2005). Former AST 342C will be evaluated further under the Expanded SI following the general sampling strategy used in the Alameda Point Petroleum Program, so that the Alameda Point Petroelum Program will be able to request closure if the sampling results are favorable.

Synopsis of Secondary Data

During the 1994 EBS, the following samples were collected within AOC 1, as shown on **Figure 10**:

- Two surface soil samples (165-0001 and 165-0002) were collected in the area where a diesel odor was noted during the visual inspection and analyzed for TPH-gasoline, TPH-diesel, and TPH-motor oil.
- One subsurface soil sample (165-0009) was also collected from this area and analyzed for the TPH constituents listed above, metals, SVOCs, and VOCs.

Appendix Table A-2 of the Final Transfer Parcel EDC-17 SI Report (BEI, 2007b) summarizes the constituents detected in AOC 1 surface and subsurface soil samples. Volatile organic compounds, SVOCs, and metals were either not detected or were not detected above the screening criteria. Petroleum constituents (i.e., TPH-gasoline, TPH-diesel, TPH-motor oil) were not detected or were not detected above the screening criteria in soil sample 165-0009.

Total petroleum hydrocarbons as motor-oil were detected above the residential and industrial ESLs soil samples 165-0001 and 165-0002. Chemical concentrations of TPH-diesel, TPH-gasoline, VOCs, SVOCs, and metals in this sample were either below screening criteria or not detected. Limitations of the secondary data can be found in **Worksheet #13**.

Problem Definition

Total petroleum hydrocarbons as motor-oil was detected above residential and industrial ESLs in soil samples 165-0001 and 165-0002 within AOC 1. No other soil samples collected near this sample location were analyzed for TPH. Therefore, the release area of TPH contamination near these two sample locations has not been defined. As a result, the spatial coverage of this sample is inadequate to assess whether or not a release has occurred and, if so, has this release resulted in

SAP Worksheet #10b-2—Transfer Parcel EDC-17 AOC 1 (TPH Delineation in EBS Parcel 165) Problem Definition (continued)

contamination at concentrations that would pose a potentially unacceptable risk to human or ecological receptors or leaching concern for groundwater. Therefore, an Expanded SI is necessary to evaluate if the CERCLA-related release warrants further investigation or action.

In addition, data collected during the 1994 EBS near the former AST 432C suggest there has not been a non-TPH CERCLA-related release at the site that has resulted in contamination of soil, however, no soil samples were collected to the north and west of the former AST location. As a result, the spatial coverage of the samples analyzed was inadequate to draw this conclusion with certainty. Therefore, an Expanded SI is necessary to evaluate if there was a release of petroleum constituents at AOC 1 near the former AST 342 and, if so, whether the release warrants further investigation or action.

Environmental Questions to be Answered by the Expanded SI:

1. What is the area of release of TPH contamination surrounding sample location 165-0001?

To answer this question one borehole will be advanced in the area between previous sample locations 165-0001 and 165-0002 and four step-out boreholes will be advanced 25 feet north, east, south, and west of the previous sample locations, as shown in **Figure 10**. Soil samples will be collected from each borehole as described in **Worksheet #17**. Because TPH was the only constituent detected in previous sample 165-0001 above a screening criterion, soil samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor oil). In addition, the soil samples collected from the step-out boreholes will also be analyzed for TAL metals, TCL VOCs, and TCL PAHs so that these data can be used by the Alameda Point Petroelum Program to support closure of former AST 342C. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. Was there a release(s) of hazardous constituents from historical storage of petroleum fuel at the AOC?

To answer this question two boreholes will be advanced, one to the north and one to the east of the concrete pad where former AST 432C was located, as shown in **Figure 10.** Soil samples will be collected from each borehole as described in **Worksheet #17**. Discrete direct-push samples will be collected from at least one borehole as described in **Worksheet #17.** Based on historical use as a UST storing diesel fuel, soil samples will be analyzed for TAL metals, petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor oil), TCL VOCs, and TCL PAHs. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

3. If a CERCLA-related release is identified, is further investigation or action warranted?

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10b-3—Transfer Parcel EDC-17 AOC 2 (Building 402 Evaluation) Problem Definition

Background and Potential Release History

AOC 2 is located within EBS Parcel 169 as shown in **Figure 4**. As recommended in the 2007 Transfer Parcel EDC-17 SI Report, AOC 2 was established to assess potential impacts to soil and groundwater from maintenance and sandblasting activities formerly conducted at former Building 402. Historical information indicates that EBS Parcel 169 was used for drum painting, empty drum and chemical storage, material storage, an RV park, aircraft and vehicle parking. Former Building 402 was located in the northern portion of EBS Parcel 169 and was historically used as a maintenance shop and sandblast shelter (BEI, 2007b).

Synopsis of Secondary Data

No sampling has been conducted at this AOC.

Problem Definition

No sampling has occurred at AOC 2. Although there are no records of past releases and there was no evidence of past releases observed during the 1994 EBS open space survey, the potential presence of CERCLA-related hazardous substances cannot be ruled out without sample collection due to the nature of the historical activities at this AOC. Therefore, an Expanded SI is necessary to evaluate if a CERCLA-related release occurred at AOC 2 and, if so, whether the release warrants further investigation or action.

Environmental Questions to be Answered by the Additional Soil Removal and Associated Confirmatory Sampling:

1. **<u>Was there a release(s) of hazardous constituents from historical maintenance and sandblasting activities in former Building 402?</u>**

Six boreholes will be advanced in the footprint of former Building 402, one in the center and five near the perimeter of the AOC, as shown in **Figure 11**. Soil samples will be collected from each borehole as described in **Worksheet #17**. Discrete direct-push samples will be collected from three boreholes as described in **Worksheet #17.** Based on historical use as a maintenance shop and sand blast shelter, soil and groundwater samples will be analyzed for petroleum constituents using silica gel cleanups (i.e, TPH-gasoline, TPH-diesel, TPH-motor oil), TCL VOCs, TCL SVOCs, TCL PAHs, and TAL metals. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. **<u>If a CERCLA-related release is identified, is further investigation or action warranted?</u>**

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10b-4—Transfer Parcel EDC-17 AOC 3 (VOCs in Groundwater) Problem Definition

Background and Potential Release History

AOC 3 is located within EBS Parcel 169 as shown in **Figure 4**. As recommended in the Transfer Parcel EDC-17 SI Report, AOC 3 was established to verify the presence and assess the extent of VOCs in groundwater at and near previous sample location 169-0019. Historically, EBS Parcel 169 was used for drum painting, empty drum and chemical storage, material storage, a recreational vehicle (RV) park, aircraft and vehicle parking (BEI, 2007b).

Synopsis of Secondary Data

During the EBS, the following samples were collected within and in the vicinity of AOC 3, as shown on **Figure 11**:

- Three groundwater samples (169-0017, 169-0018, 169-0019) were collected in the suspected historical aircraft washdown area and analyzed for TPH-gasoline, TPH-diesel, and TPH-motor oil, VOCs, SVOCs, and filtered metals.

Appendix Table A-2 of the Final EDC-17 SI Report (BEI, 2007b) summarizes the constituents detected in AOC 3 groundwater samples. Volatile organic compounds, SVOCs, TPH, and metals were either not detected or were not detected above the screening criteria in groundwater samples 169-0017 and 169-0018.

Methyl tert-butyl ether (MTBE) was detected above the regulatory screening criteria at sample location 169-0019 (collected in 1998). Trichloroethene (TCE) was detected below the regulatory screening criteria at sample location 169-0019. Chemical concentrations of remaining analytes were either below screening criteria or not detected. It should be noted, that MTBE and trichloroethene (TCE) concentrations reported in the groundwater sample collected at sample location160-0019 contributed to a groundwater cancer risk above the target risk level. Limitations of the secondary data can be found in **Worksheet #13**.

Problem Definition

Methyl tert-butyl ether was detected above the regulatory screening level and TCE was detected below the regulatory screening level in one groundwater sample collected in 1998 from sample location 160-0019, which suggests a CERCLA-related release has occurred at AOC 3. The detected concentrations of MTBE and TCE in the groundwater sample collected in 1998 from location 160-0019 contributed to a groundwater cancer risk above the target risk level, indicating a potentially unacceptable risk to human receptors. However, this groundwater sample was collected over 10 years ago; therefore, the current concentrations of MTBE and other VOCs are unknown. Further, no other groundwater samples have been collected near this sample location. As a result, the temporal and spatial coverage of the samples is inadequate to draw this conclusion with certainty. Therefore, an Expanded SI is necessary to verify the release of VOCs at AOC 3 and, if verified, whether the release warrants further investigation or action.

SAP Worksheet #10b-4—Transfer Parcel EDC-17 AOC 3 (VOCs in Groundwater) Problem Definition (continued)

Environmental Questions to be Answered by the Expanded SI:

1. **Was there a release of hazardous constituents (VOC and MTBE), as suggested by the concentrations in the 1998 groundwater and, if so, what is the area of release of the VOC and/or MTBE contamination?**

This question will be answered in a phased approach by first advancing a borehole at previous sample location 160-0019. Discrete direct-push samples will be collected from this borehole as described in **Workhseet #17.** Groundwater samples will be analyzed on a rapid turnaround for TCL VOCs and MTBE. If these constituents are not detected above the screening criteria (**Worksheet #15**), then no further sampling is required.

If the constituents are detected above the screening criteria, to define the extent of contamination four step-out boreholes 40 feet to the north, east, south, and west of previous sample location 169-0019 will be advanced, as shown in **Figure 11**. Discrete direct-push samples will be collected from each borehole as described in **Worksheet #17**. Groundwater samples will be analyzed for TCL VOCs and MTBE.

2. **If a CERCLA-related release is identified, is further investigation or action warranted?**

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10c-1—Transfer Parcels FED-1A, FED-2B, and FED-2C (Aircraft Parking/Staining Evaluation) Problem Definition

Background and Potential Release History

Transfer Parcels FED-1A, FED-2B, and FED-2C are shown on **Figure 5**. In the Draft Transfer Parcels FED-1A, FED-2B, and FED-2C SI Report, these transfer parcels were recommended for an aircraft parking and staining evaluation (BEI, 2008). Historically, the Navy used these transfer parcels for aircraft runways, aircraft taxiways, support service facilities (aircraft-arresting devices, compass pads, and lighting vaults), magazines, and firefighting training activities (BEI, 2008).

In order to identify areas of Transfer Parcels FED-1A, FED-2B, and FED-2C with the highest likelihood of impact from aircraft parking and staining, where aircraft washdown and maintenance activities may have occurred and confirm findings of the aerial photograph survey conducted for the 1994 EBS, aerial photographs dating from 1930 to 1994 were reviewed as part of the Draft Transfer Parcels FED-1A, FED-2B, and FED-2C Transfer Parcels SI Report (BEI, 2008). Results of the Draft SI Report aerial photograph review concurred with previous findings of staining in EBS Parcel 23. No new areas of staining were observed in the aerial photograph review conducted for the SI report. The following is a summary of staining observed in both aerial photograph reviews.

An aircraft parking apron in the northeastern and central-eastern portion of EBS Parcel 23 (including the area of former ASTs 488, 499, 407A, and 407B) was first observed in an aerial photo from 1947. This area was consistently and heavily used for aircraft parking until 1985, and was used to a lesser extent until after 1994. Smaller parking areas were used at various times over the years, including the northwestern corner and southeastern portion of EBS Parcel 23. Significant staining was observed during the aerial photograph review in the heavily used north- and central-eastern portion of EBS Parcel 23, near the former ASTs. This area of EBS Parcel 23 was historically used as aircraft parking aprons.

Synopsis of Secondary Data

Five surface soil samples (023-009, 023-0010M through 023-013M) and five subsurface soil samples (023-0023, 023-0024M through 23-0027M) were collected in the most heavily stained areas within the parking apron areas to assess impacts from the observed staining and potential impact from aircraft parking, fueling, and maintenance activities. Surface and subsurface soil samples were analyzed for petroleum constituents (i.e., TPH-gasoline, TPH-diesel, and TPH-motor-oil) and metals; subsurface soil sample were also analyzed for VOCs. TPH constituents and metals were reported below screening criteria and VOCs were not detected above laboratory detection limits. The Draft Transfer Parcels FED-1A, FED-2B, and FED-2C Transfer Parcels SI Report (BEI, 2008) recommended further evaluation of aircraft parking an staining areas across Transfer Parcels FED-1A, FED-2B, and FED-2C.

Problem Definition

No groundwater sampling has occurred in the in the aircraft parking apron in the northeastern and central-eastern portion of EBS Parcel 23 where significant staining was observed in historical aerial photographs resulting from aircraft parking, possible maintenance, and possible washdown

SAP Worksheet #10c-1—Transfer Parcels FED-1A, FED-2B, and FED-2C (Aircraft Parking/Staining Evaluation) Problem Definition (continued)

activities. During the BCT site walk on July 28, 2009, BCT members requested that groundwater samples be collected in this aircraft parking apron.

In addition, further evaluation of aircraft parking and staining is needed to assess if additional areas have been impacted by aircraft parking, maintenance, and washdown activities Therefore, an Expanded SI is necessary to evaluate if a CERCLA-related release occurred at Transfer Parcels FED-1A, FED-2B, and FED-2C and, if so, whether the release warrants further investigation or action.

Environmental Questions to be Answered by the Expanded SI:

1. **Was there a release(s) of hazardous constituents to groundwater from aircraft parking, possible maintenance, and possible washdown activities in the aircraft parking apron where significant staining was observed in historical aerial photographs?**

Three boreholes will be advanced in the northeastern and central-eastern portion of EBS Parcel 23 where significant staining was observed, as shown on **Figure 12**. However, if significant concrete cracking in observed in the apron, the boreholes will be relocated in the field to be placed within the areas of cracked concrete. Soil and discrete direct-push samples will be collected from each borehole as described in **Worksheet #17**. Based on historical use as aircraft parking, possible aircraft washdown, and possible aircraft maintenance, soil and groundwater samples will be analyzed for TAL metals, petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL VOCs, and TCL PAHs. The soil and groundwater samples will be submitted to the laboratory on rapid turnaround time. The soil and groundwater data will be immediately assessed to determine if step-out boreholes are needed. If step-out boreholes are needed, the Navy will plot available data and proposed step-out borehole locations and provide to the agencies prior to conducting the field work. Soil and groundwater sampling at the step-out boreholes will follow the above sampling guidelines. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. **Was there a release(s) of hazardous constituents from historical use of other areas of the transfer parcel for aircraft parking, maintenance, and washdown activities?**

Available historical aerial photographs of Transfer Parcels FED-1A, FED-2B, and FED-2C will be reviewed to identify additional areas (i.e., areas other than the areas discussed in Question 1 above) of aircraft parking and maintenance. Once these areas have been identified, a search of historical metals, TPH, VOC, and PAH data within and surrounding these areas will be conducted to assess whether there are sufficient existing data to draw conclusions about the potential for a CERCLA-related release to have occurred from the historical use of these areas for aircraft parking, maintenance, and washdown. Stains identified during the aerial photograph review will be verified by a site reconnaissance. The findings of the aerial photograph survey, historical data review, and site reconnaissance (including copies of the aerial photographs and figures with suspect areas plotted along with historical data) will be included in the Final SI Report.

SAP Worksheet #10c-1—Transfer Parcels FED-1A, FED-2B, and FED-2C (Aircraft Parking/Staining Evaluation) Problem Definition (continued)

If, based on the historical aerial photograph review, data review, and site reconnaissance it is determined that the apparent staining was not from aircraft washdown or maintenance activities (e.g., wearing/exposed asphalt, tar asphalt patch, or tire marks) or that the staining was a result form aircraft washdown or maintenance activities, but historic sample results within and around the stained area do not suggest a potential CERCLA-related release has occurred, then no sampling will occur in this stained area and justification for this decision will be included in the Final SI Report.

If the staining is determined to be from aircraft washdown or maintenance activities and no or insufficient historic sample results are available or if historic sample results suggest that a potential CERCLA-related release has occurred in the identified area as a result of aircraft parking, maintenance, or washdown activities, then sampling will occur following the general sampling protocol outlined below. Exact number of boreholes and their location, will not be determined until after the historical aerial photograph review, historic data review, and site reconnaissance have been completed. Soil and discrete direct-push samples will be collected as described in **Worksheet #17**. Soil and groundwater samples will be analyzed for TAL metals, petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL VOCs, and TCL PAHs. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

3. **<u>If a CERCLA-related release is identified, is further investigation or action warranted?</u>**

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram** 1.

SAP Worksheet #10c-2—Transfer Parcel FED-1A - AOC 1 (PCB and Pesticide Evaluation) Problem Definition

Background and Potential Release History

AOC 1 is located in EBS Parcel 5 as shown on **Figure 5**. As recommended in the Draft Transfer Parcels FED-1A, FED-2B, and FED-2C SI Report, AOC 1 was established to further evaluate PCBs and pesticides in the area south of the westernmost end of Runway 07/25, between IR Site 1 and IR Site 2, where PCBs were detected in previous soil samples (BEI, 2008). Historically, EBS Parcel 5 was used as a taxiway and runway.

Synopsis of Secondary Data

During Phases 5 and 6 of the RI/FS performed at IR Site 1 and IR Site 2, 15 soil samples (A-1 through A-8 and B-2 through B-8) were collected in a grid pattern between the two IR sites and analyzed for SVOCs, pesticides/PCBs, and metals; four samples were additionally analyzed for total recoverable petroleum hydrocarbons. Appendix Table A-2 of the draft Transfer Parcels FED-1A, FED-2B, and FED-2C SI Report (BEI, 2008) summarizes the constituents detected in AOC 1 soil samples.

The PCB Aroclor-1260 was detected at 370 micrograms per kilogram (µg/kg), which was above the residential screening criterion (but not the industrial screening criterion) in a single surface soil sample (A-1) located near the western end of AOC 1. Laboratory detection limits in previous studies for up to six PCBs and one pesticide were above screening criteria. Remaining analytes in soil were not detected above screening criteria. Limitations of the secondary data can be found in **Worksheet #13**.

Problem Definition

Aroclor-1260 was detected at one sample location (A-1) above the residential screening criterion at AOC 1. In addition, detection limits used in previous studies were above screening criteria for up to six PCBs and one pesticide compound, creating a data gap at four previous sample locations (A-2, A-3, A-4, and A-6). Therefore, the spatial coverage of reliable PCB and pesticide data is inadequate to assess whether or not a release has occurred and, if so, if the release resulted in contamination at concentrations that would pose a potentially unacceptable risk to human or ecological receptors or leaching concern for groundwater. Therefore, an Expanded SI is necessary to evaluate if there was a release of PCBs at AOC 1 and, if so, whether the release warrants further investigation or action.

SAP Worksheet #10c-2—Transfer Parcel FED-1A - AOC 1 (PCB and Pesticide Evaluation) Problem Definition (continued)

Environmental Questions to be Answered by the Expanded SI:

1. **What is the extent of PCB contamination above residential screening levels surrounding sample location A-1, previous sample location where Aroclor-1260 exceeded the screening criterion during the EBS??**

The extent of a potential PCB release area will be defined by advancing one borehole at previous sample location A-1 and four step-out boreholes 25 feet to the north, south, east, and west of previous sample A-1, as shown on **Figure 12**. Soil samples will be collected from each borehole as described in **Worksheet #17**. Because Aroclor-1260 (a PCB) was the only constituent detected above the screening criteria in soil at AOC 1, soil samples will be analyzed for TCL PCBs. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. **Are PCBs and pesticides present at previous surface soil sample locations A-2, A-3, A-4, and A-6, which were previously sampled for PCBs and pesticides, but detection limits exceeded the screening criteria?**

Four boreholes will be advanced at previous surface soil sample locations A-2, A-3, A-4, and A-6, as shown on **Figure 12.** Soil samples will be collected from each borehole as described in **Worksheet #17**. Because historical samples were analyzed for TCL PCBs and pesticides, the new soil samples will be analyzed for PCBs and pesticides. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

3. **If PCBs and pesticides are present at concentrations above the screening criteria new sample locations, is further investigation or action warranted?**

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1.**

SAP Worksheet #10c-3—Transfer Parcel FED-1A - 13 SWMU Former ASTs (TPH, PCB, and Metals Evaluation) Problem Definition

Background and Potential Release History

The 13 SWMU former ASTs are within EBS Transfer Parcel 23, as shown on **Figure 5**. All 13 ASTs have been removed. EBS Transfer Parcel 23 encompasses most of former Runway 13/31 and a small portion of the western end of former Runway 07/25, as well as related taxiways and parking aprons. EBS Transfer Parcel 24, which is located wholly within EBS Transfer Parcel 23, is an approximately 10-acre bird sanctuary.

Seven of the former ASTs were associated with aircraft-arresting devices and contained diesel fuel (30-gallon former ASTs 483A, 483B, 485B, 495A, 495B, 599A, and 599B), three were stand-alone ASTs that contained diesel fuel (100-gallon former AST 467B, 200-gallon former AST 496, and 1,000-gallon former AST 499), two contained liquid oxygen (6,000-gallon former ASTs 407A and 407B), and one contained aviation gasoline (5,000-gallon former AST 488). The SWMU evaluation report recommended that former ASTs 407A and 407B be addressed under the CERCLA program and that the remaining 10 former ASTs be addressed under the Petroleum Program (SulTech, 2005). Aboveground storage tank 488 is currently being investigated under the Alameda Point Petroleum Program; however, additional sampling for metals at this AST has been proposed as part of this SAP. Former ASTs 483A, 483B, 485B, 495A, 495B, 599A, 599B, 467B, 496, and 499 will be evaluated further under the Expanded SI following the general sampling strategy used in the Alameda Point Petroleum Program, so that the Alameda Point Petroelum Program will be able to request closure if the sampling results are favorable.

Synopsis of Secondary Data

During the 1994 EBS open space survey conducted near Runway 13/31, staining was observed at the location of former ASTs 467B, 483A, 483B, 495A, 495B, 599A, and 599B. The stains were reported to be either diesel fuel or hydraulic fluid and were associated with a relatively minor quantity of released material.

During 1994 EBS, the following samples were collected near the former ASTs, as shown on **Figure 13:**

- One surface soil sample near former AST 599A (sample 023-0002M) and one surface soil sample near former AST 599B (sample 023-0001M) and analyzed for TPH and PCBs
- One subsurface soil sample (023-0044) and one groundwater sample (023-0045) were collected at the previous sample location 023-002M during a second phase of sampling, and analyzed for TPH constituents, VOCs, and SVOCs

Appendix Table A-2 of the draft Transfer Parcels FED-1A, FED-2B, and FED-2C SI Report (BEI, 2008) summarizes the constituents detected in soil samples near these former ASTs. At former AST 599A, TPH-motor-oil in sample 023-0002M was reported at a concentration of 1,000 milligrams per kilogram (mg/kg), which exceeded the residential ESL. Remaining analytes were either detected below screening levels or were not detected above laboratory detection limits. Based on the elevated concentration of TPH-motor-oil in sample 023-0002M, one subsurface soil sample (023-0044) and one groundwater sample (023-0045) were collected at the previous sample

SAP Worksheet #10c-3—Transfer Parcel FED-1A—13 SWMU Former ASTs (TPH, PCB, and Metals Evaluation) Problem Definition (continued)

location during a second phase of sampling, and both were requested to be analyzed for TPH constituents, VOCs, and SVOCs. The laboratory was unable to analyze soil sample 023-0044 for TPH-diesel and TPH-motor-oil for unknown reasons. Remaining analytes in soil and groundwater were not detected, with the exception of acetone, a common laboratory contaminant, which was reported in the soil sample at a concentration less than the screening criteria. Petroleum constituents (i.e., TPH-gasoline, TPH-diesel, and TPH-motor-oil) or PCBs were not detected or were detected below screening criteria in soil sample 023-0001M.

Problem Definition

No soil samples have been collected in the vicinity of ten of the former ASTs located in EBS Transfer Parcel 23. Prior sampling at the other two former ASTs (described in the preceding section) in EBS Transfer Parcel 23 has been inadequate to sufficiently address the potential chemical constituents of concern that may be associated with these former ASTs. The potential constituents of concern at the former ASTs are as follows:

1. **Petroleum-Based Fuels**—Eleven of the 13 former ASTs contained either diesel or aviation fuel. Therefore, TPH are potential constituents of concern for soil at these former AST locations, excluding ASTs 407A and 407B since they reportedly contained liquid oxygen. No additional soil samples need to be collected at former AST 599B for TPH-diesel or TPH-motor-oil since petroleum constituents (i.e., TPH-gasoline, TPH-diesel, and TPH-motor-oil) or PCBs were not detected or were detected below screening criteria in soil sample 023-0001M, which was collected near this former AST. No additional soil samples need to be collected at former AST 488 for TPH-diesel or TPH-motor-oil since data have been collected under the Alameda Point Petroelum Program.

   In addition, soil and discrete direct-push samples collected form boreholes at former ASTs 467B, 483A, 483B, 485B, 495A, 495B, 496, 499, 599A, and 599B will also be analyzed for TCL VOCs and TCL PAHs so that these former ASTs can be closed by the Alameda Point Petroleum Program.

2. **PCBs**—Because the presence of hydraulic fluid was documented at the former ASTs associated with aircraft-arresting devices along Runway 13/31, evaluation of soil at all such former ASTs for PCBs, a common constituent in hydraulic fluids during the operational period of the NAS Alameda, is warranted. Soils at former ASTs 599A and 599B have already been analyzed for PCBs during the 1994 EBS, but not all the remaining six former ASTs associated with aircraft-arresting devices (former ASTs 467B, 483A, 483B, 495A, 495B, and 485B).

3. **Metals**—During the useful life of all 13 former ASTs, it is possible that the ASTs themselves were sand-blasted and re-painted with paint containing lead and/or other metals. Chipping and peeling of paint could also result in a release of metals to the soil. Therefore, evaluation of soil at all 13 former ASTs for Title 22 metals is warranted.

SAP Worksheet #10c-3—Transfer Parcel FED-1A—13 SWMU Former ASTs (TPH, PCB, and Metals Evaluation) Problem Definition (continued)

Environmental Questions to be Answered by the Expanded SI:

1. **Was there a release of petroleum-based fuels at any of the 11 of the 13 former ASTs for petroleum storage?**

To assess if a release of petroleum-based fuels has occurred, two boreholes will be advanced at the site of each former AST (except for former AST 488), for a total of 20 boreholes, as shown on **Figure 12**. Soil samples will be collected from each borehole as described in **Worksheet #17**. Discrete direct-push samples wll be collected from the boreholes as described in **Worksheet #17.** Based on historical use as AST used to store aviation or diesel fuel, soil and disecrte direct-push samples collected near fomer ASTs 467B, 483A, 483B, 485B, 495A, 495B, 496, 499, and 599A will be analyzed for TPH-diesel and TPH-motor-oil using silica gel cleanups. To obtain the required data needed for closure under the Alameda Pont Petroleum Program for former ASTs 467B, 483A, 483B, 485B, 495A, 495B, 496, 499, 599A, and 599B, soil and discrete direct-push samples will be analysed for TCL VOCs and TCL PAHs. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. **Was there a release of PCBs at any of the five former ASTs associated with aircraft-arresting devices that were not previously sampled and analyzed for PCBs?**

To assess if a release of PCBs has occurred, soil samples collected from the boreholes described above at former ASTs 467B, 483A, 483B, 495A, 495B, and 485B will also be analyzed for TCL PCBs, for a total of 36 samples. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

3. **Was there a release of paint-based metals occurred at any of the 13 former ASTs?**

If a former AST was located on soil, then soil samples will be collected and analyzed for Title 22 metals from the 26 boreholes described in Question 1 above, at the same intervals. In addition, two boreholes will be advanced near former AST488, at the same intervals listed in Question 1 above and analyzed for Title 22 metals. If a former AST was located on pavement and it can be documented that the area was paved prior to AST installation, soil samples will be collected from the nearest channel or area where surface runoff would have carried and possibly deposited paint chips. In this case, soil samples will be collected from the surface and from 2 feet bgs from 2 boreholes within the depositional area. These soil samples will be analyzed for Title 22 metals. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

4. **If a CERCLA-related release is identified, is further investigation or action warranted?**

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10c-4—Transfer Parcel FED-1A—IR Site 33 (PAHs in Soil Evaluation) Problem Definition

Background and Potential Release History

IR Site 33 was created to address elevated concentrations of PAHs detected in soil samples. As originally delineated, IR Site 33 was located within Transfer Parcels FED-1A and FED-2B, as shown on **Figure12**. IR Site 33 covered part of Runway 13/31 and a related taxiway within Transfer Parcel FED-1A, and encompassed the entirety of Transfer Parcel FED-2B. Based on subsequent sampling and an ecological and human health risk assessment, it has been recommended to modify the IR Site 33 boundary to exclude that portion within Transfer Parcel FED-2B, leaving the remaining portion of IR Site 33 entirely within EBS Parcel 23. Since no known releases of PAHs occurred within EBS Parcel 23, and the land in this area is comprised of fill material, it is thought that PAHs detected in soil samples originated in the fill material itself.

Synopsis of Secondary Data

In 2002 and 2003, Bechtel Environmental, Inc. conducted two PAH-related investigations that included the collection of soil samples within Transfer Parcel FED-1A. During the 2002 investigation, designed to characterize PAH concentrations in fill soil at sites with no known releases, 300 soil samples were collected from 75 boreholes and analyzed for PAHs. Five of these 75 boreholes were located within IR Site 33 (boreholes 32FED-1A-31, 32FED-1A-38, 32FED-1A-47, 32FED-1A-58, and 32FED-1A-67). Appendix Table A-2 of the draft Transfer Parcels FED-1A, FED-2B, and FED-2C SI Report (BEI, 2008) summarizes the constituents detected in AOC 1 soil samples.

The benzo(a)pyrene [B(a)P] equivalent concentration in 8 samples from the 5 boreholes (32FED-1A-31, 32FED-1A-38, 32FED-1A-47, 32FED-1A-58, and 32FED-1A-67) within IR Site 33 exceeded the Alameda point-specific screening criterion for residential use of 620 µg/kg.

Problem Definition

Five boreholes for PAH soil sample collection have been advanced within IR Site 33, and all five boreholes have had samples with B(a)P equivalent concentrations that exceed the Alameda Point-specific screening criterion for residential use. The five boreholes were between 400 and 1,000 feet apart from one another. This sampling density is inadequate to delineate the aerial extent of PAHs in soils within IR Site 33. Therefore, an Expanded SI is necessary to evaluate the extent of TPH contamination at IR Site 33, and, if so, whether the release warrants further investigation or action.

SAP Worksheet #10c-4—IR Site 33 (PAHs in Soil Evaluation) Problem Definition (continued)

Environmental Questions to be Answered by the Expanded SI:

1. **What is the area of release of PAH contamination surrounding sample locations 32FED-1A-31, 32FED-1A-38, 32FED-1A-47, 32FED-1A-58, and 32FED-1A-67?**

Each of the five boreholes from the 2002 PAH investigation (32FED-1A-31, 32FED-1A-38, 32FED-1A-47, 32FED-1A-58, and 32FED-1A-67) will be treated as a hotspot. Four boreholes will be advanced to 8 feet bgs near each of the 2002 boreholes, 40 feet to the north, south, east, and west of the former boring, as shown on **Figure 13**. Soil samples will be collected from each borehole as described in **Worksheet #17**. Because PAHs were detected in previous samples 32FED-1A-31, 32FED-1A-38, 32FED-1A-47, 32FED-1A-58, and 32FED-1A-67above a screening criterion, soil samples will be analyzed for TCL PAHs. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. **If a CERCLA-related release is identified, is further investigation or action warranted?**

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10c-5—Transfer Parcels FED-1A-Munitions in Soil at Former Munitions Storage Area Problem Definition

Background and Potential Release History

Classified munitions storage was reported at several buildings at the EBS parcel, including Buildings 50, 51, 56, 57, 58, and 270, located along the western boundary of EBS Parcel 23 located within Transfer Parcel FED-1A. Former Buildings 568 through 581, located along the western and southern boundary of the EBS Parcel 23 located within Transfer Parcel FED-1A were lockers which housed munitions (**Figure 5)**.

Synopsis of Secondary Data

During 1994 EBS, groundwater samples were collected from six borehole locations (023-0038 through 023-0043) surrounding former munitions storage areas located in the southwestern corner of EBS Parcel 23, as shown on **Figure 13**. The grab groundwater samples were analyzed for explosives.

Appendix Table A-2 of the draft Transfer Parcels FED-1A, FED-2B, and FED-2C SI Report (BEI, 2008) summarizes the constituents detected in the groundwater samples collected from the munitions area. Only one explosive, octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine, was reported at a concentration of 4.8 μg/L, below the screening criterion of 1,800 μg/L. This explosive was detected in grab groundwater sample 023-0039. Limitations of the secondary data can be found in **Worksheet #13**.

Problem Definition

No soil sampling has occurred in the former munitions area and one explosive was detected at a low concentration below the screening criteria in a grab groundwater sample. Although the data collected during the 1994 EBS suggest there has not been a CERCLA-related release at the site that has resulted in contamination of groundwater, sufficient groundwater samples have already been collected to help draw conclusions for this area; however, no soil samples have been collected in the former munitions area. Therefore, an Expanded SI is necessary to evaluate if a CERCLA-related release occurred at the former munitions area and, if so, whether the release warrants further investigation or action.

Environmental Questions to be Answered by the Expanded SI:

1. **<u>Was there a release(s) of hazardous constituents from historical munitions storage?</u>**

   Ten boreholes will be advanced one near each front door of Buildings 50, 51, 56, 57, 58, and 270, one near the pervious grab groundwater location (023-0039) that had the low level detect of an explosive, and two randomly placed near the former lockers, as shown in **Figure 12**. Soil samples will be collected from each borehole as described in **Worksheet #17**. Based on historical use of this area for munitions storage, soil samples will be analyzed for explosives. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10c-5—Transfer Parcels FED-1A-Munitions in Soil at Former Munitions Storage Area Problem Definition (continued)

2. **If a CERCLA-related release is identified, is further investigation or action warranted?**

   This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1.**

SAP Worksheet #10c-6—Transfer Parcels FED-1A-Firefightng Training Activities Evaluation Problem Definition

Background and Potential Release History

Portions of Transfer Parcel FED-1A were used for firefighting training activities. Firefighting training activities involved the use of fire fighting foam on aircraft in various areas of Open Space III (**Figure 12)**. Open Space III is approximately 30 percent of EBS Parcel 23 and is 95 percent asphalt with patches of soil and vegetation and 5 percent concrete taxiway. Activities conducted within this open space include aircraft washdown, fire fighting training activities, aircraft warm-up, and use of the aircraft runway. Flammable fuels were stored and used in Open Space III for fire fighting training. During the EBS Phase 1 inspection, flammable fuels were reportedly stored in a CONEX box 150 feet east of Structure 480. The EBS Phase 1 site inspection data documented that the application of fire fighting foam left a white residue on the ground surface in scattered areas in Open Space III.

Synopsis of Secondary Data

During the 2002 PAH Investigation, soil samples were collected in a grid pattern across several EBS Parcels, including Transfer Parcels FED-1A, FED-2B, and FED-2C. Thirty-four of these sample locations were collected within Open Space III in EBS parcel 23, as shown on **Figure 12**. At each of the sample locations soil was composited from the following intervals: 0 to 0.5 feet bgs, 0.5 to 2.0 feet bgs, 2.0 to 4.0 feet bgs, and 4.0 to 8.0 feet bgs, following the Alameda Point PAH collection guidelines as outlined in the Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point (BEI, 2002). The soil samples were analyzed for PAHs.

Appendix Table A-2 of the draft Transfer Parcels FED-1A, FED-2B, and FED-2C SI Report (BEI, 2008) summarizes the PAHs detected in the soil samples collected from Open Space III. PAHs were detected above the Alameda Point-specific screening criterion for residential use of 620 µg/kg at sample locations 32FED-1A-58 and 32FED-1A-67. These sample locations are being further investigated as part of IR Site 33 (see **Worksheet #10c-4**). None of the remaining sample locations within the Open Space III boundary had detection of PAHs above the Alameda Point-specific screening criterion. Limitations of the secondary data can be found in **Worksheet #13**.

Problem Definition

Historic soil sampling (2002 PAH investigation) did not account for all potential hazardous constituents that may have been used during the firefighting training activities in Open Space II so these data are inadequate to draw this conclusion with certainty. Therefore, this Expanded SI is necessary to further clarify whether there was a release of hazardous constituents in Open Space III and, if so, whether the release warrants further investigation or investigation or action.

SAP Worksheet #10c-6—Transfer Parcels FED-1A-Firefightng Training Evaluation Problem Definition (continued)

Environmental Questions to be Answered by the Expanded SI:

1. **Was there a release(s) of hazardous constituents from historic firefighting training activities?**

   Thirty-five boreholes will be advanced in an approximate 500 foot grid pattern across Open Space III, as shown in **Figure 12**. Soil samples will be collected from each borehole as described in **Worksheet #17**. Based on historical use for firefighting training activities, soil samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, and TPH-motor-oil), TCL VOCs, dioxins/furans, and TAL metals. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. **If a CERCLA-related release is identified, is further investigation or action warranted?**

   This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1.**

SAP Worksheet #10c-7—Transfer Parcel FED-1A – Building 100 PCB Evaluation Problem Definition

Background and Potential Release History

Building 100 is within EBS Transfer Parcel 23, as shown on **Figure 13**. EBS Transfer Parcel 23 encompasses most of former Runway 13/31 and a small portion of the western end of former Runway 07/25, as well as related taxiways and parking aprons. EBS Transfer Parcel 24, which is located wholly within EBS Transfer Parcel 23, is an approximately 10-acre bird sanctuary.

Building 100 is a one-story, approximate 600-square-foot building which has previously been identified as a transformer vault. Building 100 is located near the southern end of Parking Apron No. 2 and in the southeastern portion of transfer parcel FED-1A. Building 100 is comprised of two separate rooms and one of the rooms previously held a 4,160-KVA transformer and oil-filled switches suspected of containing oil contaminated with PCBs. According to the EBS, PCBs were not detected in the switches; however, the transformer was not accessible during the sampling activities and was therefore not sampled. The transformer has been removed from the building.

Synopsis of Secondary Data

Records of oil, wipe, or concrete chip samples from the oil-filled switches and former transformer were not found during the historical document review.

Problem Definition

Although there are no records of past releases and there was no evidence of past releases observed during the preliminary assessment performed by the Facility Management Office, the potential presence of CERCLA-related hazardous substances cannot be ruled out without sample collection due to the nature of the historical activities at Building 100. Therefore, an Expanded SI is necessary to evaluate if a CERCLA-related release occurred at Building 100 and, if so, whether the release warrants further investigation or action.

Environmental Questions to be Answered by the Expanded SI:

1. <u>**Was there a release of PCBs at Building 100?**</u>

To assess if a release of PCBs has occurred, concrete samples will be collected from a maximum of a 1.5-meter grid pattern on the floor of each of the two rooms that comprise Building 100. The maximum 1.5-meter grid forms six sampling areas. Based on the maximum 1.5-meter grid a varying number of sub-samples will composited to form one composite sample per sampling area. Sample locations will be collected and composited based on Toxic Substances Control Act (TSCA) guidelines and analyzed for TCL PCBs. A total of 6 composite samples will be submitted for laboratory analysis. The sub-samples for each area will be submitted to the laboratory and held pending analysis of the composite sample. If PCBs are detected in a composite sample above the screening criteria presented in **Worksheet #15** the sub-samples associated with the respective composite sample will be analyzed for PCBs. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10c-7—Transfer Parcel FED-1A – Building 100 PCB Evaluation Problem Definition (continued)

2. **If a CERCLA-related release is identified, is further action warranted?**

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #10c-8—Transfer Parcel FED-1A – Washdown 259 Evaluation Problem Definition

Background and Potential Release History

Washdown 259 is a sloped concrete washdown pad encompassing approximately 8,500 square feet within EBS Transfer Parcel 23, as shown on **Figure 12**. The washdown pad sides slope toward a trench drain in the center of the pad. EBS Transfer Parcel 23 encompasses most of former Runway 13/31 and a small portion of the western end of former Runway 07/25, as well as related taxiways and parking aprons. EBS Transfer Parcel 24, which is located wholly within EBS Transfer Parcel 23, is an approximately 10-acre bird sanctuary.

Washdown 259 was constructed in 1983 as an aircraft wash pad. Washdown 259 is located south of Building 100. No documented spills are associated with the wash pad and no staining was apparent on historical aerial photographs. Based on historical site inspections, the wash pad appears to drain to the storm sewer.

Synopsis of Secondary Data

During 1994 EBS, groundwater and soil grab samples were collected from two borehole locations (023-0047 and 023-0049) near Washdown 259, as shown on **Figure 12**. The grab soil and groundwater samples were analyzed for TPH, SVOCs and VOCs.

Appendix Table A-2 of the draft Transfer Parcels FED-1A, FED-2B, and FED-2C SI Report (BEI, 2008) summarizes the constituents detected in the groundwater samples collected from the Washdown 259. Acetone, methylene chloride, bis(2-ethylhexyl)phthalate, and butylbenzylphthalate were detected at concentrations below respective screening levels in soil samples collected from sample location 023-0049. TPH as diesel was detected at concentrations below screening levels in grab groundwater samples collected from both sample locations.

Problem Definition

Soil and groundwater samples have been collected near Washdown 259; however, no soil or groundwater samples have been collected from beneath the trench drain. Although the data collected during the 1994 EBS suggest there has not been a CERCLA-related release at the site that has resulted in contamination of groundwater or soil above acceptable levels, no samples have been collected from the trench drain or from the eastern side of the wash pad. Therefore, an Expanded SI is necessary to evaluate if a CERCLA-related release occurred at Washdown 259 and, if so, whether the release warrants further investigation or action.

SAP Worksheet #10c-8—Transfer Parcel FED-1A – Washdown 259 Evaluation Problem Definition (continued)

Environmental Questions to be Answered by the Expanded SI:

1. **Was there a release(s) of hazardous constituents from historic washdown activities at this area?**

Prior to drilling activities, the trench drain located in the center will be cleaned to remove any debris or standing water. After cleaning, the trench drain will be inspected to find weak areas (i.e., cracked concrete). The findings of this inspection will be included in the Final SI Report. If weak areas are observed in the trench drain, a borehole will be placed in that area and samples will be collected as described below to assess whether a CERCLA-release(s) has occurred. If no weak areas are observed, boreholes will be randomly chosen within the open trench drain and samples will be collected as described below to assess whether a CERCLA-release(s) has occurred.

To assess if a release of contaminants has occurred, a borehole will be advanced to the east and south of Washdown 259 and two boreholes will be advanced from within the open trench drain, for a total of 4 borehole locations, as shown on **Figure 12**. Soil and discrete direct-push samples will be collected from each borehole as described in **Worksheet #17**. Based on historical uses as a washdown area, soil and groundwater samples will be analyzed for TCL VOCs. The question will be answered by evaluating the data through Step 4 of the decision analysis process, as shown on **Diagram 1**.

2. If a CERCLA-related release is identified, is further action warranted?

This question will be answered by evaluating the data collected during the Expanded SI in Steps 5 through 7 of the decision analysis process, as shown on **Diagram 1**.

SAP Worksheet #11—Project Quality Objectives/Systematic Planning Process Statements

1. Who will use the data and what will the data be used for?

The SOW covered by this SAP comprises a release assessment, therefore, the Navy, USEPA, DTSC, and Water Board will use the data collected during the Expanded SI (as well as relevant historical data) to make determinations of whether CERCLA-related releases took place and, if so, whether further evaluation or action is warranted. While this is the overall data use for all the sites, the specific data use for each site may vary depending on its status (i.e., whether Preliminary Assessment [PA]/SI-level evaluation has previously occurred). Therefore, the site-specific data uses are defined in Item 9 of this worksheet.

2. What are the Project Action Limits (PALs)?

The PALs are defined below and are listed, by constituent group and medium, in **Worksheet #15**. In general, the PALs are:

- Alameda Point human health screening values for direct contact with soil and domestic use of groundwater are the current USEPA Regional Screening Levels (RSLs) (USEPA, 2008). The RSLs have replaced the 2004 Region 9 PRGs that are cited in the final Transfer Parcel EDC-12 and Transfer Parcel EDC-17 SI Reports (BEI, 2007a and 2007b) and the draft Transfer Parcels FED-1A, FED-2B, and FED-2C (BEI, 2008).
- USEPA MCLs or the California MCLs, whichever are lower for a particular constituent are used to screen groundwater results at Alameda Point (USEPA, 2006a and DTSC, 2006).
- USEPA National Recommended Water Quality Criteria (NRWQC) for Toxic Pollutants to screen groundwater collected within 100 feet of San Francisco Bay (USEPA, 2006b).
- Alameda Point ESVs for soil and groundwater are derived from multiple sources, which are listed in the Screening-level Ecological Risk Assessment (SERA) (Neptune, 2002)
- California Regional Water Quality Control Board 2008 ESLs for TPH in Soil and Groundwater (Water Board, 2008).
- California Regional Water Quality Control Board 2005 Environmental Screening Levels for soil protective of indoor air (Table E-1b, Water Board, 2005).
- California Regional Water Quality Control Board 2005 ESLs for groundwater protective of indoor air (Table E-1a of Water Board, 2005).
- Alameda Point preliminary screening criterion benzo(a)pyrene equivalent concentration of 620 µg/kg for residential use (DON, 2001).
- Alameda Point background soil inorganics screening values (TtEMI, 2001).
- Where a specific PAL deviates from the above, it is footnoted in the applicable **Worksheet #15** table.

SAP Worksheet #11—Project Quality Objectives/Systematic Planning Process Statements (continued)

3. What types of data are needed (matrix, target analytes, analytical groups, field screening, on-site analytical or off-site laboratory techniques, sampling techniques)?

Worksheet #10 defines the matrices, analytical groups, and, where applicable, specific target analytes for each site. Because of the nature of SI activities, the target analyses are not generally restricted to particular analytes; they are, however, restricted to analyte groups based on known or suspected historical activities. Historical data described in Worksheet #10 will be combined with the newly collected data to evaluate the sites.

Temporary monitoring well installation, soil, concrete and groundwater sampling, and related activities will be done in general accordance with the applicable standard operating procedure in Attachment B of the Work Plan.

- Soil sampling and homogenizing associated with collection of soil sample for PAH analysis will follow the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-Specific Site Inspections for Alameda Point* (BEI, 2002) and in general accordance with the operating procedures described in Worksheet #14.

4. How "good" do the data need to be in order to support the environmental decision?

Several types of data will be collected during the Expanded SI. How good the data need to be is discussed by data type below.

- **Visual Observations and PID Readings**—Visual observations and PID readings will be used at various sites to help select soil and discrete direct-push sample locations. As such, the data are considered qualitative in that they do not need to provide an exact or quantified value. Rather, they need to be of sufficient quality to facilitate consideration relative to other data in the same area. For example, if a groundwater sample is to be collected in a boring with the highest PID reading, it is not the actual PID reading that is relevant; it is the highest PID reading relative to the other PID readings that is relevant.

SAP Worksheet #11—Project Quality Objectives/Systematic Planning Process Statements (continued)

As such, calibrating and operating the PID in accordance with the organic vapor monitor (OVM) SOP in Attachment B are sufficient to provide data of appropriate quality for making this decision. Similarly, if a sample is to be collected based on a particular distinguishable quality (e.g., presence of staining, presence of odor, upper first water bearing zone, lower first water bearing zone) the professional judgment provided by the education and experience of the field staff is appropriate for making these determinations.

- **Offsite Analytical Data**—This SAP is for an Expanded SI, therefore, the data from the offsite laboratory need to be "good" enough to make determinations of whether a CERCLA-related release has occurred and, if so, whether the release warrants further investigation or action. Ensuring data are "good" enough for this purpose is done via employing appropriate analytical protocol, validating the resulting data, including QA/QC samples to verify proper sampling and analysis protocol, and performing a data quality evaluation (DQE) to assess the availability and usability of the data for the intended purpose. Each of these is further discussed below:
- **Appropriate Analytical Protocol**—See **Worksheets #15, 19, 23, 24, 25, 28, and 30** and Item 5 below.
- **Data Validation**—Validation of data increases the level of confidence in a data set for a particular data use. The particular type and level of validation necessary to achieve acceptable confidence is subjective. In other words, the appropriate type and level of data validation is not an absolute. Rather, it is data use- and data user-specific. For this Expanded SI data set, offsite analyses for potential contaminants (other than Toxicity Characteristic Leaching Procedure [TCLP]) will be validated by an independent, third party data validator using guidance from the validation criteria outlined by the USEPA. The SAP validation criteria and guidance documents are listed in **Worksheet #36**. These documents will help the validator create a thorough and systematic approach to the validation process. The data validator will also recalculate 10 percent of the results from the raw laboratory data, which may identify laboratory errors in identification or quantification, if present.

QA/QC Samples—During the Expanded SI, QA/QC samples will be collected with the various media samples as a check on sampling and analytical protocol. Like data validation, the appropriate type and quantity of QA/QC samples is not an absolute. For this Expanded SI, field duplicates will be collected at a frequency of 1 per 10 field samples per matrix. Field duplicates help assess sample collection techniques and laboratory precision. Matrix spike/matrix spike duplicates (MS/MSDs) are collected at a frequency of one pair per 20 field samples per matrix. The frequency is such that there is one MS/MSD pair per laboratory analytical batch. MS/MSD samples are often required by the analytical method and/or data validation guidance. Equipment blanks are collected at a frequency of one per day per decontaminated equipment. Equipment

SAP Worksheet #11—Project Quality Objectives/Systematic Planning Process Statements (continued)

blanks help assess equipment decontamination techniques and identify when contamination may have been carrying over from one sample location to another. It is important to maintain this equipment blank frequency because the equipment blank is collected after visiting the most contaminated location, and it is important to not associate too many locations with the potentially-contaminated equipment blank. Trip blanks are collected at a frequency of one per cooler containing volatiles. Trip blanks accompany the empty sample containers while they are stored at the laboratory or shipped to the site, and while they are full and shipped back to the laboratory. Trip blanks are useful for assessing whether or not there is any contamination during periods of time when the samples are not directly supervised. No field blanks will be collected unless on a particular day of sampling, the ambient conditions suggest airborne particulates may contaminate the samples being collected.

- **DQE**—In order to support the environmental decision, each result must be *available* to and *usable* for the project team. All data sets will undergo a DQE prior to using the data to make site-specific determinations. The terms *data availability* and *data usability* and the DQE process in general are described in **Worksheet #37**.

5. How much data should be collected (number of samples for each analytical group, matrix, and concentration)?

Worksheet #17 contains the number of samples per matrix per analytical group per site. **Worksheet #15** contains analytical methodology and quantitation limits. In addition to listing the particular analytes, PALs, and quantitation limits (QLs), **Worksheet #15** identifies where QLs are higher than PALs. While this information was taken into consideration when planning the analytical protocol for each site and may lead to some uncertainty (varies by the specific analytical protocol for each site), it does not prevent conclusions to be drawn with respect to the objectives of the Expanded SI for the following reasons:

- With two exceptions (i.e., hexavalent chromium at Transfer Parcel EDC-12 AOC 6 and MTBE at Transfer Parcel EDC-17 AOC 3), the samples collected at the various sites are being analyzed for constituent groups versus a specific analyte. This is because the sites are in the Expanded SI phase, where the primary objective is to determine whether there has been a release or not. In fact, for the vast majority of sites, there is no single or small group of known constituents suspected of being released. In this case, analyzing for analyte groups is appropriate for satisfying this objective, as well as making determinations about whether further action is warranted. Even if a particular analyte has an RL above a screening criterion, there are sufficient other analytes in the same constituent group that would likely be detected in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence.

SAP Worksheet #11—Project Quality Objectives/Systematic Planning Process Statements (continued)

- Even though QLs may be higher than certain PALs, method detection limits (MDLs) may be closer to or lower than PALs. Theoretically, the laboratory instrument could detect a constituent down to its MDL at concentrations that would then be reported as estimated. For example, in **Worksheet #15-5**, more than half of the VOCs with QLs greater than PALs have MDLs that are lower than the PALs (e.g., 1,1,2-TCA, 1,4-DCB, benzene, etc.).
- In some cases, project action levels or action criteria might reflect levels that are below the RL. The RLs represented in **Worksheet #15** are the industry standard for the methods listed. Developing new analytical methodologies and modifying existing protocols are normally both beyond the project scope. Therefore, detections above the RL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process.

6. Where, when, and how should the data be collected/generated?

The attached figures show the tentative sampling locations for each site. The proposed project schedule is included in **Worksheet #16**. The data will be collected following procedures described in the SOPs in Attachment B of the Work Plan and as described in **Worksheet #21**.

7. Who will collect and generate the data? How will the data be reported?

CH2M HILL and its subcontractors will collect the data. Empirical Laboratories, LLC a California National Environmental Laboratory Program (CA NELAP) number 08264CA in Nashville, Tennessee will generate the analytical data. SGS North America will be a subcontractor to Empirical Laboratories, and will provide analytical data for dioxins/furans. The data will be evaluated and reported in an addendum to the Final SI Report for Transfer Parcels EDC12 and EDC17 (BEI, 2007a and 2007b) and in the Draft Final SI Report for Transfer Parcels FED-1A, FED-2B, and FED-2C Parcels.

8. How will the data be archived?

The electronic data will be loaded into the Navy Installation Restoration Information System (NIRIS) database and CH2M HILL's Environmental Data Management (EDM) System and Data Warehouse databases. Raw data, as well as data summary tables, will be included in the Expanded SI addendums and Report. Hardcopy data will be archived by CH2M HILL and the Navy in accordance with contract requirements.

9. List the Project Quality Objectives (PQOs) in the form of if/then qualitative and quantitative statements.

The decision analysis process shown in **Diagram 1** represents the general PQOs for all sites included in this Expanded SI SAP. The general objectives of the decision analysis process are:

SAP Worksheet #11—Project Quality Objectives/Systematic Planning Process Statements (continued)

- To determine if a CERCLA-related release occurred and, if so,
- Whether the release warrants further investigation or action

The seven-step decision analysis can be subdivided into five PQO categories, as described below.

- CERCLA Eligibility (Step 1 of **Diagram 1**)—CERCLA eligibility is determined in general accordance with USEPA guidance (USEPA, 1991, 1999a, and 1999b). The resulting PQO statement is:
  - If the site is CERCLA eligible, then collect site-specific samples (if none or insufficient samples exist); otherwise, prepare a no further action decision document or defer to another regulatory program.
  - The decision analysis process potentially applies to all sites initially identified in the Alameda Point Environmental Restoration Program. For sites included in this SAP, it is assumed that they are all potentially CERCLA-eligible.
- Data Quality Assessment (Step 2 of **Diagram 1**)—The data quality assessment is performed via the DQE (**Worksheet #37**). The resulting PQO statement is:
  - If the DQE indicates the data are available and useful for the intended purpose, then perform the release assessment (see Steps 3 and 4); otherwise, collect sufficient additional samples to achieve an available and useful data set.
- Release Assessment (Steps 3 and 4 of **Diagram 1**)—The PQO statements for release assessment are:
  - If any inorganics above the Alameda Point Background Values or non-inorganics are detected, then a release potentially occurred; otherwise, make a final evaluation of the adequacy of the data set (see Step 7).
  - If a release potentially occurred, then determine if it is CERCLA-related; otherwise, make a final evaluation of the adequacy of the data set (see Step 7).
  - If a release is CERCLA-related, then determine if the release warrants further investigation or action (see Steps 5 and 6); otherwise, make a final evaluation of the adequacy of the data set (see Step 7).
  - A "CERCLA-related release" is a release of hazardous substances, pollutants, and contaminants eligible for CERCLA response as defined in CERCLA Sections 101(14) and 101(33). Total petroleum hydrocarbon contamination is not considered a CERCLA hazardous material, therefore, is not usually evaluated under the CERCLA process. However, TPH is being assessed under CERCLA during this Expanded SI for programmatic efficiency.

SAP Worksheet #11—Project Quality Objectives/Systematic Planning Process Statements (continued)

- Further Action Determination (Steps 5 and 6 of **Diagram 1**)—Once a potential release is suspected, the need for further evaluation or action is made by screening the data with human health, ecological, leaching to groundwater, or other regulatory screening levels (i.e., Alameda Point Background concentrations for metals in soil and groundwater, Alameda Point specific screening level of benzo(a)pyrene equivalent concentration, USEPA RSLs and MCLs, Cal MCLS, Water Board ESLs). The Alameda Point screening values for groundwater and surface water samples are presented in **Worksheet #15-1** (metals), **Worksheet #15-2** (pesticides/PCBs), **Worksheet #15-3** (PAHs), **Worksheet #15-4** (SVOCs), **Worksheet #15-5** (TPH and VOCs), **Worksheet #15-6** (explosives), and **Worksheet #15-7** (dioxins/furans). The Alameda Point screening values for surface soil, subsurface soil, and sediment samples are presented in **Worksheet 15-8** (metals), **Worksheet 15-9** (pesticides/PCBs), **Worksheet 15-10** (PAHs), **Worksheet 15-11** (SVOCs), **Worksheet 15-12** (TPH and VOCs), **Worksheet 15-13** (explosives), and **Worksheet 15-14** (dioxins/furans). The PQO statements associated with these steps are:
  - If the constituent concentrations exceed Alameda Point screening values, then determine if more refined estimates of risk can be performed; otherwise (i.e., if no exceedances), make a final evaluation of the adequacy of the data set (see Step 7).
  - If more refined evaluations can be performed that suggest no further action is warranted, then make a final evaluation of the adequacy of the data set (see Step 7); otherwise, make a determination of whether additional source data would permit more refined evaluations.
  - If additional source data would permit more refined evaluations of risk, then collect the data and make the more refined evaluations; otherwise, make a determination of whether an interim action or expanded investigation is warranted.
  - If interim action is warranted, then perform interim action and collect confirmatory data for evaluation via the decision analysis process; otherwise, make a determination of the type of expanded investigation that is warranted.
  - If the data suggest a substantial release has occurred (e.g., release may be widespread and screening suggests risks are potentially very high with respect to regulatory threshold levels), then perform an RI; otherwise, perform additional Expanded SI.
- Where there are exceedances of the most conservative human health screening criteria, more refined evaluations will be performed to evaluate the significance of the screening-level exceedances. These refinements may include one or more of the following:
  - Applying more realistic screening values based on anticipated land uses, rather than using default values.

SAP Worksheet #11—Project Quality Objectives/Systematic Planning Process Statements (continued)

- Based on the number of samples available, the EPC (as represented by the upper confidence limit [UCL] of the mean) can be used to provide a more realistic estimate of the areal average exposure to human and ecological receptors. At the SI stage, samples are collected from areas expected to be the most impacted (i.e., where the potential release likely occurred). Therefore, the constituent concentrations in the dataset are likely biased high for a receptor's exposure area, which would likely result in conservative estimates of EPCs.
- Consideration of the level at which decisions would likely be made (e.g., target groundwater concentrations would not be lower than MCLs).
- Consideration of a cumulative risk target of 1×10^{-5} that accounts for aggregate effects from multiple constituents, rather than assuming chemical-specific risk targets of $1x10^{-6}$.

• Where there are exceedances of the most conservative ESVs, more refined evaluations consider the following types of information:
  - The size of the site
  - The type and quality of the habitat present on the site and in surrounding areas, and the potential receptors likely to be present
  - The frequency and magnitude of screening value and background exceedances
  - Average soil exposure concentrations
  - The spatial pattern of exceedances
  - Additional screening values from the literature, where applicable
  - Other site-specific factors that might be relevant to assessing potential exposures (e.g., soil type, fate, transport properties)

Transfer Parcels EDC-12, EDC-17, FED-1A, FED-2B, and FED-2C Aircraft Parking and Staining Evaluation

As stated previously, the 7-step decision analysis process applies to all sites in the Expanded SI phase. Certain sites for which an Expanded SI will take place have additional, related PQOs, as follows:

During the Expanded SI at these transfer parcels, no sampling will be performed in areas of aircraft parking and staining areas unless the historical aerial photograph survey, historical data reviews, and site reconnaissance suggest the staining is from aircraft parking, aircraft washdown, or maintenance activities and no or insufficient historic samples results are available for the stained area or if historic samples suggest that a potential release of a CERCLA-related hazardous material has occurred as a result of historic aircraft parking, maintenance, and washdown activities in the suspect area.

SAP Worksheet #11—Project Quality Objectives/Systematic Planning Process Statements (continued)

If the reviews of historical aerial photographs, historical data, and site reconnaissance suggest that a potential CERCLA-related release has occurred as a result of historic aircraft parking, maintenance, and washdown activities, collect surface soil, subsurface soil, and groundwater samples to determine whether a release occurred; otherwise, no further action is necessary at Transfer Parcels EDC-12, EDC-17, FED-1A, FED-2B, and FED-2C relating to the historical use of the parcel for aircraft parking/maintenance, with the exception of the six AOCs presented in this SAP that have already been identified as having a potential release.

If surface soil, subsurface soil, and groundwater samples are collected as a result of the aircraft parking and staining evaluation, the data collected will be assessed following the 7-step decision analysis process described above and shown on **Diagram 1**.

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SAP Worksheet #12-1—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Surface Soil, Subsurface Soil, and Sediment

Analytical Group: VOC

Concentration Level/Method: “Low” (SW8260B)

Measurement Performance Criteria (MPC) Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	Data Quality Indicators (DQIs)	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	VOC	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD Quality Systems Manual (QSM) Version 4.1 limits; see **Worksheet #28-1A**	A
MSD	VOC	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; see **Worksheet #28-1A**	A
Field Duplicate (FD)	VOC	One per 10 samples	Precision	Relative Percent Difference (RPD) < 50%	S & A
Equipment Rinsate Blank (EB)	VOC	One per day	Bias/Contamination	No analytes detected > PQL; up to 5 times PQL for acetone and 2-butanone, and up to 2.5 times for methylene chloride	S & A
Cooler temperature indicator	VOC	One per cooler	Accuracy/ Representativeness	4 degrees Celsius (°C) (±2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-2—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Surface Soil, Subsurface Soil, and Sediment

Analytical Group: SVOC

Concentration Level/Method: “Low” (SW8270C) and “SIM” (SW8270-SIM)

MPC Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	SVOC - Low	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD QSM Version 4.1 limits; See Worksheet 28-2A	A
MSD	SVOC - Low	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; See Worksheet 28-2A	A
FD	SVOC - Low	One per 10 samples	Precision	RPD < 30%	S & A
EB	SVOC - Low	One per day	Bias/Contamination	No analytes detected > PQL; up to 5 times PQL for phthalate esters.	S & A
Cooler temperature indicator	SVOC - Low	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S
MS	SVOC - SIM	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD QSM Version 4.1 limits; See Worksheet 28-2B	A
MSD	SVOC - SIM	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; See Worksheet 28-2B	A
FD	SVOC - SIM	One per 10 samples	Precision	RPD < 50%	S & A
EB	SVOC - SIM	One per day	Bias/Contamination	No analytes detected > PQL; up to 5 times PQL for phthalate esters.	S & A
Cooler temperature indicator	SVOC - SIM	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-3—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Surface Soil, Subsurface Soil, Concrete and Sediment

Analytical Group: PEST/PCB

Concentration Level/Method: "Low" (SW808A, SW8082)

MPC Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	PEST/PCB	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD QSM Version 4.1 limits; See **Worksheet #28-3A**	A
MSD	PEST/PCB	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; See **Worksheet #28-3A**	A
FD	PEST/PCB	One per 10 samples	Precision	RPD < 50%	S & A
EB	PEST/PCB	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	PEST/PCB	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-4—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Surface Soil, Subsurface Soil, and Sediment

Analytical Group: TPH

Concentration Level/Method: "Low" (SW8015B)

MPCTable – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	TPH – Gasoline Range Organics (GRO)	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD QSM Version 4.1 limits; See **Worksheet 28-4A**	A
MSD	TPH - GRO	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; See **Worksheet 28-4A**	A
FD	TPH - GRO	One per 10 samples	Precision	RPD < 30%	S & A
EB	TPH - GRO	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	TPH - GRO	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S
MS	TPH – Diesel Range Organics (DRO)	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD QSM Version 4.1 limits; See **Worksheet 28-4A**	A
MSD	TPH - DRO	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; See **Worksheet 28-4A**	A
FD	TPH - DRO	One per 10 samples	Precision	RPD < 50%	S & A
EB	TPH - DRO	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	TPH - DRO	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-5—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Surface Soil, Subsurface Soil, and Sediment

Analytical Group: Explosives (EXP)

Concentration Level/Method: “Low” (SW8330A)

MPC Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	EXP	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD QSM Version 4.1 limits; See **Worksheet #28-5A**	A
MSD	EXP	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; See **Worksheet #28-5A**	A
FD	EXP	One per 10 samples	Precision	RPD < 50%	S & A
EB	EXP	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	EXP	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-6—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Surface Soil, Subsurface Soil, and Sediment

Analytical Group: Dioxins/Furans (DX/FN)

Concentration Level/Method: “Low” (SW8290)

MPC Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	DX/FN	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD QSM Version 4.1 limits; See **Worksheet #28-6A**	A
MSD	DX/FN	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; See **Worksheet #28-6A**	A
FD	DX/FN	One per 10 samples	Precision	RPD < 50%	S & A
EB	DX/FN	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	DX/FN	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-7—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Surface Soil, Subsurface Soil, and Sediment

Analytical Group: METALS (TAL,RCRA,TITLE22)

Concentration Level/Method: "Low" (SW6010B, SW6020, SW7471A)

MPC Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	METALS (TAL,RCRA,TITLE22)	One for each group of 20 samples of a similar matrix	Accuracy/Bias	Recovery ± 25% of true value is sample < 4x spike value	A
MSD	METALS (TAL,RCRA,TITLE22)	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	Recovery ± 25% of true value is sample < 4x spike value	A
FD	METALS (TAL,RCRA,TITLE22)	One per 10 samples	Precision	RPD < 50%	S & A
EB	METALS (TAL,RCRA,TITLE22)	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	METALS (TAL,RCRA,TITLE22)	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-8—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Surface Soil, Subsurface Soil, and Sediment

Analytical Group: Hexavalent Chromium (HEX CR)

Concentration Level/Method: “Low” (SW7199)

MPC Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	HEX CR	One for each group of 20 samples of a similar matrix	Accuracy/Bias	Recovery ± 25% of true value is sample < 4x spike value	A
MSD	HEX CR	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	Recovery ± 25% of true value is sample < 4x spike value	A
FD	HEX CR	One per 10 samples	Precision	RPD < 50%	S & A
EB	HEX CR	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	HEX CR	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-9—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Groundwater and Surface Water

Analytical Group: VOC

Concentration Level/Method: “Low” (SW8260B)

MPC Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	VOC	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD QSM Version 4.1 limits; See **Worksheet #28-1A**	A
MSD	VOC	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; See **Worksheet #28-1A**	A
FD	VOC	One per 10 samples	Precision	RPD < 30%	S & A
EB	VOC	One per day	Bias/Contamination	No analytes detected > PQL; up to 5 times PQL for acetone and 2-butanone, and up to 2.5 times for methylene chloride	S & A
TB	VOC	One per day per cooler	Bias/Contamination	No analytes detected > PQL; up to 5 times PQL for acetone and 2-butanone, and up to 2.5 times for methylene chloride	S & A
Cooler temperature indicator	VOC	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-10—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Groundwater and Surface Water

Analytical Group: PEST/PCB

Concentration Level/Method: “Low” (SW808A, SW8082)

MPC Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	PEST/PCB	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD QSM Version 4.1 limits; See Worksheet 28-3A	A
MSD	PEST/PCB	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; See Worksheet 28-3A	A
FD	PEST/PCB	One per 10 samples	Precision	RPD < 30%	S & A
EB	PEST/PCB	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	PEST/PCB	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-11—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Groundwater and Surface Water

Analytical Group: TPH

Concentration Level/Method: “Low” (SW8015B)

MPC Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	TPH - GRO	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD QSM Version 4.1 limits; See Worksheet 28-4A	A
MSD	TPH - GRO	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; See Worksheet 28-4A	A
FD	TPH - GRO	One per 10 samples	Precision	RPD < 30%	S & A
EB	TPH - GRO	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	TPH - GRO	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S
MS	TPH - DRO	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD QSM Version 4.1 limits; See Worksheet 28-4A	A
MSD	TPH - DRO	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; See Worksheet 28-4A	A
FD	TPH - DRO	One per 10 samples	Precision	RPD < 30%	S & A
EB	TPH - DRO	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	TPH - DRO	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-12—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Groundwater and Surface Water

Analytical Group: EXP

Concentration Level/Method: “Low” (SW8330A)

MPC Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	EXP	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD QSM Version 4.1 limits; See **Worksheet #28-5A**	A
MSD	EXP	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; See **Worksheet #28-5A**	A
FD	EXP	One per 10 samples	Precision	RPD < 30%	S & A
EB	EXP	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	EXP	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-13—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Groundwater and Surface Water

Analytical Group: DX/FN

Concentration Level/Method: “Low” (SW8290)

MPC Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	DX/FN	One for each group of 20 samples of a similar matrix	Accuracy/Bias	DoD QSM Version 4.1 limits; See **Worksheet #28-6A**	A
MSD	DX/FN	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	DoD QSM Version 4.1 limits; See **Worksheet #28-6A**	A
FD	DX/FN	One per 10 samples	Precision	RPD < 30%	S & A
EB	DX/FN	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	DX/FN	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-14—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Groundwater and Surface Water

Analytical Group: METALS (TAL,RCRA,TITLE22)

Concentration Level/Method: “Low” (SW6010B, SW6020, SW7471A)

MPC Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	METALS (TAL, RCRA, TITLE 22)	One for each group of 20 samples of a similar matrix	Accuracy/Bias	Recovery ± 25% of true value is sample < 4x spike value	A
MSD	METALS (TAL, RCRA, TITLE 22)	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	Recovery ± 25% of true value is sample < 4x spike value	A
FD	METALS (TAL, RCRA, TITLE 22)	One per 10 samples	Precision	RPD < 20%	S & A
EB	METALS (TAL, RCRA, TITLE 22)	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	METALS (TAL, RCRA, TITLE 22)	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

SAP Worksheet #12-15—Measurement Performance Criteria Table/Field Quality Control Samples

Matrix: Groundwater and Surface Water

Analytical Group: HEX CR

Concentration Level/Method: “Low” (SW7196)

MPC Table – Field QC Samples

QC Sample	Analytical Group[1]	Frequency	DQIs	MPC	QC Sample Assesses Error for Sampling (S), Analytical (A) or both (S&A)
MS	HEX CR	One for each group of 20 samples of a similar matrix	Accuracy/Bias	Recovery ± 25% of true value is sample < 4x spike value	A
MSD	HEX CR	One for each group of 20 samples of a similar matrix	Accuracy/Bias and Precision	Recovery ± 25% of true value is sample < 4x spike value	A
FD	HEX CR	One per 10 samples	Precision	RPD < 20%	S & A
EB	HEX CR	One per day	Bias/Contamination	No analytes detected > PQL	S & A
Cooler temperature indicator	HEX CR	One per cooler	Accuracy/ Representativeness	4°C (± 2°C)	S

[1]If information varies within an analytical group, separate by individual analyte.

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SAP Worksheet #13—Secondary Data Criteria and Limitations Table

The table below provides general information on how secondary data will be used and the limitations on their use. Following the general table below, secondary data criteria and limitations tables are presented for each site where historical analytical data exist (applicable to the SOW covered by this SAP), specifically to address the use and limitations of the historical analytical data.

Secondary Data	Data Source (Originating Organization, Report Title, and Date)	Data Generator(s) (Data Types, Data Generation/ Collection Dates)	How Data Will Be Used	Limitations on Data Use
Site background information	Prepared by: International Technology Corporation Report Title: *Environmental Baseline Survey Data Evaluation Summary – Final, Alameda Point, California.* Date: January 2001	Site histories for: EDC-12 EDC-17 Fed-1A, 2B, & 2C	Site history summaries. Understanding of historical activities that led to a potentially CERCLA-related release.	More recent information may supersede historical information from this report.
Site background information	Prepared by: Bechtel Environmental, Inc. Report Title: *Final Site Inspection Report Transfer Parcel EDC-12 Naval Air Station, Alameda, California* Date: October 2007	Site history; see specific transfer parcels below for historical analytical data	Site history summaries. Understanding of historical activities that led to a potentially CERCLA-related release.	More recent information may supersede historical information from this report.
Site background information	Prepared by: Bechtel Environmental, Inc. Report Title: *Final Site Inspection Report Transfer Parcel EDC-17 Naval Air Station, Alameda, California* Date: September 2007	Site history; see specific transfer parcels below for historical analytical data	Site history summaries. Understanding of historical activities that led to a potentially CERCLA-related release.	More recent information may supersede historical information from this report.
Site background information	Prepared by: Bechtel Environmental, Inc. Report Title: *Draft Site Inspection Report Transfer Parcels FED-1A, FED-2B, and FED-2C Naval Air Station, Alameda, California* Date: October 2007	Site history; see specific transfer parcels below for historical analytical data	Site history summaries. Understanding of historical activities that led to a potentially CERCLA-related release.	More recent information may supersede historical information from this report.

SAP Worksheet #13—Secondary Data Criteria and Limitations Table (continued)

Secondary Data	Data Source (Originating Organization, Report Title, and Date)	Data Generator(s) (Data Types, Data Generation/ Collection Dates)	How Data Will Be Used	Limitations on Data Use
Transfer Parcel EDC-12				
Historic data; 432 Soil Samples, 6 soil gas samples, 7 manhole sediment samples, and 100 groundwater samples	Prepared by: Bechtel Environmental Inc. for the Navy Report Title: *Final Site Inspection Report Transfer Parcel EDC-12, Alameda Point, Alameda, California* Date: October 2007	Various Navy subcontractors collected soil, soil gas, manhole sediment, and groundwater samples were collected between 1995 through 2005. See Appendix A of the Final Transfer Parcel EDC-12 SI Report (BEI, 2007a)	Data from this report will be incorporated, as appropriate, into comprehensive data set for determining presence of potential releases and the appropriate further action.	Spatial coverage of soil data not sufficient to characterize the source areas at the following areas/areas of concerns (AOCs): AOC 2 – extent of TPH in soil not defined near sample location 150-0016M; AOC 3 – extent of TPH in soil not defined near sample locations 150-0020M and 151-009M; and AOC 4 – TPH contamination in soil not defined near sample locations 154-003M and 154-0023M Soil and/or groundwater data is not sufficient (i.e., no soil or groundwater samples collected, inadequate analytical suite based on historic activities) for assessing potential releases at the following areas/AOCs: entire Transfer Parcel EDC-12 (aircraft parking and staining evaluation); AOC 1; AOC 4 – SWMU NADEP GAPs 67 and 69 and area surrounding Building 167 where aircraft parking, maintenance, and washdown may have occurred; AOC 5; and AOC 6 Historic data unusable to assess potential releases because of a quality assurance issues with the data (i.e., laboratory reporting limits above screening levels, data rejected because of calibration errors) at the following areas/AOCs: AOC 2 – SWMU GAP 621 and drum storage area (TPH, SVOCs, metals, pesticides, and PCBs not analyzed in historic samples); AOC 3 – former wood-treatment area (reporting limits for SVOCs above screening levels); and AOC 4 – three soil sample TPH results rejected because of a calibration error.

SAP Worksheet #13—Secondary Data Criteria and Limitations Table (continued)

Secondary Data	Data Source (Originating Organization, Report Title, and Date)	Data Generator(s) (Data Types, Data Generation/ Collection Dates)	How Data Will Be Used	Limitations on Data Use
EDC-17				
Historic data; 60 Soil Samples, 5 manhole sediment samples, and 5 groundwater samples	Prepared by: Bechtel Environmental Inc. for the Navy Report Title: *Final Site Inspection Report Transfer Parcel EDC-17, Alameda Point, Alameda, California* Date: September 2007	Various Navy subcontractors collected soil, manhole sediment, and groundwater samples were collected between 1994 through 2002. See Appendix A of the Final Transfer Parcel EDC-17 SI Report (BEI, 2007b)	Data from this report will be incorporated, as appropriate, into comprehensive data set for determining presence of potential releases and the appropriate further action.	Spatial coverage of soil data not sufficient to characterize the source areas at the following areas/areas of concerns (AOCs): AOC 1 and AOC 3 Soil and/or groundwater data is not sufficient (i.e., no soil or groundwater samples collected, inadequate analytical suite based on historic activities) for assessing potential releases at the following areas/AOCs: entire Transfer Parcel EDC-17 (aircraft parking and staining evaluation)
Fed-1A, 2B, & 2C				
Historic data; 468 Soil samples, 7 manhole sediment samples, 44 surface sediment samples, 43 surface water samples, and 262 groundwater samples	Prepared by: Bechtel Environmental Inc. for the Navy Report Title: *Draft Site Inspection Report Transfer Parcels FED-1A, FED-2B, and FED-2C, Alameda Point, Alameda, California* Date: May 2008	Various Navy subcontractors collected soil, manhole sediment, surface sediment, surface water, and groundwater samples were collected between 1990 through 2007. See Appendix A of the Draft Transfer Parcels FED-1A, FED-2B, and FED-2C Report (BEI, 2008)	Data from this report will be incorporated, as appropriate, into comprehensive data set for determining presence of potential releases and the appropriate further action.	Spatial coverage of soil data not sufficient to characterize the source areas at the following areas/areas of concerns (AOCs): AOC 1; 13 SWMUs Former ASTs; and IR Site 33 Soil and/or groundwater data is not sufficient (i.e., no soil or groundwater samples collected, inadequate analytical suite based on historic activities) for assessing potential releases at the following areas/AOCs: entire Transfer Parcels FED-1A, FED-2B, and FED-2C (aircraft parking and staining evaluation), FED-1A Aircraft Parking Apron, FED-1A Munitions storage area, FED-1A – Firefighting training area, Building 100. Historic data unusable to assess potential releases because of a quality assurance issues with the data (i.e., laboratory reporting limits above screening levels, data rejected because of calibration errors) at the following areas/AOCs: AOC 1 – PCB and pesticide data had reporting limits above screening levels;

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SAP Worksheet #14—Summary of Project Tasks

General Protocol

Utility Clearance

Prior to the start of field work, proposed sampling locations will be marked and an underground utility survey and clearance will be conducted to locate subsurface utilities within the transfer parcels. The utility clearance will attempt to locate any existing underground utilities in our project work area, including water distribution piping, telecommunications lines, storm sewer lines, sanitary sewer lines, fire water lines, and electrical lines. The utility survey will be conducted by a private utility location company. Colored spray paint will be used to mark the locations and type of utilities encountered.

In addition to the private utility locator, Underground Service Alert will be notified 48 hours prior to drilling. Sample locations may be adjusted based on the result of the utility clearance.

After the completion of utility clearance and before borehole advancement, a hand auger will be advanced to a depth of 4 to 5 feet bgs (the ground refers to the top of the soil layer, excluding asphalt, concrete, gravel, and topsoil) at each borehole to manually check for obstructions. The direct-push borehole will be advanced adjacent to the hand-augered borehole, since soil samples are proposed to be collected at depths shallower than 4 to 5 feet bgs.

Mobilization

Mobilization will include CH2M HILL staff and subcontractors traveling to Alameda Point. Mobilization will occur only after the following tasks have been completed:

- Utility clearance
- The SAP has been approved by the stakeholders

Field Screening

At boreholes where subsurface soil samples are proposed, field screening will be used to determine the location at which samples should be taken. Several methods, including visual and olfactory signals and testing for presence of volatile organic compounds using an OVM or PID, will be used to determine where contamination is likely to be concentrated and therefore where soil samples will be most beneficial.

When examining cores preparing to take samples, the field technician or geologist will initially employ the use of visual and olfactory signals. Visual indications of contamination include discoloration, inconsistent texture, variation in moisture content and visible pockets of contaminants such as TPH and debris. Olfactory signals include odors similar to those of solvents, oil, and gasoline. These odors often pertain to such contaminants as VOCs, SVOCs and TPH products.

An OVM and/or PID will be used following SOP-10 Volatiles Monitoring by OVM/PID by the field worker to confirm visual and olfactory signals and locate pockets of contamination

SAP Worksheet #14—Summary of Project Tasks (continued)

within the core. PID and OVM screening involves placing a portion of soil with suspected contamination into a plastic bag or other sealed container. A few minutes are allowed to pass while contaminants volatilize. Then the "nose" of the instrument is inserted into a small opening of the container where it measures organic constituents in the headspace. One or both of these field screening instruments may be used at the discretion of the field worker to confirm suspected pockets of contamination.

Sampling

Sampling will follow the SOP-1 Soil Sampling, SOP-2 Homogenization of Soil and Sediment Samples, SOP-3 Soil Sampling for VOCs Using the EnCore Sampler, SOP-7 Direct-Push Groundwater Sample Collection, SOP-8 VOC Sampling – Water, and SOP-20 Concrete Core Sampling, which have been included in Attachment B. For all surface/subsurface soil samples, the soil sample depths are presented in **Worksheet #17**. Soil samples will be collected by direct-push techniques (Attachment B of the Work Plan, SOP-4). For all PCB concrete sample locations, the locations are presented on **Figure 13**.

PAH Soil Homogenization

Soil samples collected for PAH analysis will follow the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-Specific Site Inspections for Alameda Point* (BEI, 2002). Sample cores designated for PAH soil samples will be inspected and logged by the field geologist. Upon completion, sample sections representing fill intervals of 0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs will be transferred to aluminum trays. Each sample will then be homogenized based on the procedure outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). Field homogenization consists of the following quartering procedure to be performed in dedicated, disposable aluminum trays.

- The material in the sample pan will be divided into quarters, and each quarter will be mixed individually using a dedicated, disposable plastic scoop.
- Two quarters will then be combined to form halves.
- The two halves will then be mixed to form a homogeneous matrix.
- The procedure will be repeated several times until the samples are adequately mixed.
- After homogenization, the soil sample will be collected from each fill interval.

Equipment Decontamination

Equipment decontamination will follow SOP-12, *Decontamination of Personnel and Equipment,* and SOP-13, *Decontamination of Drilling Rigs and Equipment,* included in Attachment B of the Work Plan.

Investigation-Derived Waste Management

IDW will be managed and disposed of in accordance with the IDW Management Plan (IDWMP) (Attachment E of the Work Plan).

SAP Worksheet #14—Summary of Project Tasks (continued)

Surveying

Soil sample locations will be horizontally located by a licensed surveyor in accordance with the SOP-20, *Civil Surveying,* in Attachment B of the Work Plan. Concrete sample locations will be measured and verified in the field at the time of sampling. These sample locations will not need to be surveyed.

Storage

All analytical data will be stored on CH2M HILL's EDM System and Data Warehouse databases or the NIRIS database if it is available for use at the time the data is received.

Shipments

All analytical samples will be sent by FedEx. All samples will be shipped in accordance with the SOP-18, *Packing and Shipping Procedures for Low Concentration Samples,* in Attachment B of the Work Plan.

Quality Control

All QC samples are listed on **Worksheet #20**. In reference to the field tasks, all field work will be overseen by a FTL who is responsible for the quality control of the sampling and make sure the proper SOPs are followed for each task.

Sample Analysis

The laboratory will maintain, test, inspect, and calibrate analytical instruments (**Worksheets #24 and #25**). The laboratory will analyze soil, sediment, concrete, groundwater, and surface water samples. The laboratory will analyze soil, concrete and groundwater samples for various groups of parameters as shown on **Worksheets # 15 and #18**.

Data Management

Attachment D, Final Data Management Plan provides guidance on data management steps. The Project EIS, Bryan Jones, is responsible for data tracking and storage. In addition a third party data validator will receive all analytical data from the laboratory and the data will be validated prior to its use by the Navy.

Procedures for Recording and Correcting Data

All field data will be recorded in field logbooks.

Project Assessment/Audit: **Worksheets #31 and #32**

Data Validation: Third party data validation will be accomplished in accordance with NAVFACSW Environmental Work Instruction #1.**Worksheets #35 and #36** provide further information.

Data Usability Assessment: **Worksheet #37.**

SAP Worksheet #14—Summary of Project Tasks (continued)

Site-specific Protocol

Transfer Parcel EDC-12

An aircraft parking and staining evaluation will be conducted across Transfer Parcel EDC-12. The evaluation will consist of reviewing historical aerial photographs to try and identify areas of aircraft parking and staining within the transfer parcel. Identified areas will be plotted on a figure along with historical data. Stains identified during the aerial photograph review will be verified by a site reconnaissance. If based on the historical aerial photographs, data review, and site reconnaissance, it appears that a potential CERCLA-related release has occurred in the identified area(s) as a result of aircraft parking, maintenance, or washdown activities, then soil and groundwater samples will be collected.

Soil Sampling: If sampling is necessary, surface and subsurface soil samples will be collected from borings within the suspect area, specific depth intervals are presented in **Worksheet #17**. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a photoionization detector/flame ionization detector (PID/FID). If contamination is suspected, then a soil sample(s) from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17,** will be submitted to the laboratory for analysis. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. For additional details see **Worksheet #17**.

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a five foot section of a one inch diameter polyvinyl chloride (PVC)-slotted well screen (0.01-inch slot size) fitted with an end cap into at least one borehole in the suspect area. The upper sections of the wells will be solid PVC pipes. Two discrete direct-push samples will be collected from at least one borehole in the suspect areas, specific sample intervals are presented in **Worksheet #17.** For additional details see **Worksheet #17.**

Transfer Parcel EDC-12 – AOC 1

Soil Sampling: Surface and subsurface soil samples will be collected at four locations (**Figure 6**) in the former storage yards, specific sample intervals are presented in **Worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17,** will be submitted to the laboratory for analysis. For additional details see **Worksheet #17.**

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a five foot section of a 1 inch diameter PVC-slotted well screen (0.01-inch slot size) fitted with an end cap into at one borehole. The upper sections of the wells will be solid PVC pipes. Two discrete direct-push samples will be collected from one borehole in the AOC, specific sample intervals are presented in **Worksheet #17**. For additional details see **Worksheet #17**.

SAP Worksheet #14—Summary of Project Tasks (continued)

Transfer Parcel EDC-12 – AOC2

Soil Sampling: Surface and subsurface soil samples will be collected at eight locations (**Figure 7**) near SWMU GAP 621, drum storage area south of Building 621, and step-out sample locations at previous sample location 150-0016M (TPH detected above ESLs), specific sample intervals are presented in **Worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. For additional details see **Worksheet #17**.

Transfer Parcel EDC-12 – AOC 3

Soil Sampling: Surface and subsurface soil samples will be collected at 17 locations (**Figure 7**) as step-out sample locations at previous sample locations 151-009M, 151-0012M, and 151-0020M (TPH detected above ESLs) and in the former wood-treatment area, specific sample intervals are presented in **Worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. For additional details see **Worksheet #17**.

Transfer Parcel EDC-12 – AOC 4

Soil Sampling: Surface and subsurface soil samples will be collected at 11 locations (**Figure 8**) at previous step-out sample locations 154-0030, 154-0032, and 154-0034 (TPH-diesel data previously collected at these locations were rejected during the validation process), NADEP GAPs 67 and 69, east, south, and west sides of Building 167, and open space south of Building 167, specific depth intervals are presented in **Worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. For additional details see **Worksheet #17**.

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a five foot section of a one inch diameter PVC-slotted well screen (0.01-inch slot size) fitted with an end cap into eight of the boreholes. The upper sections of the wells will be solid PVC pipes. Two discrete direct-push samples will be collected from the eight boreholes, specific sample intervals are presented in **Worksheet #17**. For additional details see **Worksheet #17.**

SAP Worksheet #14—Summary of Project Tasks (continued)

Transfer Parcel EDC-12 – AOC 5

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a 5 foot section of a one inch diameter PVC-slotted well screen (0.01-inch slot size) fitted with an end cap into 15 boreholes advanced on a 150-foot grid pattern across the AOC, as shown in **Figure 9**. The upper sections of the wells will be solid PVC pipes. Two discrete direct-push samples will be collected from the 15 boreholes, specific sample intervals are presented in **Worksheet #17**. For additional details see **Worksheet #17.**

Transfer Parcel EDC-12 – AOC 6

Soil Sampling: Surface and subsurface soil samples will be collected at two locations (**Figure 9**) advanced on either side of SWU AST 584, specific depth intervals are presented in **Worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. For additional details see **Worksheet #17**.

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a 5 foot section of a 1 inch diameter PVC-slotted well screen (0.01-inch slot size) fitted with an end cap into one borehole. The upper sections of the wells will be solid PVC pipes. Two discrete direct-push samples will be collected from at the borehole, specific sample intervals are presented in **Worksheet #17**. For additional details see **Worksheet #17.**

Transfer Parcel EDC-17

An aircraft parking and staining evaluation will be conducted across Transfer Parcel EDC-17. The evaluation will consist of reviewing historical aerial photographs to try and identify areas of aircraft parking and staining within the transfer parcel. Identified areas will be plotted on a figure along with historical data. Stains identified during the aerial photograph review will be verified by a site reconnaissance. If based on the historical aerial photographs, data review, and site reconnaissance, it appears that a potential CERCLA-related release has occurred in the identified area(s) as a result of aircraft parking, maintenance, or washdown activities, then soil and groundwater samples will be collected.

Soil Sampling: If sampling is necessary, surface and subsurface soil samples will be collected from borings within the suspect area, specific depth intervals are presented in **Worksheet #17**. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. For additional details see **Worksheet #17**.

SAP Worksheet #14—Summary of Project Tasks (continued)

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a five foot section of a 1 inch diameter PVC-slotted well screen (0.01-inch slot size) fitted with an end cap into at least one borehole in the suspect area. The upper sections of the wells will be solid PVC pipes. Two discrete direct-push samples will be collected from at least one borehole in the suspect areas, specific sample intervals are presented in **Worksheet #17**. For additional details see **Worksheet #17**.

Transfer Parcel EDC-17 - Stained Area North of Building 402

Soil Sampling: Surface and subsurface soil samples will be collected at three locations (**Figure 11**) advanced north of Building 402, specific depth intervals are presented in **worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. For additional details see **Worksheet #17**.

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a 5 foot section of a 1 inch diameter PVC-slotted well screen (0.01-inch slot size) fitted with an end cap into each borehole. The upper sections of the wells will be solid PVC pipes. Two discrete direct-push samples will be collected from the three boreholes, specific sample intervals are presented in **Worksheet #17**. For additional details see **Worksheet #17**.

Transfer Parcel EDC-17 – AOC 1

Soil Sampling: Surface and subsurface soil samples will be collected at seven locations (**Figure 10**) as step-out sample locations at sample locations 165-0001 and 165-0002 (TPH-diesel data previously collected at these locations were rejected during the validation process) and near the location of former AST 342C, specific depth intervals are presented in **Worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. For additional details see **Worksheet #17**.

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a 5 foot section of a 1 inch diameter PVC-slotted well screen (0.01-inch slot size) fitted with an end cap into each borehole. The upper sections of the wells will be solid PVC pipes. Two discrete direct-push samples will be collected from at least one of the boreholes, specific sample intervals are presented in **Worksheet #17**. For additional details see **Worksheet #17**.

Transfer Parcel EDC-17 – AOC 2

Soil Sampling: Surface and subsurface soil samples will be collected at six locations (**Figure 11**) in the footprint of former Building 402, specific depth intervals are presented in

SAP Worksheet #14—Summary of Project Tasks (continued)

Worksheet #17. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. For additional details see **Worksheet #17**.

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a 5 foot section of a 1 inch diameter PVC-slotted well screen (0.01-inch slot size) fitted with an end cap into three boreholes. The upper sections of the wells will be solid PVC pipes. Two discrete direct-push samples will be collected from the three boreholes, specific sample intervals are presented in **Worksheet #17**. For additional details see **Worksheet #17**.

Transfer Parcel EDC-17 – AOC 3

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a 5 foot section of a 1 inch diameter PVC-slotted well screen (0.01-inch slot size) fitted with an end cap into one borehole advanced at previous sample location 160-0019 (VOCs detected above screening criteria). The upper sections of the wells will be solid PVC pipes. Two discrete direct-push samples will be collected from the borehole, specific sample intervals are presented in **Worksheet #17**. These groundwater samples will be sent to the laboratory on rapid turnaround. If VOCs are detected above screening criteria in either of the groundwater samples then four step-out boreholes will be advanced, as shown in **Figure 11**. Temporary monitoring wells will be installed at each borehole as described above and two discrete direct-push samples will be collected from each step-out borehole, specific sample intervals are presented in **Worksheet #17.** For additional details see **Worksheet #17.**

FED-1A, FED-2B, and FED-2C

An aircraft parking and staining area evaluation will be conducted across Transfer Parcels FED-1A, FED-2B, and FED-2C. The evaluation will consist of reviewing historical aerial photographs to try and identify areas of aircraft parking and staining within the transfer parcel. Identified areas will be plotted on a figure along with historical data. Stains identified during the aerial photograph review will be verified by a site reconnaissance. If based on the historical aerial photographs, data review, and site reconnaissance, it appears that a potential CERCLA-related release has occurred in the identified area(s) as a result of aircraft parking, maintenance, and washdown activities, then soil and groundwater samples will be collected.

Soil Sampling: If sampling is necessary, surface and subsurface soil samples will be collected from borings within the suspect area, specific depth intervals are presented in **Worksheet #17**. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil

SAP Worksheet #14—Summary of Project Tasks (continued)

sample will be collected just above the groundwater interface. For additional details see **Worksheet #17**.

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a 5 foot section of a 1 inch diameter PVC-slotted well screen (0.01-inch slot size) fitted with an end cap into at least one borehole in the suspect area. The upper sections of the wells will be solid PVC pipes. Two discrete direct-push samples will be collected from at least one borehole in the suspect areas, specific sample intervals are presented in **Worksheet #17**. For additional details see **Worksheet #17**.

Transfer Parcel FED-1A – Aircraft Parking Apron

Soil Sampling: Surface and subsurface soil samples will be collected at three locations (**Figure 12**) in the aircraft parking apron where heavy staining was observed; specific depth intervals are presented in **worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. For additional details see **Worksheet #17**.

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a 5-foot section of a 1 inch diameter PVC-slotted well screen (0.01-inch slot size) fitted with an end cap into each borehole. The upper sections of the wells will be solid PVC pipes. Two discrete direct-push samples will be collected from the three boreholes; specific sample intervals are presented in **Worksheet #17**. For additional details see **Worksheet #17**.

Transfer Parcel FED-1A – AOC 1

Soil Sampling: Surface and subsurface soil samples will be collected at nine locations (**Figure 12**) at previous sample locations A-1 along with step-out samples at this previous location (PCB detected above screening level) and at previous sample locations A-2, A-3, A-4, and A-6 (previous sample results had detection limits exceeding the screening criteria), specific sample depth intervals are presented in **Worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. For additional details see **Worksheet #17**.

Transfer Parcel FED-1A -13 SWMU Former ASTs

Soil Sampling: Surface and subsurface soil samples will be collected at 26 locations (**Figure 12**) on either side of the SWMU ASTs, specific sample depth intervals are presented in **Worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples

SAP Worksheet #14—Summary of Project Tasks (continued)

will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. For additional details see **Worksheet #17**.

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a 5 foot section of a 1 inch diameter PVC-slotted well screen (0.01-inch slot size) fitted with an end cap into each borehole. The upper sections of the wells will be solid PVC pipes. Two discrete direct-push samples will be collected from at least one borehole at each former AST, specific sample intervals are presented in **Worksheet #17**. For additional details see **Worksheet #17**.

Transfer Parcel FED-1A – IR 33

Soil Sampling: Surface and surface soil samples will be collected at 20 locations (**Figure 13**) as step-out sample locations to previous sample locations 32FED-1A-31, 32FED-1A-38, 32FED-1A-47, 32FED-1A-58, and 32FED-1A-67, specific sample depth intervals are presented in **Worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. For additional details see **Worksheet #17**.

Transfer Parcel FED-1A – Munitions in Soil

Soil Sampling: Surface and subsurface soil samples will be collected at 10 locations (**Figure 12**) near the front door of Buildings 50, 51, 56, 57, 58, and 270, near the pervious discreetdiscrete direct-push location 023-0039, and near the former lockers, specific sample depth intervals are presented in **Worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. For additional details see **Worksheet #17**.

Transfer Parcel FED-1A – Firefighting Training Activities Evaluation

Soil Sampling: Surface and subsurface soil samples will be collected at 38 locations (**Figure 12**) across Open Space III, specific sample depth intervals are presented in **Worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. For additional details see **Worksheet #17**.

SAP Worksheet #14—Summary of Project Tasks (continued)

Transfer Parcel FED-1A – Building 100 PCB Evaluation

Concrete Sampling: Surface concrete samples will be collected at 23 locations and composited for a total of 3 samples for laboratory analysis (**Figure 13**) from inside Building 100. If a sample location can not be advanced because of a surface obstruction, then the sample location will be moved and the change of sample location will be noted in the field logbook. If conditions inside Building 100 are different then what is presented on Figure 13, the project management team will decide how to modify or change the proposed scope of sampling scheme to still comply with TSCA regulations. For additional details see **Worksheet #17**.

Transfer Parcel FED-1A – Washdown 259 Evaluation

Soil Sampling: Surface and subsurface soil samples will be collected at four locations (**Figure 12**) in the open trench drain and adjacent to Washdown 259, specific depth intervals are presented in **Worksheet #17**. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Soil samples will be collected with direct-push technology. The soil cores will be screened visually and with a PID/FID. If contamination is suspected, then a soil sample(s) will be collected from the suspected contaminated zone, instead of sample depth intervals outlined in **Worksheet #17**, will be submitted to the laboratory for analysis. For additional details see **Worksheet #17**.

Temporary Monitoring Well Sampling: A temporary monitoring well will be installed by inserting a 5-foot section of a 1-inch diameter PVC-slotted well screen (0.01-inch slot size) fitted with an end cap into the four boreholes. The upper sections of the wells will be solid PVC pipes. A discrete direct-push sample will be collected from each of the boreholes; specific sample intervals are presented in **Worksheet #17**. For additional details see **Worksheet #17.**

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SAP Worksheet #15-1—Reference Limits and Evaluation Table

Matrix: Groundwater and Surface Water

Analytical Group: METALS (TAL, RCRA, TITLE 22)

Analyte	CAS	RSLs Residential	Background (µg/L)	Eco SSSBs (µg/L)	NRWQC (µg/L)	RSLs-Tap (GW) (µg/L)	CLP RLs (µg/L)	PAL (µg/L)	PAL Reference[1]	PQL Goal (µg/L)	Laboratory-specific[2]	
											PQLs (µg/L)	MDLs (µg/L)
Aluminum	7429-90-5	--	1070	--	87	3700	200	87	NRWQC	87	200	50
Antimony	7440-36-0	--	37.5	--	5.6	15	60	5.6	NRWQC	5.6	15	5
Arsenic	7440-38-2	--	20.72	--	0.018	0.045	10	0.018	NRWQC	0.018	10	3
Barium	7440-39-3	--	569.5	--	1000	730	200	569.5	BG SL	200	40	4
Beryllium	7440-41-7	--	2.5	--	--	73	5	2.5	BG_SL	2.5	5	1
Cadmium	7440-43-9	--	--	--	0.25	18	5	0.25	NRWQC	0.25	5	1
Calcium	7440-70-2	--	--	--	--	--	5000	NC	NC	5000	5000	1000
Chromium	7440-47-3	--	12.45	--	--	110	10	12.45	ERSL	10	10	3
Cobalt	7440-48-4	--	--	--	--	11	50	11	ERSL	11	15	5
Copper	7440-50-8	--	24.03	--	3.1	1500	25	3.1	NRWQC	3.1	15	5
Iron	7439-89-6	--	6586	--	300	2600	100	300	NRWQC	100	100	30
Lead	7439-92-1	--	11.45	--	8.1	15	10	8.1	NRWQC	8.1	3	1
Magnesium	7439-95-4	--	--	--	--	--	5000	NC	NC	5000	5000	1000
Manganese	7439-96-5	--	1741	--	50	880	15	50	NRWQC	15	15	5
Mercury	7439-97-6	--	--	--	0.3	0.57	0.2	0.3	NRWQC	0.2	0.2	0.08
Molybdenum	7439-98-7	--	--	240	--	180	--	180	ERSL	180	15	5
Nickel	7440-02-0	--	--	--	8.2	730	40	8.2	NRWQC	8.2	15	5
Potassium	7440-09-7	--	--	--	--	--	5000	NC	NC	5000	5000	1000
Selenium	7782-49-2	--	8.58	--	5	180	35	5	NRWQC	5	10	3
Silver	7440-22-4	--	--	--	1.9	180	10	1.9	NRWQC	1.9	3	1
Sodium	7440-23-5	--	--	--	--	--	5000	NC	NC	5000	5000	1000
Thallium	7440-28-0	--	16.15	--	0.24	2.4	25	0.24	NRWQC	0.24	10	3
Vanadium	7440-62-2	--	26.27	--	--	180	50	26	BG_SL	26	20	5
Zinc	7440-66-6	--	36.39	--	81	11,000	60	36	BG_SL	36	30	10
Hexavalent Chromium	1854-02-99	--	--	--	11	110	--	11	NRWQC	11	10	4

Notes:

µg/L = micrograms per liter; BG_SL = Background Threshold Level at Alameda Point; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; NC = not calculated; NRWQC = National Recommended Water Quality Criteria; PAL = Project Action Limits; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmarks.

[1] Lowest screening level of the NRWQC for Priority Toxic Pollutants, RSLs as of April 2009 (ERSL), or the Background Threshold Level at Alameda Point (BG_SL). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.

SAP Worksheet #15-1—Reference Limits and Evaluation Table (continued)

[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been "shaded" for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL/PQL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence; 2) the laboratory-specific MDLs are expected to be significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL/PQL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more detailed discussion on how to assess data when the PQL Goal is not met.

-- No screening level value was available.

SAP Worksheet #15-2—Reference Limits and Evaluation Table

Matrix: Groundwater and Surface Water

Analytical Group: Pesticide/PCBs

Analyte	CAS	RSLs Residential	Background (µg/L)	Eco SSSBs (µg/L)	NRWQC (µg/L)	RSLs-Tap (GW) (µg/L)	CLP RLs (µg/L)	PAL (µg/L)	PAL Reference[1]	PQL Goal (µg/L)	Laboratory-specific[2] PQLs (µg/L)	Laboratory-specific[2] MDLs (µg/L)
4,4'-dichlorodiphenyldichloroethane (4,4'-DDD)	72-54-8	--	--	--	0.00031	0.28	0.1	0.00031	NRWQC	0.00031	0.02	0.005
4,4'-dichlorodiphenyldichloroethene (4,4'-DDE)	72-55-9	--	--	--	0.00022	0.2	0.1	0.00022	NRWQC	0.00022	0.02	0.005
4,4'-dichlorodiphenyltrichloroethane (4,4'-DDT)	50-29-3	--	--	--	0.00022	0.2	0.1	0.00022	NRWQC	0.00022	0.02	0.005
Aldrin	309-00-2	--	--	--	0.000049	0.004	0.05	0.000049	NRWQC	0.000049	0.01	0.002
alpha-BHC	319-84-6	--	--	--	0.0026	0.011	0.05	0.0026	NRWQC	0.0026	0.01	0.002
alpha-Chlordane	5103-71-9	--	--	--	--	0.19	0.05	0.19	ERSL	0.05	0.01	0.002
Aroclor-1016	12674-11-2	--	--	--	0.000064	0.26	1	0.000064	NRWQC	0.000064	0.5	0.05
Aroclor-1221	11104-28-2	--	--	--	0.000064	0.0068	1	0.000064	NRWQC	0.000064	0.5	0.05
Aroclor-1232	11141-16-5	--	--	--	0.000064	0.0068	1	0.000064	NRWQC	0.000064	0.5	0.05
Aroclor-1242	53469-21-9	--	--	--	0.000064	0.034	1	0.000064	NRWQC	0.000064	0.5	0.05
Aroclor-1248	12672-29-6	--	--	--	0.000064	0.034	1	0.000064	NRWQC	0.000064	0.5	0.05
Aroclor-1254	11097-69-1	--	--	--	0.000064	0.034	1	0.000064	NRWQC	0.000064	0.5	0.05
Aroclor-1260	11096-82-5	--	--	--	0.000064	0.034	1	0.000064	NRWQC	0.000064	0.5	0.05
Aroclor-1262	37324-23-5	--	--	--	0.000064	0.17	--	0.000064	NRWQC	0.000064	0.5	0.05
Aroclor-1268	11100-14-4	--	--	--	0.000064	0.17	--	0.000064	NRWQC	0.000064	0.5	0.05
beta-BHC	319-85-7	--	--	--	0.0091	0.037	0.05	0.0091	NRWQC	0.0091	0.01	0.002
delta-BHC	319-86-8	--	--	--	--	0.037	0.05	0.037	ERSL	0.037	0.01	0.002
Dieldrin	60-57-1	--	--	--	0.000052	0.0042	0.1	0.000052	NRWQC	0.000052	0.02	0.005
Endosulfan I	959-98-8	--	--	--	0.0087	22	0.05	0.0087	NRWQC	0.0087	0.01	0.002
Endosulfan II	33213-65-9	--	--	--	0.0087	22	0.1	0.0087	NRWQC	0.0087	0.02	0.005
Endosulfan sulfate	1031-07-8	--	--	--	62	22	0.1	22	ERSL	0.1	0.02	0.005
Endrin	72-20-8	--	--	--	0.0023	1.1	0.1	0.0023	NRWQC	0.0023	0.02	0.005
Endrin aldehyde	7421-93-4	--	--	--	0.29	1.1	0.1	0.29	NRWQC	0.1	0.02	0.005
Endrin ketone	53494-70-5	--	--	--	--	1.1	0.1	1.1	ERSL	0.1	0.02	0.005
gamma-BHC (Lindane)	58-89-9	--	--	--	0.16	0.061	0.05	0.061	ERSL	0.05	0.02	0.005
gamma-Chlordane	5103-74-2	--	--	--	0.0008	0.19	0.05	0.0008	NRWQC	0.0008	0.01	0.002
Heptachlor	76-44-8	--	--	--	0.000079	0.015	0.05	0.000079	NRWQC	0.000079	0.01	0.002
Heptachlor epoxide	1024-57-3	--	--	--	0.000039	0.0074	0.05	0.000039	NRWQC	0.000039	0.01	0.002
Methoxychlor	72-43-5	--	--	--	0.03	18	0.5	0.03	NRWQC	0.03	0.01	0.002
Toxaphene	8001-35-2	--	--	--	0.00028	0.061	5	0.00028	NRWQC	0.00028	1.0	0.2

Notes:

µg/L = micrograms per liter; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; NRWQC = National Recommended Water Quality Criteria; PAL = Project Action Limits; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmark.

SAP Worksheet #15-2—Reference Limits and Evaluation Table (continued)

[1] Lowest screening level of the NRWQC for Priority Toxic Pollutants, RSLs as of April 2009 (ERSL). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.
[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been “shaded” for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL/PQL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence; 2) the laboratory-specific MDLs are expected to be significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL/PQL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more detailed discussion on how to assess data when the PQL Goal is not met.

-- No screening level value was available.

SAP Worksheet #15-3—Reference Limits and Evaluation Table

Matrix: Groundwater and Surface Water

Analytical Group: PAHs

Analyte	CAS	RSLs Residential	Background (µg/L)	Eco SSSBs (µg/L)	NRWQC (µg/L)	RSLs-Tap (GW) (µg/L)	CLP RLs (µg/L)	PAL (µg/L)	PAL Reference[1]	PQL Goal (µg/L)	Laboratory-specific[2] PQLs (µg/L)	Laboratory-specific[2] MDLs (µg/L)
1-Methylnaphthalene	90-12-0	--	--	--	--	2.3	0.1	2.3	ERSL	0.1	0.05	0.015
2-Methylnaphthalene	91-57-6	--	--	--	--	150	0.1	150	ERSL	0.1	0.05	0.015
Acenaphthene	83-32-9	--	--	--	670	220	0.1	220	ERSL	0.1	0.05	0.015
Acenaphthylene	208-96-8	--	--	--	--	220	0.1	220	ERSL	0.1	0.05	0.015
Anthracene	120-12-7	--	--	--	8300	1100	0.1	1100	ERSL	0.1	0.05	0.015
Benzo(a)anthracene	56-55-3	--	--	--	0.0038	0.029	0.1	0.0038	NRWQC	0.0038	0.05	0.015
Benzo(a)pyrene	50-32-8	--	--	--	0.0038	0.0029	0.1	0.0029	NRWQC	0.0029	0.05	0.015
Benzo(b)fluoranthene	205-99-2	--	--	--	0.0038	0.029	0.1	0.0038	NRWQC	0.0038	0.05	0.015
Benzo(g,h,i)perylene	191-24-2	--	--	--	--	110	0.1	110	ERSL	0.1	0.05	0.015
Benzo(k)fluoranthene	207-08-9	--	--	--	0.0038	0.29	0.1	0.0038	NRWQC	0.0038	0.05	0.015
Chrysene	218-01-9	--	--	--	0.0038	2.9	0.1	0.0038	NRWQC	0.0038	0.05	0.015
Dibenz(a,h)anthracene	53-70-3	--	--	--	0.0038	0.0029	0.1	0.0029	NRWQC	0.0029	0.05	0.015
Fluoranthene	206-44-0	--	--	--	130	150	0.1	130	NRWQC	0.1	0.05	0.015
Fluorene	86-73-7	--	--	--	1100	150	0.1	150	ERSL	0.1	0.05	0.015
Indeno(1,2,3-cd)pyrene	193-39-5	--	--	--	0.0038	0.029	0.1	0.0038	NRWQC	0.0038	0.05	0.015
Naphthalene	91-20-3	--	--	--	--	0.14	0.1	0.14	ERSL	0.1	0.05	0.015
Phenanthrene	85-01-8	--	--	--	--	1100	0.1	1100	ERSL	0.1	0.05	0.015
Pyrene	129-00-0	--	--	--	830	110	0.1	110	ERSL	0.1	0.05	0.015

Notes:

µg/L = micrograms per liter; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; NRWQC = National Recommended Water Quality Criteria; PAL = Project Action Limits; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmarks.

[1] Lowest screening level of the NRWQC for Priority Toxic Pollutants, or RSLs as of April 2009 (ERSL), For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.

[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been "shaded" for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL/PQL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence; 2) the laboratory-specific MDLs are expected to be

SAP Worksheet #15-3—Reference Limits and Evaluation Table (continued)

significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL/PQL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more detailed discussion on how to assess data when the PQL Goal is not met.
-- No screening level value was available.

SAP Worksheet #15-4—Reference Limits and Evaluation Table

Matrix: Groundwater and Surface Water

Analytical Group: Semivolatiles

Analyte	CAS	RSLs Residential	Background (µg/L)	Eco SSSBs (µg/L)	NRWQC (µg/L)	RSLs-Tap (GW) (µg/L)	CLP RLs (µg/L)	PAL (µg/L)	PAL Reference[1]	PQL Goal (µg/L)	Laboratory-specific[2]	
											PQLs (µg/L)	MDLs (µg/L)
1,1-Biphenyl	92-52-4	--	--	--	--	180	5	180	ERSL	5	5	1
2,4,5-Trichlorophenol	95-95-4	--	--	--	1800	370	5	370	ERSL	5	5	1
2,4,6-Trichlorophenol	88-06-2	--	--	--	1.4	3.7	5	1.4	NRWQC	1.4	3	1
2,4-Dichlorophenol	120-83-2	--	--	--	77	11	5	11	ERSL	5	5	1.5
2,4-Dimethylphenol	105-67-9	--	--	--	380	73	5	73	ERSL	5	5	1.5
2,4-Dinitrophenol	51-28-5	--	--	--	69	7.3	10	7.3	ERSL	7.3	5	1.5
2,4-Dinitrotoluene	121-14-2	--	--	--	0.11	0.22	5	0.11	NRWQC	0.11	2	0.5
2,6-Dinitrotoluene	606-20-2	--	--	--	--	37	5	37	ERSL	5	5	1.5
2-Chloronaphthalene	91-58-7	--	--	--	1000	290	5	290	ERSL	5	2	0.6
2-Chlorophenol	95-57-8	--	--	--	81	18	5	18	ERSL	5	5	1.5
2-Methylnaphthalene	91-57-6	--	--	--	--	15	5	15	ERSL	5	3	1
2-Methylphenol	95-48-7	--	--	--	--	180	5	180	ERSL	5	5	1.5
2-Nitroaniline	88-74-4	--	--	--	--	110	--	110	PRG	110	10	3
2-Nitrophenol	88-75-5	--	--	--	--	18	5	18	ERSL	5	5	1.5
3,3'-Dichlorobenzidine	91-94-1	--	--	--	0.021	0.15	5	0.021	NRWQC	0.021	2	0.5
3-Nitroaniline	99-09-2	--	--	--	--	3.2	--	3.2	ERSL	3.2	10	3
4,6-Dinitro-2-methylphenol	534-52-1	--	--	--	13	3.7	10	3.7	ERSL	3.7	3	1
4-Bromophenyl-phenylether	101-55-3	--	--	--	--	--	5	NC	NC	5	2	0.6
4-Chloro-3-methylphenol	59-50-7	--	--	--	--	18	5	18	ERSL	5	5	1.5
4-Chloroaniline	106-47-8	--	--	--	--	0.34	5	0.34	ERSL	0.34	3	1
4-Chlorophenyl-phenylether	7005-72-3	--	--	--	--	18	5	18	ERSL	5	5	1.5
4-Methylphenol	106-44-5	--	--	--	--	18	5	18	ERSL	5	5	1.5
4-Nitroaniline	100-01-6	--	--	--	--	3.4	10	3.4	ERSL	3.4	10	3
4-Nitrophenol	100-02-7	--	--	--	--	--	10	NC	NC	10	5	1.5
Acenaphthene	83-32-9	--	--	--	670	220	5	220	ERSL	5	5	1.5
Acenaphthylene	208-96-8	--	--	--	--	220	5	220	ERSL	5	5	1.5
Anthracene	120-12-7	--	--	--	8300	1100	5	1100	ERSL	5	3	1
Benzidine	92-87-5	--	--	--	0.00086	--		0.00086	NRWQC	0.00086	3	1
Benzo(a)anthracene	56-55-3	--	--	--	0.0038	0.029	5	0.0038	NRWQC	0.0038	3	1
Benzo(a)pyrene	50-32-8	--	--	--	0.0038	0.0029	5	0.0029	NRWQC	0.0029	3	1
Benzo(b)fluoranthene	205-99-2	--	--	--	0.0038	0.029	5	0.0038	NRWQC	0.0038	3	1
Benzo(g,h,i)perylene	191-24-2	--	--	--	--	110	5	110	ERSL	5	5	1.5
Benzo(k)fluoranthene	207-08-9	--	--	--	0.0038	0.29	5	0.0038	NRWQC	0.0038	3	1
bis(2-Chloroethoxy)methane	111-91-1	--	--	--	--	11	5	11	ERSL	5	3	1

SAP Worksheet #15-4—Reference Limits and Evaluation Table (continued)

Analyte	CAS	RSLs Residential	Background (µg/L)	Eco SSSBs (µg/L)	NRWQC (µg/L)	RSLs-Tap (GW) (µg/L)	CLP RLs (µg/L)	PAL (µg/L)	PAL Reference[1]	PQL Goal (µg/L)	Laboratory-specific[2] PQLs (µg/L)	Laboratory-specific[2] MDLs (µg/L)
bis(2-Chloroethyl)ether	111-44-4	--	--	--	0.03	0.012	5	0.012	ERSL	0.012	3	1
bis(2-Chloro-1-methylethyl)ether	108-60-1	--	--	--	1400	0.32	5	0.32	ERSL	0.32	3	1
bis(2-Ethylhexyl)phthalate	117-81-7	--	--	--	1.2	4.8	5	1.2	NRWQC	1.2	3	1
Butylbenzylphthalate	85-68-7	--	--	--	1500	35	5	35	ERSL	5	5	1.5
Carbazole	86-74-8	--	--	--	--	3.4	--	3.4	PRG	3.4	5	1.5
Chrysene	218-01-9	--	--	--	0.0038	2.9	5	0.0038	NRWQC	0.0038	3	1
Dibenz(a,h)anthracene	53-70-3	--	--	--	0.0038	0.0029	5	0.0029	ERSL	0.0029	5	1.5
Dibenzofuran	132-64-9	--	--	--	--	3.7	5	3.7	ESWSL	3.7	3	1
Diethylphthalate	84-66-2	--	--	--	17,000	2900	5	2900	ERSL	5	5	1.5
Dimethyl phthalate	131-11-3	--	--	--	270,000	--	5	270000	NRWQC	5	5	1.5
Di-n-butylphthalate	84-74-2	--	--	--	2000	370	5	370	ERSL	5	5	1.5
Di-n-octylphthalate	117-84-0	--	--	--		1500	--	1500	PRG	1500	5	1.5
Fluoranthene	206-44-0	--	--	--	130	150	5	150	ERSL	5	3	1
Fluorene	86-73-7	--	--	--	1100	150	5	150	ERSL	5	2.5	0.7
Hexachlorobenzene	118-74-1	--	--	--	0.00028	0.042	5	0.00028	NRWQC	0.00028	3	1
Hexachlorobutadiene	87-68-3	--	--	--	0.44	0.86	5	0.44	NRWQC	0.44	3	1
Hexachlorocyclopentadiene	77-47-4	--	--	--	40	22	5	22	ERSL	5	3	1
Hexachloroethane	67-72-1	--	--	--	1.4	3.7	5	1.4	NRWQC	1.4	3	1
Indeno(1,2,3-cd)pyrene	193-39-5	--	--	--	0.0038	0.029	5	0.0038	NRWQC	0.0038	5	1.5
Isophorone	78-59-1	--	--	--	35	71	5	35	NRWQC	5	5	1.5
Naphthalene	91-20-3	--	--	--	--	0.14	5	0.14	ERSL	0.14	3	1
Nitrobenzene	98-95-3	--	--	--	17	0.12	5	0.12	ERSL	0.12	3	1
n-Nitroso-di-n-propylamine	621-64-7	--	--	--	0.005	0.0096	5	0.005	NRWQC	0.005	3	1
n-Nitrosodiphenylamine	86-30-6	--	--	--	3.3	14	5	3.3	NRWQC	3.3	3	1
Pentachlorophenol	87-86-5	--	--	--	0.27	0.56	10	0.27	NRWQC	0.27	10	1.5
Phenanthrene	85-01-8	--	--	--	--	1100	5	1100	ERSL	5	3	1
Phenol	108-95-2	--	--	--	10000	1100	5	1100	ERSL	5	4	1
Pyrene	129-00-0	--	--	--	830	110	5	110	ERSL	5	3	1

Notes:

µg/L = micrograms per liter; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; NC = not calculated; NRWQC = National Recommended Water Quality Criteria; PAL = Project Action Limits; PRG = 2004 USEPA Preliminary Remedial Goals; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmarks.

[1] Lowest screening level of the NRWQC for Priority Toxic Pollutants, RSLs as of April 2009 (ERSL). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.

[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been "shaded" for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining

SAP Worksheet #15-4—Reference Limits and Evaluation Table (continued)

lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL/PQL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence; 2) the laboratory-specific MDLs are expected to be significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL/PQL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more detailed discussion on how to assess data when the PQL Goal is not met.

-- No screening level value was available

SAP Worksheet #15-5—Reference Limits and Evaluation Table

Matrix: Groundwater and Surface Water

Analytical Group: TPH & Volatiles

Analyte	CAS	RSLs Residential	Background (µg/L)	Eco SSSBs (µg/L)	NRWQC (µg/L)	RSLs-Tap (GW) (µg/L)	CLP RLs (µg/L)	PAL (µg/L)	PAL Reference[1]	PQL Goal (µg/L)	Laboratory-specific[2]	
											PQLs (µg/L)	MDLs (µg/L)
TPH (gasolines)	TPH-Gasoline	--	--	--	--	210	--	210	RWQCB	210	50	15
TPH (middle distillates)	TPH-Diesel	--	--	--	--	210	--	210	RWQCB	210	50	15
TPH (residual fuels)	TPH-Oil	--	--	--	--	210	--	210	RWQCB	210	100	30
1,1,1-TCA	71-55-6	--	--	--	--	910	0.5	910	ERSL	1.0	1	0.2
1,1,2,2-Tetrachloroethane	79-34-5	--	--	--	0.17	0.067	0.5	0.067	ERSL	0.067	1	0.2
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	--	--	--	--	5900	0.5	5900	ERSL	1.0	1	0.2
1,1,2-TCA	79-00-5	--	--	--	0.59	0.24	0.5	0.24	ERSL	0.24	1	0.2
1,1-Dichloroethane	75-34-3	--	--	--	--	2.4	0.5	2.4	ERSL	1.0	1	0.2
1,1-Dichloroethene	75-35-4	--	--	--	330	34	0.5	34	ERSL	1.0	1	0.2
1,2,3-Trichloropropane	96-18-4	--	--	--	--	0.0096		0.0096	ERSL	0.0096	1	0.3
1,2,4-Trichlorobenzene	120-82-1	--	--	--	--	0.82	0.5	0.82	ERSL	0.82	2	0.2
1,2,4-Trimethylbenzene	95-63-6	--	--	--	--	15		15	ERSL	15	5	1.5
1,3,5-Trimethylbenzene	108-67-8	--	--	--	--	12		12	ERSL	12	5	1.5
1,2-Dibromo-3-chloropropane	96-12-8	--	--	--	--	0.00032	0.5	0.00032	ERSL	0.00032	1	0.2
1,2-Dibromoethane	106-93-4	--	--	--	--	0.0065	0.5	0.0065	ERSL	0.0065	1	0.2
1,2-Dichlorobenzene	95-50-1	--	--	--	--	37	0.5	37	ERSL	1.0	1	0.2
1,2-Dichloroethane	107-06-2	--	--	--	0.38	0.15	0.5	0.15	ERSL	0.15	1	0.2
1,2-Dichloropropane	78-87-5	--	--	--	0.5	0.39	0.5	0.39	ERSL	0.39	1	0.2
1,3-Dichlorobenzene	541-73-1	--	--	--	--	1800	--	1800	PRG	1800	1	0.2
1,4-Dichlorobenzene	106-46-7	--	--	--	--	0.43	0.5	0.43	ERSL	0.43	1	0.2
2-Butanone	78-93-3	--	--	--	--	710	5	710	ERSL	5	5	1.5
2-Hexanone	591-78-6	--	--	--	--	200	5	200	ERSL	5	5	1.5
4-Methyl-2-pentanone	108-10-1	--	--	--	--	200	5	200	ERSL	5	5	1.5
Acetone	67-64-1	--	--	--	--	2200	5	2200	ERSL	5	5	1.5
Benzene	71-43-2	--	--	--	2.2	0.41	0.5	0.41	ERSL	0.41	1	0.2
Bromodichloromethane	75-27-4	--	--	--	0.55	1.1	0.5	0.55	NRWQC	0.5	1	0.2
Bromoform	75-25-2	--	--	--	4.3	8.5	0.5	4.3	NRWQC	1.0	1	0.2
Bromomethane	74-83-9	--	--	--	--	0.87	0.5	0.87	ERSL	0.87	2	0.3
Carbon disulfide	75-15-0	--	--	--	--	100	0.5	100	ERSL	1.0	1	0.2
Carbon tetrachloride	56-23-5	--	--	--	0.23	0.2	0.5	0.2	ERSL	0.2	1	0.2
Chlorobenzene	108-90-7	--	--	--	130	9.1	0.5	9.1	ERSL	1.0	1	0.2
Chloroethane	75-00-3	--	--	--	--	2100	0.5	2100	ERSL	2.0	2	0.3
Chloroform	67-66-3	--	--	--	5.7	0.19	0.5	0.19	ERSL	0.19	1	0.2
Chloromethane	74-87-3	--	--	--	--	1.8	0.5	1.8	ERSL	1.8	2	0.5

SAP Worksheet #15-5—Reference Limits and Evaluation Table (continued)

Analyte	CAS	RSLs Residential	Background (µg/L)	Eco SSSBs (µg/L)	NRWQC (µg/L)	RSLs-Tap (GW) (µg/L)	CLP RLs (µg/L)	PAL (µg/L)	PAL Reference[1]	PQL Goal (µg/L)	Laboratory-specific[2] PQLs (µg/L)	Laboratory-specific[2] MDLs (µg/L)
cis-1,2-Dichloroethene	156-59-2	--	--	--	--	37	0.5	37	ERSL	1.0	1	0.2
cis-1,3-Dichloropropene	10061-01-5	--	--	--	--	0.43	0.5	0.43	ERSL	0.43	1	0.2
Dibromochloromethane	124-48-1	--	--	--	0.4	0.8	0.5	0.4	NRWQC	0.4	1	0.2
Dichlorodifluoromethane	75-71-8	--	--	--	--	39	0.5	39	ERSL	2.0	2	0.25
Ethylbenzene	100-41-4	--	--	--	530	1.5	0.5	1.5	ERSL	1.5	1	0.2
Isopropylbenzene	98-82-8	--	--	--	--	68	0.5	68	ERSL	1.0	1	0.2
Methylene chloride	75-09-2	--	--	--	4.6	4.8	0.5	4.6	NRWQC	4.6	2	0.5
Methyl-tert-butyl ether (MTBE)	1634-04-4	--	--	--	--	12	0.5	12	ERSL	1.0	1	0.25
n-Hexane	110-54-3	--	--	--	--	880	0.5	880	ERSL	1.0	1	0.3
Styrene	100-42-5	--	--	--	--	160	0.5	160	ERSL	1.0	1	0.2
PCE	127-18-4	--	--	--	0.69	0.11	0.5	0.11	ERSL	0.11	1	0.2
Toluene	108-88-3	--	--	--	1300	230	0.5	230	ERSL	1.0	1	0.2
trans-1,2-Dichloroethene	156-60-5	--	--	--	140	11	0.5	11	ERSL	1.0	1	0.2
trans-1,3-Dichloropropene	10061-02-6	--	--	--	--	0.43	0.5	0.43	ERSL	0.43	1	0.2
TCE	79-01-6	--	--	--	2.5	1.7	0.5	1.7	ERSL	1.0	1	0.2
Trichlorofluoromethane	75-69-4	--	--	--	--	130	0.5	130	ERSL	2.0	2	0.5
Vinyl acetate	108-05-4	--	--	--	--	410	0.5	410	ERSL	1.0	1	0.3
Vinyl chloride	75-01-4	--	--	--	0.025	0.016	0.5	0.016	ERSL	0.016	1	0.3
Xylene, total	1330-20-7	--	--	--	--	20	0.5	20	ERSL	1.0	1	0.3

Notes:

µg/L = micrograms per liter; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; NC = not calculated; NRWQC = National Recommended Water Quality Criteria; PAL = Project Action Limits; PRG = 2004 USEPA Preliminary Remedial Goal; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmarks; RWQCB = Regional Water Qaulity Control Board Environmental Screening Levels.

[1] Lowest screening level of the NRWQC for Priority Toxic Pollutants, RSLs as of April 2009 (ERSL). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL

[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been "shaded" for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL/PQL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence; 2) the laboratory-specific MDLs are expected to be significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL/PQL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more detailed discussion on how to assess data when the PQL Goal is not met.

-- No screening level value was available

SAP Worksheet #15-6—Reference Limits and Evaluation Table

Matrix: Groundwater and Surface Water

Analytical Group: Explosives

Analyte	CAS	RSLs Residential	Background (µg/L)	Eco SSSBs (µg/L)	NRWQC (µg/L)	RSLs-Tap (GW) (µg/L)	CLP RLs (µg/L)	PAL (µg/L)	PAL Reference[1]	PQL Goal (µg/L)	Laboratory-specific[2] PQLs (µg/L)	Laboratory-specific[2] MDLs (µg/L)
HMX	2691-41-0	--	--	--	--	1800	--	1800	ERSL	13	0.5	0.1
RDX	121-82-4	--	--	--	--	0.6	--	0.6	ERSL	0.6	0.5	0.1
1,3,5-Trinitrobenzene	99-35-4	--	--	--	--	1100	--	1100	ERSL	7	0.5	0.1
1,3-Dinitrobenzene	99-65-0	--	--	--	--	3.7	--	3.7	ERSL	3	0.5	0.1
Tetryl	479-45-8	--	--	--	--	150	--	150	ERSL	4	0.5	0.1
Nitrobenzene	98-95-3	--	--	--	--	0.1	--	0.1	ERSL	0.1	0.5	0.1
2,4,6-Trinitrotoluene	118-96-7	--	--	--	--	2.2	--	2.2	ERSL	2	0.5	0.1
4-Amino-2,6-dinitrotoluene	1946-51-0	--	--	--	--	7.3	--	7.3	ERSL	1	0.5	0.1
2-Amino-4,6-dinitrotoluene	355-72-78-2	--	--	--	--	7.3	--	7.3	ERSL	1	0.5	0.1
2,4-Dinitrotoluene	121-14-2	--	--	--	--	0.2	--	0.2	ERSL	0.2	0.5	0.1
2,6-Dinitrotoluene	606-20-2	--	--	--	--	37	--	37	ERSL	6	0.5	0.1
2-Nitrotoluene	88-72-2	--	--	--	--	0.3	--	0.3	ERSL	0.3	0.5	0.1
3-Nitrotoluene	99-08-1	--	--	--	--	730	--	730	ERSL	8	0.5	0.1
4-Nitrotoluene	99-99-0	--	--	--	--	4.2	--	4.2	ERSL	4	0.5	0.1

Notes:

µg/L = micrograms per liter; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; PAL = Project Action Limits; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmarks.

[1] RSLs as of April 2009 (ERSL). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.

[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been “shaded” for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence; 2) the laboratory-specific MDLs are expected to be significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more deailed discussion on how to assess data when the PQL Goal is not met.

-- No screening level value was available

SAP Worksheet #15-7—Reference Limits and Evaluation Table

Matrix: Groundwater and Surface Water

Analytical Group: Dioxins/Furans

Analyte	CAS	RSLs Residential	Background (ng/L)	Eco SSSBs (ng/L)	NRWQC (ng/L)	RSLs-Tap (GW) (ng/L)	CLP RLs (ng/L)	PAL (ng/L)	PAL Reference[1]	PQL Goal (ng/L)	Laboratory-specific[2] PQLs (ng/L)	Laboratory-specific[2] MDLs (ng/L)
2,3,7,8-TCDD	1746-01-6	--	--	--	--	0.005	--	0.005	ERSL	0.005	0.01	0.00086
1,2,3,7,8-PeCDD	40321-76-4	--	--	--	--	0.0045	--	0.0045	WHO	0.0045	0.05	0.00251
1,2,3,6,7,8-HxCDD	57653-85-7	--	--	--	--	0.045	--	0.045	WHO	0.045	0.05	0.00722
1,2,3,4,7,8-HxCDD	39227-28-6	--	--	--	--	0.045	--	0.045	WHO	0.045	0.05	0.00337
1,2,3,7,8,9-HxCDD	19408-74-3	--	--	--	--	0.045	--	0.045	WHO	0.045	0.05	0.00385
1,2,3,4,6,7,8-HpCDD	35822-39-4	--	--	--	--	0.45--	--	0.45	WHO	0.45	0.05	0.00583
1,2,3,4,6,7,8,9-OCDD	3268-87-9	--	--	--	--	15	--	15	WHO	15	0.1	0.00645
2,3,7,8-TCDF	51207-31-9	--	--	--	--	37	--	37	ERSL	0.005	0.01	0.00150
1,2,3,7,8-PeCDF	57117-41-6	--	--	--	--	37	--	37	ERSL	0.05	0.05	0.00296
2,3,4,7,8-PeCDF	57117-31-4	--	--	--	--	37	--	37	ERSL	0.05	0.05	0.00697
1,2,3,6,7,8-HxCDF	57117-44-9	--	--	--	--	37	--	37	ERSL	0.05	0.05	0.00548
1,2,3,7,8,9-HxCDF	72918-21-9	--	--	--	--	37	--	37	ERSL	0.05	0.05	0.00478
1,2,3,4,7,8-HxCDF	70648-26-9	--	--	--	--	37	--	37	ERSL	0.05	0.05	0.00426
2,3,4,6,7,8-HxCDF	60851-34-5	--	--	--	--	37	--	37	ERSL	0.05	0.05	0.00586
1,2,3,4,6,7,8-HpCDF	67562-39-4	--	--	--	--	37	--	37	ERSL	0.05	0.05	0.00234
1,2,3,4,7,8,9-HpCDF	55673-89-7	--	--	--	--	37	--	37	ERSL	0.05	0.05	0.00411
1,2,3,4,6,7,8,9-OCDF	39001-02-0	--	--	--	--	37	--	37	ERSL	0.1	0.1	0.00640

Notes:

µg/L = nanograms per liter; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; NC = not calculated; ng/L = nanograms per liter; NRWQC = National Recommended Water Quality Criteria; PAL = Project Action Limits; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmarks; WHO = World Health Organization toxicity equevalanecy factors used to adjust RSL

[1] RSLs as of April 2009 (ERSL). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.
[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been "shaded" for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL/PQL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence2) the laboratory-specific MDLs are expected to be significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL/PQL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more detailed discussion on how to assess data when the PQL Goal is not met.

-- No screening level value was available

SAP Worksheet #15-8—Reference Limits and Evaluation Table

Matrix: Surface Soil, Subsurface Soil, and Sediment

Analytical Group: METALS (TAL, RCRA, TITLE 22)s

											Laboratory-specific[2]	
Analyte	**CAS Number**	**RSLs Residential**	**Background (µg/kg)**	**Eco SSSBs**	**NRWQC**	**RSLs-Tap (GW)**	**CLP RLs (µg/kg)**	**PAL (µg/kg)**	**PAL Reference[1]**	**PQL Goal (µg/kg)**	**PQLs (µg/kg)**	**MDLs (µg/kg)**
Aluminum	7429-90-5	--	12250000	--	--	--	20000	12250000	BG_SL	20000	20000	5000
Antimony	7440-36-0	--	3600	--	--	--	6000	3600	BG_SL	3600	3000	1000
Arsenic	7440-38-2	--	9140	--	--	--	1000	9140	BG_SL	1000	1000	300
Barium	7440-39-3	--	78000	--	--	--	20000	78000	BG_SL	20000	20000	5000
Beryllium	7440-41-7	--	1100	--	--	--	500	1100	BG_SL	500	500	150
Cadmium	7440-43-9	--	1200	--	--	--	500	1200	BG_SL	500	500	150
Calcium	7440-70-2	--	14165000	--	--	--	500000	14165000	BG_SL	500000	500000	100000
Chromium	7440-47-3	--	4500	--	--	--	1000	4500	BG_SL	1000	1000	300
Cobalt	7440-48-4	--	9400	--	--	--	5000	9400	BG_SL	5000	5000	1500
Copper	7440-50-8	--	39000	--	--	--	2500	39000	BG_SL	2500	2500	500
Iron	7439-89-6	--	18850000	--	--	--	10000	18850000	BG_SL	10000	10000	3000
Lead	7439-92-1	--	13010	--	--	--	1000	13010	BG_SL	1000	1000	300
Magnesium	7439-95-4	--	6503000	--	--	--	500000	6503000	BG_SL	500000	500000	100000
Manganese	7439-96-5	--	315000	--	--	--	1500	315000	BG_SL	1500	1500	500
Mercury	7439-97-6	--	180	--	--	--	100	180	BG_SL	100	50	15
Molybdenum	7439-98-7	--	5200	--	--	--		5200	BG_SL	5200	4000	1000
Nickel	7440-02-0	--	48000	--	--	--	4000	48000	BG_SL	4000	4000	1000
Potassium	7440-09-7	--	2310000	--	--	--	500000	2310000	BG_SL	500000	500000	100000
Selenium	7782-49-2	--	1780	--	--	--	3500	1780	BG_SL	1780	1780	600
Silver	7440-22-4	--	2220	--	--	--	1000	2220	BG_SL	1000	1000	300
Sodium	7440-23-5	--	1544000	--	--	--	500000	1544000	BG_SL	500000	500000	100000
Thallium	7440-28-0	--	500	--	--	--	2500	500	BG_SL	500	500	150
Vanadium	7440-62-2	--	41780	--	--	--	5000	41780	BG_SL	5000	5000	1500
Zinc	7440-66-6	--	65380	--	--	--	6000	65380	BG_SL	6000	6000	2000
Hexavalent Chromium	1854-02-99	--	8000	--	--	--	--	8000	BG_SL	8000	500	250

Notes:

µg/kg = micrograms per kilogram; BG_SL = Background Threshold Level at Alameda Point; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; NRWQC = National Recommended Water Quality Criteria; PAL = Project Action Limits; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmarks.

[1] Background Threshold Level at Alameda Point (BG_SL). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.

SAP Worksheet #15-8—Reference Limits and Evaluation Table (continued)

[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been “shaded” for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL/PQL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence; 2) the laboratory-specific MDLs are expected to be significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL/PQL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more detailed discussion on how to assess data when the PQL Goal is not met.

-- No screening level value was available

SAP Worksheet #15-9—Reference Limits and Evaluation Table

Matrix: Surface Soil, Subsurface Soil, Concrete and Sediment
Analytical Group: Pesticide/PCBs

Analyte	CAS	RSLs Residentia (µg/kg)	Background (µg/kg)	Eco SSSBs (µg/kg)	NRWQC (µg/kg)	RSLs-Tap (GW) (µg/kg)	CLP RLs (µg/kg)	PAL (µg/kg)	PAL Reference[1]	PQL Goal (µg/kg)	Laboratory-specific[2] PQLs (µg/kg)	Laboratory-specific[2] MDLs (µg/kg)
4,4'-DDD	72-54-8	2000	2400	100	--	--	3.3	100	ERSL	3.3	1.7	0.5
4,4'-DDE	72-55-9	1400	1700	100	--	--	3.3	100	ERSL	3.3	1.7	0.5
4,4'-DDT	50-29-3	1700	1700	100	--	--	3.3	100	ERSL	3.3	1.7	0.5
Aldrin	309-00-2	29	32	100	--	--	1.7	29	ERSL	1.7	1.7	0.5
alpha-BHC	319-84-6	77	--	100000	--	--	1.7	77	ERSL	1.7	1.7	0.5
alpha-Chlordane	5103-71-9	1600	436	100	--	--	1.7	100	ERSL	1.7	1.7	0.5
Aroclor-1016	12674-11-2	390	--	100	--	--	33	100	ERSL	33	33	10
Aroclor-1221	11104-28-2	170	--	100	--	--	33	100	ERSL	33	33	10
Aroclor-1232	11141-16-5	170	--	100	--	--	33	100	ERSL	33	33	10
Aroclor-1242	53469-21-9	220	--	100	--	--	33	100	ERSL	33	33	10
Aroclor-1248	12672-29-6	220	--	100	--	--	33	100	ERSL	33	33	10
Aroclor-1254	11097-69-1	110	--	100	--	--	33	100	ERSL	33	33	10
Aroclor-1260	11096-82-5	220	--	100	--	--	33	100	ERSL	33	33	10
Aroclor-1262	37324-23-5	220	--	100	--	--	33	100	ERSL	33	33	10
Aroclor-1268	11100-14-4	220	--	100	--	--	33	100	ERSL	33	33	10
beta-BHC	319-85-7	270	--	100000	--	--	1.7	270	ERSL	1.7	1.7	0.5
delta-BHC	319-86-8	270	--	100000	--	--	1.7	270	ERSL	1.7	1.7	0.5
Dieldrin	60-57-1	30	2.3	0.28	--	--	3.3	0.28	ERSL	0.28	1.7	0.5
Endosulfan I	959-98-8	37000	4.6	--	--	--	1.7	4.6	BG_SL	1.7	1.7	0.5
Endosulfan II	33213-65-9	37000	4.6	--	--	--	3.3	4.67	BG_SL	3.3	1.7	0.5
Endosulfan sulfate	1031-07-8	37000	--	--	--	--	3.3	3700	ERSL	3.3	1.7	0.5
Endrin	72-20-8	1800	0.65	100	--	--	3.3	0.65	ERSL	0.65	1.7	0.5
Endrin aldehyde	7421-93-4	1800	--	100	--	--	3.3	100	ERSL	3.3	1.7	0.5
Endrin ketone	53494-70-5	1800	--	100	--	--	3.3	100	ERSL	3.3	1.7	0.5
gamma-BHC (Lindane)	58-89-9	520	10	100	--	--	1.7	10	BG_SL	1.7	1.7	0.5
gamma-Chlordane	5103-74-2	1600	--	100	--	--	1.7	100	ERSL	1.7	1.7	0.5
Heptachlor	76-44-8	110	13	--	--	--	1.7	13	BG_SL	1.7	1.7	0.5
Heptachlor epoxide	1024-57-3	53	14	100	--	--	1.7	14	BG_SL	1.7	1.7	0.5
Methoxychlor	72-43-5	31000	19,000	100	--	--	17	100	ERSL	17	3.3	1
Toxaphene	8001-35-2	440	0.42	--	--	--	170	0.42	ERSL	0.42	33	10

SAP Worksheet #15-9—Reference Limits and Evaluation Table (continued)

Notes:
µg/kg = micrograms per kilogram; BG_SL = Background Threshold Level at Alameda Point; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; NRWQC = National Recommended Water Quality Criteria; PAL = Project Action Limits; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmark.
[1] Lowest screening level of the SLs as of April 2009 (ERSL) or Background Threshold Level at Alameda Point (BG_SL). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.
[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been “shaded” for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL/PQL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence; 2) the laboratory-specific MDLs are expected to be significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL/PQL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more detailed discussion on how to assess data when the PQL Goal is not met.
-- No screening level value was available

SAP Worksheet #15-10—Reference Limits and Evaluation Table

Matrix: Surface Soil, Subsurface Soil, and Sediment

Analytical Group: PAHs

Analyte	CAS	RSLs Residentia (µg/kg)	Background (µg/kg)	Eco SSSBs (µg/kg)	NRWQC (µg/kg)	RSLs-Tap (GW) (µg/kg)	CLP RLs (µg/kg)	PAL (µg/kg)	PAL Reference[1]	PQL Goal (µg/kg)	Laboratory-specific[2] PQLs (µg/kg)	Laboratory-specific[2] MDLs (µg/kg)
1-Methylnaphthalene	90-12-0	22000	--	--	--	--	--	22000	ERSL	22000	5	1.7
2-Methylnaphthalene	91-57-6	31000	250	--	--	--	--	250	ERSL	250	5	1.7
Acenaphthene	83-32-9	340000	16,300	100	--	--	170	100	ERSL	100	5	1.7
Acenaphthylene	208-96-8	340000	12,700	100	--	--	170	100	ERSL	100	5	1.7
Anthracene	120-12-7	1700000	2800	100	--	--	170	100	ERSL	100	5	1.7
Benzo(a)anthracene	56-55-3	150	380	100	--	--	170	100	ERSL	100	5	1.7
Benzo(a)pyrene	50-32-8	15	38	100	--	--	170	15	ERSL	15	5	1.7
Benzo(b)fluoranthene	205-99-2	150	380	100	--	--	170	100	ERSL	100	5	1.7
Benzo(g,h,i)perylene	191-24-2	170000	26,600	100	--	--	170	100	ERSL	100	5	1.7
Benzo(k)fluoranthene	207-08-9	1500	380	100	--	--	170	100	ERSL	100	5	1.7
Chrysene	218-01-9	15000	3800	100	--	--	170	100	ERSL	100	5	1.7
Dibenz(a,h)anthracene	53-70-3	15	62	100	--	--	170	15	ERSL	15	5	1.7
Fluoranthene	206-44-0	230000	40,000	100	--	--	170	100	ERSL	100	5	1.7
Fluorene	86-73-7	230000	8900	100	--	--	170	100	ERSL	100	5	1.7
Indeno(1,2,3-cd)pyrene	193-39-5	150	620	100	--	--	170	100	ERSL	100	5	1.7
Naphthalene	91-20-3	3900	1300	100	--	--	170	100	ERSL	100	5	1.7
Phenanthrene	85-01-8	1700000	10,700	100	--	--	170	100	ERSL	100	5	1.7
Pyrene	129-00-0	170000	85,100	100	--	--	170	100	ERSL	100	5	1.7

Notes:

µg/kg = micrograms per kilogram; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; NC = not calculated; NRWQC = National Recommended Water Quality Criteria; PAL = Project Action Limits; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmarks.

[1] RSLs as of April 2009 (ERSL). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.

[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been "shaded" for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL/PQL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence; 2) the laboratory-specific MDLs are expected to be significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL/PQL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more detailed discussion on how to assess data when the PQL Goal is not met.

-- No screening level value was available

SAP Worksheet #15-11—Reference Limits and Evaluation Table

Matrix: Surface Soil, Subsurface Soil, and Sediment

Analytical Group: Semivolatiles

Analyte	CAS	RSLs Residentia (µg/kg)	Background (µg/kg)	Eco SSSBs (µg/kg)	NRWQC (µg/kg)	RSLs-Tap (GW) (µg/kg)	CLP RLs (µg/kg)	PAL (µg/kg)	PAL Reference[1]	PQL Goal (µg/kg)	Laboratory-specific[2]	
											PQLs (µg/kg)	MDLs (µg/kg)
1,1-Biphenyl	92-52-4	260000	650	600	--	--	170	600	ERSL	170	133	40
2,4,5-Trichlorophenol	95-95-4	610000	180	100	--	--	170	100	ERSL	100	67	22
2,4,6-Trichlorophenol	88-06-2	16	230	100	--	--	170	16	ERSL	16	133	25
2,4-Dichlorophenol	120-83-2	180	300	100	--	--	170	100	ERSL	100	133	25
2,4-Dimethylphenol	105-67-9	1200	670	100	--	--	170	100	ERSL	100	670	200
2,4-Dinitrophenol	51-28-5	12000	42	100	--	--	330	42	ERSL	42	300	100
2,4-Dinitrotoluene	121-14-2	12000	0.39		--	--	170	0.39	ERSL	0.39	330	100
2,6-Dinitrotoluene	606-20-2	6100	--	--	--	--	170	6100	ERSL	170	67	20
2-Chloronaphthalene	91-58-7	210000	--	--	--	--	170	210000	ERSL	170	67	22
2-Chlorophenol	95-57-8	39000	12	100	--	--	170	12	ERSL	12	133	40
2-Methylnaphthalene	91-57-6	31000	250	--	--	--	170	250	BG_SL	170	133	26
2-Methylphenol	95-48-7	310000	--	100	--	--	170	100	ERSL	100	133	36
2-Nitroaniline	88-74-4	180000	--	--	--	--	--	180000	PRG	180000	330	100
2-Nitrophenol	88-75-5	39000	--	--	--	--	170	39000	ERSL	170	133	40
3,3'-Dichlorobenzidine	91-94-1	1100	7.7	--	--	--	170	7.7	ERSL	7.7	133	40
3-Nitroaniline	99-09-2	1800	--	--	--	--	330	1800	ERSL	330	330	100
4,6-Dinitro-2-methylphenol	534-52-1	610	--	--	--	--	330	610	ERSL	330	670	200
4-Bromophenyl-phenylether	101-55-3		--	--	--	--	170	NC	NC	170	133	40
4-Chloro-3-methylphenol	59-50-7	39000	--	--	--	--	170	39000	ERSL	170	133	40
4-Chloroaniline	106-47-8	9000	53	--	--	--	170	53	ERSL	53	133	40
4-Chlorophenyl-phenylether	7005-72-3	31000	--	--	--	--	170	31000	ERSL	170	133	40
4-Methylphenol	106-44-5	31000	--	100	--	--	170	100	ERSL	100	133	40
4-Nitroaniline	100-01-6	18000	--	--	--	--	330	18000	ERSL	330	330	100
4-Nitrophenol	100-02-7	--	--	--	--	--	330	NC	NC	100	330	100
Acenaphthene	83-32-9	340000	16,300	100	--	--	170	100	ERSL	100	67	22
Acenaphthylene	208-96-8	340000	12,700	100	--	--	170	100	ERSL	100	133	40
Anthracene	120-12-7	1700000	2800	100	--	--	170	100	ERSL	100	67	22
Benzidine	92-87-5	0.5	0.094	--	--	--		0.094	ERSL	0.094	330	100
Benzo(a)anthracene	56-55-3	150	380	100	--	--	170	100	ERSL	100	67	22
Benzo(a)pyrene	50-32-8	4.6	38	100	--	--	170	4.6	ERSL	4.6	67	22
Benzo(b)fluoranthene	205-99-2	150	380	100	--	--	170	100	ERSL	100	67	22
Benzo(g,h,i)perylene	191-24-2	170000	26,600	100	--	--	170	100	ERSL	100	67	22
Benzo(k)fluoranthene	207-08-9	1500	380	100	--	--	170	100	ERSL	100	67	22
bis(2-Chloroethoxy)methane	111-91-1	18000	--	--	--	--	170	18000	ERSL	170	133	40

SAP Worksheet #15-11—Reference Limits and Evaluation Table (continued)

Analyte	CAS	RSLs Residentia (µg/kg)	Background (µg/kg)	Eco SSSBs (µg/kg)	NRWQC (µg/kg)	RSLs-Tap (GW) (µg/kg)	CLP RLs (µg/kg)	PAL (µg/kg)	PAL Reference[1]	PQL Goal (µg/kg)	Laboratory-specific[2] PQLs (µg/kg)	Laboratory-specific[2] MDLs (µg/kg)
bis(2-Chloroethyl)ether	111-44-4	190	0.4	--	--	--	170	0.4	ERSL	0.4	330	100
bis(2-Chloro-1-methylethyl)ether	108-60-1	0.09	--	--	--	--	330	0.09	ERSL	0.09	670	200
bis(2-Ethylhexyl)phthalate	117-81-7	35000	34,700	--	--	--	170	34700	ERSL	170	133	40
Butylbenzylphthalate	85-68-7	260000	--	--	--	--	170	260000	ERSL	170	133	40
Carbazole	86-74-8	24000	--	--	--	--	--	24000	ERSL	24000	133	40
Chrysene	218-01-9	15000	23,200	100	--	--	170	100	ERSL	100	67	22
Dibenz(a,h)anthracene	53-70-3	15	62	100	--	--	170	15	ERSL	15	67	22
Dibenzofuran	132-64-9	7800	--	--	--	--	170	7800	ERSL	170	133	40
Diethylphthalate	84-66-2	4900000	35	1000	--	--	170	35	ERSL	35	133	40
Dimethyl phthalate	131-11-3	1200	35	2000	--	--	170	35	ERSL	35	67	22
Di-n-butylphthalate	84-74-2	610000	--	200000	--	--	170	200000	ERSL	170	330	100
Di-n-octylphthalate	117-84-0	2400000	--	--	--	--	--	2400000	PRG	2400000	330	100
Fluoranthene	206-44-0	230000	40,000	100	--	--	170	100	ERSL	100	67	22
Fluorene	86-73-7	230000	8900	100	--	--	170	100	ERSL	100	133	40
Hexachlorobenzene	118-74-1	300	340	1000000	--	--	170	300	ERSL	170	67	20
Hexachlorobutadiene	87-68-3	6100	2200	--	--	--	170	2200	BG_SL	170	330	100
Hexachlorocyclopentadiene	77-47-4	37000		100	--	--	170	100	ERSL	100	133	40
Hexachloroethane	67-72-1	6100	3000	--	--	--	170	3000	BG_SL	170	670	120
Indeno(1,2,3-cd)pyrene	193-39-5	150	620	100	--	--	170	100	ERSL	100	330	100
Isophorone	78-59-1	510000	--	--	--	--	170	510000	ERSL	170	133	40
Naphthalene	91-20-3	3900	1300	100	--	--	170	100	ERSL	100	330	110
Nitrobenzene	98-95-3	3100	--	400	--	--	170	400	ERSL	170	133	40
n-Nitroso-di-n-propylamine	621-64-7	69	--	--	--	--	170	69	ERSL	69	133	40
n-Nitrosodiphenylamine	86-30-6	99000	--	200	--	--	170	200	ERSL	170	133	40
Pentachlorophenol	87-86-5	3000	3000	5	--	--	330	5	ERSL	5	670	100
Phenanthrene	85-01-8	1700000	10,700	100	--	--	170	100	ERSL	100	133	40
Phenol	108-95-2	1800000	76	100	--	--	170	76	ERSL	76	133	40
Pyrene	129-00-0	170000	85,100	100	--	--	170	100	ERSL	100	133	40

Notes:

µg/kg = micrograms per kilogram; BG_SL = Background Threshold Level at Alameda Point; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; NC = not calculated; NRWQC = National Recommended Water Quality Criteria; PAL = Project Action Limits; PRG = 2004 USEPA Preliminary Remedial Goall; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmarks.

[1] RSLs as of April 2009 (ERSL). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.

SAP Worksheet #15-11—Reference Limits and Evaluation Table (continued)

[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been "shaded" for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL/PQL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence 2) the laboratory-specific MDLs are expected to be significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL/PQL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more detailed discussion on how to assess data when the PQL Goal is not met.

-- No screening level value was available

SAP Worksheet #15-12—Reference Limits and Evaluation Table

Matrix: Surface Soil, Subsurface Soil, and Sediment

Analytical Group: TPH & Volatiles

Analyte	CAS	RSLs Residentia (µg/kg)	Background (µg/kg)	Eco SSSBs (µg/kg)	NRWQC (µg/kg)	RSLs-Tap (GW) (µg/kg)	CLP RLs (µg/kg)	PAL (µg/kg)	PAL Reference[1]	PQL Goal (µg/kg)	Laboratory-specific[2] PQLs (µg/kg)	Laboratory-specific[2] MDLs (µg/kg)
TPH (gasolines)	TPH-Gasoline	--	83,400	--	--	--		83400	ERSL	5000	5000	150
TPH (middle distillates)	TPH-Diesel	--	83,400	--	--	--		83400	ERSL	4000	4000	1000
TPH (residual fuels)	TPH-Oil	--	366,600	--	--	--		366600	ERSL	10000	10000	3000
1,1,1-TCA	71-55-6	680000	7800	300	--	--	5	300	ERSL	5	5	1
1,1,2,2-Tetrachloroethane	79-34-5	590	18	300	--	--	5	18	ERSL	5	5	1
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	940000	--	--	--	--	5	940000	ERSL	5	5	1
1,1,2-TCA	79-00-5	1100	70	300	--	--	5	70	ERSL	5	5	1
1,1-Dichloroethane	75-34-3	3400	200	300	--	--	5	200	ERSL	5	5	1
1,1-Dichloroethene	75-35-4	25000	1000	--	--	--	5	1000	ERSL	5	5	1
1,2,3-Trichloropropane	96-18-4	91	--	--	--	--		91	ERSL	91	5	1
1,2,4-Trichlorobenzene	120-82-1	8700	1500	100	--	--	5	100	ERSL	5	5	1
1,2,4-Trimethylbenzene	95-63-6	--	--	24	--	--		24	ERSL	24	5	1
1,3,5-Trimethylbenzene	108-67-8	--	--	20	--	--		20	ERSL	20	5	1
1,2-Dibromo-3-chloropropane	96-12-8	5.6	4.5		--	--	5	4.5	ERSL	4.5	2	0.67
1,2-Dibromoethane	106-93-4	34	0.33	5000	--	--	5	0.33	ERSL	0.33	2	0.20
1,2-Dichlorobenzene	95-50-1	200000	1100	100	--	--	5	100	ERSL	5	5	1
1,2-Dichloroethane	107-06-2	450	4.4	870000	--	--	5	4.4	ERSL	4.4	5	14
1,2-Dichloropropane	78-87-5	930	120	300	--	--	5	120	ERSL	5	5	1
1,3-Dichlorobenzene	541-73-1		7400	--	--	--	5	7400	ERSL	5	5	1
1,4-Dichlorobenzene	106-46-7	2600	590	100	--	--	5	100	ERSL	5	5	1
2-Butanone	78-93-3	2800000	--	--	--	--	10	2800000	ERSL	10	10	3
2-Hexanone	591-78-6	530000	--	--	--	--	10	530000	ERSL	10	10	3
4-Methyl-2-pentanone	108-10-1	530000	--	100000	--	--	10	530000	ERSL	10	10	3
Acetone	67-64-1	6100000	500	--	--	--	10	500	ERSL	10	20	6
Benzene	71-43-2	1100	44	100	--	--	5	44	ERSL	5	5	1
Bromodichloromethane	75-27-4	10000	570	450000	--	--	5	570	ERSL	5	5	1
Bromoform	75-25-2	61000	2200	1147000	--	--	5	2200	ERSL	5	5	1
Bromomethane	74-83-9	790	390	--	--	--	5	390	ERSL	5	5	1
Carbon disulfide	75-15-0	67000			--	--	5	67000	ERSL	5	2	0.33
Carbon tetrachloride	56-23-5	250	20	300	--	--	5	20	ERSL	5	5	1
Chlorobenzene	108-90-7	31000	1500	100	--	--	5	100	ERSL	5	5	1
Chloroethane	75-00-3	1500000	850	--	--	--	5	850	ERSL	5	5	1
Chloroform	67-66-3	300	680	300	--	--	5	300	ERSL	5	5	1

SAP Worksheet #15-12—Reference Limits and Evaluation Table (continued)

Analyte	CAS	RSLs Residentia (µg/kg)	Background (µg/kg)	Eco SSSBs (µg/kg)	NRWQC (µg/kg)	RSLs-Tap (GW) (µg/kg)	CLP RLs (µg/kg)	PAL (µg/kg)	PAL Reference[1]	Project QL Goal (µg/kg)	Laboratory-specific[2] PQLs (µg/kg)	Laboratory-specific[2] MDLs (µg/kg)
Chloromethane	74-87-3	1700	6400	--	--	--	5	1700	ERSL	5	5	1
cis-1,2-Dichloroethene	156-59-2	78000	190	300	--	--	5	190	ERSL	5	5	1
cis-1,3-Dichloropropene	10061-01-5	1700	59	300	--	--	5	59	ERSL	5	2	0.2
Dibromochloromethane	124-48-1	5800	7600	--	--	--	5	5800	ERSL	5	5	1
Dichlorodifluoromethane	75-71-8	19000	--	--	--	--	5	19000	ERSL	5	5	1
Ethylbenzene	100-41-4	5700	2300	100	--	--	5	100	ERSL	5	5	1
Isopropylbenzene	98-82-8	220000	--	--	--	--	5	220000	ERSL	5	5	1
Methylene chloride	75-09-2	11000	77	300	--	--	5	77	ERSL	5	5	1
Methyl-tert-butyl ether (MTBE)	1634-04-4	39000	23	--	--	--	5	23	ERSL	5	5	1
n-Hexane	110-54-3	--	--	6200	--	--	--	6200	ERSL	6200	5	1.5
Styrene	100-42-5	650000	1500	100	--	--	5	100	ERSL	5	5	1
PCE	127-18-4	570	370	300	--	--	5	300	ERSL	5	5	1
Toluene	108-88-3	500000	2900	100	--	--	5	100	ERSL	5	5	1
trans-1,2-Dichloroethene	156-60-5	11000	669	300	--	--	5	300	ERSL	5	5	1
trans-1,3-Dichloropropene	10061-02-6	1700	59	300	--	--	5	59	ERSL	5	2	0.20
TCE	79-01-6	2800	460	300	--	--	5	300	ERSL	5	5	1
Trichlorofluoromethane	75-69-4	80000	--	--	--	--	5	80000	ERSL	5	5	1
Vinyl acetate	108-05-4	--	--	88	--	--		88	ERSL	88	5	1
Vinyl chloride	75-01-4	60	22	300	--	--	5	22	ERSL	5	5	1
Xylene, total	1330-20-7	60000	2300	100	--	--	--	100	ERSL	5	5	1.5

Notes:
µg/kg = micrograms per kilogram; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; NRWQC = National Recommended Water Quality Criteria; PAL = Project Action Limits; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmarks.

[1] RSLs as of April 2009 (ERSL). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.
[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been "shaded" for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL/PQL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence; 2) the laboratory-specific MDLs are expected to be significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL/PQL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more detailed discussion on how to assess data when the PQL Goal is not met.
-- No screening level value was available

SAP Worksheet #15-13—Reference Limits and Evaluation Table

Matrix: Surface Soil, Subsurface Soil, and Sediment

Analytical Group: Explosives

Analyte	CAS	RSLs Residentia (µg/kg)	Background (µg/kg)	Eco SSSBs (µg/kg)	NRWQC (µg/kg)	RSLs-Tap (GW) (µg/kg)	CLP RLs (µg/kg)	PAL (µg/kg)	PAL Reference[1]	PQL Goal (µg/kg)	Laboratory-specific[2] PQLs (µg/kg)	Laboratory-specific[2] MDLs (µg/kg)
HMX	2691-41-0	3800000	--	--	--	--	--	3800000	ERSL	2200	500	100
RDX	121-82-4	5500	--	--	--	--	--	5500	ERSL	1000	500	100
1,3,5-Trinitrobenzene	99-35-4	2200000	--	--	--	--	--	2200000	ERSL	500	500	100
1,3-Dinitrobenzene	99-65-0	6100	--	--	--	--	--	6100	ERSL	500	500	100
Tetryl	479-45-8	240000	--	--	--	--	--	240000	ERSL	650	500	100
Nitrobenzene	98-95-3	21	--	--	--	--	--	21	ERSL	21	500	100
2,4,6-Trinitrotoluene	118-96-7	19000	--	--	--	--	--	19000	ERSL	500	500	100
4-Amino-2,6-dinitrotoluene	1946-51-0	150000	--	--	--	--	--	150000	ERSL	10000	500	100
2-Amino-4,6-dinitrotoluene	355-72-78-2	150000	--	--	--	--	--	150000	ERSL	10000	500	100
2,4-Dinitrotoluene	121-14-2	1600	--	--	--	--	--	1600	ERSL	500	500	100
2,6-Dinitrotoluene	606-20-2	61000	--	--	--	--	--	61000	ERSL	500	500	100
2-Nitrotoluene	88-72-2	2900	--	--	--	--	--	2900	ERSL	500	500	100
3-Nitrotoluene	99-08-1	1200000	--	--	--	--	--	1200000	ERSL	500	500	100
4-Nitrotoluene	99-99-0	30000	--	--	--	--	--	30000	ERSL	500	500	100

µg/kg = micrograms per kilogram; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; NRWQC = National Recommended Water Quality Criteria; PAL = Project Action Limits; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmarks.

[1] RSLs as of April 2009 (ERSL). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.
[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been “shaded” for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL/PQL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence; 2) the laboratory-specific MDLs are expected to be significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL/PQL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more detailed discussion on how to assess data when the PQL Goal is not met.
-- No screening level value was available

SAP Worksheet #15-14—Reference Limits and Evaluation Table

Matrix: Surface Soil, Subsurface Soil, and Sediment

Analytical Group: Dioxins/Furans

Analyte	CAS	RSLs Residentia (µg/kg)	Background (µg/kg)	Eco SSSBs (µg/kg)	NRWQC (µg/kg)	RSLs-Tap (GW) (µg/kg)	CLP RLs (µg/kg)	PAL (µg/kg)	PAL Reference[1]	PQL Goal (µg/kg)	Laboratory-specific[2] PQLs (µg/kg)	Laboratory-specific[2] MDLs (µg/kg)
2,3,7,8-TCDD	1746-01-6	0.00085	--	--	--	--	--	0.00085	ERSL	0.00085	0.001	0.00012
1,2,3,7,8-PeCDD	40321-76-4	0.0045	--	--	--	--	--	0.0045	WHO	0.0045	0.005	0.00028
1,2,3,6,7,8-HxCDD	57653-85-7	0.045	--	--	--	--	--	0.045	WHO	0.045	0.005	0.00042
1,2,3,4,7,8-HxCDD	39227-28-6	0.045	--	--	--	--	--	0.045	WHO	0.045	0.005	0.00041
1,2,3,7,8,9-HxCDD	19408-74-3	0.045	--	--	--	--	--	0.045	WHO	0.045	0.005	0.00027
1,2,3,4,6,7,8-HpCDD	35822-39-4	0.45	--	--	--	--	--	0.45	WHO	0.45	0.005	0.00041
1,2,3,4,6,7,8,9-OCDD	3268-87-9	15	--	--	--	--	--	15	WHO	15	0.01	0.00091
2,3,7,8-TCDF	51207-31-9	2500	--	--	--	--	--	2500	ERSL	0.001	0.001	0.00010
1,2,3,7,8-PeCDF	57117-41-6	2500	--	--	--	--	--	2500	ERSL	0.005	0.005	0.00032
2,3,4,7,8-PeCDF	57117-31-4	2500	--	--	--	--	--	2500	ERSL	0.005	0.005	0.00032
1,2,3,6,7,8-HxCDF	57117-44-9	2500	--	--	--	--	--	2500	ERSL	0.005	0.005	0.00048
1,2,3,7,8,9-HxCDF	72918-21-9	2500	--	--	--	--	--	2500	ERSL	0.005	0.005	0.00014
1,2,3,4,7,8-HxCDF	70648-26-9	2500	--	--	--	--	--	2500	ERSL	0.005	0.005	0.00031
2,3,4,6,7,8-HxCDF	60851-34-5	2500	--	--	--	--	--	2500	ERSL	0.005	0.005	0.00030
1,2,3,4,6,7,8-HpCDF	67562-39-4	2500	--	--	--	--	--	2500	ERSL	0.005	0.005	0.00056
1,2,3,4,7,8,9-HpCDF	55673-89-7	2500	--	--	--	--	--	2500	ERSL	0.005	0.005	0.00056
1,2,3,4,6,7,8,9-OCDF	39001-02-0	2500	--	--	--	--	--	2500	ERSL	0.01	0.01	0.00071

Notes:

µg/kg = micrograms per kg; CAS = Chemical Abstract Number; CLP = Contract Laboratory Program; ERSL = USEPA Regional Screening Levels; GW = groundwater; MDL = Method Detection Limits; NC = not collected; NRWQC = National Recommended Water Quality Criteria; PAL = Project Action Limits; PQL = Project Quantitation Limits; RL = Reporting Limits; RSL = Residential Screening Level; SSSB = Subsurface Soil Screening Benchmarks; WHO = World Health Organization toxicity equevalanecy factors used to adjust RSL.

[1] RSLs as of April 2009 (ERSL). For those analytes where a toxicity reference value is not listed (e.g. NC), the PQL goal was set to the laboratory-specific PQL.

[2] Laboratory-specific MDLs (e.g. Limit of Detection) and PQLs (e.g. Limit of Quantitation) are limits that an individual laboratory can achieve when performing a specific analytical method. Where the laboratory-specific PQL is greater than the PQL Goal the analyte has been "shaded" for easy identification. The laboratory-specific PQLs are industry standard for the methods listed. The selected method and PQLs are the available state-of-the-art methods for this analysis; obtaining lower detection is not practicable for this Work Plan. If a PQL Goal is not met, the data will be assessed as follows: 1) The other analytes within the same constituent group whose PQLs are below the PQL Goal will be used to assess a release event and to determine whether there has been a release because even if a particular analyte has an RL/PQL above the screening criterion, there are sufficient analytes in the same constituent group that would likely be deteced in the event of a release and whose RLs are below the screening values such that further action determinations for the site can be made with sufficient confidence; 2) the laboratory-specific MDLs are expected to be significantly lower than the laboratory reporting limits (or PQLs). Detects below the laboratory reporting limits/PQL will be reported and used; and 3) detections above the RL/PQL are above the project action levels and detection-level limitations will be evaluated during the project decision-making process. Please refer to Worksheet 11 for a more detailed discussion on how to assess data when the PQL Goal is not met.

-- No screening level value was available

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SAP Worksheet #16—Project Schedule/Timeline Table (Optional Format)

	Deliverable	Duration	Start	Submittal Date (Calendar Days)
1	Internal draft response to comments on Draft Site Inspection Report for Transfer Parcels FED-1A, 2B, &2C	15	5/4/2009	5/18/2009
	Navy Comments	14	5/19/2009	6/1/2009
	Interim final response to comments on Draft Site Inspection Report for Transfer Parcels FED-1A, 2B, &2C	7	6/2/2009	6/8/2009
	Final Response to Agency comments on Draft Site Inspection Report for Transfer Parcels FED-1A, 2B, &2C (submittal as part of SI Report)	NA		5/17/2010
EXPANDED SI WORKPLAN				
2	Working Draft Supplemental Site Inspection Work Plan/SAP for Transfer Parcels FED-1A. 2B, & 2C, EDC-12, and EDC-17; including Sampling and Analysis Plan	96	5/4/2009	8/7/2009
	Navy Review	15	8/8/2009	8/22/2009
	Pre -Draft Supplemental Site Inspection Work Plan/SAP for Transfer Parcels FED-1A. 2B, & 2C, EDC-12, and EDC-17; including Sampling and Analysis Plan	24	8/23/2009	9/15/2009
	Navy Quality Assurance Officer and Navy Review of Pre-Draft Work Plan and SAP	37	9/16/2009	10/22/2009
	Draft Supplemental Site Inspection Work Plan/SAP for Transfer Parcels FED-1A. 2B, & 2C, EDC-12, and EDC-17; including Sampling and Analysis Plan	29	10/23/2009	11/20/2009
	Agency Review	80	11/21/2009	2/8/2010
	Final Site Inspection Workplan & SAP (Track Changes) (assumes Navy QAO review)	24	2/9/2010	3/4/2010
	Agency Review-Concurrence of track changes	7	3/5/2010	3/11/2010
	Final Supplemental Site Inspection Work Plan; including Sampling and Analysis Plan	2	3/12/2010	3/13/2010
ACCIDENT PREVENTION PLAN/SITE SAFETY AND HEALTH				
3	Draft Supplemental Site Inspection Accident Prevention Plan / Site Safety and Health Plan for Transfer Parcels FED-1A, 2B, & 2C, EDC-12, and EDC-17	65	5/4/2009	9/17/2009
	Navy Comments	24	9/18/2009	10/11/2009
	Revise per Navy comments	39	10/12/2009	11/19/2009
	Navy Final Review	19	11/20/2009	12/8/2009
	Final Supplemental Site Inspection Accident Prevention Plan / Site Safety and Health Plan for Transfer Parcels FED-1A, 2B, & 2C, EDC-12, and EDC-17	20	12/9/2009	12/28/2009
FIELDWORK				
4	Expanded SI Fieldwork (*note: start date for this activity is the latest date from above three sections*)	60	3/13/2010	5/11/2010

SAP Worksheet #16—Project Schedule/Timeline Table (Optional Format) (continued)

SI REPORT FOR TRANSFER PARCELS FED-1A,2B, &2C				
5	Internal revised draft Final SI Report for Transfer Parcels FED-1A, 2B, and 2C	45	5/8/2010	6/21/2010
	Navy Review	15	6/22/2010	7/6/2010
	Revised Draft-Final SI Report	15	7/7/2010	7/21/2010
	Agency Review and Concurrence	60	7/22/2010	9/19/2010
	Final Site Inspection Report	30	9/20/2010	10/19/2010
EXPANDED SI REPORT FOR TRANSFER PARCEL EDC-12				
6	Pre-draft Expanded SI Report for Transfer Parcel EDC-12	45	5/8/2010	6/21/2010
	Navy Comments	15	6/22/2010	7/6/2010
	Draft Expanded SI Report	15	7/7/2010	7/21/2010
	Agency Review	60	7/22/2010	9/19/2010
	Draft-Final Expanded SI Report	30	9/20/2010	10/19/2010
	Agency Review and Concurrence	60	10/20/2010	12/18/2010
	Final Expanded SI Report	15	12/19/2010	1/2/2011
EXPANDED SI REPORT FOR TRANSFER PARCEL EDC-17				
7	Pre-draft Expanded SI Report for Transfer Parcel EDC-17	45	5/8/2010	6/21/2010
	Navy Comments	15	6/22/2010	7/6/2010
	Draft Expanded SI Report	15	7/7/2010	7/21/2010
	Agency Reviews	60	7/22/2010	9/17/2010
	Draft-Final Expanded SI Report	30	9/20/2010	10/19/2010
	Agency Review and Concurrence	60	10/20/2010	12/18/2010
	Final Expanded SI Report	15	12/19/2010	1/2/2011

Notes/Assumptions: Assumes no radiological component in development of SI Work Plan. However, radiological screening for H&S purposes should not affect the current milestone dates.

SAP Worksheet #17—Sampling Design and Rationale

Given that the SOW under this SAP is an Expanded SI, the general sampling rationale and design are based on the general objective of assessing whether a release has occurred and, if so, whether further action is warranted. Consistent with this objective, the sampling design is based on both judgmental (i.e., biased) and systematic random (i.e., grid sampling) approaches.

Judgmental Sampling

For sites where there are relevant historical sample data, sample locations are biased to those areas where known or suspected site historical information and/or field observations suggest that a release may have occurred. This judgmental approach is taken for the following sites:

Transfer Parcels EDC-12, EDC-17, FED-1A, FED-2B, and FED-2C—Aircraft Parking and Staining Evaluation (if sampling is required)

Available historical aerial photographs of Transfer Parcels EDC-12, EDC-17, FED-1A, FED-2B, and FED-2C will be reviewed to identify additional areas of aircraft parking and maintenance and/or areas showing signs of staining. Once these areas have been identified, a search of historical TPH and VOC data within and surrounding these areas will be conducted to assess whether there are sufficient existing data to draw conclusions about the potential for a CERCLA-related release to have occurred from historical use of these areas for aircraft parking, maintenance, and washdown. Stains identified during the aerial photograph review will be verified by a site reconnaissance. The findings of the aerial photograph survey, historical data review, and site reconnaissance (including copies of the aerial photographs and figures with suspect areas plotted along with historical data) will be included in the SI Report addendum.

If, based on the historical aerial photograph review, data review, and site reconnaissance, it is determined that the apparent staining in a given area was not from aircraft washdown or maintenance activities (but rather from, e.g., wearing/exposed asphalt, tar asphalt patch, or tire marks), or that the staining was a result of aircraft washdown or maintenance activities but historic sample results within and around the stained area do not suggest a potential CERCLA-related release has occurred, then no sampling will be necessary in this stained area, and justification for this decision will be included in the SI Report addendum.

If the staining is determined to be from aircraft washdown or maintenance activities and no or insufficient historic sample results are available, or if historic sample results suggest that a potential CERCLA-related release has occurred in the identified area, then sampling will occur following the general sampling protocol outlined below. The exact number of boreholes and their locations will not be determined until after the historical aerial photograph review, historic data review, and site reconnaissance have been completed.

The general sampling protocol (excluding soil samples being analyzed for PAHs) in these stained areas will be to collect a surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs). The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e.,

SAP Worksheet #17—Sampling Design and Rationale (continued)

olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. In addition, soil samples will be collected for PAH analysis at each borehole following the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**. After homogenization, one soil sample will be collected from each depth interval. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Two discrete direct-push samples, one from the FWBZ-upper (approximately 10 feet bgs) and one from the FWBZ-lower (approximately 20 feet bgs) in Transfer Parcels EDC-12 and EDC-17, and two from the FWBZ, one at the groundwater table (approximately 7 feet bgs) and one deeper sample (approximately 15 feet bgs) in Transfer Parcesl FED-1A, FED-2B, and FED-2C, will be collected from at least one borehole in the suspect area. The exact location of the discrete direct-push sample(s) will be determined after the historical aerial photograph review, historic data review, and site reconnaissance have been completed. Soil and groundwater samples will be analyzed for TAL metals, petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL VOCs, and TCL PAHs.

Transfer Parcel EDC-12 (AOC 2)—SWMU GAP 621/Drum Storage Evaluation and TPH Delineation EBS Parcels 150A/150B (applies to SWMU GAP 621/drum storage area only)

Four boreholes will be advanced, two on either side of SWMU GAP 621 and two in the former drum storage area, as shown on **Figure 7**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth, excluding soil samples being collected for PAH analysis. Soil samples will be collected for PAH analysis at each borehole following the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**. After homogenization, one soil sample will be collected from each depth interval. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Because the historical analytical suite did not account for all potential hazardous constituents that may have been stored in these areas of AOC 2, soil samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL SVOCs, TCL PAHs, TAL metals, TCL PCBs, and TCL pesticides. VOCs have been excluded, as soil samples in these areas have already been analyzed for VOCs, which were not detected.

SAP Worksheet #17—Sampling Design and Rationale (continued)

Transfer Parcel EDC-12 (AOC 3)—TPH Delineation EBS Parcels 150B/151 and SVOCs at Former Wood-Treatment Area (applies to former wood-treatment area only)

Five boreholes will be advanced near previous soil sample locations within the former wood-treatment area, as shown on **Figure 7**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed suggesting contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. In addition, soil samples will be collected for PAH analysis from each borehole following the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**. After homogenization, one soil sample will be collected from each depth interval. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Because the historical SVOC (including PAH) analytical data collected in AOC 3 had detection limits greater than the screening criteria, soil samples will be analyzed for TCL SVOCs and the composite soil samples will be analyzed for TCL PAHs. In addition, surface soil samples will be analyzed for dixoins/furans.

Transfer Parcel EDC-12 (AOC 4)—Building 167 and Surrounding Area in EBS Parcel 154 (applies to areas near the two SWMUs inside Building 167 and the areas outside of Building 167 only)

Eight soil boreholes will be advanced: one at each of the two SWMU NADEP GAPS and one borehole on each of the three sides of Building 167 (east, south, and west; the north side of the building is being investigated as part of IR Site 27), as well as three boreholes in the open space areas where maintenance and washdown of aircraft and other vehicles may have occurred, as shown on **Figure 8**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth, excluding soil samples being collected for PAH analysis. Soil samples will be collected for PAH analysis at each borehole following the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**. After homogenization, one soil sample will be collected from each depth interval. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Two discrete direct-push samples, one from the FWBZ-upper (approximately 10 feet bgs) and one from the FWBZ-lower (approximately 20 feet bgs), will be collected from each borehole. Based on historical use as NADEP GAPS, aircraft parking, possible aircraft washdown, and possible

SAP Worksheet #17—Sampling Design and Rationale (continued)

aircraft and vehicle maintenance, soil and groundwater samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL VOCs, TCL SVOCs, TCL PAHs, TAL metals, TCL PCBs, and TCL pesticides.

Transfer Parcel EDC-12 (AOC 6)—SWMU AST 584

Two soil boreholes will be advanced, on either side of SWMU AST 584, as shown on **Figure 9**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed suggesting contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. In addition, soil samples will be collected for PAH analysis from each borehole following the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**. After homogenization, one soil sample will be collected from each depth interval. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Two discrete direct-push samples, one from the FWBZ-upper (approximately 10 feet bgs) and one from the FWBZ-lower (approximately 20 feet bgs), will be collected from one borehole. The exact location of the discrete direct-push sample will be determined in the field based on field observations (e.g., soil staining). Based on historical use of corrosion-inhibiting chemicals, soil and groundwater samples will be analyzed for TCL SVOCs, TCL PAHs, TAL metals, and hexavalent chromium.

Transfer Parcel EDC-17—Stained Area North of Building 402

Three boreholes will be advanced along the northern boundary of EBS Parcel 169, north of Building 402 where significant staining was observed, as shown on **Figure 11**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. In addition, soil samples will be collected for PAH analysis from each borehole following the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**. After homogenization, one soil sample will be collected from each depth interval. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Two discrete direct-push samples, one from the FWBZ-upper (approximately 10 feet bgs) and one from

SAP Worksheet #17—Sampling Design and Rationale (continued)

the FWBZ-lower (approximately 20 feet bgs), will be collected from each borehole. Based on historical use as aircraft parking, possible aircraft washdown, and possible aircraft maintenance, soil and groundwater samples will be analyzed for TAL metals, petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL VOCs, and TCL PAHs.

Transfer Parcel EDC-17 (AOC 1)— Soil Sampling at AST 432C

Two boreholes will be advanced, one to the north and one to the east of the concrete pad where former AST 432C was located, as shown in **Figure 10.** A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected at the groundwater interface. In addition, soil samples will be collected for PAH analysis from each borehole following the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**. After homogenization, one soil sample will be collected from each depth interval.

Discrete direct-push samples will be collected from at least one borehole if groundwater is encountered above 8.5 feet bgs. However, if staining is observed during field activities, then the borehole will be advanced to obtain groundwater samples; maximum depths will be dependent upon the capabilities of the on-site equipment and methods being used (expected maximum depth is approximately 25 feet bgs). Two discrete direct-push samples, one from the FWBZ-upper (approximately 10 feet bgs) and one from the FWBZ-lower (approximately 20 feet bgs), will be collected from three boreholes.

Based on historical use as a UST storing diesel fuel, soil samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor oil). In addition, the soil and discrete depth direct-push groundwater samples will be analyzed for TAL metals, TCL VOCs, and TCL PAHs to support closure of forme AST through the Alameda Point Petroleum Program.

Transfer Parcel EDC-17 (AOC 2)—Building 402 Evaluation in EBS Parcel 169

Six boreholes will be advanced in the footprint of former Building 402, one in the center and five near the perimeter of the AOC, as shown in **Figure 11**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth, excluding soil samples being collected for PAH analysis. Soil samples will be collected for PAH

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analysis at each borehole following the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**. After homogenization, one soil sample will be collected from each depth interval. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Two discrete direct-push samples, one from the FWBZ-upper (approximately 10 feet bgs) and one from the FWBZ-lower (approximately 20 feet bgs), will be collected from three boreholes. The exact location of the discrete direct-push samples will be determined in the field based on field observations (e.g., soil staining, olfactory observations, elevated PID readings, etc.). Based on historical use as a maintenance shop and sand blast shelter, soil and groundwater samples will be analyzed for petroleum constituents using silica gel cleanups (i.e, TPH-gasoline, TPH-diesel, TPH-motor oil), TCL VOCs, TCL SVOCs, TCL PAHs, and TAL metals.

Transfer Parcel FED-1A (AOC 1)—Pesticide and PCB Evaluation in EBS Parcel 5 (applies to samples at locations where detection limits exceeded screening criteria)

Four boreholes will be advanced at previous surface soil sample locations A-2, A-3, A-4, and A-6 where detection limits for certain PCBs and a pesticide were above the screening criteria, as shown on **Figure 12.** A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed suggesting contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Subsurface samples (collected from 0.5 to 8 feet bgs) will be held pending laboratory results from the surface soil samples. If screening criteria are exceeded in a surface sample from a particular borehole, then the subsurface soil samples from that borehole will be analyzed by the laboratory. Because historical samples were analyzed for TCL PCBs and pesticides, the new soil samples will be analyzed for PCBs and pesticides.

Transfer Parcel FED-1A—13 SWMU Former ASTs (TPH, PCB, and Metals Evaluation)

To assess whether a release of petroleum-based fuels has occurred near the 11 of 13 SWMU former ASTs that stored petroleum, two boreholes will be advanced at the site of each former AST (except for AST 488), for a total of 22 boreholes, as shown on **Figure 12**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected at groundwater interface. In addition, soil samples will be collected for PAH analysis from each borehole following the Alameda Point PAH collection

SAP Worksheet #17—Sampling Design and Rationale (continued)

guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**.

Since staining was observed near former ASTs 467B and 599B, two discrete depth direct-push samples, one from the FWBZ-upper (approximately 10 feet bgs) and one from the FWBZ-lower (approximately 20 feet bgs), will be collected from at least one of the boreholes advanced near each of the ASTs. The exact borehole location of the discrete depth direct-push samples will be determined in the field based on field observations (e.g., soil staining, olfactory observations, elevated PID readings, etc.).

Discrete depth direct-push groundwater samples will be collected from at least one borehole near each of the remaining former ASTs if groundwater is encountered above 8.5 feet bgs. However, if staining is observed during field activities, then the borehole will be advanced to obtain groundwater samples; maximum depths will be dependent upon the capabilities of the on-site equipment and methods being used (expected maximum depth is approximately 25 feet bgs). Two discrete direct-push samples, one from the FWBZ-upper (approximately 10 feet bgs) and one from the FWBZ-lower (approximately 20 feet bgs), will be collected from three boreholes.

Based on historical use as an AST used to store aviation or diesel fuel, soil samples will be analyzed for TCL VOCs, TPH-diesel, TPH-motor-oil using silica gel cleanups, and TCL PAHs. In addition, to assess if a release of PCBs has occurred, soil samples collected from the boreholes described above at former ASTs 467B, 483A, 483B, 495A, 495B, and 485B will also be analyzed for TCL PCBs, for a total of 30 samples.

If a former AST was located on soil, then soil samples will be collected and analyzed for Title 22 metals from the 22 boreholes described above, at the same intervals. In addition, two boreholes will be advanced near former AST 407A, AST 407B, and AST 488 at the same intervals listed above and analyzed for Title 22 metals. If a former AST was located on pavement and it can be documented that the area was paved prior to AST installation, soil samples will be collected from the nearest channel or area where surface runoff would have carried and possibly deposited paint chips. In this case, soil samples will be collected from the surface and from 2 feet bgs from 2 boreholes within the depositional area. These soil samples will be analyzed for Title 22 metals.

Transfer Parcel FED-1A—Munitions in Soil at Former Munitions Storage Area

Ten boreholes will be advanced, one near each front door of Buildings 50, 51, 56, 57, 58, and 270, one near the pervious discrete direct-push location (023-0039) that had the low level detect of an explosive, and two randomly placed near the former lockers, as shown in **Figure 12**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed suggesting contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the

SAP Worksheet #17—Sampling Design and Rationale (continued)

groundwater interface. Based on historical use of this area for munitions storage, soil samples will be analyzed for explosives.

Transfer Parcel FED-1A—Aircraft Parking Apron

Three boreholes will be advanced in the northeastern and central-eastern portion of EBS Parcel 23 where significant staining was observed, as shown on **Figure 12**. However, if significant concrete cracking in observed in the apron, the boreholes will be relocated in the field to be placed within the areas of cracked concrete. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. In addition, soil samples will be collected for PAH analysis from each borehole following the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**. After homogenization, one soil sample will be collected from each depth interval. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Two discrete direct-push samples from the FWBZ, one at the groundwater table (approximately 7 feet bgs) and one deeper sample (approximately 15 feet bgs), will be collected from each borehole. Based on historical use as aircraft parking, possible aircraft washdown, and possible aircraft maintenance, soil and groundwater samples will be analyzed for TAL metals, petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL VOCs, and TCL PAHs. The soil and groundwater samples will be submitted to the laboratory on rapid turnaround time. The soil and groundwater data will be immediately assessed to determine if step-out boreholes are needed. If step-out boreholes are needed, the Navy will plot available data and proposed step-out borehole locations and provide to the agencies prior to conducting the field work. Soil and groundwater sampling at the step-out boreholes will follow the above sampling guidelines.

Transfer Parcel FED-1A—WD-259 Evaluation

Prior to drilling activities, the trench drain located in the center will be cleaned to remove any debris or standing water. After cleaning, the trench drain will be inspected to find any weak areas that might exist (i.e., cracked concrete). The findings of this inspection will be included in the Final SI Report. If weak areas are observed in the trench drain, a borehole will be placed in that area and samples will be collected as described below to assess whether a CERCLA-release(s) has occurred. If no weak areas are observed, boreholes will be randomly chosen within the open trench drain and samples will be collected as described below to assess whether a CERCLA-release(s) has occurred.

To assess if a release of contaminants has occurred, a borehole will be advanced to the east and south of Washdown 259 and two boreholes will be advanced from within the open trench drain, for a total of 4 borehole locations, as shown on **Figure 12**. A surface soil sample

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(0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Two discrete direct-push samples from the FWBZ, one at the water table (approximately 7 feet bgs) and one deeper sample (approximately 15 feet bgs), will be collected from each borehole. Based on historical uses as a washdown area, soil and groundwater samples will be analyzed for TCL VOCs.

Systematic Random Sampling

For sites where there are no relevant historical sample data and specific areas where a release may have occurred cannot be identified based on historical information and/or field observations, sample locations are to be placed in a grid pattern, as described below. This systematic approach is taken for the following sites:

Transfer Parcel EDC-12 (AOC 1)—Former Storage Yards

Four boreholes will be advanced across the AOC (approximately 50- to 100-foot spacing), as shown on **Figure 6.** A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. This sampling depth protocol excludes soil samples being collected for PAH analysis. Soil samples will be collected for PAH analysis at each borehole following the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**. After homogenization, one soil sample will be collected from each depth interval. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Two discrete direct-push samples, one from the FWBZ-upper (approximately 10 feet bgs) and one from the FWBZ-lower (approximately 20 feet bgs), will be collected from one borehole. The exact location of the discrete direct-push sample will be determined in the field based on field observations (e.g., soil staining, olfactory observations, elevated FID/PID readings, etc.). Based on historical use and the uncertainty of what was stored in the yards, soil and groundwater samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL VOCs, TCL SVOCs, TCL PAHs, TAL metals, TCL PCBs, and TCL pesticides.

Transfer Parcel EDC-12 (AOC 5)—Washdown Area in Southern Portion of EBS Parcel

Fifteen boreholes will be advanced spaced approximately 150 feet apart across the site, as shown on **Figure 9**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface

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soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth, excluding soil samples being collected for PAH analysis. Soil samples will be collected for PAH analysis at each borehole following the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**. After homogenization, one soil sample will be collected from each depth interval. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Two discrete direct-push samples, one from the FWBZ-upper (approximately 10 feet bgs) and one from the FWBZ-lower (approximately 20 feet bgs), will be collected from each borehole. Based on historical use as aircraft parking, possible aircraft washdown, and possible aircraft and vehicle maintenance, soil and groundwater samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil), TCL VOCs, TCL SVOCs, and TCL PAHs.

Transfer Parcel FED-1A—Firefighting Training Activities Evaluation

Thirty-five boreholes will be advanced in an approximate 500-foot grid pattern across Open Space III, as shown in **Figure 12**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Based on historical use for firefighting training activities, soil samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, and TPH-motor-oil), TCL VOCs, dioxins/furans, and TAL metals.

For some sites were relevant historical sample data exist, the sample locations and/or density are insufficient spatially to make release determinations conclusively. For these sites, projected sample locations are biased to areas that, when considered collectively with the relevant historical sample data, provide sufficient spatial data to make conclusive release determinations (i.e., new samples fill data gaps in historical samples) or further define extent of contamination. This approach is taken for the following sites:

Transfer Parcel EDC-12 (AOC 2)—SWMU GAP 621/Drum Storage Evaluation and TPH Delineation EBS Parcels 150A/150B (applies to TPH delineation area in EBS Parcels 150A/150B only)

Four step-out boreholes wll be advanced 25 feet to the north, east, south, and west of previous sample location 150-0016M, as shown on **Figure 7**. Soil samples will be collected at 0.5, 4, and 8 ft bgs, or where staining is observed or field screening (i.e., olfactory

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observations, FID/PID readings) suggests contamination, from each of the boreholes. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Because TPH was the only constituent detected in previous sample 150-0016M above a screening criterion, soil samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil).

Transfer Parcel EDC-12 (AOC 3)—TPH Delineation EBS Parcels 150B/151 and SVOCs at Former Wood-Treatment Area (applies to TPH delineation area in EBS Parcels 150B/151 only)

Four step-out boreholes will be advanced 25 feet north, east, south, and west of each the previous sample locations 150-0020, 151-009 and 151-0012M, as shown on **Figure 7**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Because TPH was the only constituent detected in previous samples 150-0020, 151-009, and 151-0012M above a screening criterion, oil sample will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil).

Transfer Parcel EDC-12 (AOC 4)—Building 167 and Surrounding Area in EBS Parcel 154 (applies to the TPH delineation area inside Building 167 only)

Three boreholes will be advanced at previous step-out sample locations 154-0031, 154-0032, and 154-0034 (TPH-diesel data previously collected at these locations were rejected during the validation process), as shown on **Figure 8**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. Because TPH was the only constituent rejected in previous samples 154-0031, 154-0032, and 154-0034, soil samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor-oil).

Transfer Parcel EDC-17 (AOC 1)—Delineation of TPH in EBS Parcel 165

One borehole will be advanced in the area between previous sample locations 165-0001 and 165-0002 and four step-out boreholes will be advanced 25 feet north, east, south, and west of the previous sample locations, as shown in **Figure 10**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed or field screening (i.e., olfactory observations, FID/PID readings) suggests contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be

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collected just above the groundwater interface. In addition, soil samples will be collected for PAH analysis from each borehole following the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**. After homogenization, one soil sample will be collected from each depth interval.

Because TPH was the only constituent detected in previous sample 165-0001 above a screening criterion, soil samples will be analyzed for petroleum constituents using silica gel cleanups (i.e., TPH-gasoline, TPH-diesel, TPH-motor oil). In addition, the soil and discrete direct-push samples will be analyzed for TAL metals, TCL VOCs, and TCL PAHs to support closure of former AST 432C through the Almeda Point Petroleum Program.

Transfer Parcel EDC-17 (AOC 3)—Further Evaluation of VOCs in Groundwater in EBS Parcel 169

A phased sampling approach will be used at this AOC by first advancing a borehole at previous sample location 160-0019. Two discrete direct-push samples, one from the FWBZ-upper (approximately 10 feet bgs) and one from the FWBZ-lower (approximately 20 feet bgs), will be collected from the borehole. Groundwater samples will be analyzed on a rapid turnaround for TCL VOCs and MTBE. If these constituents are not detected above the screening criteria (**Worksheet #15**), then no further sampling is required.

If the constituents are detected above the screening criteria, to define the extent of contamination four step-out boreholes 40 feet to the north, east, south, and west of previous sample location 169-0019 will be advanced, as shown in **Figure 11**. Two discrete direct-push samples, one from the FWBZ-upper (approximately 10 feet bgs) and one from the FWBZ-lower (approximately 20 feet bgs), will be collected from each borehole. Groundwater samples will be analyzed for TCL VOCs and MTBE.

Transfer Parcel FED-1A (AOC 1)—Pesticide and PCB Evaluation in EBS Parcel 5 (applies to step out samples only)

The extent of a potential PCB release area will be defined by advancing one borehole at previous sample location A-1 and four step-out boreholes 25 feet to the north, south, east, and west of previous sample A-1, as shown on **Figure 12**. A surface soil sample (0 to 0.5 feet bgs) and two subsurface soil samples (between 0.5 foot bgs and 8 feet bgs) will be collected from each borehole. The subsurface soil samples will be collected either at specific depths where soil staining is observed suggesting contamination, or at 4 feet bgs and 8 feet bgs if no staining is observed or field screening does not suggest contamination at a specific depth. If groundwater is encountered at a depth shallower than 8 feet bgs, then the deepest soil sample will be collected just above the groundwater interface. Because Aroclor-1260 (a PCB) was the only constituent detected above the screening criteria in soil at AOC 1, soil samples will be analyzed for TCL PCBs.

Transfer Parcel FED-1A—IR Site 33 (PAHs in Soil Evaluation)

Each of the five boreholes from the 2002 PAH investigation (32FED-1A-31, 32FED-1A-38, 32FED-1A-47, 32FED-1A-58, and 32FED-1A-67) will be treated as a hotspot. Four boreholes will be advanced to 8 feet bgs near each of the 2002 boreholes, 40 feet to the north, south,

SAP Worksheet #17—Sampling Design and Rationale (continued)

east, and west of the former boring, as shown on **Figure 13**. Soil samples will be collected for PAH analysis at each borehole following the Alameda Point PAH collection guidelines as outlined in the *Draft Final Work Plan for PAH Background Determination and PAH-specific SIs for Alameda Point* (BEI, 2002). According to the Alameda Point PAH collection guidelines, soil from each depth interval (0 to 0.5, 0.5 to 2, 2 to 4, and 4 to 8 feet bgs) at each borehole will be homogenized following procedures presented in **Worksheet #11**. After homogenization, one soil sample will be collected from each depth interval. A total of 20 boreholes will be advanced and 80 composite soil samples will be collected. Because PAHs were detected in previous samples 32FED-1A-31, 32FED-1A-38, 32FED-1A-47, 32FED-1A-58, and 32FED-1A-67 above a screening criterion, soil samples will be analyzed for TCL PAHs.

For the above sampling approach, the rationale for the matrices to be sampled, the number of samples per matrix, the analytical groups, and screening levels is discussed in **Worksheets #10, #11, #14, and #15**. Sample location figures are provided in the Work Plan.

Transfer Parcel FED-1A—Building 100 PCB Evaluation

To assess whether a release of PCBs has occurred, concrete samples will be collected from a maximum of a 1.5-meter grid pattern on the floor of each of the two rooms that comprise Building 100. The maximum 1.5-meter grid forms six sampling areas. Based on the maximum 1.5-meter grid a varying number of sub-samples will composited to form one discrete sample per sampling area. The methodology for combining discrete sample locations to form composite samples is described in SOP #2 in Attachment B. Sample locations will be collected and composited based on TSCA guidelines and analyzed for TCL PCBs. A total of 6 samples will be submitted for laboratory analysis. A total of six or nine discrete sample locations are proposed for each sampling area depending on the area's size. Discrete sample locations per sampling area are shown on Figure 13.

For the above sampling approach, the rationale for the matrices to be sampled and screening levels is discussed in **Worksheets #10, #11, and #15**. Sample location figures are provided in the Work Plan.

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SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference
EDC-12						
AOC 1						
AP12A1-DP01	AP12A1-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH, VOCs, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A1-DP01	AP12A1-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A1-DP01	AP12A1PAH-DS01-0.0-0.5-MMYY	Soil	0.0-0.5	PAHs	1	See Worksheet 21
AP12A1-DP01	AP12A1PAH-DS01-0.5-2.0-MMYY	Soil	0.5-2.0	PAHs	1	See Worksheet 21
AP12A1-DP01	AP12A1PAH-DS01-4.0-8.0-MMYY	Soil	4.0-8.0	PAHs	1	See Worksheet 21
AP12A1-MW01	AP12A1-MW01-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, Metals, Pesticides, PCBs	3 (MS/MSD)	See Worksheet 21
AP12A1-MW01	AP12A1-MW01-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A1-DP02	AP12A1-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A1-DP02	AP12A1-DS02-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A1-DP02	AP12A1-DS02-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A1-DP02	AP12A1PAH-DS02-0.0-0.5-MMYY	Soil	0.0-0.5	PAHs	1	See Worksheet 21
AP12A1-DP02	AP12A1PAH-DS02-0.5-2.0-MMYY	Soil	0.5-2.0	PAHs	3 (MS/MSD)	See Worksheet 21
AP12A1-DP02	AP12A1PAH-DS02-2.0-4.0-MMYY	Soil	2.0-4.0	PAHs	1	See Worksheet 21
AP12A1-DP02	AP12A1PAH-DS02-4.0-8.0-MMYY	Soil	4.0-8.0	PAHs	1	See Worksheet 21
AP12A1-DP03	AP12A1-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A1-DP03	AP12A1-DS03-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A1-DP03	AP12A1-DS03-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A1-DP03	AP12A1PAH-DS03-0.5-2.0-MMYY	Soil	0.5-2.0	PAHs	1	See Worksheet 21
AP12A1-DP03	AP12A1PAH-DS03-2.0-4.0-MMYY	Soil	2.0-4.0	PAHs	1	See Worksheet 21
AP12A1-DP03	AP12A1PAH-DS03-4.0-8.0-MMYY	Soil	4.0-8.0	PAHs	1	See Worksheet 21
AP12A1-DP04	AP12A1-DS04-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A1-DP04	AP12A1-DS04-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A1-DP04	AP12A1-DS04-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A1-DP04	AP12A1PAH-DS04-0.0-0.5-MMYY	Soil	0.0-0.5	PAHs	1	See Worksheet 21
AP12A1-DP04	AP12A1PAH-DS04-0.5-2.0-MMYY	Soil	0.5-2.0	PAHs	1	See Worksheet 21
AP12A1-DP04	AP12A1PAH-DS04-2.0-4.0-MMYY	Soil	2.0-4.0	PAHs	1	See Worksheet 21
AOC 2						
AP12A2-DP01	AP12A2-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A2-DP01	AP12A2-DS01-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A2-DP01	AP12A2-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A2-DP01	AP12A2PAH-DS01-0.0-0.5-MMYY	Soil	0.0-0.5	PAHs	1	See Worksheet 21
AP12A2-DP01	AP12A2PAH-DS01-0.5-2.0-MMYY	Soil	0.5-2.0	PAHs	1	See Worksheet 21
AP12A2-DP01	AP12A2PAH-DS01-2.0-4.0-MMYY	Soil	2.0-4.0	PAHs	3 (MS/MSD)	See Worksheet 21
AP12A2-DP01	AP12A2PAH-DS01-4.0-8.0-MMYY	Soil	4.0-8.0	PAHs	1	See Worksheet 21
AP12A2-DP02	AP12A2-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A2-DP02	AP12A2-DS02-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A2-DP02	AP12A2PAH-DS02-0.0-0.5-MMYY	Soil	0.0-0.5	PAHs	1	See Worksheet 21
AP12A2-DP02	AP12A2PAH-DS02-0.5-2.0-MMYY	Soil	0.5-2.0	PAHs	1	See Worksheet 21
AP12A2-DP02	AP12A2PAH-DS02-4.0-8.0-MMYY	Soil	4.0-8.0	PAHs	1	See Worksheet 21
AP12A2-DP03	AP12A2-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A2-DP03	AP12A2-DS03-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A2-DP03	AP12A2-DS03-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A2-DP03	AP12A2PAH-DS03-0.0-0.5-MMYY	Soil	0.0-0.5	PAHs	1	See Worksheet 21
AP12A2-DP03	AP12A2PAH-DS03-0.5-2.0-MMYY	Soil	0.5-2.0	PAHs	1	See Worksheet 21
AP12A2-DP03	AP12A2PAH-DS03-4.0-8.0-MMYY	Soil	4.0-8.0	PAHs	1	See Worksheet 21
AP12A2-DP04	AP12A2-DS04-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, SVOCs, Metals, Pesticides, PCBs	3 (MS/MSD)	See Worksheet 21
AP12A2-DP04	AP12A2-DS04-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, SVOCs, Metals, Pesticides, PCBs	1	See Worksheet 21
AP12A2-DP04	AP12A2PAH-DS04-0.0-0.5-MMYY	Soil	0.0-0.5	PAHs	1	See Worksheet 21
AP12A2-DP04	AP12A2PAH-DS04-0.5-2.0-MMYY	Soil	0.5-2.0	PAHs	1	See Worksheet 21
AP12A2-DP04	AP12A2PAH-DS04-2.0-4.0-MMYY	Soil	2.0-4.0	PAHs	1	See Worksheet 21
AP12A2-DP04	AP12A2PAH-DS04-4.0-8.0-MMYY	Soil	4.0-8.0	PAHs	1	See Worksheet 21
AP12A2-DP05	AP12A2-DS05-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A2-DP05	AP12A2-DS05-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A2-DP06	AP12A2-DS06-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A2-DP06	AP12A2-DS06-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A2-DP06	AP12A2-DS06-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A2-DP07	AP12A2-DS07-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A2-DP07	AP12A2-DS07-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A2-DP07	AP12A2-DS07-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A2-DP08	AP12A2-DS08-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A2-DP08	AP12A2-DS08-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A2-DP08	AP12A2-DS08-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AOC 3						
AP12A3-DP01	AP12A3-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP01	AP12A3-DS01-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP01	AP12A3-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP02	AP12A3-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP02	AP12A3-DS02-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP02	AP12A3-DS02-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP03	AP12A3-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP03	AP12A3-DS03-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP03	AP12A3-DS03-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP04	AP12A3-DS04-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP04	AP12A3-DS04-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP04	AP12A3-DS04-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP05	AP12A3-DS05-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A3-DP05	AP12A3-DS05-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DS05	AP12A3-DS05-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP06	AP12A3-DS06-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP06	AP12A3-DS06-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP06	AP12A3-DS06-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP07	AP12A3-DS07-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP07	AP12A3-DS07-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP07	AP12A3-DS07-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP08	AP12A3-DS08-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP08	AP12A3-DS08-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP08	AP12A3-DS08-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP09	AP12A3-DS09-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP09	AP12A3-DS09-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	3 (MS/MSD)	See Worksheet 21
AP12A3-DP09	AP12A3-DS09-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP10	AP12A3-DS10-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP10	AP12A3-DS10-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP10	AP12A3-DS10-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP11	AP12A3-DS11-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP11	AP12A3-DS11-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP11	AP12A3-DS11-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP12	AP12A3-DS12-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP12	AP12A3-DS12-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP12	AP12A3-DS12-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A3-DP13	AP12A3-DS13-0.0-0.5-MMYY	Soil	0.0 - 0.5	SVOCs and dioxins/furans	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A3-DP13	AP12A3-DS13-3.5-4.0-MMYY	Soil	3.5 – 4.0	SVOCs	1	See Worksheet 21
AP12A3-DP13	AP12A3-DS13-7.5-8.0-MMYY	Soil	7.5 - 8.0	SVOCs	1	See Worksheet 21
AP12A3-DP13	AP12A3PAH-DS13-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A3-DP13	AP12A3PAH-DS13-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	3 (MS/MSD)	See Worksheet 21
AP12A3-DP13	AP12A3PAH-DS13-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A3-DP14	AP12A3-DS14-0.0-0.5-MMYY	Soil	0.0 - 0.5	SVOCs and dioxins/furans	3 (MS/MSD)	See Worksheet 21
AP12A3-DP14	AP12A3-DS14-3.5-4.0-MMYY	Soil	3.5 – 4.0	SVOCs	1	See Worksheet 21
AP12A3-DP14	AP12A3-DS14-7.5-8.0-MMYY	Soil	7.5 - 8.0	SVOCs	1	See Worksheet 21
AP12A3-DP14	AP12A3PAH-DS14-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A3-DP14	AP12A3PAH-DS14-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A3-DP14	AP12A3PAH-DS14-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A3-DP15	AP12A3-DS15-0.0-0.5-MMYY	Soil	0.0 - 0.5	SVOCs and dioxins/furans	1	See Worksheet 21
AP12A3-DP15	AP12A3-DS15-3.5-4.0-MMYY	Soil	3.5 – 4.0	SVOCs	1	See Worksheet 21
AP12A3-DP15	AP12A3PAH-DS15-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A3-DP15	AP12A3PAH-DS15-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A3-DP15	AP12A3PAH-DS15-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A3-DP15	AP12A3PAH-DS15-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A3-DP16	AP12A3-DS16-0.0-0.5-MMYY	Soil	0.0 - 0.5	SVOCs and dioxins/furans	1	See Worksheet 21
AP12A3-DP16	AP12A3-DS16-3.5-4.0-MMYY	Soil	3.5 – 4.0	SVOCs	1	See Worksheet 21
AP12A3-DP16	AP12A3-DS16-7.5-8.0-MMYY	Soil	7.5 - 8.0	SVOCs	1	See Worksheet 21
AP12A3-DP16	AP12A3PAH-DS16-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A3-DP16	AP12A3PAH-DS16-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A3-DP16	AP12A3PAH-DS16-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A3-DP16	AP12A3PAH-DS16-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A3-DP17	AP12A3-DS17-0.0-0.5-MMYY	Soil	0.0-0.5	SVOCs and dioxins/furans	1	See Worksheet 21
AP12A3-DP17	AP12A3-DS17-3.5-4.0-MMYY	Soil	3.5 – 4.0	SVOCs	1	See Worksheet 21
AP12A3-DP17	AP12A3-DS17-7.5-8.0-MMYY	Soil	7.5 - 8.0	SVOCs	1	See Worksheet 21
AP12A3-DP17	AP12A3PAH-DS17-0.5-2.0-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A3-DP17	AP12A3PAH-DS17-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A3-DP17	AP12A3PAH-DS17-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AOC 4						
AP12A4-DP01	AP12A4-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A4-DP01	AP12A4-DS01-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A4-DP01	AP12A4-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A4-DP02	AP12A4-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A4-DP02	AP12A4-DS02-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A4-DP03	AP12A4-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP12A4-DP03	AP12A4-DS03-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A4-DP03	AP12A4-DS03-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP12A4-DP04	AP12A4-DS04-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP04	AP12A4-DS04-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP04	AP12A4-DS04-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP04	AP12A4PAH-DS04-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A4-DP04	AP12A4PAH-DS04-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A4-DP04	AP12A4PAH-DS04-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A4-MW04	AP12A4-MW04-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP05	AP12A4-DS05-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP05	AP12A4-DS05-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP05	AP12A4-DS05-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP05	AP12A4PAH-DS05-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A4-DP05	AP12A4PAH-DS05-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A4-DP05	AP12A4PAH-DS05-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A4-DP05	AP12A4PAH-DS05-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A4-MW05	AP12A4-MW05-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-MW05	AP12A4-MW05-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP06	AP12A4-DS06-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	3 (MS/MSD)	See Worksheet 21
AP12A4-DP06	AP12A4-DS06-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP06	AP12A4-DS06-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP06	AP12A4PAH-DS06-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	3 (MS/MSD)	See Worksheet 21
AP12A4-DP06	AP12A4PAH-DS06-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A4-DP06	AP12A4PAH-DS06-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A4-DP06	AP12A4PAH-DS06-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A4-MW06	AP12A4-MW06-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP07	AP12A4-DS07-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP07	AP12A4-DS07-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP07	AP12A4PAH-DS07-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A4-DP07	AP12A4PAH-DS07-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A4-DP07	AP12A4PAH-DS07-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A4-MW07	AP12A4-MW07-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-MW07	AP12A4-MW07-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP08	AP12A4-DS08-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP08	AP12A4-DS08-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP08	AP12A4-DS08-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP08	AP12A4PAH-DS08-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A4-DP08	AP12A4PAH-DS08-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A4-DP08	AP12A4PAH-DS08-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A4-DP08	AP12A4PAH-DS08-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A4-MW08	AP12A4-MW08-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-MW08	AP12A4-MW08-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP09	AP12A4-DS09-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP09	AP12A4-DS09-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP09	AP12A4-DS09-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP09	AP12A4PAH-DS09-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A4-DP09	AP12A4PAH-DS09-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A4-DP09	AP12A4PAH-DS09-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A4-DP09	AP12A4PAH-DS09-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A4-MW09	AP12A4-MW09-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-MW09	AP12A4-MW09-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP10	AP12A4-DS10-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP10	AP12A4-DS10-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A4-DP10	AP12A4-DS10-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP10	AP12A4PAH-DS10-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	3 (MS/MSD)	See Worksheet 21
AP12A4-DP10	AP12A4PAH-DS10-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A4-DP10	AP12A4PAH-DS10-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A4-DP10	AP12A4PAH-DS10-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A4-MW10	AP12A4-MW10-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-MW10	AP12A4-MW10-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP11	AP12A4-DS11-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP11	AP12A4-DS11-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-DP11	AP12A4PAH-DS11-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A4-DP11	AP12A4PAH-DS11-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A4-DP11	AP12A4PAH-DS11-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A4-DP11	AP12A4PAH-DS11-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A4-MW11	AP12A4-MW11-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AP12A4-MW11	AP12A4-MW11-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, metals, PCBs, Pesticides	1	See Worksheet 21
AOC 5						
AP12A5-DP01	AP12A5-DS01-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP01	AP12A5-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP01	AP12A5PAH-DS01-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A5-DP01	AP12A5PAH-DS01-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-DP01	AP12A5PAH-DS01-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A5-MW01	AP12A5-MW01-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-MW01	AP12A5-MW01-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs	3 (MS/MSD)	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A5-DP02	AP12A5-DS02-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP02	AP12A5-DS02-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP02	AP12A5PAH-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A5-DP02	AP12A5PAH-DS02-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A5-DP02	AP12A5PAH-DS02-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-DP02	AP12A5PAH-DS02-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A5-MW02	AP12A5-MW02-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-MW02	AP12A5-MW02-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-DP03	AP12A5-DS03-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP03	AP12A5-DS03-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP03	AP12A5PAH-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	3 (MS/MSD)	See Worksheet 21
AP12A5-DP03	AP12A5PAH-DS03-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A5-DP03	AP12A5PAH-DS03-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-DP03	AP12A5PAH-DS03-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A5-MW03	AP12A5-MW03-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-DP04	AP12A5-DS04-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP04	AP12A5-DS04-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	3 (MS/MSD)	See Worksheet 21
AP12A5-DP04	AP12A5PAH-DS04-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A5-DP04	AP12A5PAH-DS04-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A5-DP04	AP12A5PAH-DS04-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-DP04	AP12A5PAH-DS04-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A5-MW04	AP12A5-MW04-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A5-MW04	AP12A5-MW04-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-DP05	AP12A5-DS05-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP05	AP12A5-DS05-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP05	AP12A5PAH-DS05-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A5-DP05	AP12A5PAH-DS05-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-DP05	AP12A5PAH-DS05-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A5-MW05	AP12A5-MW05-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-MW05	AP12A5-MW05-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-DP06	AP12A5-DS06-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOC	1	See Worksheet 21
AP12A5-DP06	AP12A5-DS06-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP06	AP12A5-DS06-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP06	AP12A5PAH-DS06-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A5-DP06	AP12A5PAH-DS06-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A5-DP06	AP12A5PAH-DS06-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-MW06	AP12A5-MW06-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	3 (MS/MSD)	See Worksheet 21
AP12A5-MW06	AP12A5-MW06-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-DP07	AP12A5-DS07-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOC	1	See Worksheet 21
AP12A5-DP07	AP12A5-DS07-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP07	AP12A5-DS07-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP07	AP12A5PAH-DS07-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A5-DP07	AP12A5PAH-DS07-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A5-DP07	AP12A5PAH-DS07-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A5-DP07	AP12A5PAH-DS07-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A5-MW07	AP12A5-MW07-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-MW07	AP12A5-MW07-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-DP08	AP12A5-DS08-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOC	1	See Worksheet 21
AP12A5-DP08	AP12A5-DS08-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP08	AP12A5-DS08-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP08	AP12A5PAH-DS08-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A5-DP08	AP12A5PAH-DS08-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A5-DP08	AP12A5PAH-DS08-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-DP08	AP12A5PAH-DS08-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A5-MW08	AP12A5-MW08-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-DP09	AP12A5-DS09-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOC	1	See Worksheet 21
AP12A5-DP09	AP12A5-DS09-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP09	AP12A5-DS09-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP09	AP12A5PAH-DS09-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A5-DP09	AP12A5PAH-DS09-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-DP09	AP12A5PAH-DS09-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A5-MW09	AP12A5-MW09-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-MW09	AP12A5-MW09-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-DP10	AP12A5-DS10-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOC	3 (MS/MSD)	See Worksheet 21
AP12A5-DP10	AP12A5-DS10-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP10	AP12A5-DS10-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP10	AP12A5PAH-DS10-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A5-DP10	AP12A5PAH-DS10-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A5-DP10	AP12A5PAH-DS10-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-DP10	AP12A5PAH-DS10-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A5-MW10	AP12A5-MW10-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-MW10	AP12A5-MW10-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-DP11	AP12A5-DS11-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOC	1	See Worksheet 21
AP12A5-DP11	AP12A5-DS11-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP11	AP12A5-DS11-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP11	AP12A5PAH-DS11-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A5-DP11	AP12A5PAH-DS11-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A5-DP11	AP12A5PAH-DS11-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-DP11	AP12A5PAH-DS11-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A5-MW11	AP12A5-MW11-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-MW11	AP12A5-MW11-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-DP12	AP12A5-DS12-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOC	1	See Worksheet 21
AP12A5-DP12	AP12A5-DS12-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP12	AP12A5-DS12-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP12	AP12A5PAH-DS12-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A5-DP12	AP12A5PAH-DS12-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A5-DP12	AP12A5PAH-DS12-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-DP12	AP12A5PAH-DS12-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	3 (MS/MSD)	See Worksheet 21
AP12A5-MW12	AP12A5-MW12-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-MW12	AP12A5-MW12-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-DP13	AP12A5-DS13-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOC	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A5-DP13	AP12A5-DS13-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	3 (MS/MSD)	See Worksheet 21
AP12A5-DP13	AP12A5-DS13-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP13	AP12A5PAH-DS13-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A5-DP13	AP12A5PAH-DS13-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A5-DP13	AP12A5PAH-DS13-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-DP13	AP12A5PAH-DS13-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A5-MW13	AP12A5-MW13-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-DP14	AP12A5-DS14-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOC	1	See Worksheet 21
AP12A5-DP14	AP12A5-DS14-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP14	AP12A5-DS14-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP14	AP12A5PAH-DS14-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A5-DP14	AP12A5PAH-DS14-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A5-DP14	AP12A5PAH-DS14-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-DP14	AP12A5PAH-DS14-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A5-MW14	AP12A5-MW14-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-MW14	AP12A5-MW14-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-DP15	AP12A5-DS15-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOC	1	See Worksheet 21
AP12A5-DP15	AP12A5-DS15-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP15	AP12A5-DS15-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs	1	See Worksheet 21
AP12A5-DP15	AP12A5PAH-DS15-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A5-DP15	AP12A5PAH-DS15-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A5-DP15	AP12A5PAH-DS15-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP12A5-MW15	AP12A5-MW15-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AP12A5-MW15	AP12A5-MW15-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs	1	See Worksheet 21
AOC 6						
AP12A6-DP01	AP12A6-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	SVOCs, Metals, Cr6	1	See Worksheet 21
AP12A6-DP01	AP12A6-DS01-3.5-4.0-MMYY	Soil	3.5 – 4.0	SVOCs, Metals, Cr6	1	See Worksheet 21
AP12A6-DP01	AP12A6-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	SVOCs, Metals, Cr6	3 (MS/MSD)	See Worksheet 21
AP12A6-DP01	AP12A6PAH-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	3 (MS/MSD)	See Worksheet 21
AP12A6-DP01	AP12A6PAH-DS01-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A6-DP01	AP12A6PAH-DS01-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A6-DP01	AP12A6PAH-DS01-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A6-MW01	AP12A6-MW01-LFWB2-MMYY	Ground Water	FWBZ-lower	SVOCs, Metals, Cr6, PAHs	1	See Worksheet 21
AP12A6-DP02	AP12A6-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	SVOCs, Metals, Cr6	1	See Worksheet 21
AP12A6-DP02	AP12A6-DS02-3.5-4.0-MMYY	Soil	3.5 – 4.0	SVOCs, Metals, Cr6	1	See Worksheet 21
AP12A6-DP02	AP12A6PAH-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP12A6-DP02	AP12A6PAH-DS02-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP12A6-DP02	AP12A6PAH-DS02-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP12A6-DP02	AP12A6PAH-DS02-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP12A6-MW02	AP12A6-MW02-UFWB2-MMYY	Ground Water	FWBZ-upper	SVOCs, Metals, Cr6, PAHs	1	See Worksheet 21
AP12A6-MW02	AP12A6-MW02-LFWB2-MMYY	Ground Water	FWBZ-lower	SVOCs, Metals, Cr6, PAHs	1	See Worksheet 21
EDC-17						
Aircraft Parking Stained Area						
AP17APS-DP01	AP17APS-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17APS-DP01	AP17APS-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17APS-DP01	AP17APSPAH-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP17APS-DP01	AP17APSPAH-DS01-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP17APS-DP01	AP17APSPAH-DS01-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17APS-MW01	AP17APS-MW01-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP17APS-MW01	AP17APS-MW01-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP17APS-DP02	AP17APS-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17APS-DP02	AP17APS-DS02-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, metals	3 (MS/MSD)	See Worksheet 21
AP17APS-DP02	AP17APS-DS02-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17APS-DP02	AP17APSPAH-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP17APS-DP02	AP17APSPAH-DS02-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17APS-DP02	AP17APSPAH-DS02-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	3 (MS/MSD)	See Worksheet 21
AP17APS-DP02	AP17APSPAH-DS02-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17APS-MW02	AP17APS-MW02-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP17APS-DP03	AP17APS-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17APS-DP03	AP17APS-DS03-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17APS-DP03	AP17APSPAH-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP17APS-DP03	AP17APSPAH-DS03-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17APS-DP03	AP17APSPAH-DS03-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17APS-MW03	AP17APS-MW03-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP17APS-MW03	AP17APS-MW03-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AOC 1						
AP17A1-DP01	AP17A1-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP17A1-DP01	AP17A1-DS01-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs metals	1	See Worksheet 21
AP17A1-DP01	AP17A1-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17A1-DP01	AP17A1-DP01PAH-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP17A1-DP01	AP17A1-DP01PAH-DS03-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A1-DP01	A AP17A1-DP01PAH-DS03-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17A1-DP02	AP17A1-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17A1-DP02	AP17A1-DS02-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17A1-DP02	AP17A1-DS02-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17A1-DP02	AP17A1-DP02PAH-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP17A1-DP02	AP17A1-DP02PAH-DS03-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A1-DP02	A AP17A1-DP02PAH-DS03-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17A1-DP03	AP17A1-DS03-0.0-0.5-MMYY	Soil	0.0-0.5	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17A1-DP03	AP17A1-DS03-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17A1-DP03	AP17A1-DS03-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17A1-DP03	AP17A1-DP03PAH-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP17A1-DP03	AP17A1-DP03PAH-DS03-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A1-DP03	A AP17A1-DP03PAH-DS03-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17A1-DP04	AP17A1-DS04-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17A1-DP04	AP17A1-DS04-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17A1-DP04	AP17A1-DS04-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, metals	3 (MS/MSD)	See Worksheet 21
AP17A1-DP04	AP17A1-DP04PAH-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP17A1-DP04	AP17A1-DP04PAH-DS03-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A1-DP04	A AP17A1-DP04PAH-DS03-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17A1-DP05	AP17A1-DS05-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17A1-DP05	AP17A1-DS05-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs metals	1	See Worksheet 21
AP17A1-DP05	AP17A1-DS05-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP17A1-MW05	AP17A1-MW05UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP17A1-MW05	AP17A1-MW05-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP17A1-DP05	AP17A1-DP05PAH-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP17A1-DP05	AP17A1-DP05PAH-DS03-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A1-DP05	A AP17A1-DP05PAH-DS03-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17A1-DP06	AP17A1-DS06-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP17A1-DP06	AP17A1-DS06-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP17A1-DP06	AP17A1-DS06-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP17A1-DP06	AP17A1-DP06PAH-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP17A1-DP06	AP17A1-DP06PAH-DS03-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A1-DP06	A AP17A1-DP06PAH-DS03-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17A1-DP07	AP17A1-DS07-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables	1	See Worksheet 21
AP17A1-DP07	AP17A1-DS07-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables	1	See Worksheet 21
AP17A1-DP07	AP17A1-DS07-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables	1	See Worksheet 21
AP17A1-DP07	AP17A1-DP07PAH-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP17A1-DP07	AP17A1-DP07PAH-DS03-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A1-DP07	A AP17A1-DP07PAH-DS03-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AOC 2						
AP17A2-DP01	AP17A2-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP01	AP17A2-DS01-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP01	AP17A2-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP01	AP17A2PAH-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP17A2-DP01	AP17A2PAH-DS01-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A2-DP01	AP17A2PAH-DS01-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP17A2-DP01	AP17A2PAH-DS01-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17A2-MW01	AP17A2-MW01-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs, Metals	1	See Worksheet 21
AP17A2-MW01	AP17A2-MW01-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs, Metals	1	See Worksheet 21
AP17A2-DP02	AP17A2-DS02-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP02	AP17A2-DS02-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP02	AP17A2PAH-DS02-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A2-DP02	AP17A2PAH-DS02-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP17A2-DP02	AP17A2PAH-DS02-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17A2-MW02	AP17A2-MW02-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs, Metals	1	See Worksheet 21
AP17A2-DP03	AP17A2-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOCs, Metals	3 (MS/MSD)	See Worksheet 21
AP17A2-DP03	AP17A2-DS03-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP03	AP17A2-DS03-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP03	AP17A2PAH-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	3 (MS/MSD)	See Worksheet 21
AP17A2-DP03	AP17A2PAH-DS03-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A2-DP03	AP17A2PAH-DS03-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP17A2-DP03	AP17A2PAH-DS03-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17A2-MW03	AP17A2-MW03-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, SVOCs, PAHs, Metals	3 (MS/MSD)	See Worksheet 21
AP17A2-MW03	AP17A2-MW03-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, SVOCs, PAHs, Metals	1	See Worksheet 21
AP17A2-DP04	AP17A2-DS04-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP04	AP17A2-DS04-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP04	AP17A2PAH-DS04-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A2-DP04	AP17A2PAH-DS04-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP17A2-DP04	AP17A2PAH-DS04-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17A2-DP05	AP17A2-DS05-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP05	AP17A2-DS05-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP05	AP17A2-DS05-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP05	AP17A2PAH-DS05-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP17A2-DP05	AP17A2PAH-DS05-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A2-DP05	AP17A2PAH-DS05-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP17A2-DP05	AP17A2PAH-DS05-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17A2-DP06	AP17A2-DS06-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP06	AP17A2-DS06-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP06	AP17A2-DS06-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, SVOCs, Metals	1	See Worksheet 21
AP17A2-DP06	AP17A2PAH-DS06-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP17A2-DP06	AP17A2PAH-DS06-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A2-DP06	AP17A2PAH-DS06-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP17A2-DP06	AP17A2PAH-DS06-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AOC 3						
AP17A3-DP01	AP17A2PAH-DS05-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP17A2-DP05	AP17A2PAH-DS05-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP17A2-DP05	AP17A2PAH-DS05-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP17A2-DP05	AP17A2PAH-DS05-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP17A3-MW01	AP17A3-MW01-UFWB2-MMYY	Ground Water	FWBZ-upper	VOCs, MTBE	1	See Worksheet 21
AP17A3-MW02	AP17A3-MW02-UFWB2-MMYY	Ground Water	FWBZ-upper	VOCs, MTBE	1	See Worksheet 21
AP17A3-MW02	AP17A3-MW02-LFWB2-MMYY	Ground Water	FWBZ-lower	VOCs, MTBE	1	See Worksheet 21
AP17A3-MW03	AP17A3-MW03-UFWB2-MMYY	Ground Water	FWBZ-upper	VOCs, MTBE	1	See Worksheet 21
AP17A3-MW03	AP17A3-MW03-LFWB2-MMYY	Ground Water	FWBZ-lower	VOCs, MTBE	1	See Worksheet 21
AP17A3-MW04	AP17A3-MW04-UFWB2-MMYY	Ground Water	FWBZ-upper	VOCs, MTBE	1	See Worksheet 21
AP17A3-MW04	AP17A3-MW04-LFWB2-MMYY	Ground Water	FWBZ-lower	VOCs, MTBE	1	See Worksheet 21
AP17A3-MW05	AP17A3-MW05-UFWB2-MMYY	Ground Water	FWBZ-upper	VOCs, MTBE	1	See Worksheet 21
AP17A3-MW05	AP17A3-MW05-LFWB2-MMYY	Ground Water	FWBZ-lower	VOCs, MTBE	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
FED-1A, 2B, & 2C						
Aircraft Parking Apron						
AP1AAPA-DP01	AP1AAPA-DS01-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP1AAPA-DP01	AP1AAPA-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP1AAPA-DP01	AP1A2APAPAH-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AAPA-DP01	AP1AAPAPAH-DS01-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AAPA-DP01	AP1AAPAPAH-DS01-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AAPA-DP01	AP1AAPAPAH-DS01-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AAPA-MW01	AP1AAPA-MW01-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AAPA-DP02	AP1AAPA-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP1AAPA-DP02	AP1AAPA-DS02-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP1AAPA-DP02	AP1AAPA-DS02-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP1AAPA-DP02	AP1A2APAPAH-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AAPA-DP02	AP1AAPAPAH-DS02-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AAPA-DP02	AP1AAPAPAH-DS02-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AAPA-DP02	AP1AAPAPAH-DS02-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AAPA-MW02	AP1AAPA-MW02-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AAPA-MW02	AP1AAPA-MW02-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, PAHs, metals	3 (MS/MSD)	See Worksheet 21
AP1AAPA-DP03	AP1AAPA-DS03-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP1AAPA-DP03	AP1AAPA-DS03-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, metals	1	See Worksheet 21
AP1AAPA-DP03	AP1A2APAPAH-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AAPA-DP03	AP1AAPAPAH-DS03-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AAPA-DP03	AP1AAPAPAH-DS03-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AAPA-DP03	AP1AAPAPAH-DS03-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AAPA-MW03	AP1AAPA-MW03-UFWB2-MMYY	Ground Water	FWBZ-upper	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AAPA-MW03	AP1AAPA-MW03-LFWB2-MMYY	Ground Water	FWBZ-lower	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AOC 1						
AP1AA1-DP01	AP1AA1-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	PCBs	3 (MS/MSD)	See Worksheet 21
AP1AA1-DP01	AP1AA1-DS01-3.5-4.0-MMYY	Soil	3.5 – 4.0	PCBs	1	See Worksheet 21
AP1AA1-DP01	AP1AA1-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	PCBs	1	See Worksheet 21
AP1AA1-DP02	AP1AA1-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	PCBs	1	See Worksheet 21
AP1AA1-DP02	AP1AA1-DS02-3.5-4.0-MMYY	Soil	3.5 – 4.0	PCBs	1	See Worksheet 21
AP1AA1-DP03	AP1AA1-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	PCBs	1	See Worksheet 21
AP1AA1-DP03	AP1AA1-DS03-3.5-4.0-MMYY	Soil	3.5 – 4.0	PCBs	1	See Worksheet 21
AP1AA1-DP03	AP1AA1-DS03-7.5-8.0-MMYY	Soil	7.5 - 8.0	PCBs	1	See Worksheet 21
AP1AA1-DP04	AP1AA1-DS04-0.0-0.5-MMYY	Soil	0.0 - 0.5	PCBs	1	See Worksheet 21
AP1AA1-DP04	AP1AA1-DS04-3.5-4.0-MMYY	Soil	3.5 – 4.0	PCBs	1	See Worksheet 21
AP1AA1-DP05	AP1AA1-DS05-0.0-0.5-MMYY	Soil	0.0 - 0.5	PCBs	1	See Worksheet 21
AP1AA1-DP05	AP1AA1-DS05-3.5-4.0-MMYY	Soil	3.5 – 4.0	PCBs	1	See Worksheet 21
AP1AA1-DP05	AP1AA1-DS05-7.5-8.0-MMYY	Soil	7.5 - 8.0	PCBs	1	See Worksheet 21
AP1AA1-DP06	AP1AA1-DS06-3.5-4.0-MMYY	Soil	3.5 – 4.0	PCBs and Pesticides	1	See Worksheet 21
AP1AA1-DP06	AP1AA1-DS06-7.5-8.0-MMYY	Soil	7.5 - 8.0	PCBs and Pesticides	1	See Worksheet 21
AP1AA1-DP07	AP1AA1-DS07-0.0-0.5-MMYY	Soil	0.0 - 0.5	PCBs and Pesticides	1	See Worksheet 21
AP1AA1-DP07	AP1AA1-DS07-3.5-4.0-MMYY	Soil	3.5 – 4.0	PCBs and Pesticides	1	See Worksheet 21
AP1AA1-DP07	AP1AA1-DS07-7.5-8.0-MMYY	Soil	7.5 - 8.0	PCBs and Pesticides	3 (MS/MSD)	See Worksheet 21
AP1AA1-DP08	AP1AA1-DS08-0.0-0.5-MMYY	Soil	0.0 - 0.5	PCBs and Pesticides	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AA1-DP08	AP1AA1-DS08-3.5-4.0-MMYY	Soil	3.5 – 4.0	PCBs and Pesticides	1	See Worksheet 21
AP1AA1-DP08	AP1AA1-DS08-7.5-8.0-MMYY	Soil	7.5 - 8.0	PCBs and Pesticides	1	See Worksheet 21
AP1AA1-DP09	AP1AA1-DS09-0.0-0.5-MMYY	Soil	0.0 - 0.5	PCBs and Pesticides	1	See Worksheet 21
AP1AA1-DP09	AP1AA1-DS09-3.5-4.0-MMYY	Soil	3.5 – 4.0	PCBs and Pesticides	1	See Worksheet 21
IR Site 33						
AP1AIR33-DP01	AP1AIR33-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP01	AP1AIR33-DS01-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AIR33-DP01	AP1AIR33-DS01-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP01	AP1AIR33-DS01-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP02	AP1AIR33-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP02	AP1AIR33-DS02-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AIR33-DP02	AP1AIR33-DS02-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP02	AP1AIR33-DS02-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP03	AP1AIR33-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP03	AP1AIR33-DS03-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP03	AP1AIR33-DS03-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP04	AP1AIR33-DS04-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP04	AP1AIR33-DS04-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	3 (MS/MSD)	See Worksheet 21
AP1AIR33-DP04	AP1AIR33-DS04-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP04	AP1AIR33-DS04-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP05	AP1AIR33-DS05-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP05	AP1AIR33-DS05-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AIR33-DP05	AP1AIR33-DS05-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AIR33-DP06	AP1AIR33-DS06-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP06	AP1AIR33-DS06-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AIR33-DP06	AP1AIR33-DS06-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP06	AP1AIR33-DS06-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP07	AP1AIR33-DS07-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP07	AP1AIR33-DS07-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AIR33-DP07	AP1AIR33-DS07-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP07	AP1AIR33-DS07-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP08	AP1AIR33-DS08-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP08	AP1AIR33-DS08-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP08	AP1AIR33-DS08-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP09	AP1AIR33-DS09-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP09	AP1AIR33-DS09-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	3 (MS/MSD)	See Worksheet 21
AP1AIR33-DP09	AP1AIR33-DS09-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP09	AP1AIR33-DS09-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP10	AP1AIR33-DS10-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP10	AP1AIR33-DS10-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AIR33-DP10	AP1AIR33-DS10-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP11	AP1AIR33-DS11-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP11	AP1AIR33-DS11-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AIR33-DP11	AP1AIR33-DS11-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP11	AP1AIR33-DS11-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AIR33-DP12	AP1AIR33-DS12-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AIR33-DP12	AP1AIR33-DS12-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP12	AP1AIR33-DS12-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP13	AP1AIR33-DS13-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP13	AP1AIR33-DS13-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP13	AP1AIR33-DS13-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP14	AP1AIR33-DS14-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP14	AP1AIR33-DS14-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	3 (MS/MSD)	See Worksheet 21
AP1AIR33-DP14	AP1AIR33-DS14-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP14	AP1AIR33-DS14-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP15	AP1AIR33-DS15-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP15	AP1AIR33-DS15-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AIR33-DP15	AP1AIR33-DS15-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP16	AP1AIR33-DS16-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP16	AP1AIR33-DS16-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AIR33-DP16	AP1AIR33-DS16-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP16	AP1AIR33-DS16-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP17	AP1AIR33-DS17-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP17	AP1AIR33-DS17-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AIR33-DP17	AP1AIR33-DS17-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP17	AP1AIR33-DS17-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP18	AP1AIR33-DS18-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AIR33-DP18	AP1AIR33-DS18-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP18	AP1AIR33-DS18-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP19	AP1AIR33-DS19-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP19	AP1AIR33-DS19-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	3 (MS/MSD)	See Worksheet 21
AP1AIR33-DP19	AP1AIR33-DS19-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AIR33-DP19	AP1AIR33-DS19-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AIR33-DP20	AP1AIR33-DS20-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AIR33-DP20	AP1AIR33-DS20-0.5-2.0-MMYY	Soil	0.5 - 2.0	PAHs	1	See Worksheet 21
AP1AIR33-DP20	AP1AIR33-DS20-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
13 SWMUs Former ASTs						
AP1AW599A-DP1	AP1AW599A-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW599A-DP1	AP1AW599A-DS1-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW599A-DP1	AP1AW599A-DS1-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW599A-DP1	AP1AW599A-DP1-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW599A-DP1	AP1AW599A-DP1-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW599A-DP1	AP1AW599A-DP1-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW599A-DP2	AP1AW599A-DS2-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW599A-DP2	AP1AW599A-DS2-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW599A-DP2	AP1AW599A-DS2-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW599A-DP2	AP1AW599A-DP2-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW599A-DP2	AP1AW599A-DP2-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW599A-DP2	AP1AW599A-DP2-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW599A-MW2	AP1AW599A-MW2-FWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW599A-MW2	AP1AW599A-MW2-SWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW599B-DP1	AP1AW599B-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, Title 22 metals	1	See Worksheet 21
AP1AW599B-DP1	AP1AW599B-DS1-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, Title 22 metals	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AW599B-DP1	AP1AW599B-DS1-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, Title 22 metals	1	See Worksheet 21
AP1AW599B-DP1	AP1AW599B-DP1-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW599B-DP1	AP1AW599B-DP1-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW599B-DP1	AP1AW599B-DP1-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW599B-DP2	AP1AW599B-DS2-0.0-0.5-MMYY	Soil	0.0 – 0.5	TPH-Diesel, TPH-Motor Oil, Title 22 metals	1	See Worksheet 21
AP1AW599B-DP2	AP1AW599B-DS2-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, Title 22 metals	1	See Worksheet 21
AP1AW599B-DP2	AP1AW599B-DS2-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, Title 22 metals	1	See Worksheet 21
AP1AW599B-DP2	AP1AW599B-DP2-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW599B-DP2	AP1AW599B-DP2-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW599B-DP2	AP1AW599B-DP2-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW599B -MW2	AP1AW599B -MW2-FWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW599B -MW2	AP1AW599B -MW2-SWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW467B-DP1	AP1AW467B-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, PCBs, Title 22 metals	1	See Worksheet 21
AP1AW467B-DP1	AP1AW467B-DS1-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, PCBs, Title 22 metals	1	See Worksheet 21
AP1AW467B-DP1	AP1AW467B-DS1-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, PCBs, Title 22 metals	1	See Worksheet 21
AP1AW467B-DP1	AP1AW467B-DP1-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW467B-DP1	AP1AW467B-DP1-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW467B-DP1	AP1AW467B-DP1-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW467B-DP2	AP1AW467B-DS2-0.0-0.5-MMYY	Soil	0.0 – 0.5	TPH-Diesel, TPH-Motor Oil, PCBs, Title 22 metals	1	See Worksheet 21
AP1AW467B-DP2	AP1AW467B-DS2-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, PCBs, Title 22 metals	1	See Worksheet 21
AP1AW467B-DP2	AP1AW467B-DS2-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, PCBs, Title 22 metals	1	See Worksheet 21
AP1AW467B-DP2	AP1AW467B-DP2-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW467B-DP2	AP1AW467B-DP2-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW467B-DP2	AP1AW467B-DP2-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW467B -MW2	AP1AW467B -MW2-FWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW467B -MW2	AP1AW467B -MW2-SWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW495A-DP1	AP1AW495B-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW495A-DP1	AP1AW495B-DS1-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW495A-DP1	AP1AW495B-DS1-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW495A-DP1	AP1AW495B-DP1-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW495A-DP1	AP1AW495-DP1-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW495A-DP1	AP1AW495B -DP1-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AW495A-DP2	AP1AW495B-DS2-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW495A-DP2	AP1AW495B-DS2-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW495A-DP2	AP1AW495B-DS2-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW495A-DP2	AP1AW495B DP2-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW495A-DP2	AP1AW495B –DP2-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW495A-DP2	AP1AW495B –DP2-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW495A -MW2	AP1AW495B -MW2-FWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW495A -MW2	AP1AW495B-MW2-SWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW495B-DP1	AP1AW495B-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW495B-DP1	AP1AW495B-DS1-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW495B-DP1	AP1AW495B-DS1-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW495B-DP1	AP1AW495A DP1-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW495B-DP1	AP1AW495A -DP1-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW495B-DP1	AP1AW495A -DP1-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW495B-DP2	AP1AW495B-DS2-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW495B-DP2	AP1AW495B-DS2-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW495B-DP2	AP1AW495B-DS2-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW495B-DP2	AP1AW495B DP2-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW495B-DP2	AP1AW495B –DP2-2.0-4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW495B-DP2	AP1AW495B –DP2-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW495B -MW2	AP1AW495B -MW2-FWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW495B -MW2	AP1AW495B -MW2-SWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW483A-DP1	AP1AW483A-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW483A-DP1	AP1AW483A-DS1-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW483A-DP1	AP1AW483A-DS1-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW483A-DP1	AP1AW483A-DP1-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW483A-DP1	AP1AW483A-DP1-2.0 - 4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW483A-DP1	AP1AW483A-DP1-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW483A-DP2	AP1AW483A-DS2-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AW483A-DP2	AP1AW483A-DS2-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW483A-DP2	AP1AW483A-DS2-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW483A-DP2	AP1AW483A-DP2-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW483A-DP2	AP1AW483A-DP2-2.0 - 4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW483A-DP2	AP1AW483A-DP2-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW483A -MW2	AP1AW483A -MW2-FWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW483A -MW2	AP1AW483A -MW2-SWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW483B-DP1	AP1AW483B-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW483B-DP1	AP1AW483B-DS1-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW483B-DP1	AP1AW483B-DS1-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW483B-DP1	AP1AW483B-DP1-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW483B-DP1	AP1AW483B-DP1-2.0 - 4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW483B-DP1	AP1AW483B-DP1-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW483B-DP2	AP1AW483B-DS2-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	3 (MS/MSD)	See Worksheet 21
AP1AW483B-DP2	AP1AW483B-DS2-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW483B-DP2	AP1AW483B-DS2-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW483B-DP2	AP1AW483B-DP2-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW483B-DP2	AP1AW483B-DP2-2.0 - 4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW483B-DP2	AP1AW483B-DP2-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW483B -MW2	AP1AW483A -MW2-FWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW483B -MW2	AP1AW483A -MW2-SWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW496-DP1	AP1AW496-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW496-DP1	AP1AW496-DS1-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW496-DP1	AP1AW496-DS1-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW496-DP1	AP1AW496-DP1-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW496-DP1	AP1AW496-DP1-2.0 - 4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW496-DP1	AP1AW496-DP1-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AW496-DP2	AP1AW496-DS2-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW496-DP2	AP1AW496-DS2-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW496-DP2	AP1AW496-DS2-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW496-DP2	AP1AW496-DP2-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW496-DP2	AP1AW496-DP2-2.0 - 4.0MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW496-DP2	AP1AW496-DP2-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW496 -MW2	AP1AW496 -MW2-FWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW496 -MW2	AP1AW496-MW2-SWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW485B-DP1	AP1AW485B-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW485B-DP1	AP1AW485B-DS1-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW485B-DP1	AP1AW485B-DS1-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW485B-DP1	AP1AW485B-DP1-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW485B-DP1	AP1AW485B-DP1-2.0 - 4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW485B-DP1	AP1AW485B-DP1-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW485B-DP2	AP1AW485B-DS2-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW485B-DP2	AP1AW485B-DS2-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW485B-DP2	AP1AW485B-DS2-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, PCBs, VOCs	1	See Worksheet 21
AP1AW485B-DP2	AP1AW485B-DP2-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW485B-DP2	AP1AW485B-DP2-2.0 - 4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW485B-DP2	AP1AW485B-DP2-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW485B -MW2	AP1AW485B -MW2-FWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW485B-MW2	AP1AW485B-MW2-SWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW488-DP1	AP1AW4888-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	metals	1	See Worksheet 21
AP1AW488-DP1	AP1AW488-DS1-1.5-2.0-MMYY	Soil	1.5-2.0	metals	1	See Worksheet 21
AP1AW488 DP2	AP1AW4888-DS2-0.0-0.5-MMYY	Soil	0.0 - 0.5	metals	1	See Worksheet 21
AP1AW488-DP2	AP1AW488-DS2-1.5-2.0-MMYY	Soil	1.5-2.0	metals	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AW499-DP1	AP1AW499-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW499-DP1	AP1AW499-DS1-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW499-DP1	AP1AW499-DS1-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW499-DP1	AP1AW499-DP1-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW499-DP1	AP1AW499-DP1-2.0 - 4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW499-DP1	AP1AW499-DP1-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW499-DP2	AP1AW499-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW499-DP2	AP1AW499-DS2-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW499-DP2	AP1AW499-DS2-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH-Diesel, TPH-Motor Oil, metals, VOCs	1	See Worksheet 21
AP1AW499-DP2	AP1AW499-DP2-0.0-0.5-MMYY	Soil	0.0 - 0.5	PAHs	1	See Worksheet 21
AP1AW499-DP2	AP1AW499-DP2-2.0 - 4.0-MMYY	Soil	2.0 - 4.0	PAHs	1	See Worksheet 21
AP1AW499-DP2	AP1AW499-DP2-4.0-8.0-MMYY	Soil	4.0 - 8.0	PAHs	1	See Worksheet 21
AP1AW499-MW2	AP1AW485B -MW2-FWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW499-MW2	AP1AW485B-MW2-SWB-MMYY	Ground Water	FWBZ	TPH purgeables and extractables, VOCs, PAHs, metals	1	See Worksheet 21
AP1AW407A-DP1	AP1AW407A-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	Metals	1	See Worksheet 21
AP1AW407A-DP1	AP1AW407A-DS1-3.5-4.0-MMYY	Soil	3.5 – 4.0	Metals	1	See Worksheet 21
AP1AW407A-DP1	AP1AW407A-DS1-7.5-8.0-MMYY	Soil	7.5 - 8.0	Metals	1	See Worksheet 21
AP1AW407A-DP2	AP1AW407A-DS2-0.0-0.5-MMYY	Soil	0.0 - 0.5	Metals	1	See Worksheet 21
AP1AW407A-DP2	AP1AW407A-DS2-3.5-4.0-MMYY	Soil	3.5 – 4.0	Metals	1	See Worksheet 21
AP1AW407A-DP2	AP1AW407A-DS2-7.5-8.0-MMYY	Soil	7.5 - 8.0	Metals	1	See Worksheet 21
AP1AW407B-DP1	AP1AW407B-DS1-0.0-0.5-MMYY	Soil	0.0 - 0.5	Metals	1	See Worksheet 21
AP1AW407B-DP1	AP1AW407B-DS1-3.5-4.0-MMYY	Soil	3.5 – 4.0	Metals	1	See Worksheet 21
AP1AW407B-DP1	AP1AW407B-DS1-7.5-8.0-MMYY	Soil	7.5 - 8.0	Metals	1	See Worksheet 21
AP1AW407B-DP2	AP1AW407B-DS2-0.0-0.5-MMYY	Soil	0.0 - 0.5	Metals	3 (MS/MSD)	See Worksheet 21
AP1AW407B-DP2	AP1AW407B-DS2-3.5-4.0-MMYY	Soil	3.5 – 4.0	Metals	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AW407B-DP2	AP1AW407B-DS2-7.5-8.0-MMYY	Soil	7.5 - 8.0	Metals	1	See Worksheet 21
Munitions Storage Area						
AP1AMSA-DP01	AP1AMSA-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	Explosives	1	See Worksheet 21
AP1AMSA-DP01	AP1AMSA-DS01-0.0-0.5-MMYY	Soil	3.5 – 4.0	Explosives	1	See Worksheet 21
AP1AMSA-DP01	AP1AMSA-DS01-0.0-0.5-MMYY	Soil	7.5 - 8.0	Explosives	1	See Worksheet 21
AP1AMSA-DP02	AP1AMSA-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	Explosives	1	See Worksheet 21
AP1AMSA-DP02	AP1AMSA-DS02-0.0-0.5-MMYY	Soil	3.5 – 4.0	Explosives	3 (MS/MSD)	See Worksheet 21
AP1AMSA-DP02	AP1AMSA-DS02-0.0-0.5-MMYY	Soil	7.5 - 8.0	Explosives	1	See Worksheet 21
AP1AMSA-DP03	AP1AMSA-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	Explosives	1	See Worksheet 21
AP1AMSA-DP03	AP1AMSA-DS03-0.0-0.5-MMYY	Soil	3.5 – 4.0	Explosives	1	See Worksheet 21
AP1AMSA-DP03	AP1AMSA-DS03-0.0-0.5-MMYY	Soil	7.5 - 8.0	Explosives	1	See Worksheet 21
AP1AMSA-DP04	AP1AMSA-DS04-0.0-0.5-MMYY	Soil	3.5 – 4.0	Explosives	1	See Worksheet 21
AP1AMSA-DP04	AP1AMSA-DS04-0.0-0.5-MMYY	Soil	7.5 - 8.0	Explosives	1	See Worksheet 21
AP1AMSA-DP05	AP1AMSA-DS05-0.0-0.5-MMYY	Soil	0.0 - 0.5	Explosives	1	See Worksheet 21
AP1AMSA-DP05	AP1AMSA-DS05-0.0-0.5-MMYY	Soil	3.5 – 4.0	Explosives	3 (MS/MSD)	See Worksheet 21
AP1AMSA-DP05	AP1AMSA-DS05-0.0-0.5-MMYY	Soil	7.5 - 8.0	Explosives	1	See Worksheet 21
AP1AMSA-DP06	AP1AMSA-DS06-0.0-0.5-MMYY	Soil	0.0 - 0.5	Explosives	1	See Worksheet 21
AP1AMSA-DP06	AP1AMSA-DS06-0.0-0.5-MMYY	Soil	3.5 – 4.0	Explosives	1	See Worksheet 21
AP1AMSA-DP06	AP1AMSA-DS06-0.0-0.5-MMYY	Soil	7.5 - 8.0	Explosives	1	See Worksheet 21
AP1AMSA-DP07	AP1AMSA-DS07-0.0-0.5-MMYY	Soil	0.0 - 0.5	Explosives	1	See Worksheet 21
AP1AMSA-DP07	AP1AMSA-DS07-0.0-0.5-MMYY	Soil	7.5 - 8.0	Explosives	1	See Worksheet 21
AP1AMSA-DP08	AP1AMSA-DS08-0.0-0.5-MMYY	Soil	0.0 - 0.5	Explosives	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AMSA-DP08	AP1AMSA-DS08-0.0-0.5-MMYY	Soil	3.5 – 4.0	Explosives	1	See Worksheet 21
AP1AMSA-DP08	AP1AMSA-DS08-0.0-0.5-MMYY	Soil	7.5 - 8.0	Explosives	1	See Worksheet 21
AP1AMSA-DP09	AP1AMSA-DS09-0.0-0.5-MMYY	Soil	0.0 - 0.5	Explosives	1	See Worksheet 21
AP1AMSA-DP09	AP1AMSA-DS09-0.0-0.5-MMYY	Soil	3.5 – 4.0	Explosives	1	See Worksheet 21
AP1AMSA-DP09	AP1AMSA-DS09-0.0-0.5-MMYY	Soil	7.5 - 8.0	Explosives	1	See Worksheet 21
AP1AMSA-DP10	AP1AMSA-DS10-0.0-0.5-MMYY	Soil	0.0 - 0.5	Explosives	1	See Worksheet 21
AP1AMSA-DP10	AP1AMSA-DS10-0.0-0.5-MMYY	Soil	3.5 – 4.0	Explosives	1	See Worksheet 21
Firefighting Trainnig Activities Area						
AP1AFTA-DP01	AP1AFTA-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP01	AP1AFTA-DS01-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP01	AP1AFTA-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP02	AP1AFTA-DS02-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP02	AP1AFTA-DS02-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	3 (MS/MSD)	See Worksheet 21
AP1AFTA-DP02	AP1AFTA-DS02-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP03	AP1AFTA-DS03-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP03	AP1AFTA-DS03-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP03	AP1AFTA-DS03-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP04	AP1AFTA-DS04-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP04	AP1AFTA-DS04-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP05	AP1AFTA-DS05-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP05	AP1AFTA-DS05-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP05	AP1AFTA-DS05-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP06	AP1AFTA-DS06-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AFTA-DP06	AP1AFTA-DS06-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP06	AP1AFTA-DS06-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP07	AP1AFTA-DS07-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP07	AP1AFTA-DS07-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP08	AP1AFTA-DS08-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP08	AP1AFTA-DS08-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP08	AP1AFTA-DS08-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	3 (MS/MSD)	See Worksheet 21
AP1AFTA-DP09	AP1AFTA-DS09-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP09	AP1AFTA-DS09-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP09	AP1AFTA-DS09-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP10	AP1AFTA-DS10-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP10	AP1AFTA-DS10-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP11	AP1AFTA-DS11-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP11	AP1AFTA-DS11-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP11	AP1AFTA-DS11-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP12	AP1AFTA-DS12-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP12	AP1AFTA-DS12-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP12	AP1AFTA-DS12-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP13	AP1AFTA-DS13-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP13	AP1AFTA-DS13-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP13	AP1AFTA-DS13-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP14	AP1AFTA-DS14-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AFTA-DP14	AP1AFTA-DS14-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP15	AP1AFTA-DS15-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP15	AP1AFTA-DS15-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP15	AP1AFTA-DS15-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	3 (MS/MSD)	See Worksheet 21
AP1AFTA-DP16	AP1AFTA-DS16-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP16	AP1AFTA-DS16-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP16	AP1AFTA-DS16-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP17	AP1AFTA-DS17-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP17	AP1AFTA-DS17-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP18	AP1AFTA-DS18-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP18	AP1AFTA-DS18-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP18	AP1AFTA-DS18-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP19	AP1AFTA-DS19-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP19	AP1AFTA-DS19-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP19	AP1AFTA-DS19-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP20	AP1AFTA-DS20-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP20	AP1AFTA-DS20-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP21	AP1AFTA-DS21-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP21	AP1AFTA-DS21-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP21	AP1AFTA-DS21-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP22	AP1AFTA-DS22-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP22	AP1AFTA-DS22-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	3 (MS/MSD)	See Worksheet 21
AP1AFTA-DP22	AP1AFTA-DS22-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AFTA-DP23	AP1AFTA-DS23-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP23	AP1AFTA-DS23-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP23	AP1AFTA-DS23-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP24	AP1AFTA-DS24-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP24	AP1AFTA-DS24-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP25	AP1AFTA-DS25-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP25	AP1AFTA-DS25-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP25	AP1AFTA-DS25-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP26	AP1AFTA-DS26-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP26	AP1AFTA-DS26-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP26	AP1AFTA-DS26-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP27	AP1AFTA-DS27-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP27	AP1AFTA-DS27-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP28	AP1AFTA-DS28-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP28	AP1AFTA-DS28-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP28	AP1AFTA-DS28-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP29	AP1AFTA-DS29-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	3 (MS/MSD)	See Worksheet 21
AP1AFTA-DP29	AP1AFTA-DS29-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP29	AP1AFTA-DS29-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP30	AP1AFTA-DS30-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP30	AP1AFTA-DS30-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP31	AP1AFTA-DS31-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1AFTA-DP31	AP1AFTA-DS31-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP31	AP1AFTA-DS31-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP32	AP1AFTA-DS32-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP32	AP1AFTA-DS32-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP32	AP1AFTA-DS32-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP33	AP1AFTA-DS33-0.0-0.5-MMYY	Soil	0.0 - 0.5	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP33	AP1AFTA-DS33-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP33	AP1AFTA-DS33-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP34	AP1AFTA-DS34-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP34	AP1AFTA-DS34-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP35	AP1AFTA-DS35-3.5-4.0-MMYY	Soil	3.5 – 4.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	1	See Worksheet 21
AP1AFTA-DP35	AP1AFTA-DS35-7.5-8.0-MMYY	Soil	7.5 - 8.0	TPH purgeables and extractables, VOCs, dioxins / furans, Eight RCRA Metals	3 (MS/MSD)	See Worksheet 21
Building 100 PCB Evaluation						
AP1AB100-CC01	AP1AB100-CM01-0.0-MMYY	Concrete	0	PCBs	1	See Worksheet 21
AP1AB100-CC02	AP1AB100-CM02-0.0-MMYY	Concrete	0	PCBs	3 (MS/MSD)	See Worksheet 21
AP1AB100-CC04	AP1AB100-CM04-0.0-MMYY	Concrete	0	PCBs	1	See Worksheet 21
AP1AB100-CC05	AP1AB100-CM05-0.0-MMYY	Concrete	0	PCBs	1	See Worksheet 21
AP1AB100-CC06	AP1AB100-CM06-0.0-MMYY	Concrete	0	PCBs	1	See Worksheet 21
Washdown 259 Evaluation						
AP1A259-DP01	AP1A259-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	VOCs	1	See Worksheet 21
AP1A259-DP01	AP1A259-DS01-3.5-4.0-MMYY	Soil	3.5 – 4.0	VOCs	1	See Worksheet 21
AP1A259-DP01	AP1A259-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	VOCs	3 (MS/MSD)	See Worksheet 21
AP1A259-MW01	AP1A259-MW01-UFWB2-MMYY	Ground Water	FWBZ-upper	VOCs	1	See Worksheet 21
AP1A259-DP02	AP1A259-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	VOCs	1	See Worksheet 21
AP1A259-DP02	AP1A259-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	VOCs	1	See Worksheet 21
AP1A259-MW02	AP1A259-MW02-UFWB2-MMYY	Ground Water	FWBZ-upper	VOCs	1	See Worksheet 21
AP1A259-DP03	AP1A259-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	VOCs	1	See Worksheet 21

SAP Worksheet #18 — Sampling Locations and Methods/SOP Requirements Table (continued)

Station ID	Sample ID	Matrix	Depth (ft)	Analytical Group	No. of Samples (ID Field Duplicates)	Sampling SOP Reference [1,2]
AP1A259-DP03	AP1A259-DS01-3.5-4.0-MMYY	Soil	3.5 – 4.0	VOCs	1	See Worksheet 21
AP1A259-MW03	AP1A259-MW03-UFWB2-MMYY	Ground Water	FWBZ-upper	VOCs	1	See Worksheet 21
AP1A259-DP04	AP1A259-DS01-0.0-0.5-MMYY	Soil	0.0 - 0.5	VOCs	1	See Worksheet 21
AP1A259-DP04	AP1A259-DS01-3.5-4.0-MMYY	Soil	3.5 – 4.0	VOCs	1	See Worksheet 21
AP1A259-DP04	AP1A259-DS01-7.5-8.0-MMYY	Soil	7.5 - 8.0	VOCs	1	See Worksheet 21
AP1A259-MW04	AP1A259-MW04-UFWB2-MMYY	Ground Water	FWBZ-upper	VOCs	1	See Worksheet 21

SAP Worksheet #19—Analytical SOP Requirements Table

Matrix	Analytical Group	Analytical and Preparation Method / SOP Reference[1]	Containers (number, size, and type)	Sample volume (units)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time[3] (preparation / analysis)
Surface soil, Subsurface soil, and Sediment	VOC	SW8260B/202	Three 40-milliliter (ml) terracores	5 grams (g)	Sodium bisulfate or water and freeze -10°C	48 hrs from sampling to prep,14 days to analysis
Surface soil, Subsurface soil, and Sediment	SVOC	SW8270C/201,329	4-ounce glass jar	15 g	Cool to 4°C	14 days until extraction/ 40 days to analysis
Surface soil, Subsurface soil, and Sediment	SVOC-SIM	SW8270SIM/231,329	4-ounce glass jar	15 g	Cool to 4°C	14 days until extraction/ 40 days to analysis
Surface soil, Subsurface soil, Concrete and Sediment	PEST/PCB	SW8081A, SW8082 /211,329	4-ounce glass jar	15 g	Cool to 4°C	14 days until extraction/ 40 days to analysis
Surface soil, Subsurface soil, and Sediment	TPH-GRO	SW8015B/219	Three 40-ml terracores	5 g	Sodium bisulfate or water and freeze -10° C	48 hrs from sampling to prep,14 days to analysis
Surface soil, Subsurface soil, and Sediment	TPH-DRO	SW8015B/219,320	4-ounce glass jar	25 g	Cool to 4°C	14 days until extraction/ 40 days to analysis
Surface soil, Subsurface soil, and Sediment	EXP	SW8330A/327	4-ounce glass jar	2 g	Cool to 4°C	14 days until extraction/ 40 days to analysis
Surface soil, Subsurface soil, and Sediment	DX/FN	SW8290/ DC184.042109.10	4-ounce glass jar	10 g	Cool to 4°C	30 days until extraction/ 45 days to analysis
Surface soil, Subsurface soil, and Sediment	METALS	SW6010B, SW6020, SW7471A /100,105,104	4-ounce glass	1-2 g/ 0.3 g mercury	Cool to 4°C	180 days to analysis, 28 days mercury
Surface soil, Subsurface soil, and Sediment	HEX CR	SW7196/166,197	4-ounce glass jar	2.5 g	Cool to 4°C	28 days
Groundwater and Surface Water	VOC	SW8260B/202	Three 40-ml glass volatile vials	5 ml	HCl to a pH<2;Cool to 4°C; no headspace	14 days to analysis
Groundwater and Surface Water	SVOC	SW8270C/201,300	Two 1-liter glass amber bottles	1000 ml	Cool to 4°C	7 days until extraction/ 40 days to analysis
Groundwater and Surface Water	SVOC-SIM	SW8270SIM/231,300	Two 1-liter glass amber bottles	1000 ml	Cool to 4°C	7 days until extraction/ 40 days to analysis
Groundwater and Surface Water	PEST/PCB	SW8081A, SW8082 /211,302	Two 1-liter glass amber bottles	1000 ml	Cool to 4° Centigrade°C	7 days until extraction/ 40 days to analysis
Groundwater and Surface Water	TPH-GRO	SW8015B/219	Three 40-ml glass volatile vials	5 ml	HCl to a pH<2;Cool to 4°C; no headspace	14 days to analysis
Groundwater and Surface Water	TPH-DRO	SW8015B/219,322	Two 1-liter glass amber bottles	1000 ml	Cool to 4°C	7 days until extraction/ 40 days to analysis
Groundwater and Surface Water	EXP	SW8330A/327	Two 1-liter glass amber bottles	1000 ml	Cool to 4°C	7 days until extraction/ 40 days to analysis

SAP Worksheet #19—Analytical SOP Requirements Table (continued)

Matrix	Analytical Group	Analytical and Preparation Method / SOP Reference[1]	Containers (number, size, and type)	Sample volume (units)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time[3] (preparation / analysis)
Groundwater and Surface Water	DX/FN	SW8290/ DC184.042109.10	Two 1-liter glass amber bottles	1000 ml	Cool to 4°C	30 days until extraction/ 45 days to analysis
Groundwater and Surface Water	METALS	SW6010B, SW6020, SW7470A /100/105/103	500 ml plastic	50 ml/30 ml mercury	HNO3 to a pH<2; Cool to 4°C	180 days to analysis, 28 days mercury
Groundwater and Surface Water	HEX CR	SW7196/166	500 ml plastic	95 ml	Cool to 4°C	24 hours

[1]Specify the appropriate reference letter or number from the Analytical SOP References table (**Worksheet #23**).
[2] Provide the minimum sample volume or mass requirement if it differs from the container volume.
[3] Maximum holding time is calculated from the time the sample is collected to the time the sample is prepared/extracted.

SAP Worksheet #20—Field Quality Control Sample Summary Table

Matrix	Analytical Group	Number of Sampling Locations[2]	Number of FDs	Number of MS/MSDs[1]	Number of Field Blanks	Number of EBs	Number of Volatile Organic Analyte (VOA) TBs	Number of Proficiency Testing (PT) Samples[3]	Total No. of Samples to Lab
EDC-12									
Soil	TPH-GRO	120	12	6		12			150
Soil	TPH-DRO	120	12	6		12			150
Soil	VOC	81	8	4		8			101
Soil	SVOC	114	12	6		12			144
Soil	SVOC (SIM)	152	16	8		16			192
Soil	PEST	48	5	3		5			61
Soil	PCB	48	5	3		5			61
Soil	METALS	54	6	3		6			69
Soil	HEX CR	6	1	1		1			9
Water	TPH-GRO	45	5	3	6	3	22		84
Water	TPH-DRO	45	5	3	6	3			62
Water	VOC	45	5	3	4	3	22		82
Water	SVOC	49	5	3	5	3			65
Water	SVOC (SIM)	34	4	2	1	2			43
Water	PEST	16	2	1	3	1			23
Water	PCB	16	2	1	3	1			23
Water	METALS	20	2	1	3	1			27
Water	HEX CR	4	1	1	1	1			8
EDC-17									
Soil	TPH-GRO	48	5	3		6			62
Soil	TPH-DRO	48	5	3		6			62
Soil	VOC	9	1	1		1			12
Soil	SVOC	18	2	1		2			23
Soil	METALS	18	2	21		2			23
Soil	SVOC (SIM)	40	4	2		6			52
Water	TPH-GRO	12	2	1	2	2	6		25
Water	TPH-DRO	12	2	1	2	2			19
Water	VOC	22	3	1	2	3	11		42
Water	SVOC	6	1	1	2	1			11
Water	SVOC (SIM)	12	2	1	1	1			17
Water	MTBE	12	2	1	1	1			17
Water	METALS	6	1	1	2	1			11

SAP Worksheet #20—Field Quality Control Sample Summary Table (continued)

Matrix	Analytical Group	Number of Sampling Locations[2]	Number of of FDs	Number of MS/MSDs[1]	Number of Field Blanks	Number of EBs	Number of VOA TBs	Number of PT Samples[3]	Total No. of Samples to Lab
FED-1A, 2B, 2C									
Soil	TPH-GRO	114	12	6		5			137
Soil	TPH-DRO	186	19	9		5			219
Soil	VOC	126	13	7		9			155
Soil	SVOC (SIM)	92	9	5		8			114
Soil	PEST	12	2	1		5			20
Soil	PCB	59	6	3		6			74
Soil	METALS	225	23	11		5			264
Concrete	PCB	6	1	1					8
Water	TPH-GRO	6	1	1	1	1	3		13
Water	TPH-DRO	6	1	1	1	1			10
Water	VOC	10	1	1	1	1	5		19
Water	SVOC (SIM)	6	1	1	1	1			10
Water	PEST	0	0	0	1	0			1
Water	PCB	0	0	0	1	0			1
Water	METALS	0	0	0	1	0			1
Transfer Parcel FED-1A									
Soil	Explosives	30	3	2		2			37
Soil	Dioxins/Furans	105	11	6		11			122
Water	Explosives				1	0			1
Water	Dioxins/Furans				3	0			3

[1] Although the MS/MSD is not typically considered a field QC it is included here because location determination is often established in the field.
[2] If samples will be collected at different depths at the same location, count each discrete sampling depth as a separate sampling location or station.
[3] The number of Batch or Project-specific proficiency testing (PT) samples are optional but highly recommended.

SAP Worksheet #21—Project Sampling SOP References Table

Reference Number	Title, Revision Date and / or Number	Originating Organization of Sampling SOP	Equipment Type	Modified for Project Work? (Y/N)	Comments
SOP-1	Soil Sampling	CH2M HILL	Drill rig	Y	Direct push sampling techniques may also be used, once the sample tube is split open, follow the split-spoon sampling SOP.
SOP-2	Homogenization of Soil and Sediment Samples	CH2M HILL	Sample containers, stainless steel spoons and stainless steel bowls	N	
SOP-3	Soil Sampling for VOCs Using the EnCore Sampler	CH2M HILL	EnCore Sampler	N	
SOP-4	Direct-Push Soil Sample Collection	CH2M HILL	Direct Push	N	
SOP-5	Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)	American Society for Testing and Materials (ASTM) D 2488-00	ASTM document	N	
SOP-6	Soil Boring Drilling and Abandonment	CH2M HILL	Drill rig	N	
SOP-7	Discrete Groundwater Sampling from Direct Push Boring	CH2M HILL	Direct Push	N	
SOP-8	VOC Sampling - Water	CH2M HILL	VOA vials	Y	Use pre-preserved VOA vials.
SOP-9	Calibration and measurement with Field Instruments	CH2M HILL	Multi-parameter groundwater monitoring instrument	N	
SOP-10	Volatile Monitoring by OVM	CH2M HILL	PID	N	
SOP-11	Decontamination of Personnel and Equipment	CH2M HILL	Decon equipment	N	
SOP-12	Decontamination of Drilling Rigs and Equipment	CH2M HILL	Pressure washer	N	
SOP-13	Preparing Field Log Books	CH2M HILL	Log book	N	
SOP-14	Water Level Measurements	CH2M HILL	Electric water level device	N	
SOP-15	Disposal of Waste Fluids and Solids	CH2M HILL	Water and soil drums	N	
SOP-16	Chain-of-Custody	CH2M HILL	Tape, custody seals, electronic chain-of-custody forms	N	
SOP-17	Packaging and Shipping Procedures for Low-Concentration Samples	CH2M HILL		N	
SOP-18	Equipment Blank and Field Blank Preparation	CH2M HILL	Sample containers	N	
SOP-19	Civil Surveying	CH2M HILL	Professional surveyor	N	
SOP-20	Concrete Core Sampling	CH2M HILL	Rotary Drill	N	

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SAP Worksheet #22—Field Equipment Calibration, Maintenance, Testing, and Inspection Table

Field Equipment	Calibration Activity	Maintenance Activity	Testing/Inspection Activity	Frequency	Acceptance Criteria	CA	ResponsiblePerson	SOP Reference
PID	Calibrate using ambient air and isobutylene 100 parts per million (ppm) calibration gas	Recharge battery daily	Visual Inspection	Daily, before use, at the end of the day (if practicable), and when unstable readings occur	Ambient air reads 0.0 ppm +/- 3% Isobutylene gas reads 100 ppm +/- 3% ambient air reads 0.0 ppm ±3%: (if possible).	Follow instructions in manual to clean sensor. Do not use this instrument if unable to calibrate properly.	FTL	SOP-9
FID	Calibrate using ambient air and methane 100ppm calibration gas	Recharge battery daily	Visual Inspection	Daily, before use, at the end of the day (if practicable), and when unstable readings occur	Methane gas reads 100 ppm +/- 3% ambient air reads 0.0 ppm ±3%: (if possible)	Follow instructions in manual to clean sensor. Do not use this instrument if unable to calibrate properly.	FTL	SOP-9

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SAP Worksheet #23—Analytical SOP References Table

Laboratory SOP Number	Title, Revision Date, and / or Number	Definitive or Screening Data	Matrix and Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work?[1] (Y/N)
Empirical SOP-100	Metals Digestion/Preparation Methods 3005A,3010A, 3020A, 3030, 3040A, 3050B, USEPA CLP ILMO 4.1 Aqueous & Soil/Sediment, USEPA Method 200.7 (Standard Methods) 3030C. Rev. 19	Definitive	Inorganic/Metals	NA/ Metals	Empirical Laboratories, LLC[2]	N
Empirical SOP-105	Metals Analysis by ICP Technique Methods 200.7, SW846 6010B, SM 19th Edition 2340B, USEPA ILMO 4.1, Rev. 15	Definitive	Inorganic/Metals	ICP	Empirical Laboratories, LLC	N
Empirical SOP-103	Mercury Analysis in Water by Manual Cold Vapor Technique Methods SW846 7470A & 245.1, CLP-M 4.1, Rev. 16	Definitive	Inorganic/Metals	FIMS	Empirical Laboratories, LLC	N
Empirical SOP-104	Mercury Analysis in Soil/Sediment by Manual Cold Vapor Technique Methods SW846 7471A & 245.5, CLP-ILM 4.1, Rev. 17	Definitive	Inorganic/Metals	FIMS	Empirical Laboratories, LLC	N
Empirical SOP-166	Hexavalent Chromium (Cr^{+6}) Manual Method by SW846-7196A/Standard Methods 3500 CrD, Rev. 8	Definitive	Inorganic/Metals	Spectrophotometer	Empirical Laboratories, LLC	N
Empirical SOP-197	Alkaline Digestion for Hexavalent Chromium in Soil and Sediment (Method 3060A) Rev. 9	Definitive	Inorganic/Metals	Spectrophotometer	Empirical Laboratories, LLC	N
Empirical SOP-201	Gas Chromatograph/Mass Spectrometer (GC/MS) Semivolatiles by Method 625 and SW846 Method 8270C, Rev. 18	Definitive	Organic/GC/MS	Agilent/HP GC/MS	Empirical Laboratories, LLC	N
Empirical SOP-202	GC/MS Volatiles by Method 624 and SW846 Method 8260B, Rev. 21	Definitive	Organic/GC/MS	Agilent/HP GC/MS	Empirical Laboratories, LLC	N
Empirical SOP-211	GC/Electron Capture Detector (ECD) Organochlorine Pesticides/PCBs by USEPA Method 608 and SW846 Method 8081A, 8081B/8082, 8082A, Rev. 20	Definitive	Organic/GC	Agilent/HP GC/ECD	Empirical Laboratories, LLC	N
Empirical SOP-219	GC/FID Nonhalogenated Volatile Organics And TPH by Method 8015B/8015C/ TN EPH/GRO, Rev. 11	Definitive	Organic/GC	Agilent/HP GC/FID	Empirical Laboratories, LLC	N
Empirical SOP-231	GC/MS Low Level PAH'S By SW-846 Method 8270C SIM, Rev. 3	Definitive	Organic/GC/MS	Agilent/HP GC/MS	Empirical Laboratories, LLC	N
Empirical SOP-300	GC/MS- Semivolatile BNA-Aqueous Matrix Extraction Using SW-846 Method 3510C for 8270C/625 Analysis, Rev. 17	Definitive	Organic/Extraction	NA/Extraction	Empirical Laboratories, LLC	N
Empirical SOP-302	Pesticide/PCBs – Aqueous Matrix Extraction for USEPA Method 608 and SW846 Method 8081A/8082 Using SW846 Method 3510C, Rev. 16	Definitive	Organic/Extraction	NA/Extraction	Empirical Laboratories, LLC	N
Empirical SOP-320	TPH Non-Aqueous Matrix (Low Level) by USEPA SW-846 Method 8015B, Rev. 8	Definitive	Organic/Extraction	NA/Extraction	Empirical Laboratories, LLC	N

SAP Worksheet #23—Analytical SOP References Table (continued)

Lab SOP Number	Title, Revision Date, and / or Number	Definitive or Screening Data	Matrix and Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work?[1] (Y/N)
Empirical SOP-322	TPH (Total Petroleum Hydrocarbons) Aqueous Matrix by USEPA SW846 Method 8015B, Rev. 8	Definitive	Organic/Extraction	NA/Extraction	Empirical Laboratories, LLC [2]	N
Empirical SOP-327	Nitroaromatics and Nitramines by High Performance Liquid Chromatography (HPLC) Method 8330A and 8332, Rev. 14	Definitive	Organic/HPLC	HPLC	Empirical Laboratories, LLC	N
Empirical SOP-343	BNA, Pest/PCB, and TPH Using SW-846 Method 3546, Rev. 0	Definitive	Organic/Extraction	NA/Extraction	Empirical Laboratories, LLC	N
Empirical SOP-404	Laboratory Sample Receiving Log-in and Storage SOPs, Rev. 12	Definitive	Log-in	NA/ Log-in	Empirical Laboratories, LLC	N
Empirical SOP-405	Analytical Laboratory Waste Disposal, Rev. 5	Definitive	Log-in	NA/ Log-in	Empirical Laboratories, LLC	N
Empirical SOP-410	SOPs for Laboratory Sample Storage, Secure Areas, and Sample Custody, Rev. 7	Definitive	Log-in	NA/ Log-in	Empirical Laboratories, LLC	N
Empirical SOP-QS07	Chromatographic Integration Policies, Rev. 6	N/A	N/A	NA	Empirical Laboratories, LLC	N
SGS DC184.042109.10	Method Manual for the Determination of Polychlorinated Dioxins and polychlorinated Furans by HRMS, Revision 10	Definitive	Organic/GC/MS	HRMS	SGS North America Inc.	N

Notes:
[1] If yes, then specify the modification that has been made. Note that any analytical SOP modification made relative to project specific needs must be reviewed and approved by the Navy QAO.

[2] Empirical Laboratories, LLC is certified to provide analytical services in the State of California through a reciprocity agreement with the State of Tennessee through the National Environmental Laboratory Accreditation Program (NELAP). Empirical Laboratories has also successfully completed the DoD ELAP accreditation process.

HRMS = high-resolution mass spectrometry; NA = not applicable

SAP Worksheet #24—Analytical Instrument Calibration Table

Instrument/ Method	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	CA	Person Responsible for CA[2]	SOP Reference[1]
GC/MS (SW8260B)	BFB Tune	At beginning of each 12-hour shift	Per method criteria (SW8260B; Sect 7.3.1; Table 4)	Re-tune and/or clean source	Analyst/Supervisor	Empirical SOP-202
	Initial Calibration	Upon instrument receipt, for major instrument changes, or when continuing calibration verification (CCV) does not meet criteria	Min 5 pt initial calibration for all analytes Spill prevention, containment, and countermeasure (SPCC) Radio Frequency (RF) ≥ 0.1 (0.3); % relative standard deviation (RSD) ≤ 30% for CCC; ≤ 15% all other analytes; Linear regression ≥ 0.995	Repeat calibration if criteria is not met	Analyst/Supervisor	
	Continuing Calibration	At beginning of each 12-hour shift	SPCC RF ≥ 0.1 (0.3); %D ≤ 20% for CCC; ≤ 30% all other analytes	If %D > +30% and sample result is ND, narrate. If %D < -30%, reanalyze all samples since last successful CCV	Analyst/Supervisor	
GC/MS (SW8270C, SW8270SIM)	DFTPP Tune	At beginning of each 12-hour shift	Per method criteria (SW8270C; Sect 7.3.1; Table 3)	Re-tune and/or clean source	Analyst/Supervisor	Empirical SOP-201, 231
	Initial Calibration	Upon instrument receipt, for major instrument changes, or when CCV does not meet criteria	Min 5 pt initial calibration for all analytes SPCC RF ≥ 0.05; %RSD ≤ 30% for CCC; ≤ 15% all other analytes; Linear regression ≥ 0.995	Repeat calibration if criteria is not met	Analyst/Supervisor	
	Continuing Calibration	At beginning of each 12-hour r shift	SPCC RF ≥ 0.05; %D ≤ 20% for CCC; ≤ 30% all other analytes	If %D > +30% and sample result is ND, narrate. If %D < -30%, reanalyze all samples since last successful CCV	Analyst/Supervisor	
GC/ECD (SW8081A)	Initial Calibration	Upon instrument receipt, for major instrument changes, or when CCV does not meet criteria	Min 5 pt initial calibration for all pesticides except toxaphene; mid-point calibration standard for toxaphene %RSD ≤ 20%; Linear regression ≥ 0.995	Repeat calibration if criteria is not met	Analyst/Supervisor	Empirical SOP-211
	Continuing Calibration	Daily, and after every 10 samples (not to exceed 12 hours), and at end of run	%D ≤ 20%	If %D > +20% and sample result is ND, narrate. If %D < -20%, reanalyze all samples since last successful CCV	Analyst/Supervisor	
GC/ECD (SW8082)	Initial Calibration	Upon instrument receipt, for major instrument changes, or when CCV does not meet criteria	Min 5 pt initial calibration for aroclor 1016/1260; mid-point calibration standard for all other aroclors %RSD ≤ 20%; Linear regression ≥ 0.995	Repeat calibration if criteria is not met	Analyst/Supervisor	Empirical SOP-211
	Continuing Calibration	Daily, and after every 10 samples (not to exceed 12 hours), and at end of run	%D ≤ 20%	If %D > +20% and sample result is ND, narrate. If %D < -20%, reanalyze all samples since last successful CCV	Analyst/Supervisor	
GC/FID (SW8015B; TPH-GRO)	Initial Calibration	Upon instrument receipt, for major instrument changes, or when CCV does not meet criteria	Min 5 pt initial calibration Gasoline standard; quantitate C6 – C10 %RSD ≤ 20%; Linear regression ≥ 0.995	Repeat calibration if criteria is not met	Analyst/Supervisor	Empirical SOP-219
	Continuing Calibration	Daily, and after every 10 samples (not to exceed 12 hours), and at end of run	%D ≤ 20%	If %D > +20% and sample result is ND, narrate. If %D < -20%, reanalyze all samples since last successful CCV	Analyst/Supervisor	
GC/FID (SW8015B; TPH-DRO)	Initial Calibration	Upon instrument receipt, for major instrument changes, or when CCV does not meet criteria	Min 5 pt initial calibration Diesel standard; quantitate C10 – C28 %RSD ≤ 20%; Linear regression ≥ 0.995	Repeat calibration if criteria is not met	Analyst/Supervisor	Empirical SOP-219
	Continuing Calibration	Daily, and after every 10 samples (not to exceed 12 hours), and at end of run	%D ≤ 20%	If %D > +20% and sample result is ND, narrate. If %D < -20%, reanalyze all samples since last successful CCV	Analyst/Supervisor	
HPLC (SW8330A)	Initial Calibration	Upon instrument receipt, for major instrument changes, or when CCV does not meet criteria	Min 5 pt initial calibration for all analytes %RSD ≤ 20%; Linear regression ≥ 0.995	Repeat calibration if criteria is not met	Analyst/Supervisor	Empirical SOP-327
	Continuing Calibration	Daily, and after every 10 samples (not to exceed 12 hours), and at end of run	%D ≤ 20%	If %D > +20% and sample result is ND, narrate. If %D < -20%, reanalyze all samples since last successful CCV	Analyst/Supervisor	
GC/MS (SW8290)	PFK Tune	At beginning of each 12-hour shift	Per method criteria (SW8290; Sect 7.6.2.2; Table 6)	Re-tune and/or clean source	Analyst/Supervisor	
	Initial Calibration	Upon instrument receipt, for major instrument changes, or when continuing calibration verification (CCV) does not meet criteria	Min 5 pt initial calibration for all analytes %RSD ≤ 20% for un-labeled compounds; ≤ 30% for labeled compounds; Linear regression ≥ 0.995	Repeat calibration if criteria is not met	Analyst/Supervisor	
	Continuing Calibration	At beginning and end of each 12-hour shift	%D ≤ 20% for un-labeled compounds; ≤ 30% for labeled compounds	If %D > +20/30% and sample result is ND, narrate. If %D < -20/30%, reanalyze all samples since last successful CCV	Analyst/Supervisor	
Inductively-coupled Plasma (ICP) (SW6010B)	Initial Calibration	Beginning of each day or if QC exceeds criteria	Min 3 pt initial calibration for all elements Linear regression ≥ 0.995	Re-calibrate and/or perform instrument maintenance	Analyst/Supervisor	Empirical SOP-105
	Continuing Calibration	At the beginning and end of each run sequence, and after every 10 samples	CCV: 90 – 110%	Check problem, re-calibrate and reanalyze all samples since last successful CCV. If %D > 110% and sample result is ND, narrate	Analyst/Supervisor	
Cold vapor atomic absorption spectroscopy (CVAA) (SW7470A, 7471A)	Initial Calibration	Beginning of each day or if QC exceeds criteria	Min 3 pt initial calibration Linear regression ≥ 0.995	Re-calibrate and/or perform instrument maintenance	Analyst/Supervisor	Empirical SOP-103/104
	Continuing Calibration	At the beginning and end of each run sequence, and after every 10 samples	CCV: 80 – 120%	Check problem, re-calibrate and reanalyze all samples since last successful CCV. If %D > 120% and sample result is ND, narrate	Analyst/Supervisor	
Ion chromatography/ ultraviolet (IC/UV) (SW7196)	Initial Calibration	Upon instrument receipt, for major instrument changes, or when CCV does not meet criteria	Min 3 pt initial calibration Linear regression ≥ 0.995	Re-calibrate and/or perform instrument maintenance	Analyst/Supervisor	Empircal SOP-166
	Continuing Calibration	At the beginning and end of each run sequence, and after every 10 samples	CCV: 90 – 110%	Check problem, re-calibrate and reanalyze all samples since last successful CCV. If %D > 110% and sample result is ND, narrate	Analyst/Supervisor	

[1] Specify the appropriate reference letter or number from the Analytical SOP References table (**Worksheet #23**).
[2] Name or title of responsible person may be used.

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SAP Worksheet #25—Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table

Instrument / Equipment	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	CA	Responsible Person[2]	SOP Reference[1]
GC/MS	Clean the source and replace the filaments. Replace the seal, liner and septum. Change the column.	VOC/SVOC/SVOC-SIM	Check the gas supply. Check the seal, liner, and septum.	Source cleaning is performed when the instrument response deteriorates. Other instrument maintenance is done as needed to keep the instrument performing at peak performance.	The minimum RF for SPCCs must meet those stated in method. The CCCs must be <20% difference.	Recalibrate and/or perform the necessary equipment maintenance. Check the calibration standards. Reanalyze the affected data.	Analyst/Supervisor	Empirical SOP-201/202/231
HR-GCMS	Clean the source and replace the filaments. Replace the seal, liner and septum. Change the column.	Dioxins/Furans	Check the gas supply. Check the seal, liner, and septum.	Source cleaning is performed when the instrument response deteriorates. Other instrument maintenance is done as needed to keep the instrument performing at peak performance.	The minimum RF for SPCCs must meet those stated in method. The CCCs must be <20% difference.	Recalibrate and/or perform the necessary equipment maintenance. Check the calibration standards. Reanalyze the affected data.	Analyst/Supervisor	SGS DC184.042109.10
GC/ECD	Check pressure and gas supply daily. Bake out column, change septa, liner, seal as needed, cut column as needed.	Pesticides/PCBs	Liner, seal, septum, column	Prior to initial calibration or as necessary	≤ 20% difference	If % D >+ 20% and samples are < PQL, narrate, If %D > ± 20% only on one column, narrate, If % D > ± 20% for closing CCV, and is likely due to matrix interference, narrate Otherwise reanalyze all samples back to the last acceptable CCV.	Analyst/ Supervisor	Empirical SOP-211
GC/FID	Check pressure and gas supply daily. Bake out column, change septa, liner, seal as needed, cut column as needed.	TPH GRO/DRO	Liner, seal, septum, column	Prior to initial calibration or as necessary	Percent difference ≤ 20%	Recalibrate and/or perform the necessary equipment maintenance. Check the calibration standards. Reanalyze the affected data	Analyst/ Supervisor	Empirical SOP-219
HPLC	Check pressure and gas supply daily – change when <200psi, change analytical column as needed, change mobile phase when insufficient for run or contamination, change inlet filters as needed for contamination	Explosives	Check pump pressure, check for leaks, check for adequate mobile phase	Prior to initial calibration or as necessary	CCV ≤ 15% difference.	Recalibrate and/or perform necessary equipment maintenance. Check calibration standards. Reanalyze affected data.	Analyst/ Supervisor	Empirical SOP-327

SAP Worksheet #25—Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table (continued)

Instrument / Equipment	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	CA	Responsible Person[2]	SOP Reference[1]
ICP Spectrometer	Clean the torch assembly and the spray chamber when they become discolored or when degradation in data quality is observed. Clean the nebulizer, and check the argon supply. Replace the peristaltic pump tubing as needed	METALS	Inspect the torch, nebulizer chamber, pump, and tubing	Maintenance is performed prior to initial calibration or as necessary.	The acceptance criteria for the continuing calibration standard is 90-110% of true value	Recalibrate and/or perform the necessary equipment maintenance. Check the calibration standards. Reanalyze the affected data.	Analyst/Supervisor	Empirical SOP-105
Flow Injection Mercury System	Change the tubing, filter, clean windows, and check gas flow. Check the reagents and standards.	METALS (Mercury)	Inspect the tubing, filter, and the optical cell	Maintenance is performed prior to initial calibration or as necessary.	The acceptance criteria is 80-120% of the true value	Recalibrate and/or perform the necessary equipment maintenance. Check the calibration standards. Reanalyze the affected data.	Analyst/Supervisor	Empirical SOP-103/104
Spectrophotometer	Clean reagent tubes. Change lamp.	HEX CR	Check wavelength	At the beginning of every run.	90-110% of true value	Recalibrate and/or perform necessary equipment maintenance. Check calibration standards. Reanalyze affected data.	Analyst/ Supervisor	Empirical SOP-166

[1] Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23).
[2] Name or title of responsible person may be used.

SAP Worksheet #26—Sample Handling System

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT
Sample Collection (Personnel/Organization): FTL Stephen Quayle/CH2M HILL
Sample Packaging (Personnel/Organization): Field Team Member Stephen Quayle/CH2M HILL
Coordination of Shipment (Personnel/Organization): Field Team Member Stephen Quayle/CH2M HILL
Type of Shipment/Carrier: Overnight/FedEx
SAMPLE RECEIPT AND ANALYSIS
Sample Receipt (Personnel/Organization): Sample Receipt Personnel/
Sample Custody and Storage (Personnel/Organization): Sample Receipt Personnel/
Sample Preparation (Personnel/Organization): Extractions/Digestions Personnel/
Sample Determinative Analysis (Personnel/Organization): Analytical Personnel/
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection): 30 days
Sample Extract/Digestate Storage (No. of days from extraction/digestion): Extracts and Digestates may be disposed of 90 days after extraction/digestion
Biological Sample Storage (No. of days from sample collection): N/A
SAMPLE DISPOSAL
Personnel/Organization: Sample Receipt Personnel/
Number of Days from Analysis: Samples may be disposed of 30 days after report mail date.

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SAP Worksheet #27—Sample Custody Requirements Table

Sampling Containers, Preservation Methods, and Holding Times

Worksheet #19 lists the sampling container, preservation, and holding time requirements. Pre-cleaned, laboratory-prepared containers will be procured from the analytical laboratory as needed.

Sample Labeling

Sample identification numbers will be obtained from the CH2M HILL data manager before sampling is performed. Sample labels will be attached directly to the sample container, either by the glued back surface or, for containers where the label will not adhere directly to the sample container, by a tag with twist-wire attachments.

The following information will be included on the sample label:

- Project name and site
- Sample ID – unique for each sample
- Date sampled
- Time sampled – in military time
- Initials of sampler(s)
- Analysis group or method
- Preservative in the sample container, if any

Chain-of-Custody Record

The chain-of-custody form is a vital document for all samples collected and must be properly completed. It serves as a record of sample collection information, analysis group requests, and sample tracking. It is a crucial record from the time of sample collection to final reporting and decision making. An example of a chain-of-custody is included in Appendix A.

The following information will be recorded on the chain-of-custody record at the time of sample collection:

- Project name and site
- Project number
- PM's name
- Date sampled
- Time sampled – in military time
- Sample ID – unique for each sample
- Number of containers for each sample
- Analysis group or method requested for each sample
- Special analytical requests (for example, fast turnaround requirement), as appropriate
- Sampler's name
- Laboratory name

SAP Worksheet #27—Sample Custody Requirements Table (continued)

Field Custody Procedures

Samples will be collected by field team members under the supervision of the FTL. As samples are collected, they will be placed into containers and labeled, as outlined above. Samples will be in the custody of the field team member from the time of collection until the samples are transferred to the proper dispatcher. Samples will be packed with inert packing material (for example, bubble wrap or plastic netting) to prevent breakage. Samples will then be placed in coolers containing enough ice to maintain sample temperature below 4°C until they are received by the laboratory. At the end of the sampling effort each day, the FTL will inventory the samples against the chain-of-custody form.

Sample Transfer of Custody and Shipment

Generally, samples will be sent overnight to the laboratory via air or ground transport. In some cases, samples may be delivered to the analytical laboratory by a member of the CH2M HILL field sampling team, or a representative from the laboratory may pick up the samples onsite.

Upon transferring custody of the samples, the individuals relinquishing and receiving them will sign, date, and note the time of transfer on the chain-of-custody record(s). The method of shipment, courier name, and other pertinent information will be entered in the remarks section of the chain-of-custody record. The field team member who relinquished the samples will retain a copy, and the original will accompany the containers to the laboratory. The field copy will be delivered to the CH2M HILL data manager and stored in the project files.

Before a sample leaves the site by means other than laboratory courier or CH2M HILL personnel, the chain-of-custody record will be placed in a sealed Ziploc® bag, and taped to the inside of the sample cooler. The cooler will be sealed with fiber tape, and a custody seal will be signed and dated by the relinquishing party and placed on the cooler so that the cooler cannot be opened without the custody seal being broken. Coolers will be shipped to the laboratory via FedEx, with the airbill number indicated on the COC. Upon delivery, the laboratory will log in each cooler and report the status of the samples.

Laboratory Custody Procedures

Upon receipt of the sample cooler(s), the sample custodian signs the COC and then takes the temperature using the temperature blank provided. The sample containers in the cooler are unpacked and checked against the COC, and any discrepancies or sample container breakage is noted on the COC. Next, if any water samples require preservation, the custodian will check the pH of the sample to see if it is in the acceptable pH range as indicated in **Worksheet #19**. The custodian will then deliver the COC (and any other paperwork) to the laboratory PM for Laboratory Information Management Systems (LIMS) entry and client contact (if needed).

SAP Worksheet #27—Sample Custody Requirements Table (continued)

Within 24 hours of sample receipt, the laboratory will send a letter acknowledging sample receipt to the CH2M HILL data manager. In the acknowledgment letter, the laboratory will list the samples received, the associated laboratory IDs, and any problems encountered at sample receipt.

Changes to the analyses requested on the chain-of-custody record (that is, by follow-up phone call from CH2M HILL) will be noted, initialed, and dated on the chain-of-custody copies retained by both the laboratory and CH2M HILL. Upon completion of analysis, the analytical laboratory will include the original COC for each sample in the final data deliverable.

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SAP Worksheet #28-1—Laboratory Quality Control Samples Table

Matrix Water/Soil

Analytical Group VOC

Analytical Method/SOP Reference SW8260B/202

QC Sample	Frequency / Number	Method / SOP QC Acceptance Limits	CA	Person(s) Responsible for CA	DQI	MPC
MB	One per prep batch of twenty or fewer samples of similar matrix; or one per day, whichever comes first	No analyte detected > PQL, except for common lab contaminants acetone, 2-butanone, methylene chloride -2x PQL	Investigate source of contamination. Rerun method blank prior to analysis of samples if possible. Evaluate the samples and associated QC: if blank results are above PQL, report sample results which are < PQL or > 10X the blank concentration. Reanalyze blank and samples >PQL and < 10X the blank	Analyst/Supervisor	Bias/Contamination	Same as QC Acceptance Limits
Laboratory Control Sample (LCS)	One per prep batch of twenty or fewer samples of similar matrix; or one per day, whichever comes first	DoD QSM Version 4.1 limits; See Worksheet 28-1A	Evaluate and reanalyze if possible. If an MS/MSD was performed same day and acceptable narrate. If the LCS recoveries are high but the sample results are <QL narrate. Otherwise reprep and reanalyze	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
MS/MSD	One per prep batch of twenty or fewer samples of similar matrix; or one per day, whichever comes first	DoD QSM Version 4.1 limits; See Worksheet 28-1A	CA will not be taken for samples when recoveries are outside limits and surrogate and LCS criteria are met. If both the LCS and MS/MSD are unacceptable reprep the samples and QC.	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
Internal Standards (ISs)	Each field and QC sample	IS area -50% to +100% compared to IS from CV; IS RTwindow ± 0.5 minutes compared to CV RT	Re-analyze affected samples	Analyst/Supervisor	Accuracy	Same as QC Acceptance Limits
Surrogates	Each field and QC sample	DoD QSM Version 4.1 limits; See Worksheet 28-1A	If sample volume available and within holding time, re-analyze affected samples	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits

SAP Worksheet #28-1A—LCS, MS/MSD and Surrogate Recovery Limits

Matrix: Water/Soil
Analytical Group: VOC
Analytical Method: SW8260B

Analyte	Accuracy Water (% R)	Precision Water (% RPD)	Accuracy Soil (% R)	Precision Soil (% RPD)
1,1,1-TCA	65 – 130	≤ 30	55 – 145	≤ 30
1,1,2,2-Tetrachloroethane	65 – 130	≤ 30	55 – 130	≤ 30
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	65 – 130	≤ 30	55 – 130	≤ 30
1,1,2-TCA	75 – 125	≤ 30	60 – 125	≤ 30
1,1-Dichloroethane	70 – 135	≤ 30	65 - 135	≤ 30
1,1-Dichloroethene	70 – 130	≤ 30	65 – 135	≤ 30
1,2,3-Trichloropropane	75 – 125	≤ 30	65 – 130	≤ 30
1,2,4-Trichlorobenzene	65 – 135	≤ 30	55 – 140	≤ 30
1,2,4-Trimethylbenzene	75 – 130	≤ 30	65 – 135	≤ 30
1,3,5-Trimethylbenzene	75 – 130	≤ 30	65 – 135	≤ 30
1,2-Dichloroethane	70 – 130	≤ 30	60 – 145	≤ 30
1,2-Dichlorobenzene	70 – 120	≤ 30	65 – 125	≤ 30
1,2-Dibromo-3-chloropropane	50 – 130	≤ 30	40 – 135	≤ 30
1,2-Dichloropropane	75 – 125	≤ 30	65 – 125	≤ 30
1,2-Dibromoethane	80 – 120	≤ 30	70 – 125	≤ 30
1,3-Dichlorobenzene	75 – 125	≤ 30	65 – 135	≤ 30
1,4-Dichlorobenzene	75 – 125	≤ 30	65 – 135	≤ 30
1-Chlorohexane	50 – 130	≤ 30	45 – 135	≤ 30
2-Butanone (MEK)	30 – 150	≤ 30	30 – 160	≤ 30
2-Hexanone	55 – 130	≤ 30	45 – 145	≤ 30
4-Methyl-2-pentanone (MIBK)	60 – 135	≤ 30	45 – 145	≤ 30
Acetone	40 - 140	≤ 30	20 – 160	≤ 30
Benzene	80 – 120	≤ 30	75 – 125	≤ 30
Bromodichloromethane	75 – 120	≤ 30	70 – 130	≤ 30
Bromoform	70 – 130	≤ 30	55 – 135	≤ 30
Bromomethane	30 – 145	≤ 30	30 – 160	≤ 30
Carbon Disulfide	35 – 160	≤ 30	45 – 160	≤ 30
Carbon Tetrachloride	65 – 140	≤ 30	55 - 145	≤ 30
Chlorobenzene	80 – 120	≤ 30	75 – 125	≤ 30
Chloroethane	60 – 135	≤ 30	40 – 155	≤ 30
Chloroform	65 – 135	≤ 30	65 - 135	≤ 30
Chloromethane	40 – 125	≤ 30	40 – 140	≤ 30
Cis-1,2-Dichloroethene	70 – 125	≤ 30	55 – 135	≤ 30
Cis-1,3-Dichloropropene	70 – 130	≤ 30	65 – 135	≤ 30
Dibromochloromethane	60 – 135	≤ 30	55 – 140	≤ 30
Dibromomethane	75 – 125	≤ 30	65 – 135	≤ 30
Dichlorodifluoromethane (Freon 12)	30 – 155	≤ 30	30 – 155	≤ 30
Ethylbenzene	75 – 125	≤ 30	65 – 135	≤ 30
Isopropylbenzene	75 – 125	≤ 30	70 – 140	≤ 30
Methylene chloride	55 – 140	≤ 30	40 – 155	≤ 30
Methyl tert-butyl ether (MTBE)	65 – 125	≤ 30	60 – 130	≤ 30
n-Hexane	40 - 140	≤ 30	40 – 140	≤ 30
Styrene	65 – 135	≤ 30	65 – 135	≤ 30
TCE	70 – 125	≤ 30	70 – 130	≤ 30
PCE	45 – 150	≤ 30	45 – 150	≤ 30
Toluene	75 – 120	≤ 30	60 – 135	≤ 30
Trans-1,2-Dichloroethene	60 – 140	≤ 30	55 – 145	≤ 30
Trans-1,3-Dichloropropene	55 – 140	≤ 30	55 – 140	≤ 30
Trichlorofluoromethane (Freon 11)	60 – 145	≤ 30	30 – 150	≤ 30
Vinyl Acetate	40 - 145	≤ 30	40 – 145	≤ 30
Vinyl Chloride	50 – 145	≤ 30	45 – 140	≤ 30
Xylenes, Total	75 – 130	≤ 30	70 – 135	≤ 30
Surrogates:				
Dibromofluoromethane	85 – 115		75 – 125	
Toluene-D8	85 – 120		85 – 115	
4-Bromofluorobenzene	75 – 120		85 – 120	
1,2-DCA-D4	70 - 120		60 – 130	

SAP Worksheet #28-2—Laboratory QC Samples Table

Matrix Water/Soil

Analytical Group SVOC-Low; SVOC-SIM

Analytical Method / SOP Reference SW8270C, 8270C-SIM/201,23

QC Sample	Frequency / Number	Method / SOP QC Acceptance Limits	CA	Person(s) Responsible for CA	DQI	MPC
MB	One per prep batch of twenty or fewer samples of similar matrix	No analyte detected > PQL	Investigate source of contamination. Evaluate the samples and associated QC: if blank results are above PQL, report sample results which are < PQL or > 10X the blank concentration. Re-analyze blank and samples >PQL and < 10X the blank	Analyst/Supervisor	Bias/Contamination	Same as QC Acceptance Limits
LCS	One per prep batch of twenty or fewer samples of similar matrix	DOD QSM 4.1 limits; See Worksheet 28-2A,B	Evaluate and reanalyze if possible. If an MS/MSD was extracted in the same extraction batch and acceptable narrate. If the LCS recoveries are high but the sample results are <QL narrate. Otherwise re-prep and re-analyze	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
MS/MSD	One per prep batch of twenty or fewer samples of similar matrix	DOD QSM 4.1 limits; See Worksheet 28-2A,B	CA will not be taken for samples when recoveries are outside limits and surrogate and LCS criteria are met. If both the LCS and MS/MSD are unacceptable re-prep the samples and QC.	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
ISs	Each field and QC sample	IS area -50% to +100% compared to IS from CV; IS RT window ± 0.5 minutes compared to CV RT	Re-analyze affected samples	Analyst/Supervisor	Accuracy	Same as QC Acceptance Limits
Surrogates	Each field and QC sample	DOD QSM 4.1 limits; See Worksheet 28-2A,B	If sample volume available, re-analyze affected samples	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits

SAP Worksheet #28-2A—LCS, MS/MSD and Surrogate Recovery Limits

Matrix: Water/Soil

Analytical Group: SVOC-Low

Analytical Method: SW8270C

Analyte	Accuracy Water (% R)	Precision Water (% RPD)	Accuracy Soil (% R)	Precision Soil (% RPD)
1,1-Biphenyl	30 - 150	≤ 30	50 – 150	≤ 30
2,4-Dinitrotoluene	50 – 120	≤ 30	50 – 115	≤ 30
2,6-Dinitrotoluene	50 – 115	≤ 30	50 – 110	≤ 30
2-Chloronaphthalene	50 – 105	≤ 30	45 – 105	≤ 30
2-Methylnaphthalene	45 - 105	≤ 30	45 – 105	≤ 30
2-Nitroaniline	50 – 115	≤ 30	45 – 120	≤ 30
3,3'-Dichlorobenzidine	20 – 110	≤ 30	10 - 130	≤ 30
3-Nitroaniline	20 – 125	≤ 30	25 – 110	≤ 30
4-Bromophenyl phenyl ether	50 – 115	≤ 30	45 – 115	≤ 30
4-Chloroaniline	15 – 110	≤ 30	10 - 100	≤ 30
4-Chlorophenyl phenyl ether	50 – 110	≤ 30	45 – 110	≤ 30
4-Nitroaniline	35 – 120	≤ 30	35 – 115	≤ 30
Acenaphthylene	50 – 105	≤ 30	45 – 105	≤ 30
Acenaphthene	45 – 110	≤ 30	45 – 110	≤ 30
Anthracene	55 – 110	≤ 30	55 – 105	≤ 30
Benzidine	30 - 150	≤ 30	30 - 150	≤ 30
Benz (a) anthracene	55 – 110	≤ 30	50 – 110	≤ 30
Benzo (a) pyrene	55 – 110	≤ 30	50 – 110	≤ 30
Benzo (b) fluoranthene	45 – 120	≤ 30	45 – 115	≤ 30
Benzo (g,h,i) perylene	40 – 125	≤ 30	40 – 125	≤ 30
Benzo (k) fluoranthene	45 – 125	≤ 30	45 – 125	≤ 30
Bis (2-chloroethoxy) methane	45 – 105	≤ 30	45 – 110	≤ 30
Bis (2-chloroethyl) ether	35 – 110	≤ 30	40 – 105	≤ 30
Bis (2-chloroisopropyl) ether	25 – 130	≤ 30	20 – 115	≤ 30
Bis (2-ethylhexyl) phthalate	40 – 125	≤ 30	45 – 125	≤ 30
Butyl Benzyl Phthalate	45 – 115	≤ 30	50 – 125	≤ 30
Carbazole	50 – 115	≤ 30	45 – 115	≤ 30
Chrysene	55 – 110	≤ 30	55 – 110	≤ 30
Di-n-Butyl Phthalate	55 – 115	≤ 30	55 – 110	≤ 30
Di-n-Octyl Phthalate	35 – 135	≤ 30	40 – 130	≤ 30
Dibenz (a,h) Anthracene	40 – 125	≤ 30	40 – 125	≤ 30
Dibenzofuran	55 – 105	≤ 30	50 - 105	≤ 30
Diethyl Phthalate	40 – 120	≤ 30	50 – 115	≤ 30
Dimethyl Phthalate	25 – 125	≤ 30	50 – 110	≤ 30
Fluoranthene	55 – 115	≤ 30	55 – 115	≤ 30
Fluorene	50 – 110	≤ 30	50 – 110	≤ 30
Hexachlorobenzene	50 – 110	≤ 30	45 – 120	≤ 30
Hexachlorobutadiene	25 – 105	≤ 30	40 – 115	≤ 30
Hexachlorocyclopentadiene	20 - 150	≤ 30	50 – 150	≤ 30
Hexachloroethane	30 – 100	≤ 30	35 – 110	≤ 30
Indeno (1,2,3-c,d) Pyrene	45 – 125	≤ 30	40 – 120	≤ 30

SAP Worksheet #28-2A—LCS, MS/MSD and Surrogate Recovery Limits (continued)

Analyte	Accuracy Water (% R)	Precision Water (% RPD)	Accuracy Soil (% R)	Precision Soil (% RPD)
Isophorone	50 - 110	≤ 30	45 – 110	≤ 30
n-Nitrosodi-n-propylamine	35 – 130	≤ 30	40 – 115	≤ 30
n-Nitrosodiphenylamine	50 – 110	≤ 30	50 - 115	≤ 30
Naphthalene	40 – 100	≤ 30	40 – 105	≤ 30
Nitrobenzene	45 – 110	≤ 30	40 – 115	≤ 30
Phenanthrene	50 – 115	≤ 30	50 – 110	≤ 30
Pyrene	50 – 130	≤ 30	45 – 125	≤ 30
2,4,5-Trichlorophenol	50 – 110	≤ 30	50 – 110	≤ 30
2,4,6-Trichlorophenol	50 – 115	≤ 30	45 – 110	≤ 30
2,4-Dichlorophenol	50 – 105	≤ 30	45 – 110	≤ 30
2,4-Dimethylphenol	30 – 110	≤ 30	30 – 105	≤ 30
2,4-Dinitrophenol	15 – 140	≤ 30	15 – 130	≤ 30
2-Chlorophenol	35 – 105	≤ 30	45 – 105	≤ 30
2-Methylphenol	40 – 110	≤ 30	40 – 105	≤ 30
2-Nitrophenol	40 – 115	≤ 30	40 – 110	≤ 30
4,6-Dinitro-2-Methyl Phenol	40 – 130	≤ 30	30 – 135	≤ 30
4-Chloro-3-Methyl Phenol	45 – 110	≤ 30	45 – 115	≤ 30
4-Methylphenol	30 – 110	≤ 30	40 – 105	≤ 30
4-Nitrophenol	40 – 115	≤ 30	15 – 140	≤ 30
Pentachlorophenol	40 – 115	≤ 30	25 - 120	≤ 30
Phenol	40 – 115	≤ 30	40 – 100	≤ 30
Surrogates:				
2,4,6-Tribromophenol	40 – 125		35 – 125	
2-Fluorobiphenyl	50 – 110		45 – 105	
2-Fluorophenol	20 – 110		35 – 105	
Nitrobenzene-D5	40 – 110		35 - 100	
Phenol-D5	30 - 115		40 – 100	
Terphenyl-D14	50 – 135		30 – 125	

SAP Worksheet #28-2B—LCS, MS/MSD and Surrogate Recovery Limits

Matrix: Water/Soil

Analytical Group: SVOC-SIM

Analytical Method: SW8270C-SIM

Analyte	Accuracy Water (% R)	Precision Water (% RPD)	Accuracy Soil (% R)	Precision Soil (% RPD)
1-Methylnaphthalene	35-131	≤ 40	30-111	≤ 50
2-Methylnaphthalene	45-105	≤ 40	45-105	≤ 50
Acenaphthylene	50-105	≤ 40	45-105	≤ 50
Acenaphthene	45-110	≤ 40	45-110	≤ 50
Anthracene	55-110	≤ 40	55-105	≤ 50
Benz (a) anthracene	55-110	≤ 40	50-110	≤ 50
Benzo (a) pyrene	55-110	≤ 40	50-110	≤ 50
Benzo (b) fluoranthene	45-120	≤ 40	45-115	≤ 50
Benzo (g,h,i) perylene	40-125	≤ 40	40-125	≤ 50
Benzo (k) fluoranthene	45-125	≤ 40	45-125	≤ 50
Chrysene	55-110	≤ 40	55-110	≤ 50
Dibenz (a,h) Anthracene	40-125	≤ 40	40-125	≤ 50
Fluoranthene	55-115	≤ 40	55-115	≤ 50
Fluorene	50-110	≤ 40	50-110	≤ 50
Indeno (1,2,3-c,d) Pyrene	45-125	≤ 40	40-120	≤ 50
Naphthalene	40-100	≤ 40	40-105	≤ 50
Phenanthrene	50-115	≤ 40	50-110	≤ 50
Pyrene	50-130	≤ 40	45-125	≤ 50
Surrogates:				
2-Fluorobiphenyl	34-167		14-129	
Terphenyl-d14	34-167		14-129	

SAP Worksheet #28-3—Laboratory QC Samples Table

Matrix Water/Soil

Analytical Group PEST/PCB

Analytical Method /SOP Reference SW8081A, 8082/211

QC Sample	Frequency / Number	Method / SOP QC Acceptance Limits	CA	Person(s) Responsible for CA	DQI	MPC
Method Blank	One per prep batch of twenty or fewer samples of similar matrix	No analyte detected > PQL	Investigate source of contamination. Evaluate the samples and associated QC: if blank results are above PQL, report sample results which are < PQL or > 10X the blank concentration. Re-analyze blank and samples >PQL and < 10X the blank	Analyst/Supervisor	Bias/ Contamination	Same as QC Acceptance Limits
LCS	One per prep batch of twenty or fewer samples of similar matrix PEST: Spike with single component pesticide mix PCB: Spike with Aroclor 1016/1260 mix	DoD QSM Version 4.1 limits; See Worksheet 28-3A	Evaluate and reanalyze if possible. If an MS/MSD was extracted in the same extraction batch and acceptable narrate. If the LCS recoveries are high but the sample results are <QL narrate. Otherwise re-prep and re-analyze	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
MS/MSD	One per prep batch of twenty or fewer samples of similar matrix(spike same as LCS)	DoD QSM Version 4.1 limits; See Worksheet #28-3A	CA will not be taken for samples when recoveries are outside limits and surrogate and LCS criteria are met. If both the LCS and MS/MSD are unacceptable re-prep the samples and QC.	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
Surrogates	Each field and QC sample	DoD QSM Version 4.1 limits; See Worksheet 28-3A	No CA if only one surrogate is out. If both surrogates are high and sample is < PQL, no CA is taken. If surrogates are low and sample volume available, re-analyze affected samples	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
Second Column Confirmation	100 percent of all positive results for pesticides above the method detection limit	Quantitative confirmation by a second GC column with dissimilar phase and retention characteristics within the specified sample holding time is required.	Reanalyze sample if confirmation not performed	Analyst/Supervisor	Bias	Relative percent difference (RPD) between the primary and confirmation results less than 40%

SAP Worksheet #28-3A—LCS, MS/MSD and Surrogate Recovery Limits

Matrix: Water/Soil

Analytical Group: PEST/PCB

Analytical Method: SW8081A; 8082

Analyte	Accuracy Water (% R)	Precision Water (% RPD)	Accuracy Soil (% R)	Precision Soil (% RPD)
Alpha-BHC	60 – 130	≤ 30	60 – 125	≤ 30
Beta-BHC	65 – 125	≤ 30	60 – 125	≤ 30
Delta-BHC	45 – 135	≤ 30	55 – 130	≤ 30
Gamma-BHC (Lindane)	25 – 135	≤ 30	50 – 135	≤ 30
Alpha-Chlordane	65 – 125	≤ 30	65 – 120	≤ 30
Gamma-Chlordane	60 – 125	≤ 30	65 – 125	≤ 30
4,4'-DDD	25 – 150	≤ 30	30 – 135	≤ 30
4,4'-DDE	35 – 140	≤ 30	60 – 135	≤ 30
4,4'-DDT	45 – 140	≤ 30	45 – 140	≤ 30
Aldrin	25 – 140	≤ 30	45 – 140	≤ 30
Dieldrin	60 – 130	≤ 30	60 – 125	≤ 30
Endosulfan I	50 – 110	≤ 30	30 – 135	≤ 30
Endosulfan II	30 – 130	≤ 30	35 – 140	≤ 30
Endosulfan Sulfate	55 – 135	≤ 30	60 – 135	≤ 30
Endrin	55 – 135	≤ 30	60 – 135	≤ 30
Endrin Aldehyde	55 – 135	≤ 30	35 – 145	≤ 30
Endrin Ketone	75 – 125	≤ 30	65 – 135	≤ 30
Heptachlor	40 – 130	≤ 30	50 – 140	≤ 30
Heptachlor Epoxide	60 – 130	≤ 30	65 – 130	≤ 30
Methoxychlor	55 – 150	≤ 30	55 – 145	≤ 30
Toxaphene	50 – 150	≤ 30	50 – 150	≤ 30
PCB-1016	25 – 145	≤ 30	40 – 140	≤ 30
PCB-1221	NA	≤ 30	NA	≤ 30
PCB-1232	NA	≤ 30	NA	≤ 30
PCB-1242	NA	≤ 30	NA	≤ 30
PCB-1248	NA	≤ 30	NA	≤ 30
PCB-1254	NA	≤ 30	NA	≤ 30
PCB-1260	30 – 145	≤ 30	60 – 130	≤ 30
PCB-1262	NA	≤ 30	NA	≤ 30
PCB-1268	NA	≤ 30	NA	≤ 30
Surrogates:				
Decachlorobiphenyl	30 – 135		55 – 130	
Tetrachloro-m-xylene	25 - 140		50 – 125	

SAP Worksheet #28-4—Laboratory QC Samples Table

Matrix Water/Soil

Analytical Group TPH-GRO; TPH-DRO

Analytical Method / SOP Reference SW8015B/219

QC Sample	Frequency / Number	Method / SOP QC Acceptance Limits	CA	Person(s) Responsible for CA	DQI	MPC
Method Blank	One per prep batch of twenty or fewer samples of similar matrix	No analyte detected > PQL	Investigate source of contamination. Evaluate the samples and associated QC: if blank results are above PQL, report sample results which are < PQL or > 10X the blank concentration. Re-analyze blank and samples >PQL and < 10X the blank	Analyst/Supervisor	Bias/Contamination	Same as QC Acceptance Limits
LCS	One per prep batch of twenty or fewer samples of similar matrix TPH-GRO: Spike with Gasoline TPH-DRO: Spike with Diesel and Motor Oil	See Worksheet 28-4A	Evaluate and reanalyze if possible. If an MS/MSD was extracted in the same extraction batch and acceptable narrate. If the LCS recoveries are high but the sample results are <QL narrate. Otherwise re-prep and re-analyze	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
MS/MSD	One per prep batch of twenty or fewer samples of similar matrix (spike same as LCS)	See Worksheet 28-4A	CA will not be taken for samples when recoveries are outside limits and surrogate and LCS criteria are met. If both the LCS and MS/MSD are unacceptable re-prep the samples and QC.	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
Surrogates	Each field and QC sample	See Worksheet 28-4A	If surrogate is outside high and sample is < PQL, no CA is taken. If surrogate is outside low and sample volume available, re-analyze affected samples	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits

SAP Worksheet #28-4A—LCS, MS/MSD and Surrogate Recovery Limits

Matrix: Water/Soil

Analytical Group: TPH-GRO; TPH-DRO

Analytical Method: SW8015B

Analytical Group	Analyte	Accuracy Water (% R)	Precision Water (% RPD)	Accuracy Soil (% R)	Precision Soil (% RPD)
TPH-GRO	TPH–Gasoline	50-150	≤ 30	50-150	≤ 30
	Surrogate:				
	Bromofluorobenzene	35-140		30-135	
TPH-DRO	TPH–Diesel	50-150	≤ 30	50-150	≤ 30
	TPH–Motor Oil	50-150	≤ 30	50-150	≤ 30
	Surrogates				
	o-Terphenyl	30-140		35-140	

SAP Worksheet #28-5—Laboratory QC Samples Table

Matrix Water/Soil

Analytical Group EXP

Analytical Method /SOP Reference SW8330A/327

QC Sample	Frequency / Number	Method / SOP QC Acceptance Limits	CA	Person(s) Responsible for CA	DQI	MPC
Method Blank	One per prep batch of twenty or fewer samples of similar matrix	No analyte detected > PQL	Investigate source of contamination. Evaluate the samples and associated QC: if blank results are above PQL, report sample results which are < PQL or > 10X the blank concentration. Re-analyze blank and samples >PQL and < 10X the blank	Analyst/Supervisor	Bias/ Contamination	Same as QC Acceptance Limits
LCS	One per prep batch of twenty or fewer samples of similar matrix	DoD QSM Version 4.1 limits; See Worksheet 28-5A	Evaluate and reanalyze if possible. If an MS/MSD was extracted in the same extraction batch and acceptable narrate. If the LCS recoveries are high but the sample results are <QL narrate. Otherwise re-prep and re-analyze	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
MS/MSD	One per prep batch of twenty or fewer samples of similar matrix(spike same as LCS)	DoD QSM Version 4.1 limits; See Worksheet #28-5A	CA will not be taken for samples when recoveries are outside limits and surrogate and LCS criteria are met. If both the LCS and MS/MSD are unacceptable re-prep the samples and QC.	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
Surrogates	Each field and QC sample	DoD QSM Version 4.1 limits; See Worksheet 28-5A	If surrogate is outside high and sample is < PQL, no CA is taken. If surrogate is outside low and sample volume available, re-analyze affected samples	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits

SAP Worksheet #28-5A—LCS, MS/MSD and Surrogate Recovery Limits

Matrix: Water/Soil

Analytical Group EXP

Analytical Method: SW8330A

Analyte	Accuracy Water (% R)	Precision Water (% RPD)	Accuracy Soil (% R)	Precision Soil (% RPD)
HMX	80 – 115	≤ 30	75 – 125	≤ 30
RDX	50 – 160	≤ 30	70 – 135	≤ 30
1,3,5-Trinitrobenzene	65 – 140	≤ 30	75 – 125	≤ 30
1,3-Dinitrobenzene	45 – 160	≤ 30	70 – 135	≤ 30
Tetryl	10 – 150	≤ 30	10 – 150	≤ 30
Nitrobenzene	50 – 140	≤ 30	75 – 125	≤ 30
2,4,6-Trinitrotoluene	50 – 145	≤ 30	55 – 140	≤ 30
4-Amino-2,6-Dinitrotoluene	55 – 155	≤ 30	75 – 130	≤ 30
2-Amino-4,6-Dinitrotoluene	50 – 155	≤ 30	75 – 130	≤ 30
2,4-Dinitrotoluene	60 – 135	≤ 30	75 – 130	≤ 30
2,6-Dinitrotoluene	60 – 135	≤ 30	70 – 130	≤ 30
2-Nitrotoluene	45 – 135	≤ 30	70 – 130	≤ 30
3-Nitrotoluene	50 – 130	≤ 30	70 – 130	≤ 30
4-Nitrotoluene	50 – 130	≤ 30	70 – 135	≤ 30
Surrogate:				
1-Chloro-3-nitrobenzene	40 - 145		55 - 140	

SAP Worksheet #28-6—Laboratory QC Samples Table

Matrix Water/Soil

Analytical Group DX/FN

Analytical Method / SOP Reference SW8290/DC184.042109.10

QC Sample	Frequency / Number	Method / SOP QC Acceptance Limits	CA	Person(s) Responsible for CA	DQI	MPC
MB	One per prep batch of twenty or fewer samples of similar matrix	No analyte detected > PQL	Investigate source of contamination. Evaluate the samples and associated QC: if blank results are above PQL, report sample results which are < PQL or > 10X the blank concentration. Re-analyze blank and samples >PQL and < 10X the blank	Analyst/Supervisor	Bias/Contamination	Same as QC Acceptance Limits
LCS	One per prep batch of twenty or fewer samples of similar matrix	SGS DC184.042109.10	Evaluate and reanalyze if possible. If an MS/MSD was extracted in the same extraction batch and acceptable narrate. If the LCS recoveries are high but the sample results are <QL narrate. Otherwise re-prep and re-analyze	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
MS/MSD	One per prep batch of twenty or fewer samples of similar matrix	SGS DC184.042109.10	CA will not be taken for samples when recoveries are outside limits and surrogate and LCS criteria are met. If both the LCS and MS/MSD are unacceptable re-prep the samples and QC.	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
ISs	Each field and QC sample	SGS DC184.042109.10	Re-analyze affected samples	Analyst/Supervisor	Accuracy	Same as QC Acceptance Limits

SAP Worksheet #28-6A—LCS, MS/MSD and Surrogate Recovery Limits

Matrix: Water/Soil

Analytical Group DX/FN

Analytical Method: SW8290

Analyte	Accuracy Water (% R)	Precision Water (% RPD)	Accuracy Soil (% R)	Precision Soil (% RPD)
2,3,7,8-TCDD	70 - 130	≤ 30	70 - 130	≤ 30
1,2,3,7,8-PeCDD	70 - 130	≤ 30	70 - 130	≤ 30
1,2,3,6,7,8-HxCDD	70 - 130	≤ 30	70 - 130	≤ 30
1,2,3,4,7,8-HxCDD	70 - 130	≤ 30	70 - 130	≤ 30
1,2,3,7,8,9-HxCDD	70 - 130	≤ 30	70 - 130	≤ 30
1,2,3,4,6,7,8-HpCDD	70 - 130	≤ 30	70 - 130	≤ 30
1,2,3,4,6,7,8,9-OCDD	70 - 130	≤ 30	70 - 130	≤ 30
2,3,7,8-TCDF	70 - 130	≤ 30	70 - 130	≤ 30
1,2,3,7,8-PeCDF	70 - 130	≤ 30	70 - 130	≤ 30
2,3,4,7,8-PeCDF	70 - 130	≤ 30	70 - 130	≤ 30
1,2,3,6,7,8-HxCDF	70 - 130	≤ 30	70 - 130	≤ 30
1,2,3,7,8,9-HxCDF	70 - 130	≤ 30	70 - 130	≤ 30
1,2,3,4,7,8-HxCDF	70 - 130	≤ 30	70 - 130	≤ 30
2,3,4,6,7,8-HxCDF	70 - 130	≤ 30	70 - 130	≤ 30
1,2,3,4,6,7,8-HpCDF	70 - 130	≤ 30	70 - 130	≤ 30
1,2,3,4,7,8,9-HpCDF	70 - 130	≤ 30	70 - 130	≤ 30
1,2,3,4,6,7,8,9-OCDF	70 - 130	≤ 30	70 - 130	≤ 30
Internal Standards:				
13C-2,3,7,8-TCDD	40 – 135		40 – 135	
13C-1,2,3,7,8-PeCDD	40 – 135		40 – 135	
13C-1,2,3,6,7,8-HxCDD	40 – 135		40 – 135	
13C-1,2,3,4,6,7,8-HpCDD	40 – 135		40 – 135	
13C-1,2,3,4,6,7,8,9-OCDD	40 – 135		40 – 135	
13C-2,3,7,8-TCDF	40 – 135		40 – 135	
13C-1,2,3,7,8-PeCDF	40 – 135		40 – 135	
13C-1,2,3,4,7,8-HxCDF	40 – 135		40 – 135	
13C-1,2,3,4,6,7,8-HpCDF	40 – 135		40 – 135	

SAP Worksheet #28-7—Laboratory QC Samples Table

Matrix Water/Soil

Analytical Group METALS (TAL, RCRA, TITLE 22)

Analytical Method / SOP Reference SW6010B/105; SW7470A,7471A/103,104

QC Sample	Frequency / Number	Method / SOP QC Acceptance Limits	CA	Person(s) Responsible for CA	DQI	MPC
Method Blank	One per prep batch of twenty or fewer samples of similar matrix	No analyte detected > PQL(absolute value < PQL)	Investigate source of contamination. Evaluate the samples and associated QC: if blank results are above PQL, report sample results which are < PQL or > 10X the blank concentration. Re-analyze blank and samples >PQL and < 10X the blank	Analyst/Supervisor	Bias/Contamination	Same as QC Acceptance Limits
LCS	One per prep batch of twenty or fewer samples of similar matrix	Recovery within 80 – 120%	Evaluate and reanalyze if possible. If the LCS recoveries are high but the sample results are < PQL narrate. Otherwise re-digest and re-analyze	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
MS/MSD	One per prep batch of twenty or fewer samples of similar matrix	Recovery within 75 – 125% (if sample is < 4x spike value)	Flag results for affected analytes for all associated samples with “N”. Analyze post spike	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
Serial Dilution	One per prep batch of twenty or fewer samples of similar matrix	1:4 dilution must agree within ±10% of the original sample result if result is > 50x IDL	Perform post spike addition	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
Post Spike	One per prep batch of twenty or fewer samples of similar matrix	Recovery within 85 – 115%	Flag results for affected analytes for all associated samples with “J”	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
ISs (SW6020 only)	Each field and QC sample	IS area -50% to +100% compared to IS from CV; IS RT window ± 0.5 minutes compared to CV RT	Re-analyze affected samples	Analyst/Supervisor	Accuracy	Same as QC Acceptance Limits

SAP Worksheet #28-8—Laboratory QC Samples Table

Matrix Water/Soil

Analytical Group HEX CR

Analytical Method / SOP Reference SW7196/166

QC Sample	Frequency / Number	Method / SOP QC Acceptance Limits	CA	Person(s) Responsible for CA	DQI	MPC
Method Blank	One per prep batch of twenty or fewer samples of similar matrix	No analyte detected > PQL (absolute value < PQL)	Investigate source of contamination. Evaluate the samples and associated QC: if blank results are above PQL, report sample results which are < PQL or > 10X the blank concentration. Re-analyze blank and samples >PQL and < 10X the blank	Analyst/Supervisor	Bias/Contamination	Same as QC Acceptance Limits
LCS	One per prep batch of twenty or fewer samples of similar matrix	Recovery within 90 – 110%	Evaluate and reanalyze if possible. If the LCS recoveries are high but the sample results are < PQL narrate. Otherwise re-digest and re-analyze	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
MS/MSD	One per prep batch of twenty or fewer samples of similar matrix	Recovery within 75 – 125% (if sample is < 4x spike value)	Flag results for affected analytes for all associated samples with “N”	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits
Post Spike	One per prep batch of twenty or fewer samples of similar matrix	Recovery within 85 – 115%	Flag results for affected analytes for all associated samples with “J”	Analyst/Supervisor	Accuracy/Bias	Same as QC Acceptance Limits

SAP Worksheet #29—Project Documents and Records Table

Document	Where Maintained
Field Notebooks	
Chain of Custody Records	Electronic portable document format (PDF) copies in the project file. Hardcopy in the final data deliverable. Archived at project closeout.
Air Bills	Hardcopy in the data deliverable. Archived at project closeout.
Telephone Logs	Electronic portable document format (PDF) copies in the project file. Archived at project closeout.
CA Forms	Electronic PDF copies in the project file. Hardcopy in the final data deliverable. Archived at project closeout.
PID/FID Readings	
Water quality parameters collected during groundwater sampling	Electronic PDF copies in the project file. Hardcopy in the final data deliverable. Archived at project closeout
OVM/OVA readings	Electronic PDF copies in the project file. Hardcopy in the final data deliverable. Archived at project closeout
Various field measurements	Electronic PDF copies in the project file. Hardcopy in the final data deliverable. Archived at project closeout
All field equipment calibration information	Electronic PDF copies in the project file. Hardcopy in the final data deliverable. Archived at project closeout
Field equipment maintenance records	Electronic PDF copies in the project file. Hardcopy in the final data deliverable. Archived at project closeout
Planning Documents	Hardcopy in the final data deliverable. Archived at project closeout.
Sample Receipt, Custody, and Tracking Records	Electronic PDF copies in the project file. Hardcopy in the final data deliverable. Archived at project closeout.
Standard Traceability Logs	Hardcopy in the final data deliverable. Archived at project closeout.
Equipment Calibration Logs	Hardcopy in the final data deliverable. Archived at project closeout.
Sample Preparation Logs	Hardcopy in the final data deliverable. Archived at project closeout.
Instrument Run Logs	Hardcopy in the final data deliverable. Archived at project closeout.
Equipment Maintenance, Testing, and Inspection Logs	Maintained by the laboratory
Reported Field Sample Results	Electronic PDF copies in the project file. Hardcopy in the final data deliverable. Archived at project closeout.
Reported Results for Standards, QC Checks, and QC samples	Hardcopy in the final data deliverable. Archived at project closeout.
Instrument Printouts (raw data) for Field Samples, Standards, QC Checks, and QC samples	Hardcopy in the final data deliverable. Archived at project closeout.
Final Lab Data Package (Hardcopy)	Archived at project closeout.
Data Package Completeness Checklists	Electronic PDF copies in the project file. Hardcopy in the final data deliverable. Archived at project closeout
Sample Disposal Records	Maintained by the laboratory
Extraction/Clean-up Records	Maintained by the laboratory
Field Sampling Audit Checklists	Electronic PDF copies in the project file. Hardcopy in the final data deliverable. Archived at project closeout
Fixed Laboratory Audit Checklists	Electronic PDF copies in the project file. Hardcopy in the final data deliverable. Archived at project closeout
Data Validation Reports	Electronic PDF copies in the project file. Hardcopy in the final data deliverable. Archived at project closeout.

Note: Files will be stored for a minimum of 7 years in accordance with the CLEAN Contract requirement

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SAP Worksheet #30—Analytical Services Table

Matrix	Analytical Group [1]	Sample Locations/ ID Number	Analytical|Method	Data Package Turnaround Time	Laboratory / Organization (name and address, contact person and telephone number)	Backup Laboratory / Organization (name and address, contact person and telephone number)
Water	VOC	49	Volatiles by SW8260B	28 calendar days	Empirical Laboratories, LLC 227 French Landing Dr. Nashville, TN 37228 Janice Shilling 615-345-1115	Curtis and Tompkins, Inc 2323 Fifth St. Berkeley, CA 94710 John Goyette 510-486-0900
Water	SVOC	39	Semivolatiles by SW8270C	28 calendar days	See above	See above
Water	PEST	12	Pesticides by SW8081A	28 calendar days	See above	See above
Water	TPH-GRO	49	TPH-GRO by SW8015B	28 calendar days	See above	See above
Water	TPH-DRO	49	TPH-DRO by SW8015B	28 calendar days	See above	See above
Water	EXP	3	Explosives by SW8330A	28 calendar days	See above	See above
Water	DX/FN	2	Dioxins/Furans by SW8290	28 calendar days	SGS North America Inc 5500 Business Drive Wilmington, NC 28405 Linda McWhirter 910-350-1903	TestAmerica Inc West Sacramento Laboratory 880 Riverside Parkway West Sacramento, CA 95605 916-373-5600
Water	METALS (TAL, RCRA, TITLE 22)	24	Metals by SW6010B, 7470A	28 calendar days	Empirical Laboratories, LLC 227 French Landing Dr. Nashville, TN 37228 Janice Shilling 615-345-1115	Curtis and Tompkins, Inc 2323 Fifth St. Berkeley, CA 94710 John Goyette 510-486-0900
Soil	VOC	200	Volatiles by SW8260B	28 calendar days	See above	See above
Soil	SVOC	230	Semivolatiles by SW8270C	28 calendar days	See above	See above
Soil	SVOC-SIM	100	Semivolatiles by SW8270C-SIM	28 calendar days	See above	See above
Soil	PEST	115	Pesticides by SW8081A	28 calendar days	See above	See above
Soil/Concrete	PCB	151	PCBs by SW8082	28 calendar days	See above	See above

SAP Worksheet #30—Analytical Services Table (continued)

Matrix	Analytical Group [1]	Sample Locations/ ID Number	Analytical|Method	Data Package Turnaround Time	Laboratory / Organization[1] (name and address, contact person and telephone number)	Backup Laboratory / Organization[1] (name and address, contact person and telephone number)
Soil	TPH-GRO	373	TPH-GRO by SW8015B	28 calendar days	See above	See above
Soil	TPH-DRO	373	TPH-DRO by SW8015B	28 calendar days	See above	See above
Soil	METALS (TAL, RCRA, TITLE 22)	178	Metals by SW6010B, 7471A	28 calendar days	See above	See above
Soil	HEX CR	10	Hexavalent Chromium by SW7196	28 calendar days	See above	See above
Soil	EXP	30	Explosives by SW8330A	28 calendar days	See above	See above
Soil	DX/FN	7	Dioxins/Furans by SW8290	28 calendar days	SGS North America Inc 5500 Business Drive Wilmington, NC 28405 Linda McWhirter 910-350-1903	TestAmerica Inc West Sacramento Laboratory 880 Riverside Parkway West Sacramento, CA 95605 916-373-5600

Notes:
[1] Analytical Groups:
DX/FN = Dixons/furans; EXP = explosives; HEX CR = hexavalent chromium; PCB = plychlorinated biphenyls; PEST = pesticides; SVOC = semivolatile organic compunds; SVOC-SIM =semivolatile organic compounds simultaneous ion monitoring; TPH-DRO =total petroleum hydrocarbons diesel; TPH-GRO = total petroleum hydrocarbons gasoline; VOC = volatile organic compounds;

SAP Worksheet #31—Planned Project Assessments Table

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment (title and organizational affiliation)	Person(s) Responsible for Responding to Assessment Findings (title and organizational affiliation)	Person(s) Responsible for Identifying and Implementing CA (title and organizational affiliation)	Person(s) Responsible for Monitoring Effectiveness of CA (title and organizational affiliation)
Field Performance Audit	One during sampling activities	Internal	CH2M HILL	Stephen Quayle FTL CH2M HILL	Stephen Quayle Project Field Team CH2M HILL	Jamie Eby PM CH2M HILL	Brett Doerr CLEAN UFP-SAP Reviewer CH2M HILL
Safe Work Observation (SWO)	One per week during field activities	Internal	CH2M HILL	Stephen Quayle SSC CH2M HILL	Stephen Quayle Project Field Team CH2M HILL	Rick Cavil HSO CH2M HILL	Stephen Quayle SSC CH2M HILL
DoD ELAP audit (laboratory)	Prior to sampling activities	External	Laboratory Accrediation Bureau	R. Douglas Lenard Chief Technical Lead Laboratory Accrediation Bureau	Randy Ward Empirical Labs	Randy Ward Empirical Labs	Mark Fesler CH2M HILL

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SAP Worksheet #32—Assessment Findings and Corrective Action Responses

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (name, title, organization)	Timeframe of Notification	Nature of CA Response Documentation	Individual(s) Receiving CA Response (name, title, organization)	Timeframe for Response
Field Performance Audit	Field Performance Audit Checklist	Field Team PM Environmental Manager	Within one day of audit	Verbal and CA Form	FTL CH2M HILL	Within 1 day of receipt of CA Form
SWO	Safe Work Observation Form	FTL Field Team PM	Immediately (person involved or observed person). Following day (field team). Within 1 week if worthy of elevation (HSO)	On SWO Form	FTL and individual being observed, and the PM and if elevated to the H&S officer.	Corrected in the field immediately, and within 1 week if elevated.
DoD ELAP audit (laboratory)	Audit Report (A2LA)	A2LA Mark Fesler/CH2M HILL	Within 30 days of audit	Letter from laboratory addressing audit findings	A2LA Mark Fesler/CH2M HILL	Within 45 days of audit

SAP Worksheet #32a—Corrective Action Form

Person initiating Corrective Action (CA) ________________________ **Date** _____________

Description of problem and when identified: ____

____

____

Cause of problem, if known or suspected:

____

____

____

____

____

<u>Sequence of CA:</u> (including date implemented, action planned and personnel/data affected)

____

____

____

____

____

____

CA implemented by: __________________________________ **Date:** _____________________

CA initially approved by: ______________________________ **Date:** _____________________

Follow-up date: ____

Final CA approved by: ________________________________ **Date:** _____________________

Information copies to:

<u>Anita Dodson, Program Chemist</u>

<u>Navy QAO</u>

SAP Worksheet #32b—Field Performance Audit Checklist

Project Responsibilities

Project No.: _______

Date: _______________________________

Project Location: ______

Signature: _______________________________

Team Members:

Yes _ No _ 1) Is the approved work plan being followed?
Comments ____

____

Yes _ No _ 2) Was a briefing held for project participants?
Comments ____

____

Yes _ No _ 3) Were additional instructions given to project participants?
Comments ____

____

Sample Collection

Yes _ No _ 1) Is there a written list of sampling locations and descriptions?
Comments ____

____

Yes _ No _ 2) Are samples collected as stated in the Master SOPs?
Comments ____

____

Yes _ No _ 3) Are samples collected in the type of containers specified in the work plan?
Comments ____

____

Yes _ No _ 4) Are samples preserved as specified in the work plan?
Comments ____

____

Yes _ No _ 5) Are the number, frequency, and type of samples collected as specified in the work plan?
Comments ____

____

SAP Worksheet #32b—Field Performance Audit Checklist (continued)

Yes _ No _ 6) Are quality assurance checks performed as specified in the work plan?
Comments ____

____

Yes _ No _ 7) Are photographs taken and documented?
Comments ____

____

Document Control

Yes _ No _ 1) Have any accountable documents been lost?
Comments ____

____

Yes _ No _ 2) Have any accountable documents been voided?
Comments ____

____

Yes _ No _ 3) Have any accountable documents been disposed of?
Comments ____

Yes _ No _ 4) Are the samples identified with sample tags?
Comments ____

____

Yes _ No _ 5) Are blank and duplicate samples properly identified?
Comments ____

____

Yes _ No _ 6) Are samples listed on a chain-of-custody record?
Comments ____

____

Yes _ No _ 7) Is chain-of-custody documented and maintained?
Comments ____

____

SAP Worksheet #33—Quality Assurance Management Reports Table

Type of Report	Frequency (daily, weekly monthly, quarterly, annually, etc.)	Projected Delivery Date(s)	Person(s) Responsible for Report Preparation (title and organizational affiliation)	Report Recipient(s) (title and organizational affiliation)
Field Audit Report	One during sampling activities	Submitted with report in which data is analyzed and presented	Jamie Eby PM CH2M HILL.	CH2M HILL Regional Health, Safety, Environment, and Quality Manager, Included in project files.
Data Validation Reports	Once, after analysis by laboratory, for all laboratory analytical data except pH, total organic carbon (TOC), grain size, dry bulk density.	Submitted by the validators no later than 21 days following their receipt of the analytical data from the laboratory.	Data Validation Contractor	PC, EIS, PM.
Data Usability Assessments	Once in SI/Expanded SI Report	With SI/Expanded SI Report	Mark Fesler PC, CH2M HILL.	USEPA, Water Board, and DTSC.

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SAP Worksheet #34—Verification (Step I) Process Table

Verification Input	Description	Internal / External	Responsible for Verification (name, organization)
Field Notebooks	Field notebooks will be reviewed internally and placed into the project file for archival at project closeout.	Internal	Project Manager: Jamie EbyCH2M HILL
Chains of Custody and Shipping Forms	Chain-of-custody forms and shipping documentation will be reviewed internally upon their completion and verified against the packed sample coolers they represent. The shipper's signature on the chain-of-custody will be initialed by the reviewer, a copy of the chain-of-custody retained in the site file, and the original and remaining copies taped inside the cooler for shipment.	Internal	Field Team Leader Stephen Quayle/CH2M HILL Project EIS: Bryan Jones/CH2M HILL
Sample Condition upon Receipt	Any discrepancies, missing, or broken containers will be communicated to the project EIS in the form of laboratory logins.	Internal	Project EIS: Bryan Jones/CH2M HILL
Sample Chronology	Holding times from collection to extraction or analysis and from extraction to analysis will be considered by the data validator during the data validation process.	External	Data Validation Subcontractor: Laura Maschhoff/DataQual Environmental Services
Documentation of Laboratory Method Deviations	Laboratory Method Deviations will be discussed and approved by the project chemist. Documentation will be incorporated into the case narrative which becomes part of the final hardcopy data package.	Internal	Project Chemist: Mark Fesler/CH2M HILL
Electronic Data Deliverables	Electronic Data Deliverables will be compared against hardcopy laboratory results (10% check).	Internal	Project EIS: Bryan Jones/CH2M HILL
Case Narrative	Case narratives will be reviewed by the data validator during the data validation process.	External	Data Validation Subcontractor: Laura Maschhoff/DataQual Environmental Services
Laboratory Data	All laboratory data packages will be verified internally by the laboratory performing the work for completeness and technical accuracy prior to submittal. All received data packages will be verified externally by the third party validator. Also, the data will be verified for completeness by an Environmental Information System (EIS) specialist. A chemist will perform a data quality evaluation	External Internal	Respective Laboratory QAO Data Validation Subcontractor: Laura Maschhoff/DataQual Environmental Services Project EIS: Bryan Jones/CH2M HILL PC: Mark Fesler/CH2M HILL
Audit Reports	Upon report completion, a copy of all audit reports will be placed in the site file. If corrective actions are required, a copy of the documented corrective action taken will be attached to the appropriate audit report in the QA site file. Periodically, and at the completion of site work, site file audit reports and corrective action forms will be reviewed internally to ensure that all appropriate corrective actions have been taken and that corrective action reports are attached. If corrective actions have not been taken, the site manager will be notified to ensure action is taken.	Internal	Project Manager: Jamie Eby/CH2M HILL Project Chemist: Mark Fesler/CH2M HILL
Corrective Action Reports	Corrective action reports will be reviewed by the project chemist or project manager and placed into the project file for archival at project closeout.	Internal	Project Manager: Jamie EbyCH2M HILL Project Chemist: Mark Fesler/CH2M HILL

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SAP Worksheet #35—Validation (Steps IIa and IIb) Process Table

Step IIa / IIb[1]	Validation Input	Description	Responsible for Validation (name, organization)
IIa	Laboratory methods	Ensure the laboratory analyzed samples using the correct methods.	PC: MarFesler/CH2M HILL Data Validation Subcontractor: Laura Maschhoff/DataQual Environmental Services
IIa	Target Compound List and Target Analyte List	Ensure the laboratory reported all analytes from each analysis group unless a site-specific requirement dictates a different list.	PC: Mark Fesler/CH2M HILL Data Validation Subcontractor: Laura Maschhoff/DataQual Environmental Services
IIa/IIb	Reporting Limits	Ensure the laboratory met the CRQLs, CRDLs, and otherwise project-designated QLs. If QLs were not met, the reason will be determined and documented.	PC: Mark Fesler/CH2M HILL Data Validation Subcontractor: Laura Maschhoff/DataQual Environmental Services
IIa	Field SOPs	Ensure that all field SOPs were followed.	FTL:Stephen Quayle/CH2M HILL
IIa	Laboratory SOPs	Ensure that approved analytical laboratory SOPs were followed.	Respective Laboratory QA Officer Data Validation Subcontractor: Laura Maschhoff/DataQual Environmental Services
IIa	Raw Data	20 percent review of raw data to confirm laboratory calculations (Level IV). 80 percent review of laboratory data reporting forms only; no raw data review (Level III). Level IV validation will be chosen at random by the data validator. Per NAVFACSW Environmental Work Instruction #1 all data (except waste disposal data) will be validated at the following level: 20% at level IV and 80% at Level III.	Data Validation Subcontractor: Laura Maschhoff/DataQual Environmental Services

SAP Worksheet #35—Validation (Steps IIa and IIb) Process Table (continued)

Step IIa / IIb[1]	Validation Input	Description	Responsible for Validation (name, organization)
IIa	Documentation of Method QC Results	Establish that all required QC samples were run and met required limits.	Data Validation Subcontractor: Laura Maschhoff/DataQual Environmental Services
IIb	Documentation of field QC Sample Results	Establish that all required QAPP QC samples were run and met required limits.	Data Validation Subcontractor: Laura Maschhoff/DataQual Environmental Services
IIb	Naval Facilities Engineering Service Center (NFESC) Evaluation	Ensure that each laboratory is NFESC-Evaluated for the analyses they are to perform. Ensure evaluation timeframe does not expire.	PC: Mark Fesler/CH2M HILL Data Validation Subcontractor: Laura Maschhoff/DataQual Environmental Services

Notes:
[1] IIa=compliance with methods, procedures, and contracts [see Table 10, page 117, UFP-QAPP manual, V.1, March 2005.]
IIb=comparison with MPC in the SAP [see Table 11, page 118, UFP-QAPP manual, V.1, March 2005]

SAP Worksheet #36—Analytical Data Validation (Steps IIa and IIb) Summary Table

Step IIa / IIb	Matrix	Analytical Group	Validation Criteria	Data Validator
IIa	Groundwater, Surface Water, Surface Soil, Subsurface Soil, Sediment, Concrete	VOC, SVOC, SVOC-SIM, PEST/PCBs, METALS, HEX CR	Per NAVFACSW Environmental Work Instruction #1 all data (except waste disposal data) will be validated at the following level: 20% at level IV and 80% at Level III. All data within the data set are independently validated using the DQOs established in Worksheets 12, 15, and 28. The data sets will be comprised of individual sample delivery groups (SDGs) established by the laboratory for samples received on a daily basis. Twenty percent of the SDGs are subjected to a Level IV validation and the remaining eighty percent of the SDGs are validated per Level III procedures. The 20% portion of the data set should be comprised of routine field samples, and field QC samples such as field duplicates, field blanks, trip blanks, and equipment rinsates. The validator must perform calculation checks for these data and the data for associated QC samples 20% of the SDGs will be chosen at random during sample collection.to be designated for Level IV validation. Analytical Methods and laboratory SOPs as presented in this SAP will be used to evaluate compliance against QA/QC criteria presented in this SAP and DOD QSM. Should adherence to QA/QC criteria yield deficiencies, data may be qualified. The data qualifiers that may be used are those presented in the *National Functional Guidelines for Organic Data Review* (USEPA, 1999) and *National Functional Guidelines for Inorganic Data Review* (USEPA, 2004). National Functional Guidelines will not be used for data validation; however, the specific qualifiers listed therein may be applied to data should non-conformances against the QA/QC criteria as presented in this SAP be identified.	Data Validation Subcontractor: Laura Maschhoff/DataQual Environmental Services
IIb	Groundwater, Surface Water, Surface Soil, Subsurface Soil, Sediment, Concrete	VOC, SVOC, SVOC-SIM, PEST/PCBs, METALS, HEX CR	The PC will verify that the project QLs are being met. See project limits in Worksheet #15.	PC: Mark Fesler/CH2M HILL

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SAP Worksheet #37—Usability Assessment

Summarize the usability assessment process and all procedures, including interim steps and any statistics, equations, and computer algorithms that will be used:

The quality and usability of data obtained during the project will be determined by examining and inspecting various site/field logbooks, laboratory data packages, data validation reports by third parties, and results for field QC samples (e.g., field duplicates, or rinsate blanks), and verifying that the sampling procedures and analytical results were obtained following the applicable protocols and satisfy project requirements, and can be relied upon for performing the subsequent remedial activities. The data assessment will determine possible effects on the data that result from project requirement failures (i.e., data quality), and their actual adequacy to fulfill the site-specific QA/QC requirements (i.e., data usability).

Project objectives will be compared to the data results from the field investigation to determine if they were achieved. Efforts to evaluate and verify attainment of project requirements will enable data users to understand any usability limitations associated with project data. Procedures used to assess QA/QC objectives will be in accordance with the methods and QC procedures identified in this SAP, which were originally selected based on ability to meet project goals.

The data quality/usability and reconciliation evaluations will be performed by personnel with the appropriate training and/or experience to perform these reviews/evaluations, as determined by program quality assurance officer/manager, in concert with scientific discipline leads or their designees.Evaluations will also be performed by personnel with the appropriate training and/or experience to perform these evaluations.

The results of the data quality/usability evaluation and project goal reconciliation will be presented in a report. The report will first describe the implemented overall QA process and the associated criteria. The report will then summarize the field QC, third party validation findings, and field QC sample results (field duplicates. field blanks). Subsequently these findings will be evaluated per DoD PARCC (precision, accuracy, representativeness, comparability, completeness) parameters as described in the DoD QSM Version 4.1. This evaluation will establish whether project goals were attained and the implications on data usability. In addition, any significant trends or biases will be discussed in the data quality/usability evaluation report.

Other specific evaluations that are part of the assessment are as follows:

- Non-detected site contaminants will be evaluated to ensure that project required QLs in **Worksheet #15** were achieved. If project QLs were achieved and the verification and validation steps yielded acceptable data, then the data is considered usable.
- During verification and validation steps, data may be qualified as estimated with the following qualifiers: J or UJ. These qualifiers represent minor QC deficiencies which will not affect the usability of the data. When major QC deficiencies are encountered, data will be qualified with an R and in most cases is not considered usable for project decisions.

SAP Worksheet #37—Usability Assessment (continued)

- J- Analyte present. Reported value may or may not be accurate or precise
- UJ- Analyte not detected. QL may be inaccurate or imprecise
- R- Rejected result. Result not reliable.

- Additional qualifiers that may be given by the validator are:
  - N- Tentative Identification. Consider Present. Special Methods may be needed to confirm its presence or absence in future sampling efforts
  - NJ- Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity
  - U- Not Detected
- For statistical comparisons non-detect values will be represented by a concentration equal to one-half the sample reporting limit. For duplicate sample results, the most conservative value will be used for project decisions.
- Analytical data will be checked to ensure the values and any qualifiers are appropriately transferred to the electronic database. These checks include comparison of hardcopy data and qualifiers to the electronic data deliverable. Once the data has been uploaded into the electronic database, another check will be performed to ensure all results were loaded accurately.
- Field and laboratory precision will be compared as RPD between the two results.
- Deviations from the SAP will be reviewed to assess whether CA is warranted and to assess impacts to achievement of project objectives.

Describe the evaluative procedures used to assess overall measurement error associated with the project.

- To assess whether a sufficient quantity of acceptable data are available for decision making, the data will be reconciled with MPC following validation and review of data quality indicator.
- If significant biases are detected with laboratory QA/QC samples it will be evaluated to assess impact on decision making. Low biases will be described in greater detail as they represent a possible inability to detect compounds that may be present at the site.
- If significant deviations are noted between lab and field precision the cause will be further evaluated to assess impact on decision making.

Describe the documentation that will be generated during the usability assessment and how usability assessment results will be presented so that they identify trends, relationships (correlations), and anomalies:

SAP Worksheet #37—Usability Assessment (continued)

The following will be prepared by CH2M HILL and presented to and submitted to the Alameda Partnering Team for review and decisions on the path forward for the site.

- Data tables will be produced to reflect detected and non-detected parameters. Data qualifiers will be reflected in the tables and discussed in the data quality evaluation.
- Graphical representations may be produced to reflect detected parameters across the site.
- A data quality evaluation considering all of the above will be provided as part of presentations to the Alameda Partnering Team. The data quality evaluation will identify any data usability limitations.

Identify the personnel responsible for performing the usability assessment.

- The CH2M HILL Team, including the PM and PC, will review the data and compile a presentation for the Alameda Partnering Team. The Alameda Partnering Team as a whole will assess the usability of the data.

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Appendix A
Example Forms

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Empirical Laboratories, LLC
227 French Landing Dr.
Nashville, TN 37228
615-345-1115

CHAIN OF CUSTODY RECORD

COC Number ____________
Turnaround Time Days
Date ____________ Page ____ OF ____

COMPANY ____________

PROJECT ____________

ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612

PHONE ____________ **FAX** ____________

P.O. NUM ____________ **TEAM** 1

SAMPLERS (SIGNATURE ____________

			Container:	2x250 ml Poly	2x250 ml Poly	250 ml Poly	500 ml Poly	500 ml Poly			
			Preservatives:	(NH□)□SO□/NH□OH, 4℃	(NH□)□SO□/NH□OH, 4℃	(NH□)□SO□/NH□OH, 4℃	HNO□	HNO□, 4℃			
			Filtered:	Field	Field	Field	NA	Field			
			Holding Time:	28	28	28	180	180			
SAMPLE I.D.	**DATE**	**TIME**	**Matrix**	Cr6 (E218.6R) Field Filtered	Cr6 (SM3500B) Field Filtered	Cr6 (E218.6) Field Filtered	Metals (E200.7T)	Dissolved Chromium (6010BCRFF) Field Filtered Chromium		Number of Containers	**COMMENTS**

CHAIN OF CUSTODY SIGNATURE RECORD

Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
Signature (Received)	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
Signature (Received)	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
Signature (Received)	Printed Name	Company/ Agency	Date/ Time

SAMPLE CONDITIONS

RECEIVED COOL ☐ WARM ☐ ____ ℉

CUSTODY SEALED YES ☐ NO ☐

SPECIAL REQUIREMENTS:

Empirical Laboratories, LLC
227 French Landing Dr.
Nashville, TN 37228
Janice Shilling
615-345-1115

CHAIN OF CUSTODY RECORD

COC Number ____________

Turnaround Time ____ **Days**

Date ____________ Page ____ OF ____

COMPANY ____________

PROJECT ____________

ADDRESS 155 Grand Ave Ste 1000
Oakland, CA 94612

PHONE ____________ **FAX** ____________

P.O. NUM ____________ **TEAM** 1

SAMPLERS (SIGNATURE ____________

Container:	2x250 ml Poly	2x250 ml Poly	250 ml Poly	500 ml Poly	500 ml Poly
Preservatives:	(NH□)□SO□/NH□OH, 4℃	(NH□)□SO□/NH□OH, 4℃	(NH□)□SO□/NH□OH, 4℃	HNO□	HNO□, 4℃
Filtered:	Field	Field	Field	NA	Field
Holding Time:	28	28	28	180	180
	Cr6 (E218.6R) Field Filtered	Cr6 (SM3500B) Field Filtered	Cr6 (E218.6) Field Filtered	Metals (E200.7T)	Dissolved Chromium (6010BCRFF) Field Filtered Chromium

SAMPLE I.D.	**DATE**	**TIME**	**Matrix**						Number of Containers	**COMMENTS**

TOTAL NUMBER OF CONTAINERS

CHAIN OF CUSTODY SIGNATURE RECORD

Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
Signature (Received)	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
Signature (Received)	Printed Name	Company/ Agency	Date/ Time
Signature (Relinquished)	Printed Name	Company/ Agency	Date/ Time
Signature (Received)	Printed Name	Company/ Agency	Date/ Time

SAMPLE CONDITIONS

RECEIVED COOL ☐ WARM ☐ ____ ℉

CUSTODY SEALED YES ☐ NO ☐

SPECIAL REQUIREMENTS:

CH2MHILL

Custody Label and Completion Instructions

Signature: ______________________________

Date and time: ______________________ Time: ______________

Completion Instructions:

The custody seals shall contain the following information:

- Signature
- Date and time the sample container (bottle/jar/vial) or sample shipping container (cooler) was sealed (24 hour clock)

The custody seals may be obtained from the analytical laboratory or printed from a computer onto adhesive labels.

Sample:

Date:
Time:
Sampler:

Matrix: Groundwater
Container: 250 ml Poly Lab:
Preservative:
Containers: 1 of 1
Methods:

Sample:

Date:
Time:
Sampler:

Matrix: Groundwater
Container: 250 ml Poly Lab:
Preservative:
Containers: 1 of 1
Methods:

Sample:

Date:
Time:
Sampler:

Matrix: Groundwater
Container: 250 ml Poly Lab:
Preservative:
Containers: 1 of 1
Methods:

Sample:

Date:
Time:
Sampler:

Matrix: Groundwater
Container: 250 ml Poly Lab:
Preservative:
Containers: 1 of 1
Methods:

ANALYSIS DATA SHEET

BZ0001

Laboratory: Empirical Laboratories, LLC
SDG: RSA287 001
Client:
Project:
Matrix: Soil
Laboratory ID: 1001078-01
Sampled: 01/12/10 11:40
Received: 01/14/10 08:45
% Solids: 83.64

CAS NO.	Analyte	Concentration (mg/Kg dry)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
7439-97-6	Mercury	0.0908	0.0141	0.0359	1	N	SW7471A	0A27013	01/28/10 13:02
7429-90-5	Aluminum	17300	11.4	45.5	1		SW6010B	0A25004	01/26/10 19:35
7440-36-0	Antimony		1.14	3.42	1	U N	SW6010B	0A25004	01/26/10 19:35
7440-38-2	Arsenic	10.3	0.683	2.28	1		SW6010B	0A25004	01/26/10 19:35
7440-39-3	Barium	41.6	1.14	9.11	1		SW6010B	0A25004	01/26/10 19:35
7440-41-7	Beryllium	0.395	0.228	1.14	1	J	SW6010B	0A25004	01/26/10 19:35
7440-43-9	Cadmium		0.228	1.14	1	U	SW6010B	0A25004	01/26/10 19:35
7440-70-2	Calcium	834	228	1140	1	J *	SW6010B	0A25004	01/26/10 19:35
7440-47-3	Chromium	76.2	0.455	2.28	1	N	SW6010B	0A25004	01/26/10 19:35
7440-48-4	Cobalt	7.61	1.14	2.85	1		SW6010B	0A25004	01/26/10 19:35
7440-50-8	Copper	5.45	0.911	2.28	1		SW6010B	0A25004	01/26/10 19:35
7439-89-6	Iron	36400	6.83	22.8	1		SW6010B	0A25004	01/26/10 19:35
7439-92-1	Lead	32.3	0.342	0.683	1	N	SW6010B	0A25004	01/26/10 19:35
7439-95-4	Magnesium	554	228	1140	1	J	SW6010B	0A25004	01/26/10 19:35
7439-96-5	Manganese	911	0.683	3.42	1	*	SW6010B	0A25004	01/26/10 19:35
7440-02-0	Nickel	8.71	0.683	2.28	1		SW6010B	0A25004	01/26/10 19:35
7440-09-7	Potassium	432	228	1140	1	J N	SW6010B	0A25004	01/26/10 19:35
7782-49-2	Selenium		0.683	1.14	1	U	SW6010B	0A25004	01/26/10 19:35
7440-22-4	Silver		0.455	2.28	1	U	SW6010B	0A25004	01/26/10 19:35
7440-23-5	Sodium		228	1140	1	U	SW6010B	0A25004	01/26/10 19:35
7440-28-0	Thallium		0.683	1.82	1	U	SW6010B	0A25004	01/26/10 19:35
7440-62-2	Vanadium	75.5	1.14	2.85	1		SW6010B	0A25004	01/26/10 19:35
7440-66-6	Zinc	65.3	1.14	4.55	1	N	SW6010B	0A25004	01/26/10 19:35

INITIAL AND CONTINUING CALIBRATION CHECK
SW6010B

Laboratory: Empirical Laboratories, LLC
Client:
Instrument ID: ME-ICP

SDG: RSA287_001
Project:
Calibration: 0027003
Sequence: 0A02709

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
0A02709-ICV1	Aluminum	10000	9991	99.9	ug/L	+/- 10.00%
	Antimony	1000	1025	103	ug/L	+/- 10.00%
	Arsenic	1000	987.1	98.7	ug/L	+/- 10.00%
	Barium	1000	1052	105	ug/L	+/- 10.00%
	Beryllium	1000	1033	103	ug/L	+/- 10.00%
	Cadmium	1000	1069	107	ug/L	+/- 10.00%
	Calcium	50000	50250	101	ug/L	+/- 10.00%
	Chromium	1000	991.4	99.1	ug/L	+/- 10.00%
	Cobalt	1000	1005	100	ug/L	+/- 10.00%
	Copper	1000	1027	103	ug/L	+/- 10.00%
	Iron	10000	10520	105	ug/L	+/- 10.00%
	Lead	1000	982.1	98.2	ug/L	+/- 10.00%
	Magnesium	50000	48880	97.8	ug/L	+/- 10.00%
	Manganese	1000	1061	106	ug/L	+/- 10.00%
	Nickel	1000	993.5	99.4	ug/L	+/- 10.00%
	Potassium	10000	9899	99.0	ug/L	+/- 10.00%
	Selenium	1000	1023	102	ug/L	+/- 10.00%
	Silver	500.0	506.9	101	ug/L	+/- 10.00%
	Sodium	50000	52250	105	ug/L	+/- 10.00%
	Thallium	1000	957.9	95.8	ug/L	+/- 10.00%
	Vanadium	1000	1004	100	ug/L	+/- 10.00%
	Zinc	1000	998.8	99.9	ug/L	+/- 10.00%
0A02709-CCV1	Aluminum	10000	9995	99.9	ug/L	+/- 10.00%
	Antimony	1000	1036	104	ug/L	+/- 10.00%
	Arsenic	1000	1040	104	ug/L	+/- 10.00%
	Barium	1000	1036	104	ug/L	+/- 10.00%
	Beryllium	1000	1035	103	ug/L	+/- 10.00%
	Cadmium	1000	1072	107	ug/L	+/- 10.00%
	Calcium	50000	49670	99.3	ug/L	+/- 10.00%
	Chromium	1000	994.8	99.5	ug/L	+/- 10.00%
	Cobalt	1000	1002	100	ug/L	+/- 10.00%
	Copper	1000	1025	103	ug/L	+/- 10.00%
	Iron	10000	10430	104	ug/L	+/- 10.00%
	Lead	1000	1004	100	ug/L	+/- 10.00%
	Magnesium	50000	47700	95.4	ug/L	+/- 10.00%
	Manganese	1000	1066	107	ug/L	+/- 10.00%
	Nickel	1000	1010	101	ug/L	+/- 10.00%
	Potassium	10000	10160	102	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010B

Laboratory: Empirical Laboratories, LLC　　SDG:

Client:　　Project:

Instrument ID: ME-ICP　　Calibration: 0027003

Sequence: 0A02709

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
0A02709-CCV1	Selenium	1000	1044	104	ug/L	+/- 10.00%
	Silver	500.0	503.2	101	ug/L	+/- 10.00%
	Sodium	50000	52140	104	ug/L	+/- 10.00%
	Thallium	1000	1014	101	ug/L	+/- 10.00%
	Vanadium	1000	1006	101	ug/L	+/- 10.00%
	Zinc	1000	1015	101	ug/L	+/- 10.00%
0A02709-CCV5	Aluminum	10000	9844	98.4	ug/L	+/- 10.00%
	Antimony	1000	970.7	97.1	ug/L	+/- 10.00%
	Arsenic	1000	1004	100	ug/L	+/- 10.00%
	Barium	1000	1052	105	ug/L	+/- 10.00%
	Beryllium	1000	925.6	92.6	ug/L	+/- 10.00%
	Cadmium	1000	1053	105	ug/L	+/- 10.00%
	Calcium	50000	47250	94.5	ug/L	+/- 10.00%
	Chromium	1000	955.1	95.5	ug/L	+/- 10.00%
	Cobalt	1000	945.3	94.5	ug/L	+/- 10.00%
	Copper	1000	983.6	98.4	ug/L	+/- 10.00%
	Iron	10000	10080	101	ug/L	+/- 10.00%
	Lead	1000	1013	101	ug/L	+/- 10.00%
	Magnesium	**50000**	**43740**	**87.5**	**ug/L**	+/- 10.00%
	Manganese	1000	1013	101	ug/L	+/- 10.00%
	Nickel	1000	981.8	98.2	ug/L	+/- 10.00%
	Potassium	10000	9875	98.8	ug/L	+/- 10.00%
	Selenium	1000	1008	101	ug/L	+/- 10.00%
	Silver	500.0	496.8	99.4	ug/L	+/- 10.00%
	Sodium	50000	46550	93.1	ug/L	+/- 10.00%
	Thallium	1000	970.6	97.1	ug/L	+/- 10.00%
	Vanadium	1000	930.3	93.0	ug/L	+/- 10.00%
	Zinc	1000	1048	105	ug/L	+/- 10.00%
0A02709-CCV6	Aluminum	10000	9849	98.5	ug/L	+/- 10.00%
	Antimony	1000	963.9	96.4	ug/L	+/- 10.00%
	Arsenic	1000	1006	101	ug/L	+/- 10.00%
	Barium	1000	1063	106	ug/L	+/- 10.00%
	Beryllium	1000	912.7	91.3	ug/L	+/- 10.00%
	Cadmium	1000	1057	106	ug/L	+/- 10.00%
	Calcium	50000	47000	94.0	ug/L	+/- 10.00%
	Chromium	1000	972.4	97.2	ug/L	+/- 10.00%
	Cobalt	1000	937.3	93.7	ug/L	+/- 10.00%
	Copper	1000	983.8	98.4	ug/L	+/- 10.00%

INITIAL AND CONTINUING CALIBRATION CHECK

SW6010B

Laboratory: Empirical Laboratories, LLC

SDG: RSA287_001

Client:

Project

Instrument ID: ME-ICP

Calibration: 0027003

Sequence: 0A02709

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
0A02709-CCV6	Iron	10000	9890	98.9	ug/L	+/- 10.00%
	Lead	1000	1027	103	ug/L	+/- 10.00%
	Magnesium	**50000**	**42900**	**85.8**	**ug/L**	+/- 10.00%
	Manganese	1000	1021	102	ug/L	+/- 10.00%
	Nickel	1000	984.0	98.4	ug/L	+/- 10.00%
	Potassium	10000	9773	97.7	ug/L	+/- 10.00%
	Selenium	1000	1017	102	ug/L	+/- 10.00%
	Silver	500.0	495.2	99.0	ug/L	+/- 10.00%
	Sodium	50000	45410	90.8	ug/L	+/- 10.00%
	Thallium	1000	971.6	97.2	ug/L	+/- 10.00%
	Vanadium	1000	934.1	93.4	ug/L	+/- 10.00%
	Zinc	1000	1060	106	ug/L	+/- 10.00%

Metals in Water by ICP-AES - Quality Control

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0A02709											
Instrument RL Check	Prepared & Analyzed: 01/26/2010										
Barium	39.93			ug/L	40.00		99.8	80-120			
Manganese	16.52			ug/L	15.00		110	80-120			
Instrument RL Check	Prepared & Analyzed: 01/26/2010										
Aluminum	212.4			ug/L	200.0		106	80-120			
Antimony	13.84			ug/L	15.00		92.3	80-120			
Arsenic	5.224			ug/L	5.000		104	80-120			
Beryllium	5.250			ug/L	5.000		105	80-120			
Cadmium	5.281			ug/L	5.000		106	80-120			
Calcium	5208			ug/L	5000		104	80-120			
Chromium	5.104			ug/L	5.000		102	80-120			
Cobalt	12.01			ug/L	12.50		96.1	80-120			
Copper	10.76			ug/L	10.00		108	80-120			
Iron	111.4			ug/L	100.0		111	80-120			
Lead	3.589			ug/L	3.000		120	80-120			
Magnesium	4879			ug/L	5000		97.6	80-120			
Nickel	9.672			ug/L	10.00		96.7	80-120			
Potassium	4992			ug/L	5000		99.8	80-120			
Silver	2.133			ug/L	2.000		107	80-120			
Sodium	5233			ug/L	5000		105	80-120			
Thallium	7.710			ug/L	8.000		96.4	80-120			
Vanadium	12.38			ug/L	12.50		99.0	80-120			
Zinc	19.17			ug/L	20.00		95.9	80-120			
Instrument RL Check	Prepared & Analyzed: 01/26/2010										
Selenium	4.638			ug/L	5.000		92.8	80-120			

Mercury by CVAA - Quality Control

Analyte	Result	MDL	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0B03207											
Instrument RL Check				Prepared & Analyzed: 01/28/2010							
Mercury	0.1559			ug/L	0.2000		78.0	70-130			
Instrument RL Check				Prepared & Analyzed: 01/28/2010							
Mercury	0.1731			ug/L	0.2000		86.5	70-130			

BLANKS
SW6010B

Laboratory: Empirical Laboratories, LLC SDG: RSA287_001
Client:
Instrument ID: ME-ICP Project
Sequence: 0A02709 Calibration: 0027003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
0A02709-ICB1	Aluminum	2.473	50.0	200	ug/L	U	SW6010B
	Antimony	-0.1835	5.00	15.0	ug/L	U	SW6010B
	Arsenic	0.7531	3.00	10.0	ug/L	U	SW6010B
	Barium	0.07197	5.00	40.0	ug/L	U	SW6010B
	Beryllium	-0.001710	1.00	5.00	ug/L	U	SW6010B
	Cadmium	0.3328	1.00	5.00	ug/L	U	SW6010B
	Calcium	2.250	1000	5000	ug/L	U	SW6010B
	Chromium	0.2854	2.00	10.0	ug/L	U	SW6010B
	Cobalt	0.08245	5.00	12.5	ug/L	U	SW6010B
	Copper	0.6430	4.00	10.0	ug/L	U	SW6010B
	Iron	5.774	30.0	100	ug/L	U	SW6010B
	Lead	0.5466	1.50	3.00	ug/L	U	SW6010B
	Magnesium	-2.080	1000	5000	ug/L	U	SW6010B
	Manganese	0.2132	3.00	15.0	ug/L	U	SW6010B
	Nickel	0.1301	3.00	10.0	ug/L	U	SW6010B
	Potassium	9.610	1000	5000	ug/L	U	SW6010B
	Selenium	-0.8602	3.00	5.00	ug/L	U	SW6010B
	Silver	-0.02330	1.00	10.0	ug/L	U	SW6010B
	Sodium	10.11	1000	5000	ug/L	U	SW6010B
	Thallium	-0.04495	3.00	8.00	ug/L	U	SW6010B
	Vanadium	-0.05865	5.00	12.5	ug/L	U	SW6010B
	Zinc	0.1828	5.00	20.0	ug/L	U	SW6010B
0A02709-CCB1	Aluminum	2.92	50.0	200	ug/L	U	SW6010B
	Antimony	0.0299	5.00	15.0	ug/L	U	SW6010B
	Arsenic	-0.360	3.00	10.0	ug/L	U	SW6010B
	Barium	0.220	5.00	40.0	ug/L	U	SW6010B
	Beryllium	0.0852	1.00	5.00	ug/L	U	SW6010B
	Cadmium	0.446	1.00	5.00	ug/L	U	SW6010B
	Calcium	8.40	1000	5000	ug/L	U	SW6010B
	Chromium	0.235	2.00	10.0	ug/L	U	SW6010B
	Cobalt	0.209	5.00	12.5	ug/L	U	SW6010B
	Copper	0.691	4.00	10.0	ug/L	U	SW6010B
	Iron	2.62	30.0	100	ug/L	U	SW6010B

BLANKS
SW6010B

Laboratory: Empirical Laboratories. LLC SDG: RSA287_001

Client:

Instrument ID: ME-ICP Project:

Sequence: 0A02709 Calibration: 0027003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
0A02709-CCB1	Lead	0.756	1.50	3.00	ug/L	U	SW6010B
	Magnesium	4.40	1000	5000	ug/L	U	SW6010B
	Manganese	0.228	3.00	15.0	ug/L	U	SW6010B
	Nickel	0.195	3.00	10.0	ug/L	U	SW6010B
	Potassium	5.84	1000	5000	ug/L	U	SW6010B
	Selenium	-0.724	3.00	5.00	ug/L	U	SW6010B
	Silver	0.154	1.00	10.0	ug/L	U	SW6010B
	Sodium	22.2	1000	5000	ug/L	U	SW6010B
	Thallium	0.342	3.00	8.00	ug/L	U	SW6010B
	Vanadium	0.0639	5.00	12.5	ug/L	U	SW6010B
	Zinc	0.212	5.00	20.0	ug/L	U	SW6010B
0A02709-CCB5	Aluminum	1.90	50.0	200	ug/L	U	SW6010B
	Antimony	-1.33	5.00	15.0	ug/L	U	SW6010B
	Arsenic	-0.258	3.00	10.0	ug/L	U	SW6010B
	Barium	0.128	5.00	40.0	ug/L	U	SW6010B
	Beryllium	0.0970	1.00	5.00	ug/L	U	SW6010B
	Cadmium	-0.229	1.00	5.00	ug/L	U	SW6010B
	Calcium	13.1	1000	5000	ug/L	U	SW6010B
	Chromium	0.134	2.00	10.0	ug/L	U	SW6010B
	Cobalt	0.132	5.00	12.5	ug/L	U	SW6010B
	Copper	-1.13	4.00	10.0	ug/L	U	SW6010B
	Iron	2.34	30.0	100	ug/L	U	SW6010B
	Lead	0.356	1.50	3.00	ug/L	U	SW6010B
	Magnesium	3.05	1000	5000	ug/L	U	SW6010B
	Manganese	0.0866	3.00	15.0	ug/L	U	SW6010B
	Nickel	0.334	3.00	10.0	ug/L	U	SW6010B
	Potassium	36.1	1000	5000	ug/L	U	SW6010B
	Selenium	-0.376	3.00	5.00	ug/L	U	SW6010B
	Silver	0.0322	1.00	10.0	ug/L	U	SW6010B
	Sodium	4.80	1000	5000	ug/L	U	SW6010B
	Thallium	0.195	3.00	8.00	ug/L	U	SW6010B
	Vanadium	-0.0580	5.00	12.5	ug/L	U	SW6010B
	Zinc	0.245	5.00	20.0	ug/L	U	SW6010B

BLANKS
SW6010B

Laboratory: Empirical Laboratories, LLC SDG: RSA287_001

Client:

Instrument ID: ME-ICP Project:

Sequence: 0A02709 Calibration: 0027003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
0A25004-BLK1	Aluminum	0.114	10.0	40.0	mg/Kg wet	U	SW6010B
	Antimony	-0.307	1.00	3.00	mg/Kg wet	U	SW6010B
	Arsenic	-0.159	0.600	2.00	mg/Kg wet	U	SW6010B
	Barium	0.0110	1.00	8.00	mg/Kg wet	U	SW6010B
	Beryllium	0.00213	0.200	1.00	mg/Kg wet	U	SW6010B
	Cadmium	-0.0228	0.200	1.00	mg/Kg wet	U	SW6010B
	Calcium	-0.806	200	1000	mg/Kg wet	U	SW6010B
	Chromium	0.0846	0.400	2.00	mg/Kg wet	U	SW6010B
	Cobalt	-0.0336	1.00	2.50	mg/Kg wet	U	SW6010B
	Copper	-0.207	0.800	2.00	mg/Kg wet	U	SW6010B
	Iron	0.936	6.00	20.0	mg/Kg wet	U	SW6010B
	Lead	0.00470	0.300	0.600	mg/Kg wet	U	SW6010B
	Magnesium	-0.442	200	1000	mg/Kg wet	U	SW6010B
	Manganese	0.0207	0.600	3.00	mg/Kg wet	U	SW6010B
	Nickel	0.0230	0.600	2.00	mg/Kg wet	U	SW6010B
	Potassium	7.86	200	1000	mg/Kg wet	U	SW6010B
	Selenium	0.196	0.600	1.00	mg/Kg wet	U	SW6010B
	Silver	-0.0181	0.200	2.00	mg/Kg wet	U	SW6010B
	Sodium	-0.714	200	1000	mg/Kg wet	U	SW6010B
	Thallium	-0.152	0.600	1.60	mg/Kg wet	U	SW6010B
	Vanadium	-0.0271	1.00	2.50	mg/Kg wet	U	SW6010B
	Zinc	0.0730	1.00	4.00	mg/Kg wet	U	SW6010B
0A02709-CCB6	Aluminum	9.90	50.0	200	ug/L	U	SW6010B
	Antimony	-1.50	5.00	15.0	ug/L	U	SW6010B
	Arsenic	-0.244	3.00	10.0	ug/L	U	SW6010B
	Barium	0.362	5.00	40.0	ug/L	U	SW6010B
	Beryllium	0.122	1.00	5.00	ug/L	U	SW6010B
	Cadmium	-0.242	1.00	5.00	ug/L	U	SW6010B
	Calcium	10.3	1000	5000	ug/L	U	SW6010B
	Chromium	0.401	2.00	10.0	ug/L	U	SW6010B
	Cobalt	0.123	5.00	12.5	ug/L	U	SW6010B
	Copper	-1.31	4.00	10.0	ug/L	U	SW6010B
	Iron	11.7	30.0	100	ug/L	U	SW6010B

BLANKS
SW6010B

Laboratory: Empirical Laboratories, LLC SDG: RSA287_001
Client:
Instrument ID: ME-ICP Project:
Sequence: 0A02709 Calibration: 0027003

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
0A02709-CCB6	Lead	0.693	1.50	3.00	ug/L	U	SW6010B
	Magnesium	8.71	1000	5000	ug/L	U	SW6010B
	Manganese	1.32	3.00	15.0	ug/L	U	SW6010B
	Nickel	0.525	3.00	10.0	ug/L	U	SW6010B
	Potassium	28.8	1000	5000	ug/L	U	SW6010B
	Selenium	-0.484	3.00	5.00	ug/L	U	SW6010B
	Silver	0.0177	1.00	10.0	ug/L	U	SW6010B
	Sodium	3.44	1000	5000	ug/L	U	SW6010B
	Thallium	0.351	3.00	8.00	ug/L	U	SW6010B
	Vanadium	-0.00317	5.00	12.5	ug/L	U	SW6010B
	Zinc	0.433	5.00	20.0	ug/L	U	SW6010B

BLANKS
SW7471A

Laboratory: Empirical Laboratories, LLC SDG: RSA287_001
Client:
Instrument ID: ME-FIMS Project:
Sequence: 0B03207 Calibration: 0032004

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
0B03207-ICB1	Mercury	-0.01866	0.0780	0.198	ug/L	U	SW7471A
0A27013-BLK1	Mercury	-0.00344	0.0130	0.0330	mg/Kg wet	U	SW7471A
0B03207-CCB1	Mercury	-0.00749	0.0780	0.198	ug/L	U	SW7471A
0B03207-CCB2	Mercury	-0.0205	0.0780	0.198	ug/L	U	SW7471A
0A27015-BLK1	Mercury	-0.00313	0.0130	0.0330	mg/Kg wet	U	SW7471A
0B03207-CCB3	Mercury	-0.0193	0.0780	0.198	ug/L	U	SW7471A
0B03207-CCB4	Mercury	-0.0133	0.0780	0.198	ug/L	U	SW7471A
0B03207-CCB5	Mercury	-0.0154	0.0780	0.198	ug/L	U	SW7471A
0B03207-CCB6	Mercury	-0.0167	0.0780	0.198	ug/L	U	SW7471A

ICP INTERFERENCE CHECK SAMPLE

SW6010B

Laboratory: Empirical Laboratories, LLC   SDG: RSA287_001

Client: Project: Shaw - EMSI/EMPIRICAL

Instrument ID: ME-ICP   Calibration: 0027003

Sequence: 0A02709

Lab Sample ID	Analyte	True	Found	%R	Units
0A02709-IFA1	Aluminum	500000	520,070.00	104	ug/L
	Antimony		3.20		ug/L
	Arsenic		-3.99		ug/L
	Barium		2.60		ug/L
	Beryllium		0.13		ug/L
	Cadmium		-0.68		ug/L
	Calcium	500000	485,300.00	97.1	ug/L
	Chromium		-1.39		ug/L
	Cobalt		2.51		ug/L
	Copper		-7.96		ug/L
	Iron	200000	204,190.00	102	ug/L
	Lead		6.47		ug/L
	Magnesium	500000	520,130.00	104	ug/L
	Manganese		0.21		ug/L
	Nickel		-5.91		ug/L
	Potassium		-39.39		ug/L
	Selenium		1.29		ug/L
	Silver		-0.40		ug/L
	Sodium		59.81		ug/L
	Thallium		2.70		ug/L
	Vanadium		2.07		ug/L
	Zinc		-1.84		ug/L
0A02709-IFB1	Aluminum	500000	484,610.00	96.9	ug/L
	Antimony	600.0	664.52	111	ug/L
	Arsenic	100.0	109.12	109	ug/L
	Barium	500.0	536.92	107	ug/L
	Beryllium	500.0	457.46	91.5	ug/L
	Cadmium	1000	1,159.00	116	ug/L
	Calcium	500000	451,470.00	90.3	ug/L

ICP INTERFERENCE CHECK SAMPLE
SW6010B

Laboratory: Empirical Laboratories, LLC SDG: RSA287_001
Client: Project:
Instrument ID: ME-ICP Calibration: 0027003
Sequence: 0A02709

Lab Sample ID	Analyte	True	Found	%R	Units
0A02709-IFB1	Chromium	500.0	402.40	80.5	ug/L
	Cobalt	500.0	481.23	96.2	ug/L
	Copper	500.0	478.88	95.8	ug/L
	Iron	200000	197,800.00	98.9	ug/L
	Lead	50.00	51.40	103	ug/L
	Magnesium	500000	477,390.00	95.5	ug/L
	Manganese	500.0	446.85	89.4	ug/L
	Nickel	1000	907.10	90.7	ug/L
	Potassium		66.60		ug/L
	Selenium	50.00	57.45	115	ug/L
	Silver	200.0	208.81	104	ug/L
	Sodium		146.47		ug/L
	Thallium	100.0	87.03	87.0	ug/L
	Vanadium	500.0	425.37	85.1	ug/L
	Zinc	1000	937.62	93.8	ug/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY
SW6010B

BZ0009

Laboratory: Empirical Laboratories, LLC   SDG:

Client: Project:

Matrix: Solid

Batch: 0A25004

% Solids: 81.76

Source Sample Name: **1001078-09**

ANALYTE	SPIKE ADDED (mg/Kg dry)	SAMPLE CONCENTRATION (mg/Kg dry)	MS CONCENTRATION (mg/Kg dry)	MS % REC.	Q	QC LIMITS REC.
Aluminum	470.4	16780	33810	3620		80 - 120
Antimony	58.80	ND	11.46	19.5	N	80 - 120
Arsenic	58.80	6.404	65.06	99.7		80 - 120
Barium	470.4	75.68	542.4	99.2		80 - 120
Beryllium	11.76	0.2465	11.70	97.4		80 - 120
Cadmium	29.40	0.7776	31.05	103		80 - 120
Calcium	1176	72940	12850	-5110		80 - 120
Chromium	47.04	42.63	102.0	126	N	80 - 120
Cobalt	117.6	18.81	126.2	91.3		80 - 120
Copper	58.80	6.428	69.86	108		80 - 120
Iron	235.2	23580	28350	2020		80 - 120
Lead	58.80	34.92	75.71	69.4	N	80 - 120
Magnesium	1176	1550	2763	103		80 - 120
Manganese	117.6	2255	1293	-818		80 - 120
Nickel	117.6	9.469	138.7	110		80 - 120
Potassium	1176	543.9	2269	147	N	80 - 120
Selenium	58.80	ND	55.34	94.1		80 - 120
Silver	58.80	ND	60.67	103		80 - 120
Sodium	1176	ND	1249	106		80 - 120
Thallium	58.80	ND	54.50	92.7		80 - 120
Vanadium	117.6	53.14	184.9	112		80 - 120
Zinc	117.6	63.35	255.3	163	N	80 - 120

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY
SW6010B

BZ0009

Laboratory: Empirical Laboratories, LLC SDG: [illegible]

Client: Project:

Matrix: Solid

Batch: 0A25004

% Solids: 81.76

Source Sample Name: **1001078-09**

ANALYTE	SPIKE ADDED (mg/Kg dry)	MSD CONCENTRATION (mg/Kg dry)	MSD % REC. #	% RPD	Q	QC LIMITS RPD	QC LIMITS REC.
Aluminum	470.4	36660	4230	8.08		20	80 - 120
Antimony	58.80	10.19	17.3	11.7	N	20	80 - 120
Arsenic	58.80	67.25	103	3.31		20	80 - 120
Barium	470.4	583.9	108	7.38		20	80 - 120
Beryllium	11.76	12.02	100	2.69		20	80 - 120
Cadmium	29.40	32.31	107	3.99		20	80 - 120
Calcium	1176	18020	-4670	33.5	*	20	80 - 120
Chromium	47.04	106.2	135	4.01	N	20	80 - 120
Cobalt	117.6	133.4	97.5	5.59		20	80 - 120
Copper	58.80	72.77	113	4.07		20	80 - 120
Iron	235.2	30030	2740	5.76		20	80 - 120
Lead	58.80	89.17	92.3	16.3		20	80 - 120
Magnesium	1176	2878	113	4.10		20	80 - 120
Manganese	117.6	2113	-120	48.2	*	20	80 - 120
Nickel	117.6	144.2	115	3.91		20	80 - 120
Potassium	1176	2361	154	3.97	N	20	80 - 120
Selenium	58.80	56.69	96.4	2.40		20	80 - 120
Silver	58.80	62.90	107	3.61		20	80 - 120
Sodium	1176	1287	109	3.03		20	80 - 120
Thallium	58.80	56.29	95.7	3.24		20	80 - 120
Vanadium	117.6	193.2	119	4.34		20	80 - 120
Zinc	117.6	269.9	176	5.55	N	20	80 - 120

POST DIGEST SPIKE SAMPLE RECOVERY
SW6010B

BZ0009

Laboratory: Empirical Laboratories, LLC
Client:
Matrix: Solid
Batch: 0A25004
Preparation: MET_3050B

SDG:
Project: ____________________
Laboratory ID: 0A25004-PS1
Lab Source ID: 1001078-09
Initial/Final: 1.04 g / 200 mL

Analyte	Spike Sample Result (SSR) (ug/L)	Sample Result (SR) (ug/L)	Spike Added (SA) (ug/L)	%R	Control Limit %R
Aluminum	73350	71350	2000	100	85 - 115
Antimony	271.3	ND	250.0	109	85 - 115
Arsenic	301.2	27.23	250.0	110	85 - 115
Barium	2420	321.7	2000	105	85 - 115
Beryllium	50.62	1.048	50.00	99.1	85 - 115
Cadmium	143.3	3.306	125.0	112	85 - 115
Calcium	**311600**	**310100**	**5000**	**30**	**85 - 115**
Chromium	373.2	181.2	200.0	96	85 - 115
Cobalt	573.9	79.96	500.0	98.8	85 - 115
Copper	289.8	27.33	250.0	105	85 - 115
Iron	**100800**	**100300**	**1000**	**50**	**85 - 115**
Lead	396.8	148.5	250.0	99.3	85 - 115
Magnesium	11400	6590	5000	96.2	85 - 115
Manganese	**9933**	**9586.**	**500.0**	**69.4**	**85 - 115**
Nickel	548.9	40.26	500.0	102	85 - 115
Potassium	7538	2312.	5000	104	85 - 115
Selenium	261.3	ND	250.0	104	85 - 115
Silver	267.7	ND	250.0	107	85 - 115
Sodium	5550	ND	5000	110	85 - 115
Thallium	242.0	ND	250.0	96.9	85 - 115
Vanadium	728.0	225.9	500.0	100	85 - 115
Zinc	776.5	269.4	500.0	101	85 - 115

LCS / LCS DUPLICATE RECOVERY
SW6010B

Laboratory: Empirical Laboratories, LLC SDG: [illegible]

Client: Project:

Matrix: Solid

Batch: 0A25004 Laboratory ID: 0A25004-BS1

Preparation: MET_3050B Initial/Final: 1 g / 200 mL

ANALYTE	SPIKE ADDED (mg/Kg wet)	LCS CONCENTRATION (mg/Kg wet)	LCS % REC.	QC LIMITS REC.
Aluminum	400.0	422.0	105	80 - 120
Antimony	50.00	46.48	93.0	80 - 120
Arsenic	50.00	47.15	94.3	80 - 120
Barium	400.0	438.5	110	80 - 120
Beryllium	10.00	9.630	96.3	80 - 120
Cadmium	25.00	25.17	101	80 - 120
Calcium	1000	1026	103	80 - 120
Chromium	40.00	40.91	102	80 - 120
Cobalt	100.0	96.34	96.3	80 - 120
Copper	50.00	51.07	102	80 - 120
Iron	200.0	223.2	112	80 - 120
Lead	50.00	51.90	104	80 - 120
Magnesium	1000	915.8	91.6	80 - 120
Manganese	100.0	107.5	107	80 - 120
Nickel	100.0	101.3	101	80 - 120
Potassium	1000	1040	104	80 - 120
Selenium	50.00	46.21	92.4	80 - 120
Silver	50.00	50.88	102	80 - 120
Sodium	1000	975.6	97.6	80 - 120
Thallium	50.00	48.16	96.3	80 - 120
Vanadium	100.0	97.92	97.9	80 - 120
Zinc	100.0	104.5	105	80 - 120

SERIAL DILUTION
SW6010B

BZ0009

Laboratory: Empirical Laboratories, LLC | SDG: RSA287_001
Client: | Project:
Matrix: Solid | Laboratory ID: 0B03314-SRD2
Sequence: 0B03314 | Lab Source ID: 1001078-09
Preparation: 0A27007 | Initial/Final: 1.04 / 200

Analyte	Initial Sample Result (I)	Serial Dilution Result (S)	% Difference	Q	Method	QC Limits % Difference
Aluminum	71349	71245	0.146		SW6010B	10
Antimony	ND	ND			SW6010B	10
Arsenic	27.228	27.996	2.82		SW6010B	10
Barium	321.74	318.81	0.911		SW6010B	10
Beryllium	1.0478	ND			SW6010B	10
Cadmium	3.3059	ND			SW6010B	10
Calcium	310090	318040	2.56		SW6010B	10
Chromium	181.22	182.92	0.941		SW6010B	10
Cobalt	79.964	80.82	1.07		SW6010B	10
Copper	27.327	27.118	0.767		SW6010B	10
Iron	100270	105100	4.82		SW6010B	10
Lead	148.47	148.99	0.347		SW6010B	10
Magnesium	6590	6712.5	1.86		SW6010B	10
Manganese	9586.2	10507	9.61		SW6010B	10
Nickel	40.257	41.059	1.99		SW6010B	10
Potassium	2312.4	2186	5.46		SW6010B	10
Selenium	ND	ND			SW6010B	10
Silver	ND	ND			SW6010B	10
Sodium	ND	166.8			SW6010B	10
Thallium	ND	ND			SW6010B	10
Vanadium	225.94	224.1	0.817		SW6010B	10
Zinc	269.35	270.52	0.434		SW6010B	10

METHOD DETECTION AND REPORTING LIMITS

Laboratory: Empirical Laboratories, LLC **SDG:** RSA287-001

Client:] RICAL

Matrix: Water **Instrument:** ME-ICP

Analyte	MDL	MRL	Units	Method
Aluminum	50.0	200	ug/L	SW6010B
	10.0	40.0	mg/Kg	SW6010B
Antimony	1.00	3.00	mg/Kg	SW6010B
	5.00	15.0	ug/L	SW6010B
Arsenic	0.600	2.00	mg/Kg	SW6010B
	3.00	10.0	ug/L	SW6010B
Barium	1.00	8.00	mg/Kg	SW6010B
	5.00	40.0	ug/L	SW6010B
Beryllium	0.200	1.00	mg/Kg	SW6010B
	1.00	5.00	ug/L	SW6010B
Cadmium	0.200	1.00	mg/Kg	SW6010B
	1.00	5.00	ug/L	SW6010B
Calcium	200	1000	mg/Kg	SW6010B
	1000	5000	ug/L	SW6010B
Chromium	0.400	2.00	mg/Kg	SW6010B
	2.00	10.0	ug/L	SW6010B
Cobalt	1.00	2.50	mg/Kg	SW6010B
	5.00	12.5	ug/L	SW6010B
Copper	0.800	2.00	mg/Kg	SW6010B
	4.00	10.0	ug/L	SW6010B
Iron	6.00	20.0	mg/Kg	SW6010B
	30.0	100	ug/L	SW6010B
Lead	0.300	0.600	mg/Kg	SW6010B
	1.50	3.00	ug/L	SW6010B
Magnesium	200	1000	mg/Kg	SW6010B
	1000	5000	ug/L	SW6010B
Manganese	0.600	3.00	mg/Kg	SW6010B
	3.00	15.0	ug/L	SW6010B
Nickel	0.600	2.00	mg/Kg	SW6010B
	3.00	10.0	ug/L	SW6010B
Potassium	200	1000	mg/Kg	SW6010B
	1000	5000	ug/L	SW6010B
Selenium	0.600	1.00	mg/Kg	SW6010B
	3.00	5.00	ug/L	SW6010B
Silver	0.200	2.00	mg/Kg	SW6010B
	1.00	10.0	ug/L	SW6010B
Sodium	200	1000	mg/Kg	SW6010B

METHOD DETECTION AND REPORTING LIMITS

Laboratory: Empirical Laboratories, LLC **SDG:** RSA287_001

Client: I RICAL

Matrix: Water **Instrument:** ME-ICP

Analyte	MDL	MRL	Units	Method
Sodium	1000	5000	ug/L	SW6010B
Thallium	0.600	1.60	mg/Kg	SW6010B
	3.00	8.00	ug/L	SW6010B
Vanadium	5.00	12.5	ug/L	SW6010B
	1.00	2.50	mg/Kg	SW6010B
Zinc	1.00	4.00	mg/Kg	SW6010B
	5.00	20.0	ug/L	SW6010B

METHOD DETECTION AND REPORTING LIMITS

Laboratory: Empirical Laboratories, LLC **SDG:** RSA287_001

Client:] RICAL

Matrix: Solid **Instrument:** ME-FIMS

Analyte	MDL	MRL	Units	Method
Mercury	0.0130	0.0330	mg/Kg	SW7471A

11A
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: Empirical Laboratories Contract:

Lab Code: Case No.: SAS No.: SDG No.: RSA287_001

ICP ID Number: Thermo ICP 6500 Date: 02/09/09

Analyte	Wave-length (nm)	Interelement Correction Factors for: Zn				
Aluminum	396.1	0.0000000				
Antimony	206.8	0.0000000				
Arsenic	189.0	0.0000000				
Barium	233.5	0.0000000				
Beryllium	313.0	0.0000000				
Boron	249.7	0.0000000				
Cadmium	228.8	0.0000000				
Calcium	317.9	0.0000000				
Chromium	267.7	0.0000000				
Cobalt	228.6	0.0000000				
Copper	224.7	0.0000000				
Iron	261.1	0.0000000				
Lead	220.3	0.0000000				
Magnesium	279.0	0.0000000				
Manganese	257.6	0.0000000				
Molybdenum	202.0	0.0000000				
Nickel	231.6	0.0000000				
Potassium	766.4	0.0000000				
Selenium	196.0	0.0000000				
Silicon	251.6	0.0000000				
Silver	328.0	0.0000000				
Sodium	330.2	0.0000000				
Strontium	421.5	0.0000000				
Thallium	190.8	0.0000000				
Tin	189.9	0.0000000				
Titanium	334.9	0.0000000				
Vanadium	292.4	0.0000000				
Zinc	206.2	0.0000000				

Comments:

ICP-AES AND ICP-MS LINEAR RANGES (QUARTERLY)

Lab Name: Empirical Laboratories, LLC

Client

Project: Shaw - EMSI/EMPIRICAL

ICP Instrument ID: ME-ICP Date: 09/11/2009

Analyte	Integ. Time (Sec.)	Concentration ug/L	M
Aluminum	15	500000	
Antimony	15	10000	
Arsenic	15	10000	
Barium	15	5000	
Beryllium	15	10000	
Cadmium	15	10000	
Calcium	15	500000	
Chromium	15	10000	
Cobalt	15	10000	
Copper	15	10000	
Iron	15	500000	
Lead	15	10000	
Magnesium	15	500000	
Manganese	15	10000	
Nickel	15	10000	
Potassium	15	100000	
Selenium	15	10000	
Silver	15	2000	
Sodium	15	500000	
Thallium	15	10000	
Vanadium	15	10000	
Zinc	15	10000	

PREPARATION BATCH SUMMARY

SW6010B

Laboratory: [illegible] SDG:

Client: Project: [illegible]

Batch: 0A25004 Batch Matrix: Solid Preparation: MET_3050B

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
Blank	0A25004-BLK1	01/25/10 08:40	1.00	200.00
LCS	0A25004-BS1	01/25/10 08:40	1.00	200.00
BZ0009	0A25004-MS1	01/25/10 08:40	1.04	200.00
BZ0009	0A25004-MSD1	01/25/10 08:40	1.04	200.00
BZ0009	0A25004-PS1	01/25/10 08:40	1.04	200.00
BZ0001	1001078-01	01/25/10 08:40	1.05	200.00
BZ0002	1001078-02	01/25/10 08:40	1.01	200.00
BZ0003	1001078-03	01/25/10 08:40	1.00	200.00
BZ0004	1001078-04	01/25/10 08:40	1.05	200.00
BZ0005	1001078-05	01/25/10 08:40	1.09	200.00
BZ0005	1001078-05RE1	01/25/10 08:40	1.09	200.00
BZ0006	1001078-06	01/25/10 08:40	1.07	200.00
BZ0006	1001078-06RE1	01/25/10 08:40	1.07	200.00
BZ0007	1001078-07	01/25/10 08:40	1.02	200.00
BZ0008	1001078-08	01/25/10 08:40	1.00	200.00
BZ0009	1001078-09	01/25/10 08:40	1.04	200.00
BZ0010	1001078-10	01/25/10 08:40	1.02	200.00
BZ0010	1001078-10RE1	01/25/10 08:40	1.02	200.00
BZ0011	1001078-11	01/25/10 08:40	1.07	200.00
BZ0011	1001078-11RE1	01/25/10 08:40	1.07	200.00
BZ0012	1001078-12	01/25/10 08:40	1.03	200.00
BZ0013	1001078-13	01/25/10 08:40	1.00	200.00
BZ0014	1001078-14	01/25/10 08:40	1.01	200.00
BZ0015	1001078-15	01/25/10 08:40	1.04	200.00
BZ0015	1001078-15RE1	01/25/10 08:40	1.04	200.00
BZ0016	1001078-16	01/25/10 08:40	1.08	200.00
BZ0016	1001078-16RE1	01/25/10 08:40	1.08	200.00
BZ0016	1001078-16RE2	01/25/10 08:40	1.08	200.00
BZ0018	1001078-18	01/25/10 08:40	1.02	200.00
BZ0019	1001078-19	01/25/10 08:40	1.04	200.00

ANALYSIS SEQUENCE SUMMARY
SW6010B

Laboratory:

Client:

Sequence: 0A02709

Calibration: 0027003

SDG:

Project: ____________________

Instrument: ME-ICP

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	0A02709-CAL1	012610A-001	01/26/10 09:47
Cal Standard	0A02709-CAL2	012610A-002	01/26/10 09:53
Cal Standard	0A02709-CAL3	012610A-003	01/26/10 09:58
Cal Standard	0A02709-CAL4	012610A-004	01/26/10 10:03
Cal Standard	0A02709-CAL5	012610A-005	01/26/10 10:09
Cal Standard	0A02709-CAL6	012610A-006	01/26/10 10:16
Cal Standard	0A02709-CAL7	012610A-007	01/26/10 10:22
Cal Standard	0A02709-CAL8	012610A-008	01/26/10 10:28
Cal Standard	0A02709-CAL9	012610A-009	01/26/10 10:34
Initial Cal Check	0A02709-ICV1	012610B-001	01/26/10 11:18
Initial Cal Blank	0A02709-ICB1	012610B-002	01/26/10 11:25
Instrument RL Check	0A02709-CRL1	012610B-003	01/26/10 11:30
Instrument RL Check	0A02709-CRL2	012610B-004	01/26/10 11:35
Instrument RL Check	0A02709-CRL3	012610B-016	01/26/10 12:39
Interference Check A	0A02709-IFA1	012610B-028	01/26/10 13:48
Interference Check B	0A02709-IFB1	012610B-029	01/26/10 13:54
Calibration Check	0A02709-CCV1	012610C-001	01/26/10 14:07
Calibration Blank	0A02709-CCB1	012610C-002	01/26/10 14:14
Calibration Check	0A02709-CCV5	012610C-061	01/26/10 19:03
Calibration Blank	0A02709-CCB5	012610C-062	01/26/10 19:10
Blank	0A25004-BLK1	012610C-063	01/26/10 19:15
LCS	0A25004-BS1	012610C-064	01/26/10 19:19
BZ0001	1001078-01	012610C-067	01/26/10 19:35
BZ0002	1001078-02	012610C-068	01/26/10 19:39
BZ0003	1001078-03	012610C-069	01/26/10 19:44
BZ0004	1001078-04	012610C-070	01/26/10 19:49
BZ0005	1001078-05	012610C-071	01/26/10 19:53
BZ0006	1001078-06	012610C-072	01/26/10 19:58
BZ0007	1001078-07	012610C-073	01/26/10 20:02
BZ0008	1001078-08	012610C-074	01/26/10 20:07
Calibration Check	0A02709-CCV6	012610C-075	01/26/10 20:13
Calibration Blank	0A02709-CCB6	012610C-076	01/26/10 20:20

ANALYSIS DATA SHEET

NBG-Backfill

Laboratory: Empirical Laboratories, LLC SDG: 0911230

Matrix:	Soil	Laboratory ID:	0911230-01	File ID:	009R0901.D
Sampled:	11/24/09 15:30	Prepared:	12/01/09 11:00	Analyzed:	12/02/09 20:32
Solids:	83.65	Preparation:	EXT_3546	Dilution:	1

Batch: 9L01006 Sequence: 9L33706 Calibration: 9310003 Instrument: GL-ECD4

CAS NO.	COMPOUND	CONC. (ug/Kg dry)	MDL	MRL	Q
72-54-8	4,4'-DDD		0.203	0.801	U
72-55-9	4,4'-DDE		0.203	0.801	U
50-29-3	4,4'-DDT		0.203	0.801	U
309-00-2	Aldrin		0.132	0.395	U
319-84-6	alpha-BHC		0.132	0.395	U
5103-71-9	alpha-Chlordane		0.132	0.395	U
319-85-7	beta-BHC		0.132	0.395	U
319-86-8	delta-BHC		0.132	0.395	U
60-57-1	Dieldrin		0.203	0.801	U
959-98-8	Endosulfan I		0.132	0.395	U
33213-65-9	Endosulfan II		0.203	0.801	U
1031-07-8	Endosulfan sulfate		0.203	0.801	U
72-20-8	Endrin		0.203	0.801	U
7421-93-4	Endrin aldehyde		0.203	0.801	U
53494-70-5	Endrin ketone		0.203	0.801	U
58-89-9	gamma-BHC (Lindane)		0.132	0.395	U
5566-34-7	gamma-Chlordane		0.132	0.395	U
76-44-8	Heptachlor		0.132	0.395	U
1024-57-3	Heptachlor epoxide		0.132	0.395	U
72-43-5	Methoxychlor		0.132	0.395	U
57-74-9	Chlordane (tech)		0.681	2.03	U
8001-35-2	Toxaphene		13.2	39.5	U

SYSTEM MONITORING COMPOUND	ADDED (ug/Kg dry)	CONC (ug/Kg dry)	% REC	QC LIMITS	Q
Tetrachloro-m-xylene	19.92	16.78	84.2	30 - 120	
Tetrachloro-m-xylene [2C]	19.92	13.04	65.4	30 - 120	
Decachlorobiphenyl	19.92	18.08	90.8	35 - 140	
Decachlorobiphenyl [2C]	19.92	17.42	87.4	35 - 140	

* Values outside of QC limits

SURROGATE STANDARD RECOVERY AND RT SUMMARY
SW8081A

Laboratory: Empirical Laboratories, LLC SDG: 0911230

Sequence: 9L33706 Instrument: GL-ECD4

Calibration: 9310003

Surrogate Compound	Spike Level	% Recovery	Recovery Limits	RT	CCV RT	RT Diff	RT Diff Limit	Q
Calibration Check (9L33706-CCV1) ug/L				Lab File ID: 004F0401.D		Analyzed: 12/02/09 19:00		
Tetrachloro-m-xylene	100.0	104	80 - 120	4.219		4.2190	+/-0.030	*
Tetrachloro-m-xylene [2C]	100.0	82.5	80 - 120	3.506		3.5060	+/-0.030	*
Decachlorobiphenyl	100.0	123	80 - 120	10.049		10.0490	+/-0.030	*
Decachlorobiphenyl [2C]	100.0	120	80 - 120	8.525		8.5250	+/-0.030	*
Blank (9L01006-BLK1) ug/Kg wet				Lab File ID: 007F0701.D		Analyzed: 12/02/09 19:55		
Tetrachloro-m-xylene	16.67	99.4	70 - 125	4.218	4.219	-0.0010	+/-0.030	
Tetrachloro-m-xylene [2C]	16.67	77.7	70 - 125	3.506	3.506	0.0000	+/-0.030	
Decachlorobiphenyl	16.67	127	55 - 130	10.053	10.049	0.0040	+/-0.030	
Decachlorobiphenyl [2C]	16.67	121	55 - 130	8.526	8.525	0.0010	+/-0.030	
LCS (9L01006-BS1) ug/Kg wet				Lab File ID: 008F0801.D		Analyzed: 12/02/09 20:14		
Tetrachloro-m-xylene	16.67	102	70 - 125	4.218	4.219	-0.0010	+/-0.030	
Tetrachloro-m-xylene [2C]	16.67	78.7	70 - 125	3.506	3.506	0.0000	+/-0.030	
Decachlorobiphenyl	16.67	118	55 - 130	10.05	10.049	0.0010	+/-0.030	
Decachlorobiphenyl [2C]	16.67	115	55 - 130	8.524	8.525	-0.0010	+/-0.030	
NBG-Backfill (0911230-01) ug/Kg dry				Lab File ID: 009F0901.D		Analyzed: 12/02/09 20:32		
Tetrachloro-m-xylene	19.92	84.2	30 - 120	4.217	4.219	-0.0020	+/-0.030	
Tetrachloro-m-xylene [2C]	19.92	65.4	30 - 120	3.505	3.506	-0.0010	+/-0.030	
Decachlorobiphenyl	19.92	90.8	35 - 140	10.051	10.049	0.0020	+/-0.030	
Decachlorobiphenyl [2C]	19.92	87.4	35 - 140	8.525	8.525	0.0000	+/-0.030	
NBG-Topsoil (0911230-02) ug/Kg dry				Lab File ID: 010F1001.D		Analyzed: 12/02/09 20:50		
Tetrachloro-m-xylene	21.30	84.1	30 - 120	4.219	4.219	0.0000	+/-0.030	
Tetrachloro-m-xylene [2C]	21.30	89.4	30 - 120	3.506	3.506	0.0000	+/-0.030	
Decachlorobiphenyl	21.30	89.9	35 - 140	10.05	10.049	0.0010	+/-0.030	
Decachlorobiphenyl [2C]	21.30	79.3	35 - 140	8.525	8.525	0.0000	+/-0.030	
Matrix Spike (9L01006-MS1) ug/Kg dry				Lab File ID: 011F1101.D		Analyzed: 12/02/09 21:09		
Tetrachloro-m-xylene	21.30	87.9	70 - 125	4.218	4.219	-0.0010	+/-0.030	
Tetrachloro-m-xylene [2C]	21.30	148	70 - 125	3.506	3.506	0.0000	+/-0.030	*
Decachlorobiphenyl	21.30	105	55 - 130	10.05	10.049	0.0010	+/-0.030	
Decachlorobiphenyl [2C]	21.30	82.5	55 - 130	8.523	8.525	-0.0020	+/-0.030	
Matrix Spike Dup (9L01006-MSD1) ug/Kg dry				Lab File ID: 012F1201.D		Analyzed: 12/02/09 21:27		
Tetrachloro-m-xylene	21.30	89.6	70 - 125	4.218	4.219	-0.0010	+/-0.030	
Tetrachloro-m-xylene [2C]	21.30	107	70 - 125	3.508	3.506	0.0020	+/-0.030	
Decachlorobiphenyl	21.30	91.5	55 - 130	10.051	10.049	0.0020	+/-0.030	
Decachlorobiphenyl [2C]	21.30	77.2	55 - 130	8.523	8.525	-0.0020	+/-0.030	

SURROGATE STANDARD RECOVERY AND RT SUMMARY
SW8081A

Laboratory: Empirical Laboratories, LLC   SDG: 0911230

Sequence: 9L33706   Instrument: GL-ECD4

Calibration: 9310003

Surrogate Compound	Spike Level	% Recovery	Recovery Limits	RT	CCV RT	RT Diff	RT Diff Limit	Q
Calibration Check (9L33706-CCV2) ug/L				Lab File ID: 019F1901.D		Analyzed: 12/02/09 23:37		
Tetrachloro-m-xylene	100.0	112	80 - 120	4.218	4.219	-0.0010	+/-0.030	
Tetrachloro-m-xylene [2C]	100.0	92.9	80 - 120	3.506	3.506	0.0000	+/-0.030	
Decachlorobiphenyl	100.0	119	80 - 120	10.05	10.049	0.0010	+/-0.030	
Decachlorobiphenyl [2C]	100.0	121	80 - 120	8.525	8.525	0.0000	+/-0.030	*

LCS / LCS DUPLICATE RECOVERY
SW8081A

Laboratory: Empirical Laboratories, LLC SDG: 0911230

Matrix: Solid
Batch: 9L01006 Laboratory ID: 9L01006-BS1
Preparation: EXT_3546 Initial/Final: 15 g / 5 mL

ANALYTE	SPIKE ADDED (ug/Kg wet)	LCS CONCENTRATION (ug/Kg wet)	LCS % REC.	QC LIMITS REC.
4,4'-DDD	33.33	37.59	113	30 - 135
4,4'-DDD [2C]	33.33	34.02	102	30 - 135
4,4'-DDE	33.33	38.46	115	70 - 125
4,4'-DDE [2C]	33.33	34.00	102	70 - 125
4,4'-DDT	33.33	44.14	132	45 - 140
4,4'-DDT [2C]	33.33	40.14	120	45 - 140
Aldrin	33.33	34.02	102	45 - 140
Aldrin [2C]	33.33	26.73	80.2	45 - 140
alpha-BHC	33.33	34.00	102	60 - 125
alpha-BHC [2C]	33.33	25.44	76.3	60 - 125
alpha-Chlordane	33.33	35.35	106	65 - 120
alpha-Chlordane [2C]	33.33	28.06	84.2	65 - 120
beta-BHC	33.33	35.38	106	60 - 125
beta-BHC [2C]	33.33	25.66	77.0	60 - 125
delta-BHC	33.33	38.27	115	55 - 130
delta-BHC [2C]	33.33	28.15	84.5	55 - 130
Dieldrin	33.33	34.86	105	65 - 125
Dieldrin [2C]	33.33	28.56	85.7	65 - 125
Endosulfan I	33.33	33.43	100	15 - 135
Endosulfan I [2C]	33.33	35.06	105	15 - 135
Endosulfan II	33.33	35.09	105	35 - 140
Endosulfan II [2C]	33.33	27.81	83.4	35 - 140
Endosulfan sulfate	33.33	36.29	109	60 - 135
Endosulfan sulfate [2C]	33.33	30.82	92.5	60 - 135
Endrin	**33.33**	**45.78**	**137**	**60 - 135**
Endrin [2C]	33.33	37.26	112	60 - 135
Endrin aldehyde	33.33	29.11	87.3	35 - 145
Endrin aldehyde [2C]	33.33	28.67	86.0	35 - 145
Endrin ketone	33.33	33.11	99.3	65 - 135
Endrin ketone [2C]	33.33	27.26	81.8	65 - 135

LCS / LCS DUPLICATE RECOVERY
SW8081A

Laboratory: Empirical Laboratories, LLC   SDG: 0911230

Matrix: Solid

Batch: 9L01006   Laboratory ID: 9L01006-BS1

Preparation: EXT_3546   Initial/Final: 15 g / 5 mL

ANALYTE	SPIKE ADDED (ug/Kg wet)	LCS CONCENTRATION (ug/Kg wet)	LCS % REC.	QC LIMITS REC.
gamma-BHC (Lindane)	33.33	34.62	104	60 - 125
gamma-BHC (Lindane) [2C]	33.33	25.98	77.9	60 - 125
gamma-Chlordane	33.33	35.35	106	65 - 125
gamma-Chlordane [2C]	33.33	28.72	86.2	65 - 125
Heptachlor	33.33	38.30	115	50 - 140
Heptachlor [2C]	33.33	28.02	84.0	50 - 140
Heptachlor epoxide	33.33	34.28	103	65 - 130
Heptachlor epoxide [2C]	33.33	27.51	82.5	65 - 130
Methoxychlor	33.33	43.08	129	55 - 145
Methoxychlor [2C]	33.33	38.46	115	55 - 145
Chlordane (tech)		1.70 U	0	50 - 150
Chlordane (tech) [2C]		1.70 U	0	50 - 150
Toxaphene		33.0 U	0	50 - 150
Toxaphene [2C]		33.0 U	0	50 - 150

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY
SW8081A

NBG-Topsoil

Laboratory: Empirical Laboratories, LLC   SDG: 0911230

Matrix: Solid

Batch: 9L01006

% Solids: 78.24

Source Sample Name: **0911230-02**

ANALYTE	SPIKE ADDED (ug/Kg dry)	SAMPLE CONCENTRATION (ug/Kg dry)	MS CONCENTRATION (ug/Kg dry)	MS % REC.	Q	QC LIMITS REC.
4,4'-DDD	42.61	ND	41.57	97.6		30 - 135
4,4'-DDE	42.61	ND	44.78	105		70 - 125
4,4'-DDT	42.61	ND	49.31	116		45 - 140
Aldrin	42.61	ND	36.11	84.8		45 - 140
alpha-BHC	42.61	0.3757	37.75	87.7		60 - 125
alpha-Chlordane	42.61	ND	38.26	89.8		65 - 120
beta-BHC	42.61	0.6769	38.81	89.5		60 - 125
delta-BHC	42.61	ND	38.96	91.4		55 - 130
Dieldrin	42.61	ND	38.55	90.5		65 - 125
Endosulfan I	42.61	1.233	37.56	85.3		15 - 135
Endosulfan II	42.61	ND	33.30	78.1		35 - 140
Endosulfan sulfate	42.61	0.3213	38.06	88.6		60 - 135
Endrin	42.61	ND	54.18	127		60 - 135
Endrin aldehyde	42.61	ND	26.69	62.7		35 - 145
Endrin ketone	42.61	ND	34.30	80.5		65 - 135
gamma-BHC (Lindane)	42.61	0.4135	38.51	89.4		60 - 125
gamma-Chlordane	42.61	0.2900	39.26	91.5		65 - 125
Heptachlor	42.61	ND	43.00	101		50 - 140
Heptachlor epoxide	42.61	0.5573	38.14	88.2		65 - 130
Methoxychlor	42.61	ND	44.99	106		55 - 145
Chlordane (tech)		ND	2.17 U	0		50 - 150
Toxaphene		ND	42.2 U	0		50 - 150

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY
SW8081A

NBG-Topsoil

Laboratory: Empirical Laboratories, LLC SDG: 0911230

Matrix: Solid

Batch: 9L01006

% Solids: 78.24

Source Sample Name: **0911230-02**

ANALYTE	SPIKE ADDED (ug/Kg dry)	SAMPLE CONCENTRATION (ug/Kg dry)	MS CONCENTRATION (ug/Kg dry)	MS % REC.	Q	QC LIMITS REC.
4,4'-DDD [2C]	42.61	ND	30.77	72.2		30 - 135
4,4'-DDE [2C]	42.61	ND	33.94	79.7		70 - 125
4,4'-DDT [2C]	42.61	0.4490	39.15	90.8		45 - 140
Aldrin [2C]	42.61	0.2740	27.45	63.8		45 - 140
alpha-BHC [2C]	42.61	2.445	26.21	55.8	N	60 - 125
alpha-Chlordane [2C]	42.61	0.8893	27.12	61.6	N	65 - 120
beta-BHC [2C]	42.61	0.3305	24.70	57.2	N	60 - 125
delta-BHC [2C]	42.61	0.2668	26.98	62.7		55 - 130
Dieldrin [2C]	42.61	6.859	29.58	53.3	N	65 - 125
Endosulfan I [2C]	42.61	ND	33.13	77.7		15 - 135
Endosulfan II [2C]	42.61	ND	25.63	60.2		35 - 140
Endosulfan sulfate [2C]	42.61	ND	25.40	59.6	N	60 - 135
Endrin [2C]	42.61	ND	34.40	80.7		60 - 135
Endrin aldehyde [2C]	42.61	ND	20.35	47.8		35 - 145
Endrin ketone [2C]	42.61	ND	24.50	57.5	N	65 - 135
gamma-BHC (Lindane) [2C]	42.61	0.2242	26.45	61.5		60 - 125
gamma-Chlordane [2C]	42.61	ND	27.50	64.5	N	65 - 125
Heptachlor [2C]	42.61	1.014	30.83	70.0		50 - 140
Heptachlor epoxide [2C]	42.61	0.5932	27.87	64.0	N	65 - 130
Methoxychlor [2C]	42.61	ND	35.57	83.5		55 - 145
Chlordane (tech) [2C]		ND	2.17 U	0		50 - 150
Toxaphene [2C]		ND	42.2 U	0		50 - 150

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY
SW8081A

NBG-Topsoil

Laboratory: Empirical Laboratories, LLC   SDG: 0911230

Matrix: Solid

Batch: 9L01006

% Solids: 78.24

Source Sample Name: **0911230-02**

ANALYTE	SPIKE ADDED (ug/Kg dry)	MSD CONCENTRATION (ug/Kg dry)	MSD % REC. #	% RPD	Q	QC LIMITS RPD	QC LIMITS REC.
4,4'-DDD	42.61	39.83	93.5	4.27		30	30 - 135
4,4'-DDE	42.61	43.67	103	2.51		30	70 - 125
4,4'-DDT	42.61	47.35	111	4.05		30	45 - 140
Aldrin	42.61	36.12	84.8	0.0243		30	45 - 140
alpha-BHC	42.61	37.75	87.7	0.00317		30	60 - 125
alpha-Chlordane	42.61	37.48	88.0	2.05		30	65 - 120
beta-BHC	42.61	38.64	89.1	0.443		30	60 - 125
delta-BHC	42.61	40.31	94.6	3.42		30	55 - 130
Dieldrin	42.61	38.00	89.2	1.46		30	65 - 125
Endosulfan I	42.61	36.72	83.3	2.26		30	15 - 135
Endosulfan II	42.61	32.57	76.4	2.20		30	35 - 140
Endosulfan sulfate	42.61	38.79	90.3	1.91		30	60 - 135
Endrin	42.61	52.49	123	3.18		30	60 - 135
Endrin aldehyde	42.61	27.34	64.2	2.37		30	35 - 145
Endrin ketone	42.61	32.91	77.3	4.14		30	65 - 135
gamma-BHC (Lindane)	42.61	39.21	91.1	1.79		30	60 - 125
gamma-Chlordane	42.61	38.46	89.6	2.08		30	65 - 125
Heptachlor	42.61	43.34	102	0.787		30	50 - 140
Heptachlor epoxide	42.61	37.90	87.7	0.628		30	65 - 130
Methoxychlor	42.61	41.89	98.3	7.13		30	55 - 145
Chlordane (tech)		2.17 U	0			30	50 - 150
Toxaphene		42.2 U	0			30	50 - 150

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY
SW8081A

NBG-Topsoil

Laboratory: Empirical Laboratories, LLC SDG: 0911230

Matrix: Solid

Batch: 9L01006

% Solids: 78.24

Source Sample Name: **0911230-02**

ANALYTE	SPIKE ADDED (ug/Kg dry)	MSD CONCENTRATION (ug/Kg dry)	MSD % REC. #	% RPD	Q	QC LIMITS RPD	QC LIMITS REC.
4,4'-DDD [2C]	42.61	29.53	69.3	4.12		30	30 - 135
4,4'-DDE [2C]	42.61	34.20	80.3	0.786		30	70 - 125
4,4'-DDT [2C]	42.61	39.13	90.8	0.0666		30	45 - 140
Aldrin [2C]	42.61	27.25	63.3	0.738		30	45 - 140
alpha-BHC [2C]	42.61	26.48	56.4	1.01	N	30	60 - 125
alpha-Chlordane [2C]	42.61	27.30	62.0	0.644	N	30	65 - 120
beta-BHC [2C]	42.61	24.61	57.0	0.362	N	30	60 - 125
delta-BHC [2C]	42.61	27.93	64.9	3.45		30	55 - 130
Dieldrin [2C]	42.61	30.72	56.0	3.80	N	30	65 - 125
Endosulfan I [2C]	42.61	33.45	78.5	0.965		30	15 - 135
Endosulfan II [2C]	42.61	26.11	61.3	1.86		30	35 - 140
Endosulfan sulfate [2C]	42.61	27.01	63.4	6.16		30	60 - 135
Endrin [2C]	42.61	32.73	76.8	4.99		30	60 - 135
Endrin aldehyde [2C]	42.61	21.24	49.8	4.26		30	35 - 145
Endrin ketone [2C]	42.61	24.38	57.2	0.470	N	30	65 - 135
gamma-BHC (Lindane) [2C]	42.61	26.81	62.4	1.38		30	60 - 125
gamma-Chlordane [2C]	42.61	28.10	66.0	2.16		30	65 - 125
Heptachlor [2C]	42.61	29.99	68.0	2.77		30	50 - 140
Heptachlor epoxide [2C]	42.61	27.97	64.3	0.367	N	30	65 - 130
Methoxychlor [2C]	42.61	34.16	80.2	4.06		30	55 - 145
Chlordane (tech) [2C]		2.17 U	0			30	50 - 150
Toxaphene [2C]		42.2 U	0			30	50 - 150

PREPARATION BATCH SUMMARY
SW8081A

Laboratory: Empirical Laboratories, LLC   SDG: 0911230

Batch: 9L01006   Batch Matrix: Solid   Preparation: EXT_3546

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
NBG-Backfill	0911230-01	12/01/09 11:00	15.00	5.00
NBG-Topsoil	0911230-02	12/01/09 11:00	15.00	5.00
Blank	9L01006-BLK1	12/01/09 11:00	15.00	5.00
LCS	9L01006-BS1	12/01/09 11:00	15.00	5.00
NBG-Topsoil	9L01006-MS1	12/01/09 11:00	15.00	5.00
NBG-Topsoil	9L01006-MSD1	12/01/09 11:00	15.00	5.00

ANALYSIS DATA SHEET

Blank

Laboratory:	Empirical Laboratories, LLC			SDG:	0911230		
Matrix:		Laboratory ID:	9L01006-BLK1	File ID:	007R0701.D		
Sampled:		Prepared:	12/01/09 11:00	Analyzed:	12/02/09 19:55		
Solids:		Preparation:	EXT_3546	Dilution:			
Batch:	9L01006	Sequence:	9L33706	Calibration:	9310003	Instrument:	GL-ECD4

CAS NO.	COMPOUND	CONC. (ug/Kg wet)	MDL	MRL	Q
72-54-8	4,4'-DDD		0.170	0.670	U
72-55-9	4,4'-DDE		0.170	0.670	U
50-29-3	4,4'-DDT		0.170	0.670	U
309-00-2	Aldrin		0.110	0.330	U
319-84-6	alpha-BHC		0.110	0.330	U
5103-71-9	alpha-Chlordane		0.110	0.330	U
319-85-7	beta-BHC		0.110	0.330	U
319-86-8	delta-BHC		0.110	0.330	U
60-57-1	Dieldrin		0.170	0.670	U
959-98-8	Endosulfan I		0.110	0.330	U
33213-65-9	Endosulfan II		0.170	0.670	U
1031-07-8	Endosulfan sulfate		0.170	0.670	U
72-20-8	Endrin		0.170	0.670	U
7421-93-4	Endrin aldehyde		0.170	0.670	U
53494-70-5	Endrin ketone		0.170	0.670	U
58-89-9	gamma-BHC (Lindane)		0.110	0.330	U
5566-34-7	gamma-Chlordane		0.110	0.330	U
76-44-8	Heptachlor		0.110	0.330	U
1024-57-3	Heptachlor epoxide		0.110	0.330	U
72-43-5	Methoxychlor		0.110	0.330	U
57-74-9	Chlordane (tech)		0.570	1.70	U
8001-35-2	Toxaphene		11.0	33.0	U

SYSTEM MONITORING COMPOUND	ADDED (ug/Kg wet)	CONC (ug/Kg wet)	% REC	QC LIMITS	Q
Tetrachloro-m-xylene	16.67	16.57	99.4	70 - 125	
Tetrachloro-m-xylene [2C]	16.67	12.94	77.7	70 - 125	
Decachlorobiphenyl	16.67	21.23	127	55 - 130	
Decachlorobiphenyl [2C]	16.67	20.20	121	55 - 130	

* Values outside of QC limits

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS   Contract:

Lab Code: Case No.:   SAS No.: NA   SDG No.: SDGA66357

Instrument ID: ECD4   Calibration Date(s): 11/05/09   11/05/09

Column: ZB MR-1   ID: 0.32   (mm)   Calibration Time(s): 1810   1959

LAB FILE ID: RF200: 001F0101   RF100: 002F0201   RF50: 003F0301
RF25: 004F0401   RF10: 005F0501

COMPOUND	RF200	RF100	RF50	RF25	RF10
Aldrin	81409.255	80944.950	86889.880	88575.840	78344.000
Alpha-BHC	95589.900	91708.740	98536.320	98443.400	88068.100
Alpha-Chlordane	68390.920	68253.930	74383.120	77182.120	66959.900
Beta-BHC	29920.565	30545.220	32833.260	35295.760	30965.200
4,4'-DDD	51862.840	55018.340	55096.220	58256.440	47273.800
4,4'-DDE	62509.225	63539.070	65564.140	68704.560	55525.700
4,4'-DDT	50830.080	47135.380	51833.680	51386.000	38584.200
Delta-BHC	73287.865	72229.380	77900.800	80698.280	67499.200
Dieldrin	71642.300	72385.940	77158.200	79447.520	67424.200
Endosulfan I	64556.330	65423.920	71201.040	72029.880	62378.300
Endosulfan II	57430.420	58662.350	65765.180	65664.840	55776.900
Endosulfan Sulfate	51000.345	52564.310	56619.280	57023.200	46759.600
Endrin	55538.480	45726.960	46570.460	50901.080	37928.100
Endrin Aldehyde	46127.645	51813.490	57362.820	55612.720	52015.100
Endrin Ketone	60222.635	65413.220	72066.820	72187.320	62403.300
Gamma-BHC	81476.075	78774.220	84939.180	86423.200	76480.200
Gamma-Chlordane	71452.625	71981.510	77442.720	77830.440	67640.500
Heptachlor	70261.870	67418.550	73430.120	73908.440	63718.400
Heptachlor Epoxide	71209.120	71525.890	76689.540	79615.120	69514.100
Methoxychlor	23900.205	22638.210	24291.420	25584.160	19840.700
TCMX	58952.090	59142.340	64159.480	62963.120	59459.500
DCB	36620.825	38686.930	45242.380	44821.760	36666.400

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FORM VI PESTA

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA66357

Instrument ID: ECD4 Calibration Date(s): 11/05/09 11/05/09

Column: ZB MR-1 ID: 0.32 (mm) Calibration Time(s): 1810 1959

LAB FILE ID: RF5: 006F0601 RF1: 007F0701

COMPOUND	RF5	RF1
Aldrin	78139.800	79760.000
Alpha-BHC	89192.600	89356.000
Alpha-Chlordane	67014.200	110734.00
Beta-BHC	31936.800	35245.000
4,4'-DDD	43651.400	46081.000
4,4'-DDE	50845.400	53656.000
4,4'-DDT	36570.000	36117.000
Delta-BHC	67207.400	68468.000
Dieldrin	65968.200	68453.000
Endosulfan I	62855.200	81223.000
Endosulfan II	56753.800	60357.000
Endosulfan Sulfate	45393.000	50858.000
Endrin	34183.200	34176.000
Endrin Aldehyde	51428.400	64387.000
Endrin Ketone	62161.200	72409.000
Gamma-BHC	77633.000	79607.000
Gamma-Chlordane	67191.800	69416.000
Heptachlor	64746.400	66754.000
Heptachlor Epoxide	69831.800	74785.000
Methoxychlor	19187.600	23374.000
TCMX	61851.200	67993.000
DCB	36649.400	45705.000

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA66357

Instrument ID: ECD4 Calibration Date(s): 11/05/09 11/05/09

Column: ZB MR-1 ID: 0.32 (mm) Calibration Time(s): 1810 1959

COMPOUND	CURVE	COEFFICENTS A0	A1	%RSD OR R^2
Aldrin	AVRG		82009.1036	5.0
Alpha-BHC	AVRG		92985.0086	4.8
Alpha-Chlordane	LINR	0.00000000	68783.6350	0.999
Beta-BHC	AVRG		32391.6864	6.7
4,4'-DDD	AVRG		51034.2914	10.7
4,4'-DDE	AVRG		60049.1564	11.2
4,4'-DDT	AVRG		44636.6200	16.3
Delta-BHC	AVRG		72470.1321	7.3
Dieldrin	AVRG		71782.7657	7.0
Endosulfan I	AVRG		68523.9529	9.9
Endosulfan II	AVRG		60058.6414	6.9
Endosulfan Sulfate	AVRG		51459.6764	8.6
Endrin	AVRG		43574.8971	19.2
Endrin Aldehyde	AVRG		54106.7393	10.6
Endrin Ketone	AVRG		66694.7850	8.1
Gamma-BHC	AVRG		80761.8393	4.6
Gamma-Chlordane	AVRG		71850.7993	6.0
Heptachlor	AVRG		68605.3971	5.9
Heptachlor Epoxide	AVRG		73310.0814	5.2
Methoxychlor	AVRG		22688.0421	10.4
TCMX	AVRG		62074.3900	5.3
DCB	AVRG		40627.5279	10.8

FORM VI PESTA

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA66357

Instrument ID: ECD4 Calibration Date(s): 11/05/09 11/05/09

Column: ZB MR-1 ID: 0.32 (mm) Calibration Time(s): 1810 1959

LAB FILE ID: RT1: 001F0101 RT2: 002F0201 RT3: 003F0301
RT4: 004F0401 RT5: 005F0501

COMPOUND	RT1	RT2	RT3	RT4	RT5
Aldrin	6.303	6.294	6.294	6.294	6.293
Alpha-BHC	5.065	5.058	5.056	5.055	5.055
Alpha-Chlordane	7.141	7.131	7.131	7.130	7.130
Beta-BHC	5.578	5.571	5.571	5.570	5.570
4,4'-DDD	7.963	7.956	7.957	7.955	7.958
4,4'-DDE	7.351	7.341	7.341	7.342	7.343
4,4'-DDT	8.336	8.329	8.329	8.329	8.328
Delta-BHC	5.823	5.816	5.816	5.815	5.813
Dieldrin	7.513	7.504	7.502	7.502	7.502
Endosulfan I	7.198	7.189	7.187	7.187	7.187
Endosulfan II	8.051	8.043	8.041	8.042	8.042
Endosulfan Sulfate	8.495	8.486	8.486	8.485	8.485
Endrin	7.781	7.773	7.771	7.770	7.770
Endrin Aldehyde	8.210	8.201	8.201	8.199	8.200
Endrin Ketone	9.081	9.073	9.072	9.072	9.072
Gamma-BHC	5.378	5.369	5.369	5.369	5.368
Gamma-Chlordane	7.055	7.044	7.044	7.044	7.043
Heptachlor	5.951	5.943	5.942	5.940	5.942
Heptachlor Epoxide	6.768	6.758	6.756	6.757	6.755
Methoxychlor	8.938	8.929	8.931	8.929	8.930
TCMX	4.646	4.639	4.639	4.639	4.638
DCB	10.746	10.738	10.737	10.737	10.737

FORM VI PESTA

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA66357

Instrument ID: ECD4 Calibration Date(s): 11/05/09 11/05/09

Column: ZB MR-1 ID: 0.32 (mm) Calibration Time(s): 1810 1959

LAB FILE ID: RT6: 006F0601 RT7: 007F0701

COMPOUND	RT6	RT7	MEAN RT	RT WINDOW FROM	TO
Aldrin	6.294	6.293	6.295	6.264	6.324
Alpha-BHC	5.055	5.055	5.057	5.028	5.088
Alpha-Chlordane	7.130	7.130	7.132	7.101	7.161
Beta-BHC	5.570	5.570	5.572	5.541	5.601
4,4'-DDD	7.960	7.962	7.959	7.926	7.986
4,4'-DDE	7.344	7.345	7.344	7.311	7.371
4,4'-DDT	8.330	8.332	8.331	8.299	8.359
Delta-BHC	5.815	5.813	5.816	5.786	5.846
Dieldrin	7.502	7.502	7.504	7.474	7.534
Endosulfan I	7.187	7.187	7.189	7.159	7.219
Endosulfan II	8.042	8.042	8.043	8.013	8.073
Endosulfan Sulfate	8.485	8.485	8.487	8.456	8.516
Endrin	7.770	7.770	7.772	7.743	7.803
Endrin Aldehyde	8.200	8.200	8.201	8.171	8.231
Endrin Ketone	9.072	9.073	9.074	9.043	9.103
Gamma-BHC	5.369	5.368	5.370	5.339	5.399
Gamma-Chlordane	7.044	7.043	7.045	7.014	7.074
Heptachlor	5.940	5.942	5.943	5.913	5.973
Heptachlor Epoxide	6.757	6.755	6.758	6.728	6.788
Methoxychlor	8.932	8.933	8.932	8.899	8.959
TCMX	4.639	4.638	4.640	4.609	4.669
DCB	10.739	10.738	10.739	10.708	10.768

FORM VI PESTA

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA86329

Instrument ID: ECD4 Calibration Date(s): ~~08/10/09~~ 12/02/09

Column: ZB MR-1 ID: 0.32 (mm) Calibration Time(s): 1721 1918

RF5: 005F0501

Single Point

COMPOUND	RF5	CURVE	COEFFICENT A1	%RSD OR R^2
Toxaphene	2617.580	AVRG	2617.58000	0.0
(2)	1503.380	AVRG	1503.38000	0.0
(3)	2299.530	AVRG	2299.53000	0.0
(4)	1049.180	AVRG	1049.18000	0.0
(5)	804.950	AVRG	804.950000	0.0

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FORM VI PESTA

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA86329

Instrument ID: ECD4 Calibration Date(s): ~~05/15/09~~ 12/02/09

Column: ZB MR-1 ID: 0.32 (mm) Calibration Time(s): 1445 1937

RF5: 006F0601

Single Point

COMPOUND	RF5	CURVE	COEFFICENT A1	%RSD OR R^2
Chlordane	14252.600	AVRG	14252.6000	0.0
(2)	3692.600	AVRG	3692.60000	0.0
(3)	3204.600	AVRG	3204.60000	0.0
(4)	3874.600	AVRG	3874.60000	0.0
(5)	8166.200	AVRG	8166.20000	0.0

FORM VI PESTA

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA66357

Instrument ID: ECD4 Calibration Date(s): ~~10/27/09~~ ~~10/27/09~~ 11/05/09

Column: ZB MR-2 ID: 0.32 (mm) Calibration Time(s): 1720 1910

LAB FILE ID: RF200: 005R0501 RF100: 006R0601 RF50: 007R0701
RF25: 008R0801 RF10: 009R0901

COMPOUND	RF200	RF100	RF50	RF25	RF10
Aldrin [2C]	76049.845	77682.380	90661.820	100391.56	94163.800
Alpha-BHC [2C]	111729.83	103956.62	120223.10	127369.76	119366.50
Alpha-Chlordane [2C]	69692.830	71431.870	74986.400	86246.880	79975.700
Beta-BHC [2C]	37832.950	36920.020	42939.700	47505.840	43365.300
4,4'-DDD [2C]	54349.875	57938.020	54510.940	70908.600	61476.200
4,4'-DDE [2C]	64070.840	64605.440	62015.260	78155.920	67924.500
4,4'-DDT [2C]	50064.580	46874.130	50753.520	57054.640	45141.200
Delta-BHC [2C]	85594.600	81710.860	95203.380	103226.04	90170.200
Dieldrin [2C]	76079.350	77398.880	87780.080	101269.36	95027.800
Endosulfan I [2C]	64372.230	67867.130	70630.800	85773.680	79743.700
Endosulfan II [2C]	59929.445	62969.660	73735.700	82197.280	76551.600
Endosulfan Sulfate [2C]	54568.530	58135.410	66515.060	72815.600	66182.700
Endrin [2C]	58745.845	50365.360	54490.600	66604.000	53690.000
Endrin Aldehyde [2C]	51960.710	59120.370	72610.000	76735.320	78777.800
Endrin Ketone [2C]	65959.635	73191.770	86639.660	95182.720	89138.700
Gamma-BHC [2C]	96235.510	86649.810	105660.30	112648.24	100716.60
Gamma-Chlordane [2C]	72680.810	72971.250	82374.820	88433.520	81727.600
Heptachlor [2C]	73099.095	72968.730	85509.000	93571.360	86746.200
Heptachlor Epoxide [2C]	67105.125	68723.240	79600.300	90005.400	84635.600
Methoxychlor [2C]	24517.525	24248.480	25273.280	31793.080	27163.100
TCMX [2C]	69084.095	67659.700	78507.280	82682.480	81116.000
DCB [2C]	44437.890	47138.590	56871.320	61655.760	53598.800

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FORM VI PESTA

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA66357

Instrument ID: ECD4 Calibration Date(s): ~~10/27/09~~ ~~10/27/09~~ 11/05/09

Column: ZB MR-2 ID: 0.32 (mm) Calibration Time(s): 1720 1910

LAB FILE ID: RF5: 010R1001 RF1: 011R1101

COMPOUND	RF5	RF1
Aldrin [2C]	101757.20	120006.00
Alpha-BHC [2C]	130118.20	148856.00
Alpha-Chlordane [2C]	83219.400	103951.00
Beta-BHC [2C]	47179.400	59106.000
4,4'-DDD [2C]	50587.400	63118.000
4,4'-DDE [2C]	66615.400	69238.000
4,4'-DDT [2C]	42792.400	46742.000
Delta-BHC [2C]	95673.800	106752.00
Dieldrin [2C]	102245.40	113369.00
Endosulfan I [2C]	82769.200	112472.00
Endosulfan II [2C]	81316.800	96431.000
Endosulfan Sulfate [2C]	68126.800	81879.000
Endrin [2C]	53148.800	58821.000
Endrin Aldehyde [2C]	85967.600	111588.00
Endrin Ketone [2C]	94326.800	118376.00
Gamma-BHC [2C]	113896.40	133539.00
Gamma-Chlordane [2C]	85408.600	97549.000
Heptachlor [2C]	94465.400	110155.00
Heptachlor Epoxide [2C]	90825.400	109457.00
Methoxychlor [2C]	25687.000	30831.000
TCMX [2C]	89458.200	106565.00
DCB [2C]	55146.600	68118.000

FORM VI PESTA

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS   Contract:

Lab Code: Case No.:   SAS No.: NA   SDG No.: SDGA66357

Instrument ID: ECD4   Calibration Date(s): ~~10/27/09~~   ~~10/27/09~~ 11/05/09

Column: ZB MR-2   ID: 0.32 (mm)   Calibration Time(s): 1720   1910

COMPOUND	CURVE	A0	COEFFICENTS A1	A2	%RSD OR R^2
Aldrin [2C]	AVRG		94387.5150		16.0
Alpha-BHC [2C]	AVRG		123088.572		11.7
Alpha-Chlordane [2C]	AVRG		81357.7829		14.3
Beta-BHC [2C]	AVRG		44978.4586		16.6
4,4'-DDD [2C]	AVRG		58984.1479		11.6
4,4'-DDE [2C]	AVRG		67517.9086		7.8
4,4'-DDT [2C]	AVRG		48488.9243		9.6
Delta-BHC [2C]	AVRG		94047.2686		9.6
Dieldrin [2C]	AVRG		93309.9814		14.7
Endosulfan I [2C]	LINR	0.00000000	65743.2941		0.997
Endosulfan II [2C]	AVRG		76161.6407		16.2
Endosulfan Sulfate [2C]	AVRG		66889.0143		13.5
Endrin [2C]	AVRG		56552.2293		9.5
Endrin Aldehyde [2C]	2ORDR	0.00000000	1.223e-005	6.823e-013	0.999
Endrin Ketone [2C]	AVRG		88973.6121		19.0
Gamma-BHC [2C]	AVRG		107049.409		14.0
Gamma-Chlordane [2C]	AVRG		83020.8286		10.5
Heptachlor [2C]	AVRG		88073.5407		14.8
Heptachlor Epoxide [2C]	AVRG		84336.0093		17.2
Methoxychlor [2C]	AVRG		27073.3521		11.3
TCMX [2C]	AVRG		82153.2507		16.1
DCB [2C]	AVRG		55280.9943		14.7

FORM VI PESTA

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA66357

Instrument ID: ECD4 Calibration Date(s): ~~10/27/09~~ ~~10/27/09~~ 11/05/09

Column: ZB MR-2 ID: 0.32 (mm) Calibration Time(s): 1720 1910

LAB FILE ID: RT1: 005R0501 RT2: 006R0601 RT3: 007R0701
RT4: 008R0801 RT5: 009R0901

COMPOUND	RT1	RT2	RT3	RT4	RT5
Aldrin [2C]	5.081	5.081	5.081	5.081	5.080
Alpha-BHC [2C]	4.248	4.250	4.248	4.249	4.249
Alpha-Chlordane [2C]	5.846	5.845	5.844	5.844	5.844
Beta-BHC [2C]	4.773	4.773	4.773	4.772	4.772
4,4'-DDD [2C]	6.620	6.616	6.619	6.622	6.624
4,4'-DDE [2C]	6.040	6.038	6.039	6.039	6.042
4,4'-DDT [2C]	6.900	6.898	6.899	6.901	6.899
Delta-BHC [2C]	4.970	4.968	4.969	4.969	4.969
Dieldrin [2C]	6.161	6.160	6.159	6.161	6.159
Endosulfan I [2C]	5.895	5.893	5.893	5.892	5.892
Endosulfan II [2C]	6.760	6.758	6.758	6.759	6.759
Endosulfan Sulfate [2C]	7.210	7.208	7.209	7.207	7.209
Endrin [2C]	6.440	6.438	6.438	6.437	6.437
Endrin Aldehyde [2C]	6.950	6.946	6.948	6.947	6.949
Endrin Ketone [2C]	7.773	7.770	7.769	7.771	7.770
Gamma-BHC [2C]	4.516	4.516	4.516	4.516	4.515
Gamma-Chlordane [2C]	5.788	5.786	5.788	5.787	5.787
Heptachlor [2C]	4.831	4.831	4.831	4.831	4.830
Heptachlor Epoxide [2C]	5.531	5.530	5.529	5.531	5.530
Methoxychlor [2C]	7.545	7.541	7.544	7.544	7.545
TCMX [2C]	3.855	3.856	3.854	3.856	3.855
DCB [2C]	9.166	9.165	9.166	9.164	9.165

FORM VI PESTA

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA66357

Instrument ID: ECD4 Calibration Date(s): ~~10/27/09~~ ~~10/27/09~~ 11/05/09

Column: ZB MR-2 ID: 0.32 (mm) Calibration Time(s): 1720 1910

LAB FILE ID: RT6: 010R1001 RT7: 011R1101

COMPOUND	RT6	RT7	MEAN RT	RT WINDOW FROM	RT WINDOW TO
Aldrin [2C]	5.080	5.080	5.081	5.051	5.111
Alpha-BHC [2C]	4.249	4.247	4.248	4.220	4.280
Alpha-Chlordane [2C]	5.844	5.843	5.844	5.815	5.875
Beta-BHC [2C]	4.774	4.772	4.773	4.743	4.803
4,4'-DDD [2C]	6.627	6.627	6.622	6.586	6.646
4,4'-DDE [2C]	6.042	6.043	6.040	6.008	6.068
4,4'-DDT [2C]	6.904	6.903	6.901	6.868	6.928
Delta-BHC [2C]	4.969	4.968	4.969	4.938	4.998
Dieldrin [2C]	6.160	6.158	6.160	6.130	6.190
Endosulfan I [2C]	5.894	5.893	5.893	5.863	5.923
Endosulfan II [2C]	6.760	6.758	6.759	6.728	6.788
Endosulfan Sulfate [2C]	7.210	7.210	7.209	7.178	7.238
Endrin [2C]	6.439	6.437	6.438	6.408	6.468
Endrin Aldehyde [2C]	6.949	6.950	6.948	6.916	6.976
Endrin Ketone [2C]	7.770	7.772	7.771	7.740	7.800
Gamma-BHC [2C]	4.515	4.515	4.516	4.486	4.546
Gamma-Chlordane [2C]	5.789	5.787	5.787	5.756	5.816
Heptachlor [2C]	4.830	4.830	4.831	4.801	4.861
Heptachlor Epoxide [2C]	5.530	5.530	5.530	5.500	5.560
Methoxychlor [2C]	7.549	7.548	7.545	7.511	7.571
TCMX [2C]	3.855	3.855	3.855	3.826	3.886
DCB [2C]	9.167	9.165	9.165	9.135	9.195

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS   Contract:

Lab Code: Case No.:   SAS No.: NA   SDG No.: SDGA86329

Instrument ID: ECD4   Calibration Date(s): ~~08/10/09~~ 12/02/09

Column: ZB MR-2 ID: 0.32 (mm) Calibration Time(s): 1721 1918

RF5: 005R0501

Single Point

COMPOUND	RF5	CURVE	COEFFICENT A1	%RSD OR R^2
Toxaphene [2C]	5493.080	AVRG	5493.08000	0.0
(2)	1473.610	AVRG	1473.61000	0.0
(3)	428.340	AVRG	428.340000	0.0
(4)	3179.110	AVRG	3179.11000	0.0
(5)	1240.610	AVRG	1240.61000	0.0

BM 120309

hr 12/10/09

FORM VI PESTA

FORM 6
PESTA ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: Case No.: SAS No.: NA SDG No.: SDGA86329

Instrument ID: ECD4 Calibration Date(s): ~~05/15/09~~ 12/02/09

Column: ZB MR-2 ID: 0.32 (mm) Calibration Time(s): 1445 1937

RF5: 006R0601

Single Point.

COMPOUND	RF5	CURVE	COEFFICENT A1	%RSD OR R^2
Chlordane [2C]	21148.200	AVRG	21148.2000	0.0
(2)	2634.200	AVRG	2634.20000	0.0
(3)	4065.200	AVRG	4065.20000	0.0
(4)	5144.400	AVRG	5144.40000	0.0
(5)	0 7819.800	AVRG	7819.80000	0.0

FORM VI PESTA

BREAKDOWN REPORT

Lab Sample ID: **9L33706-PEM1** **Analyzed:** **12/02/2009**

Column Number **1**

Analyte	**% Breakdown**
4.4'-DDT	3.21
Endrin	5.73

Column Number **2**

Analyte	**% Breakdown**
4.4'-DDT	4.17
Endrin	5.37

BREAKDOWN REPORT

Lab Sample ID: **9K30904-PEM1** **Analyzed:** **10/27/2009**

Column Number **1**

Analyte	**% Breakdown**
4.4'-DDT	0.00
Endrin	0.00

Column Number **2**

Analyte	**% Breakdown**
4.4'-DDT	3.16
Endrin	6.44

BREAKDOWN REPORT

Lab Sample ID: **9K31007-PEM1** **Analyzed:** **11/05/2009**

Column Number **1**

Analyte	**% Breakdown**
4.4'-DDT	8.68
Endrin	13.43

Column Number **2**

Analyte	**% Breakdown**
4.4'-DDT	7.38
Endrin	10.81

Report Date: 06-Nov-2009 11:03

J.H. 11.8.09

Empirical Laboratories, LLC

ICV

~~CONTINUING CALIBRATION COMPOUNDS~~

Instrument ID: ecd4.i Injection Date: 05-NOV-2009 20:18
Lab File ID: 008F0801.D Init. Cal. Date(s): 25-FEB-2009 05-NOV-2009
Analysis Type: Init. Cal. Times: 19:14 19:59
Lab Sample ID: SEQ-ICV1 Quant Type: ESTD
Method: \\ELABNSH05\TARGET\chem\ecd4.i\110509A.b\8081_82F.m

COMPOUND	RRF	RF100	MIN RRF	%D	MAX %D	
3 Alpha-BHC	92985	100606	0.010	8.2	15.0	
23 Gamma-BHC	80762	86591	0.010	7.2	15.0	
5 Beta-BHC	32392	34536	0.010	6.6	15.0	
15 Delta-BHC	72470	80342	0.010	10.9	15.0	
25 Heptachlor	68605	74415	0.010	8.5	15.0	
2 Aldrin	82009	85010	0.010	3.7	15.0	
26 Heptachlor Epoxide	73310	74800	0.010	2.0	15.0	
24 Gamma-Chlordane	71851	75435	0.010	5.0	15.0	
4 Alpha-Chlordane	100	105	0.010	-5.0	15.0	
17 Endosulfan I	68524	68424	0.010	-0.1	15.0	
13 4,4'-DDE	60049	66211	0.010	10.3	15.0	
16 Dieldrin	71783	74517	0.010	3.8	15.0	
20 Endrin	43575	44877	0.010	3.0	15.0	
12 4,4'-DDD	51034	55254	0.010	8.3	15.0	
18 Endosulfan II	60059	61736	0.010	2.8	15.0	
21 Endrin Aldehyde	54107	55085	0.010	1.8	15.0	
14 4,4'-DDT	44637	51752	0.010	15.9	15.0	<-
19 Endosulfan Sulfate	51460	52959	0.010	2.9	15.0	
27 Methoxychlor	22688	23812	0.010	5.0	15.0	
22 Endrin Ketone	66695	67012	0.010	0.5	15.0	

B3 110609

Report Date: 06-Nov-2009 11:03

J.H. 11.8.09

Empirical Laboratories, LLC

ICV

~~CONTINUING CALIBRATION COMPOUNDS~~

Instrument ID: ecd4.i Injection Date: 05-NOV-2009 20:18
Lab File ID: 008R0801.D Init. Cal. Date(s): 25-FEB-2009 05-NOV-2009
Analysis Type: Init. Cal. Times: 19:14 19:59
Lab Sample ID: SEQ-ICV1 Quant Type: ESTD
Method: \\ELABNSH05\TARGET\chem\ecd4.i\110509A.b\8081_82R.m

COMPOUND	RRF	RF100	MIN RRF	%D	MAX %D
3 Alpha-BHC	123089	121603	0.010	-1.2	15.0
23 Gamma-BHC	107049	105954	0.010	-1.0	15.0
5 Beta-BHC	44978	43720	0.010	-2.8	15.0
25 Heptachlor	88074	83326	0.010	-5.4	15.0
15 Delta-BHC	94047	96556	0.010	2.7	15.0
2 Aldrin	94388	87609	0.010	-7.2	15.0
26 Heptachlor Epoxide	84336	76572	0.010	-9.2	15.0
24 Gamma-Chlordane	83021	80854	0.010	-2.6	15.0
4 Alpha-Chlordane	81358	78500	0.010	-3.5	15.0
17 Endosulfan I	100	112	0.010	-11.7	15.0
13 4,4'-DDE	67518	67949	0.010	0.6	15.0
16 Dieldrin	93310	82465	0.010	-11.6	15.0
20 Endrin	56552	52889	0.010	-6.5	15.0
12 4,4'-DDD	58984	63009	0.010	6.8	15.0
18 Endosulfan II	76162	68980	0.010	-9.4	15.0
14 4,4'-DDT	48489	54571	0.010	12.5	15.0
21 Endrin Aldehyde	100	X 115	0.010	-15.4	15.0 <- HIGH
19 Endosulfan Sulfate	66889	61079	0.010	-8.7	15.0
27 Methoxychlor	27073	26461	0.010	-2.3	15.0
22 Endrin Ketone	88974	78114	0.010	-12.2	15.0

BR 110609

CONTINUING CALIBRATION CHECK
SW8081A

Laboratory: Empirical Laboratories, LLC SDG: 0911230

Instrument ID: GL-ECD4 Calibration: 9310003
Lab File ID: 004F0401.D Calibration Date: 11/05/09 12:12
Sequence: 9L33706 Injection Date: 12/02/09
Lab Sample ID: 9L33706-CCV1 Injection Time: 19:00

COMPOUND	TYPE	CONC. (ug/L) STD	CONC. (ug/L) CCV	RESPONSE FACTOR ICAL	RESPONSE FACTOR CCV	RESPONSE FACTOR MIN (#)	% DIFF / DRIFT CCV	% DIFF / DRIFT LIMIT (#)	
4,4'-DDD	A	100.0	118.2	51034.29	60315.96		18.2	20	
4,4'-DDD [2C]	A	100.0	108.3	58984.15	63870.59		8.3	20	
4,4'-DDE	A	100.0	120.7	60049.16	72487.68		20.7	20	*
4,4'-DDE [2C]	A	100.0	107.6	67517.91	72640.4		7.6	20	
4,4'-DDT	A	100.0	138.0	44636.62	61605.71		38.0	20	*
4,4'-DDT [2C]	A	100.0	126.3	48488.93	61245.4		26.3	20	*
Aldrin	A	100.0	108.2	82009.1	88699.54		8.2	20	
Aldrin [2C]	A	100.0	85.81	94387.52	80998.11		-14.2	20	
alpha-BHC	A	100.0	108.0	92985.01	100379.7		8.0	20	
alpha-BHC [2C]	A	100.0	83.92	123088.6	103302.4		-16.1	20	
alpha-Chlordane	L	100.0	111.4	76131.17	76660.02		11.4	20	
alpha-Chlordane [2C]	A	100.0	88.03	81357.73	71621.79		-12.0	20	
beta-BHC	A	100.0	111.8	32391.69	36210.44		11.8	20	
beta-BHC [2C]	A	100.0	82.30	44978.46	37017.45		-17.7	20	
delta-BHC	A	100.0	118.7	72470.13	86042.75		18.7	20	
delta-BHC [2C]	A	100.0	88.19	94047.27	82937.82		-11.8	20	
Dieldrin	A	100.0	108.6	71782.77	77998		8.7	20	
Dieldrin [2C]	A	100.0	86.47	93309.98	80682.22		-13.5	20	
Endosulfan I	A	100.0	103.2	68523.96	70720.53		3.2	20	
Endosulfan I [2C]	L	100.0	110.0	80518.39	72306.19		10.0	20	
Endosulfan II	A	100.0	109.8	60058.64	65949.9		9.8	20	
Endosulfan II [2C]	A	100.0	88.11	76161.64	67105.18		-11.9	20	
Endosulfan sulfate	A	100.0	114.5	51459.68	58935.51		14.5	20	
Endosulfan sulfate [2C]	A	100.0	98.75	66889.02	66052.86		-1.3	20	
Endrin	A	100.0	146.0	43574.9	63610.86		46.0	20	*
Endrin [2C]	A	100.0	121.0	56552.23	68460.18		21.1	20	*
Endrin aldehyde	A	100.0	97.00	54106.74	52482.08		-3.0	20	
Endrin aldehyde [2C]	Q	100.0	99.23	76679.97	60628.05		-0.8	20	
Endrin ketone	A	100.0	104.2	66694.79	69531.52		4.3	20	

CONTINUING CALIBRATION CHECK
SW8081A

Laboratory: Empirical Laboratories, LLC SDG: 0911230

Instrument ID: GL-ECD4 Calibration: 9310003
Lab File ID: 004R0401.D Calibration Date: 11/05/09 12:12
Sequence: 9L33706 Injection Date: 12/02/09
Lab Sample ID: 9L33706-CCV1 Injection Time: 19:00

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT		
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)	
Endrin ketone [2C]	A	100.0	87.01	88973.61	77412.51		-13.0	20	
gamma-BHC (Lindane)	A	100.0	108.0	80761.84	87197.18		8.0	20	
gamma-BHC (Lindane) [2C]	A	100.0	83.26	107049.4	89127.02		-16.7	20	
gamma-Chlordane	A	100.0	111.3	71850.8	79974.19		11.3	20	
gamma-Chlordane [2C]	A	100.0	90.07	83020.8	74774.71		-9.9	20	
Heptachlor	A	100.0	121.0	68605.39	83018.51		21.0	20	*
Heptachlor [2C]	A	100.0	91.22	88073.54	80340.69		-8.8	20	
Heptachlor epoxide	A	100.0	108.4	73310.08	79438.39		8.4	20	
Heptachlor epoxide [2C]	A	100.0	86.50	84336.01	72952.23		-13.5	20	
Methoxychlor	A	100.0	136.6	22688.04	31000.56		36.6	20	*
Methoxychlor [2C]	A	100.0	123.2	27073.35	33361.43		23.2	20	*
Tetrachloro-m-xylene	A	100.0	103.8	62074.39	64438.95		3.8	20	
Tetrachloro-m-xylene [2C]	A	100.0	82.53	82153.25	67804.16		-17.5	20	
Decachlorobiphenyl	A	100.0	123.1	40627.53	50019.21		23.1	20	*
Decachlorobiphenyl [2C]	A	100.0	119.5		66074.39			20	

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

CONTINUING CALIBRATION CHECK
SW8081A

Laboratory: Empirical Laboratories, LLC | SDG: 0911230

Instrument ID: GL-ECD4 | Calibration: 9310003
Lab File ID: 019F1901.D | Calibration Date: 11/05/09 12:12
Sequence: 9L33706 | Injection Date: 12/02/09
Lab Sample ID: 9L33706-CCV2 | Injection Time: 23:37

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
4,4'-DDD	A	100.0	131.5	51034.29	67114.3		31.5	20 *
4,4'-DDD [2C]	A	100.0	129.0	58984.15	76065.82		29.0	20 *
4,4'-DDE	A	100.0	132.1	60049.16	79328.02		32.1	20 *
4,4'-DDE [2C]	A	100.0	126.7	67517.91	85533.02		26.7	20 *
4,4'-DDT	A	100.0	142.2	44636.62	63485.1		42.2	20 *
4,4'-DDT [2C]	A	100.0	140.2	48488.93	67960.22		40.2	20 *
Aldrin	A	100.0	116.4	82009.1	95480.22		16.4	20
Aldrin [2C]	A	100.0	97.63	94387.52	92154.74		-2.4	20
alpha-BHC	A	100.0	118.7	92985.01	110357.3		18.7	20
alpha-BHC [2C]	A	100.0	95.13	123088.6	117097.3		-4.9	20
alpha-Chlordane	L	100.0	118.7	76131.17	81643.04		18.7	20
alpha-Chlordane [2C]	A	100.0	104.1	81357.73	84680.96		4.1	20
beta-BHC	A	100.0	124.4	32391.69	40283.45		24.4	20 *
beta-BHC [2C]	A	100.0	94.39	44978.46	42455.26		-5.6	20
delta-BHC	A	100.0	130.6	72470.13	94613		30.6	20 *
delta-BHC [2C]	A	100.0	103.0	94047.27	96850.95		3.0	20
Dieldrin	A	100.0	116.8	71782.77	83821.8		16.8	20
Dieldrin [2C]	A	100.0	98.41	93309.98	91830.16		-1.6	20
Endosulfan I	A	100.0	112.2	68523.96	76909.16		12.2	20
Endosulfan I [2C]	L	100.0	125.9	80518.39	82754.52		25.9	20 *
Endosulfan II	A	100.0	117.4	60058.64	70480.32		17.4	20
Endosulfan II [2C]	A	100.0	100.5	76161.64	76539.34		0.5	20
Endosulfan sulfate	A	100.0	122.6	51459.68	63089.42		22.6	20 *
Endosulfan sulfate [2C]	A	100.0	110.0	66889.02	73598.23		10.0	20
Endrin	A	100.0	112.7	43574.9	49126.91		12.7	20
Endrin [2C]	A	100.0	101.4	56552.23	57345.33		1.4	20
Endrin aldehyde	A	100.0	115.1	54106.74	62280.3		15.1	20
Endrin aldehyde [2C]	Q	100.0	130.2	76679.97	75050.22		30.2	20 *
Endrin ketone	A	100.0	118.4	66694.79	78974.04		18.4	20

CONTINUING CALIBRATION CHECK
SW8081A

Laboratory: Empirical Laboratories, LLC SDG: 0911230

Instrument ID: GL-ECD4 Calibration: 9310003

Lab File ID: 019R1901.D Calibration Date: 11/05/09 12:12

Sequence: 9L33706 Injection Date: 12/02/09

Lab Sample ID: 9L33706-CCV2 Injection Time: 23:37

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT	
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)
Endrin ketone [2C]	A	100.0	103.3	88973.61	91876.11		3.3	20
gamma-BHC (Lindane)	A	100.0	120.1	80761.84	96979.29		20.1	20 *
gamma-BHC (Lindane) [2C]	A	100.0	95.72	107049.4	102468.3		-4.3	20
gamma-Chlordane	A	100.0	119.3	71850.8	85728.98		19.3	20
gamma-Chlordane [2C]	A	100.0	106.3	83020.8	88220.4		6.3	20
Heptachlor	A	100.0	133.4	68605.39	91508.04		33.4	20 *
Heptachlor [2C]	A	100.0	100.2	88073.54	88265.85		0.2	20
Heptachlor epoxide	A	100.0	115.3	73310.08	84557.18		15.3	20
Heptachlor epoxide [2C]	A	100.0	98.73	84336.01	83268.81		-1.3	20
Methoxychlor	A	100.0	133.8	22688.04	30361.28		33.8	20 *
Methoxychlor [2C]	A	100.0	123.3	27073.35	33382.01		23.3	20 *
Tetrachloro-m-xylene	A	100.0	112.5	62074.39	69825.67		12.5	20
Tetrachloro-m-xylene [2C]	A	100.0	92.87	82153.25	76295.6		-7.1	20
Decachlorobiphenyl	A	100.0	118.6	40627.53	48195.2		18.6	20
Decachlorobiphenyl [2C]	A	100.0	120.7		66742.81			20

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

INITIAL CALIBRATION STANDARDS
SW8081A

Laboratory: Empirical Laboratories, LLC SDG: 0911230

Sequence: 9K31007 Instrument: GL-ECD4

Calibration: 9310003

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
09I0097	Pest ICAL @200ppb	9K31007-CAL1	001F0101.D	11/05/09 18:10
09I0097	Pest ICAL @200ppb	9K31007-CAL1	001R0101.D	11/05/09 18:10
09I0098	Pest ICAL @100ppb	9K31007-CAL2	002R0201.D	11/05/09 18:28
09I0098	Pest ICAL @100ppb	9K31007-CAL2	002F0201.D	11/05/09 18:28
09I0099	Pest ICAL @50ppb	9K31007-CAL3	003R0301.D	11/05/09 18:46
09I0099	Pest ICAL @50ppb	9K31007-CAL3	003F0301.D	11/05/09 18:46
09I0100	Pest ICAL @25ppb	9K31007-CAL4	004F0401.D	11/05/09 19:05
09I0100	Pest ICAL @25ppb	9K31007-CAL4	004R0401.D	11/05/09 19:05
09I0101	Pest @10ppb	9K31007-CAL5	005F0501.D	11/05/09 19:23
09I0101	Pest @10ppb	9K31007-CAL5	005R0501.D	11/05/09 19:23
09I0102	Pest ICAL @5ppb	9K31007-CAL6	006F0601.D	11/05/09 19:41
09I0102	Pest ICAL @5ppb	9K31007-CAL6	006R0601.D	11/05/09 19:41
09I0103	Pest ICAL @1ppb	9K31007-CAL7	007R0701.D	11/05/09 19:59
09I0103	Pest ICAL @1ppb	9K31007-CAL7	007F0701.D	11/05/09 19:59

ANALYSIS SEQUENCE SUMMARY
SW8081A

Laboratory: Empirical Laboratories, LLC　　SDG: 0911230

Sequence: 9L33706　　Instrument: GL-ECD4

Calibration: 9310003

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Performance Mix	9L33706-PEM1	003F0301.D	12/02/09 18:41
Performance Mix	9L33706-PEM1	003R0301.D	12/02/09 18:41
Calibration Check	9L33706-CCV1	004R0401.D	12/02/09 19:00
Calibration Check	9L33706-CCV1	004F0401.D	12/02/09 19:00
Blank	9L01006-BLK1	007R0701.D	12/02/09 19:55
Blank	9L01006-BLK1	007F0701.D	12/02/09 19:55
LCS	9L01006-BS1	008F0801.D	12/02/09 20:14
LCS	9L01006-BS1	008R0801.D	12/02/09 20:14
NBG-Backfill	0911230-01	009R0901.D	12/02/09 20:32
NBG-Backfill	0911230-01	009F0901.D	12/02/09 20:32
NBG-Topsoil	0911230-02	010F1001.D	12/02/09 20:50
NBG-Topsoil	0911230-02	010R1001.D	12/02/09 20:50
NBG-Topsoil	9L01006-MS1	011R1101.D	12/02/09 21:09
NBG-Topsoil	9L01006-MS1	011F1101.D	12/02/09 21:09
NBG-Topsoil	9L01006-MSD1	012F1201.D	12/02/09 21:27
NBG-Topsoil	9L01006-MSD1	012R1201.D	12/02/09 21:27
Calibration Check	9L33706-CCV2	019F1901.D	12/02/09 23:37
Calibration Check	9L33706-CCV2	019R1901.D	12/02/09 23:37

FORM X
IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

NBG-Topsoil

Lab Name: Empirical Laboratories, LLC

Lab Sample ID: 0911230-02 Date(s) Analyzed: 12/02/2009 12/02/2009

Instrument ID (1): GL-ECD4 Instrument ID (2): GL-ECD4

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
alpha-BHC	1	4.58	5.03	5.09	0.376	
	2	3.92	4.22	4.28	2.44	147
beta-BHC	1	5.09	5.54	5.60	0.677	
	2	4.35	4.74	4.80	0.330	69
gamma-BHC (Lindane)	1	4.88	5.34	5.40	0.413	
	2	4.12	4.49	4.55	0.224	60
Heptachlor epoxide	1	6.18	6.73	6.79	0.557	
	2	5.05	5.50	5.56	0.593	6

ANALYSIS DATA SHEET

Laboratory: Empirical Laboratories, LLC

SDG:

Client:

Project: Industry Scans

Matrix: Water

Laboratory ID: 0912026-01

Sampled: 12/02/09 11:00

Received: 12/02/09 17:15

% Solids: 0.00

CAS NO.	Analyte	Concentration (mg/L)	MDL	RL	Dilution Factor	Q	Method	Batch	Analyzed
18540-29-9	Hexavalent Chromium		0.0100	0.0250	1	U	SW7196A	9L03001	12/03/09 08:13

INITIAL AND CONTINUING CALIBRATION CHECK

SW7196A

Laboratory: Empirical Laboratories, LLC

Client:

Instrument ID: WC-Gensys

SDG:

Project: Industry Scans

Calibration: 9304001

Sequence: 9L34308

Lab Sample ID	Analyte	True	Found	%R	Units	Control Limit
9L34308-ICV1	Hexavalent Chromium	0.5000	0.5230	105	mg/L	+/- 10.00%
9L34308-CCV1	Hexavalent Chromium	0.5000	0.5164	103	mg/L	+/- 10.00%
9L34308-CCV2	Hexavalent Chromium	0.5000	0.5215	104	mg/L	+/- 10.00%
9L34308-CCV3	Hexavalent Chromium	0.5000	0.5202	104	mg/L	+/- 10.00%

BLANKS
SW7196A

Laboratory: Empirical Laboratories, LLC SDG:

Client:

Instrument ID: WC-Gensys Project: Industry Scans

Sequence: 9L34308 Calibration: 9304001

Lab Sample ID	Analyte	Found	MDL	MRL	Units	C	Method
9L03001-BLK1	Hexavalent Chromium	0.00	0.0100	0.0250	mg/L	U	SW7196A
9L34308-CCB1	Hexavalent Chromium	0.00	0.0100	0.0250	mg/L	U	SW7196A
9L34308-CCB2	Hexavalent Chromium	0.00	0.0100	0.0250	mg/L	U	SW7196A
9L34308-CCB3	Hexavalent Chromium	0.00	0.0100	0.0250	mg/L	U	SW7196A

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY
SW7196A

Plymouth Tube

Laboratory: Empirical Laboratories, LLC

SDG:

Client:

Project: Industry Scans

Matrix: Water

Batch: 9L03001

% Solids:

Source Sample Name: **0912026-01**

ANALYTE	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC.	Q	QC LIMITS REC.
Hexavalent Chromium	0.5000	ND	0.5126	103		85 - 115

LCS / LCS DUPLICATE RECOVERY
SW7196A

Laboratory:	Empirical Laboratories, LLC	SDG:	
Client:		Project:	Industry Scans
Matrix:	Water		
Batch:	9L03001	Laboratory ID:	9L03001-BS1
Preparation:	pHexavalentChromium SW 3060A	Initial/Final:	95 mL / 95 mL

ANALYTE	SPIKE ADDED (mg/L)	LCS CONCENTRATION (mg/L)	LCS % REC.	QC LIMITS REC.
Hexavalent Chromium	0.5000	0.5037	101	90 - 110

METHOD DETECTION AND REPORTING LIMITS

Laboratory: Empirical Laboratories, LLC **SDG:**

Client: **Project:** Industry Scans

Matrix: Water **Instrument:** WC-Gensys

Analyte	MDL	MRL	Units	Method
Hexavalent Chromium	0.0100	0.0250	mg/L	SW7196A

PREPARATION BATCH SUMMARY

SW7196A

Laboratory: Empirical Laboratories, LLC

SDG:

Client:

Project: Industry Scans

Batch: 9L03001 Batch Matrix: Water

Preparation: pHexavalentChromium SW 3060A

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
Plymouth Tube	0912026-01	12/03/09 06:31	95.00	95.00
Blank	9L03001-BLK1	12/03/09 06:31	95.00	95.00
LCS	9L03001-BS1	12/03/09 06:31	95.00	95.00
Northside Raw	9L03001-MS1	12/03/09 06:31	95.00	95.00
Northside Final	9L03001-MS2	12/03/09 06:31	95.00	95.00
Hammondwood Effluent	9L03001-MS3	12/03/09 06:31	95.00	95.00
Hammondwood Influent	9L03001-MS4	12/03/09 06:31	95.00	95.00
Plymouth Tube	9L03001-MS5	12/03/09 06:31	95.00	95.00

ANALYSIS SEQUENCE SUMMARY
SW7196A

Laboratory:	Empirical Laboratories, LLC	SDG:	
Client:		Project:	Industry Scans
Sequence:	9J30401	Instrument:	WC-Gensys
Calibration:	9304001		

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Cal Standard	9J30401-CAL2	103109-003	10/31/09 09:58
Cal Standard	9J30401-CAL1	103109-002	10/31/09 09:58
Cal Standard	9J30401-CAL4	103109-005	10/31/09 09:59
Cal Standard	9J30401-CAL3	103109-004	10/31/09 09:59
Cal Standard	9J30401-CAL6	103109-007	10/31/09 10:00
Cal Standard	9J30401-CAL5	103109-006	10/31/09 10:00
Cal Standard	9J30401-CAL7	103109-008	10/31/09 10:01
Initial Cal Check	9J30401-ICV1	103109-009	10/31/09 10:56
Calibration Check	9J30401-CCV1	103109-018	10/31/09 11:03
Calibration Blank	9J30401-CCB1	103109-019	10/31/09 11:04

ANALYSIS SEQUENCE SUMMARY
SW7196A

Laboratory: Empirical Laboratories, LLC

SDG:

Client:

Project: Industry Scans

Sequence: 9L34308

Instrument: WC-Gensys

Calibration: 9304001

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
Initial Cal Check	9L34308-ICV1		12/03/09 07:04
Blank	9L03001-BLK1	120309-003	12/03/09 07:40
Northside Raw	9L03001-MS1	120309-005	12/03/09 07:41
LCS	9L03001-BS1	120309-004	12/03/09 07:41
Hammondwood Effluent	9L03001-MS3	120309-007	12/03/09 07:42
Northside Final	9L03001-MS2	120309-006	12/03/09 07:42
Plymouth Tube	9L03001-MS5	120309-009	12/03/09 07:43
Hammondwood Influent	9L03001-MS4	120309-008	12/03/09 07:43
Calibration Check	9L34308-CCV1	120309-010	12/03/09 07:44
Calibration Blank	9L34308-CCB1	120309-011	12/03/09 07:44
Calibration Check	9L34308-CCV2	120309-012	12/03/09 08:10
Calibration Blank	9L34308-CCB2	120309-013	12/03/09 08:10
Calibration Check	9L34308-CCV3	120309-019	12/03/09 08:13
Plymouth Tube	0912026-01	120309-018	12/03/09 08:13
Calibration Blank	9L34308-CCB3	120309-020	12/03/09 08:14

ANALYSIS DATA SHEET

BZ0001

Laboratory:	Empirical Laboratories, LLC			SDG:	RSA287_001		
Matrix:	Soil	Laboratory ID:	1001078-01	File ID:	0107801A.D		
Sampled:	01/12/10 11:40	Prepared:	01/19/10 00:00	Analyzed:	01/19/10 10:05		
Solids:	83.64	Preparation:	5035	Dilution:	1		
Batch:	0A19011	Sequence:	0A02010	Calibration:	0013003	Instrument:	MS-VOA5

CAS NO.	COMPOUND	CONC. (ug/Kg dry)	MDL	MRL	Q
67-64-1	Acetone	31.4	2.15	53.7	J
71-43-2	Benzene		0.504	5.37	U
75-27-4	Bromodichloromethane		0.322	5.37	U
75-25-2	Bromoform		1.07	5.37	U
74-83-9	Bromomethane		0.773	10.7	U
78-93-3	2-Butanone	5.64	1.50	10.7	J
75-15-0	Carbon disulfide		1.40	5.37	U
56-23-5	Carbon tetrachloride		0.944	5.37	U
108-90-7	Chlorobenzene		0.365	5.37	U
75-00-3	Chloroethane		1.18	10.7	U
67-66-3	Chloroform		0.590	5.37	U
74-87-3	Chloromethane		0.558	10.7	U
124-48-1	Dibromochloromethane		0.365	5.37	U
75-34-3	1,1-Dichloroethane		0.580	5.37	U
107-06-2	1,2-Dichloroethane		0.494	5.37	U
75-35-4	1,1-Dichloroethene		1.29	5.37	U
156-59-4	cis-1,2-Dichloroethene		1.29	5.37	U
156-60-5	trans-1,2-Dichloroethene		1.18	5.37	U
NA	1,2-Dichloroethene (total)		1.29	5.37	U
78-87-5	1,2-Dichloropropane		0.494	5.37	U
10061-01-5	cis-1,3-Dichloropropene		0.537	5.37	U
10061-02-6	trans-1,3-Dichloropropene		0.343	5.37	U
100-41-4	Ethylbenzene	0.895	0.805	5.37	J
591-78-6	2-Hexanone		2.47	5.37	U
75-09-2	Methylene chloride	1.96	0.665	5.37	JB
108-10-1	4-Methyl-2-pentanone		0.622	5.37	U
100-42-5	Styrene		0.376	5.37	U
79-34-5	1,1,2,2-Tetrachloroethane		0.462	5.37	U
127-18-4	Tetrachloroethene		1.04	5.37	U
108-88-3	Toluene	1.75	0.923	5.37	J
79-00-5	1,1,2-Trichloroethane		0.376	5.37	U
71-55-6	1,1,1-Trichloroethane		0.966	5.37	U
79-01-6	Trichloroethene		0.912	5.37	U
75-01-4	Vinyl chloride		1.18	10.7	U
1330-20-7	Xylenes (total)	4.46	0.751	5.37	J

SYSTEM MONITORING COMPOUND	ADDED (ug/Kg dry)	CONC (ug/Kg dry)	% REC	QC LIMITS	Q
Bromofluorobenzene	32.20	32.16	99.9	80 - 125	
Dibromofluoromethane	32.20	32.40	101	80 - 125	
1,2-Dichloroethane-d4	32.20	34.75	108	75 - 140	
Toluene-d8	32.20	29.59	91.9	80 - 120	

SURROGATE STANDARD RECOVERY AND RT SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC

SDG: RSA287_001

Sequence: 0A02010

Instrument: MS-VOA5

Calibration: 0013003

Surrogate Compound	Spike Level	% Recovery	Recovery Limits	RT	CCV RT	RT Diff	RT Diff Limit	Q
Calibration Check (0A02010-CCV1) ug/L				Lab File ID: SEQ-CCV1.D		Analyzed: 01/19/10 07:22		
Bromofluorobenzene	30.00	101	80 - 120	16.562		16.5620	+/-1.000	*
Dibromofluoromethane	30.00	106	80 - 120	9.144		9.1440	+/-1.000	*
1,2-Dichloroethane-d4	30.00	100	80 - 120	10.453		10.4530	+/-1.000	*
Toluene-d8	30.00	95.1	80 - 120	14.299		14.2990	+/-1.000	*
LCS (0A19011-BS1) ug/Kg wet				Lab File ID: V5LCS01.D		Analyzed: 01/19/10 08:00		
Bromofluorobenzene	30.00	106	80 - 125	16.561	16.562	-0.0010	+/-1.000	
Dibromofluoromethane	30.00	104	80 - 125	9.134	9.144	-0.0100	+/-1.000	
1,2-Dichloroethane-d4	30.00	100	75 - 140	10.442	10.453	-0.0110	+/-1.000	
Toluene-d8	30.00	102	80 - 120	14.288	14.299	-0.0110	+/-1.000	
Blank (0A19011-BLK1) ug/Kg wet				Lab File ID: V5BLK01.D		Analyzed: 01/19/10 09:03		
Bromofluorobenzene	30.00	99.1	80 - 125	16.567	16.562	0.0050	+/-1.000	
Dibromofluoromethane	30.00	108	80 - 125	9.14	9.144	-0.0040	+/-1.000	
1,2-Dichloroethane-d4	30.00	119	75 - 140	10.448	10.453	-0.0050	+/-1.000	
Toluene-d8	30.00	98.0	80 - 120	14.294	14.299	-0.0050	+/-1.000	
BZ0001 (1001078-01) ug/Kg dry				Lab File ID: 0107801A.D		Analyzed: 01/19/10 10:05		
Bromofluorobenzene	32.20	99.9	80 - 125	16.567	16.562	0.0050	+/-1.000	
Dibromofluoromethane	32.20	101	80 - 125	9.159	9.144	0.0150	+/-1.000	
1,2-Dichloroethane-d4	32.20	108	75 - 140	10.467	10.453	0.0140	+/-1.000	
Toluene-d8	32.20	91.9	80 - 120	14.294	14.299	-0.0050	+/-1.000	
BZ0002 (1001078-02) ug/Kg dry				Lab File ID: 0107802A.D		Analyzed: 01/19/10 10:36		
Bromofluorobenzene	31.49	105	80 - 125	16.565	16.562	0.0030	+/-1.000	
Dibromofluoromethane	31.49	100	80 - 125	9.148	9.144	0.0040	+/-1.000	
1,2-Dichloroethane-d4	31.49	110	75 - 140	10.456	10.453	0.0030	+/-1.000	
Toluene-d8	31.49	97.4	80 - 120	14.293	14.299	-0.0060	+/-1.000	
BZ0003 (1001078-03) ug/Kg dry				Lab File ID: 0107803A.D		Analyzed: 01/19/10 11:07		
Bromofluorobenzene	32.97	103	80 - 125	16.57	16.562	0.0080	+/-1.000	
Dibromofluoromethane	32.97	109	80 - 125	9.153	9.144	0.0090	+/-1.000	
1,2-Dichloroethane-d4	32.97	119	75 - 140	10.461	10.453	0.0080	+/-1.000	
Toluene-d8	32.97	95.8	80 - 120	14.298	14.299	-0.0010	+/-1.000	
BZ0004 (1001078-04) ug/Kg dry				Lab File ID: 0107804A.D		Analyzed: 01/19/10 11:38		
Bromofluorobenzene	30.34	95.8	80 - 125	16.562	16.562	0.0000	+/-1.000	
Dibromofluoromethane	30.34	108	80 - 125	9.144	9.144	0.0000	+/-1.000	
1,2-Dichloroethane-d4	30.34	115	75 - 140	10.472	10.453	0.0190	+/-1.000	
Toluene-d8	30.34	98.1	80 - 120	14.299	14.299	0.0000	+/-1.000	

LCS / LCS DUPLICATE RECOVERY
SW8260B

Laboratory: Empirical Laboratories, LLC   SDG: RSA287_001

Matrix: Solid

Batch: 0A19011   Laboratory ID: 0A19011-BS1

Preparation: 5035   Initial/Final: 5 g / 5 mL

ANALYTE	SPIKE ADDED (ug/Kg wet)	LCS CONCENTRATION (ug/Kg wet)	LCS % REC.	QC LIMITS REC.
Acetone	100.0	111.2	111	30 - 155
Benzene	50.00	63.43	127	70 - 130
Bromodichloromethane	50.00	63.61	127	70 - 145
Bromoform	50.00	54.38	109	60 - 130
Bromomethane	50.00	55.61	111	50 - 160
2-Butanone	100.0	97.42	97.4	50 - 145
Carbon disulfide	50.00	60.04	120	65 - 145
Carbon tetrachloride	50.00	63.72	127	65 - 140
Chlorobenzene	**50.00**	**61.66**	**123**	**70 - 120**
Chloroethane	50.00	58.77	118	60 - 145
Chloroform	50.00	57.49	115	65 - 135
Chloromethane	50.00	58.58	117	50 - 150
Dibromochloromethane	50.00	61.81	124	70 - 140
1,1-Dichloroethane	50.00	54.83	110	70 - 135
1,2-Dichloroethane	50.00	59.14	118	65 - 140
1,1-Dichloroethene	50.00	60.53	121	65 - 135
cis-1,2-Dichloroethene	50.00	57.97	116	70 - 135
trans-1,2-Dichloroethene	50.00	61.27	123	65 - 140
1,2-Dichloroethene (total)	100.0	119.2	119	
1,2-Dichloropropane	50.00	63.18	126	70 - 135
cis-1,3-Dichloropropene	**50.00**	**67.81**	**136**	**75 - 135**
trans-1,3-Dichloropropene	50.00	55.96	112	65 - 125
Ethylbenzene	50.00	60.74	121	75 - 125
2-Hexanone	100.0	119.9	120	50 - 140
Methylene chloride	50.00	56.87	114	55 - 155
4-Methyl-2-pentanone	100.0	133.5	133	55 - 145
Styrene	**50.00**	**65.10**	**130**	**70 - 125**
1,1,2,2-Tetrachloroethane	50.00	57.81	116	65 - 130
Tetrachloroethene	50.00	55.98	112	65 - 130
Toluene	50.00	60.35	121	55 - 140

LCS / LCS DUPLICATE RECOVERY
SW8260B

Laboratory: Empirical Laboratories, LLC SDG: RSA287_001

Matrix: Solid

Batch: 0A19011 Laboratory ID: 0A19011-BS1

Preparation: 5035 Initial/Final: 5 g / 5 mL

ANALYTE	SPIKE ADDED (ug/Kg wet)	LCS CONCENTRATION (ug/Kg wet)	LCS % REC.	QC LIMITS REC.
1,1,2-Trichloroethane	50.00	57.29	115	70 - 130
1,1,1-Trichloroethane	50.00	59.32	119	65 - 140
Trichloroethene	50.00	63.90	128	60 - 145
Vinyl chloride	50.00	67.80	136	60 - 145
Xylenes (total)	**150.0**	**188.2**	**125**	**70 - 120**

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY
SW8260B

BZ0009

Laboratory: Empirical Laboratories, LLC   SDG: RSA287_001

Matrix: Solid

Batch: 0A19011

% Solids: 81.76

Source Sample Name: **1001078-09**

ANALYTE	SPIKE ADDED (ug/Kg dry)	SAMPLE CONCENTRATION (ug/Kg dry)	MS CONCENTRATION (ug/Kg dry)	MS % REC.	Q	QC LIMITS REC.
Acetone	123.0	107.1	92.67	-11.7	N	30 - 155
Benzene	61.52	0.6941	60.53	97.3		70 - 130
Bromodichloromethane	61.52	ND	55.95	90.9		70 - 145
Bromoform	61.52	ND	48.27	78.5		60 - 130
Bromomethane	61.52	ND	58.97	95.8		50 - 160
2-Butanone	123.0	28.25	95.25	54.5		50 - 145
Carbon disulfide	61.52	ND	62.27	101		65 - 145
Carbon tetrachloride	61.52	ND	54.69	88.9		65 - 140
Chlorobenzene	61.52	ND	52.98	86.1		70 - 120
Chloroethane	61.52	ND	57.00	92.6		60 - 145
Chloroform	61.52	ND	50.17	81.6		65 - 135
Chloromethane	61.52	ND	58.68	95.4		50 - 150
Dibromochloromethane	61.52	ND	54.20	88.1		70 - 140
1,1-Dichloroethane	61.52	ND	50.74	82.5		70 - 135
1,2-Dichloroethane	61.52	ND	54.33	88.3		65 - 140
1,1-Dichloroethene	61.52	ND	59.27	96.3		65 - 135
cis-1,2-Dichloroethene	61.52	ND	52.16	84.8		70 - 135
trans-1,2-Dichloroethene	61.52	ND	50.84	82.6		65 - 140
1,2-Dichloroethene (total)	123.0	ND	103.0	83.7		
1,2-Dichloropropane	61.52	ND	55.99	91.0		70 - 135
cis-1,3-Dichloropropene	61.52	ND	59.62	96.9		75 - 135
trans-1,3-Dichloropropene	61.52	ND	48.60	79.0		65 - 125
Ethylbenzene	61.52	0.8011	53.76	86.1		75 - 125
2-Hexanone	123.0	ND	95.09	77.3		50 - 140
Methylene chloride	61.52	4.393	57.42	86.2		55 - 155
4-Methyl-2-pentanone	123.0	ND	137.1	111		55 - 145
Styrene	61.52	ND	8.871	14.4	N	70 - 125
1,1,2,2-Tetrachloroethane	61.52	ND	57.19	93.0		65 - 130
Tetrachloroethene	61.52	ND	45.35	73.7		65 - 130
Toluene	61.52	2.430	54.91	85.3		55 - 140
1,1,2-Trichloroethane	61.52	ND	51.08	83.0		70 - 130
1,1,1-Trichloroethane	61.52	ND	53.17	86.4		65 - 140

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

SW8260B

BZ0009

Laboratory: Empirical Laboratories, LLC SDG: RSA287_001

Client: [illegible]

Matrix: Solid

Batch: 0A19011

% Solids: 81.76

Source Sample Name: **1001078-09**

ANALYTE	SPIKE ADDED (ug/Kg dry)	SAMPLE CONCENTRATION (ug/Kg dry)	MS CONCENTRATION (ug/Kg dry)	MS % REC.	Q	QC LIMITS REC.
Trichloroethene	61.52	ND	53.68	87.2		60 - 145
Vinyl chloride	61.52	ND	67.18	109		60 - 145
Xylenes (total)	184.6	4.193	155.0	81.7		70 - 120

PREPARATION BATCH SUMMARY

SW8260B

Laboratory: Empirical Laboratories, LLC SDG: RSA287_001

Batch: 0A19011 Batch Matrix: Solid Preparation: 5035

SAMPLE NAME	LAB SAMPLE ID	DATE PREPARED	INITIAL VOL./WEIGHT	FINAL VOL.
Blank	0A19011-BLK1	01/19/10 00:00	5.00	5.00
LCS	0A19011-BS1	01/19/10 00:00	5.00	5.00
BZ0009	0A19011-MS1	01/19/10 00:00	4.97	5.00
BZ0009	0A19011-MSD1	01/19/10 00:00	5.07	5.00
BZ0001	1001078-01	01/19/10 00:00	5.57	5.00
BZ0002	1001078-02	01/19/10 00:00	5.79	5.00
BZ0003	1001078-03	01/19/10 00:00	6.52	5.00
BZ0004	1001078-04	01/19/10 00:00	6.13	5.00
BZ0005	1001078-05	01/19/10 00:00	4.03	5.00
BZ0006	1001078-06	01/19/10 00:00	6.28	5.00
BZ0007	1001078-07	01/19/10 00:00	5.84	5.00
BZ0008	1001078-08	01/19/10 00:00	7.05	5.00
BZ0009	1001078-09	01/19/10 00:00	6.41	5.00
BZ0010	1001078-10	01/19/10 00:00	6.67	5.00
BZ0011	1001078-11	01/19/10 00:00	6.29	5.00
BZ0012	1001078-12	01/19/10 00:00	5.74	5.00
BZ0018	1001078-18	01/19/10 00:00	6.31	5.00

MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC SDG: RSA287 001

Lab File ID: SEQ-TUN2.D Injection Date: 01/12/10

Instrument ID: MS-VOA5 Injection Time: 12:39

Sequence: 0A01302 Lab Sample ID: 0A01302-TUN2

m/z	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE	
50	15 - 40% of 95	17.6	PASS
75	30 - 60% of 95	41.1	PASS
95	Base peak, 100% relative abundance	100	PASS
96	5 - 9% of 95	6.96	PASS
173	Less than 2% of 174	0	PASS
174	50 - 200% of 95	113	PASS
175	5 - 9% of 174	7.51	PASS
176	95 - 101% of 174	98.8	PASS
177	5 - 9% of 176	6.78	PASS

INTERNAL STANDARD AREA AND RT SUMMARY
SW8260B

Laboratory: Empirical Laboratories, LLC SDG: RSA287_001

Sequence: 0A02010 Instrument: MS-VOA5

Calibration: 0013003

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Calibration Check (0A02010-CCV1)			Lab File ID: SEQ-CCV1.D			Analyzed: 01/19/10 07:22			
Fluorobenzene	961542	12.017	932105	11.987	103	50 - 200	0.0300	+/-0.50	
Chlorobenzene-d5	422276	15.627	399608	15.598	106	50 - 200	0.0290	+/-0.50	
1,4-Dichlorobenzene-d4	501479	17.477	484121	17.467	104	50 - 200	0.0100	+/-0.50	
LCS (0A19011-BS1)			Lab File ID: V5LCS01.D			Analyzed: 01/19/10 08:00			
Fluorobenzene	902138	12.006	961542	12.017	94	50 - 200	-0.0110	+/-0.50	
Chlorobenzene-d5	368161	15.617	422276	15.627	87	50 - 200	-0.0100	+/-0.50	
1,4-Dichlorobenzene-d4	438875	17.476	501479	17.477	88	50 - 200	-0.0010	+/-0.50	
Blank (0A19011-BLK1)			Lab File ID: V5BLK01.D			Analyzed: 01/19/10 09:03			
Fluorobenzene	894824	12.012	961542	12.017	93	50 - 200	-0.0050	+/-0.50	
Chlorobenzene-d5	390061	15.623	422276	15.627	92	50 - 200	-0.0040	+/-0.50	
1,4-Dichlorobenzene-d4	474600	17.482	501479	17.477	95	50 - 200	0.0050	+/-0.50	
BZ0001 (1001078-01)			Lab File ID: 0107801A.D			Analyzed: 01/19/10 10:05			
Fluorobenzene	1025869	12.012	961542	12.017	107	50 - 200	-0.0050	+/-0.50	
Chlorobenzene-d5	423789	15.622	422276	15.627	100	50 - 200	-0.0050	+/-0.50	
1,4-Dichlorobenzene-d4	518493	17.481	501479	17.477	103	50 - 200	0.0040	+/-0.50	
BZ0002 (1001078-02)			Lab File ID: 0107802A.D			Analyzed: 01/19/10 10:36			
Fluorobenzene	944611	12.011	961542	12.017	98	50 - 200	-0.0060	+/-0.50	
Chlorobenzene-d5	377091	15.621	422276	15.627	89	50 - 200	-0.0060	+/-0.50	
1,4-Dichlorobenzene-d4	480555	17.48	501479	17.477	96	50 - 200	0.0030	+/-0.50	
BZ0003 (1001078-03)			Lab File ID: 0107803A.D			Analyzed: 01/19/10 11:07			
Fluorobenzene	887524	12.015	961542	12.017	92	50 - 200	-0.0020	+/-0.50	
Chlorobenzene-d5	402782	15.626	422276	15.627	95	50 - 200	-0.0010	+/-0.50	
1,4-Dichlorobenzene-d4	504182	17.485	501479	17.477	101	50 - 200	0.0080	+/-0.50	
BZ0004 (1001078-04)			Lab File ID: 0107804A.D			Analyzed: 01/19/10 11:38			
Fluorobenzene	888351	12.017	961542	12.017	92	50 - 200	0.0000	+/-0.50	
Chlorobenzene-d5	409559	15.627	422276	15.627	97	50 - 200	0.0000	+/-0.50	
1,4-Dichlorobenzene-d4	463139	17.476	501479	17.477	92	50 - 200	-0.0010	+/-0.50	
BZ0005 (1001078-05)			Lab File ID: 0107805A.D			Analyzed: 01/19/10 12:09			
Fluorobenzene	911382	12.015	961542	12.017	95	50 - 200	-0.0020	+/-0.50	
Chlorobenzene-d5	379809	15.626	422276	15.627	90	50 - 200	-0.0010	+/-0.50	
1,4-Dichlorobenzene-d4	465491	17.485	501479	17.477	93	50 - 200	0.0080	+/-0.50	
BZ0006 (1001078-06)			Lab File ID: 0107806A.D			Analyzed: 01/19/10 12:40			
Fluorobenzene	875840	12.015	961542	12.017	91	50 - 200	-0.0020	+/-0.50	
Chlorobenzene-d5	363830	15.626	422276	15.627	86	50 - 200	-0.0010	+/-0.50	
1,4-Dichlorobenzene-d4	455462	17.485	501479	17.477	91	50 - 200	0.0080	+/-0.50	

ANALYSIS SEQUENCE SUMMARY
SW8260B

Laboratory: Empirical Laboratories, LLC SDG: RSA287_001

Sequence: 0A01302 Instrument: MS-VOA5

Calibration: 0013003

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0A01302-TUN2	SEQ-TUN2.D	01/12/10 12:39
Cal Standard	0A01302-CAL1	SEQ-CAL1.D	01/12/10 13:41
Cal Standard	0A01302-CAL2	SEQ-CAL2.D	01/12/10 14:12
Cal Standard	0A01302-CAL3	SEQ-CAL3.D	01/12/10 14:43
Cal Standard	0A01302-CAL4	SEQ-CAL4.D	01/12/10 15:14
Cal Standard	0A01302-CAL5	SEQ-CAL5.D	01/12/10 15:46
Cal Standard	0A01302-CAL7	SEQ-CAL7.D	01/12/10 16:48
MS Tune	0A01302-TUN3	SEQ-TUN3.D	01/13/10 06:24
Initial Cal Check	0A01302-ICV1	SEQ-ICV2.D	01/13/10 07:04
Cal Standard	0A01302-CAL6	SEQ-CALX.D	01/13/10 07:35

ANALYSIS SEQUENCE SUMMARY
SW8260B

Laboratory: Empirical Laboratories, LLC   SDG: RSA287_001

Sequence: 0A02010   Instrument: MS-VOA5

Calibration: 0013003

Sample Name	Lab Sample ID	Lab File ID	Analysis Date/Time
MS Tune	0A02010-TUN1	SEQ-TUN1.D	01/19/10 06:51
Calibration Check	0A02010-CCV1	SEQ-CCV1.D	01/19/10 07:22
LCS	0A19011-BS1	V5LCS01.D	01/19/10 08:00
Blank	0A19011-BLK1	V5BLK01.D	01/19/10 09:03
BZ0001	1001078-01	0107801A.D	01/19/10 10:05
BZ0002	1001078-02	0107802A.D	01/19/10 10:36
BZ0003	1001078-03	0107803A.D	01/19/10 11:07
BZ0004	1001078-04	0107804A.D	01/19/10 11:38
BZ0005	1001078-05	0107805A.D	01/19/10 12:09
BZ0006	1001078-06	0107806A.D	01/19/10 12:40
BZ0007	1001078-07	0107807A.D	01/19/10 13:12
BZ0008	1001078-08	0107808A.D	01/19/10 13:43
BZ0009	1001078-09	0107809A.D	01/19/10 14:14
BZ0010	1001078-10	0107810A.D	01/19/10 14:45
BZ0011	1001078-11	0107811A.D	01/19/10 15:16
BZ0012	1001078-12	0107812A.D	01/19/10 15:47
BZ0018	1001078-18	0107818A.D	01/19/10 16:18
BZ0009	0A19011-MS1	0107809AM.D	01/19/10 16:49
BZ0009	0A19011-MSD1	0107809AS.D	01/19/10 17:21

INITIAL CALIBRATION STANDARDS
SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	RSA287_001
Sequence:	0A01302	Instrument:	MS-VOA5
Calibration:	0013003		

Standard ID	Description	Lab Sample ID	Lab File ID	Analysis Date/Time
10A0281	VOA_4-BFB TUNE(50ng)	0A01302-TUN2	SEQ-TUN2.D	01/12/10 12:39
10A0287	VOA_sCAL1 @ 2.0ppb	0A01302-CAL1	SEQ-CAL1.D	01/12/10 13:41
10A0288	VOA_sCAL2 @ 5.0ppb	0A01302-CAL2	SEQ-CAL2.D	01/12/10 14:12
10A0289	VOA_sCAL3 @ 10ppb	0A01302-CAL3	SEQ-CAL3.D	01/12/10 14:43
10A0290	VOA_sCAL4 @ 20ppb	0A01302-CAL4	SEQ-CAL4.D	01/12/10 15:14
10A0291	VOA_sCAL5 @ 50ppb	0A01302-CAL5	SEQ-CAL5.D	01/12/10 15:46
10A0293	VOA_sCAL7 @ 200ppb	0A01302-CAL7	SEQ-CAL7.D	01/12/10 16:48
10A0286	VOA_4-BFB TUNE(50ng)	0A01302-TUN3	SEQ-TUN3.D	01/13/10 06:24
10A0296	VOA_sCAL6 @ 100ppb	0A01302-CAL6	SEQ-CALX.D	01/13/10 07:35

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS   Contract:

Lab Code: EL   Case No.: NA   SAS No.: NA   SDG No.: SDGA26531

Instrument ID: VOA5   Calibration Date(s): 01/12/10   01/13/10

Column: RTX-VRX   ID: 0.25 (mm)   Calibration Time(s): 1341   0735

LAB FILE ID: RF2: SEQ-CAL1   RF5: SEQ-CAL2   RF10: SEQ-CAL3
RF20: SEQ-CAL4   RF50: SEQ-CAL5

COMPOUND	RF2	RF5	RF10	RF20	RF50
Acetone	0.127	0.095	0.086	0.081	0.067
Acrolein	0.023	0.020	0.020	0.024	0.019
Acrylonitrile	0.042	0.036	0.038	0.038	0.033
Benzene	0.766	0.810	0.919	0.908	0.752
Bromobenzene	0.689	0.630	0.641	0.688	0.642
Bromochloromethane	0.157	0.134	0.150	0.142	0.132
Bromodichloromethane	0.289	0.276	0.315	0.306	0.293
Bromoform	0.285	0.251	0.307	0.342	0.352
Bromomethane	0.208	0.204	0.194	0.212	0.200
2-Butanone	0.132	0.092	0.101	0.104	0.091
n-Butylbenzene	1.756	1.830	1.882	1.923	1.929
sec-Butylbenzene	2.484	2.425	2.361	2.456	2.457
tert-Butylbenzene	1.502	1.342	1.558	1.583	1.436
Carbon disulfide	0.438	0.483	0.535	0.570	0.502
Carbon tetrachloride	0.277	0.278	0.308	0.313	0.281
Chlorobenzene	1.855	1.606	1.662	1.670	1.607
Chloroethane	0.128	0.124	0.113	0.130	0.123
2-Chloroethyl vinyl ether	0.022	0.025	0.037	0.053	0.064
Chloroform	0.538	0.473	0.477	0.440	0.399
1-Chlorohexane	1.757	1.572	1.701	1.705	1.622
Chloromethane	0.248	0.257	0.250	0.282	0.258
2-Chlorotoluene	1.566	1.415	1.486	1.546	1.431
4-Chlorotoluene	1.546	1.330	1.562	1.568	1.532
Cyclohexane	0.264	0.282	0.314	0.367	0.332
Dibromochloromethane	0.595	0.556	0.565	0.628	0.617
1,2-Dibromo-3-chloropropane	0.089	0.075	0.086	0.091	0.096
1,2-Dibromoethane	0.567	0.465	0.511	0.536	0.502
Dibromomethane	0.153	0.152	0.152	0.157	0.143
1,2-Dichlorobenzene	1.246	1.076	1.115	1.164	1.110
1,3-Dichlorobenzene	1.220	1.076	1.118	1.222	1.178
t-Butyl alcohol	0.017	0.015	0.015	0.014	0.012
1,4-Dichlorobenzene	1.568	1.317	1.387	1.245	1.190
Dichlorodifluoromethane	0.240	0.239	0.249	0.315	0.285
1,1-Dichloroethane	0.361	0.328	0.502	0.359	0.434
1,2-Dichloroethane	0.276	0.237	0.269	0.274	0.238
1,1-Dichloroethene	0.161	0.166	0.180	0.177	0.146
cis-1,2-Dichloroethene	0.253	0.248	0.275	0.276	0.248

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA26531

Instrument ID: VOA5 Calibration Date(s): 01/12/10 01/13/10

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1341 0735

LAB FILE ID: RF2: SEQ-CAL1 RF5: SEQ-CAL2 RF10: SEQ-CAL3
RF20: SEQ-CAL4 RF50: SEQ-CAL5

COMPOUND	RF2	RF5	RF10	RF20	RF50
1,2-Dichloroethene(total)	0.217	0.219	0.229	0.232	0.213
trans-1,2-Dichloroethene	0.182	0.190	0.182	0.188	0.177
1,2-Dichloropropane	0.219	0.226	0.237	0.245	0.235
1,3-Dichloropropane	0.850	0.694	0.738	0.712	0.693
2,2-Dichloropropane	0.286	0.284	0.306	0.299	0.288
1,1-Dichloropropene	0.230	0.279	0.313	0.320	0.301
cis-1,3-Dichloropropene	0.266	0.282	0.327	0.335	0.302
trans-1,3-Dichloropropene	0.523	0.486	0.564	0.623	0.609
Ethylbenzene	2.545	2.540	2.686	2.655	2.609
Ethyl methacrylate	0.355	0.373	0.427	0.484	0.475
Hexachlorobutadiene	0.535	0.456	0.492	0.490	0.501
2-Hexanone	0.251	0.238	0.311	0.364	0.321
Iodomethane	0.241	0.278	0.333	0.340	0.313
Isopropylbenzene	2.161	1.961	2.153	2.215	2.204
p-Isopropyltoluene	1.938	1.851	2.028	1.928	1.871
Methyl acetate	0.125	0.106	0.094	0.094	0.078
Methyl cyclohexane	0.321	0.321	0.356	0.352	0.322
Methylene chloride	0.305	0.268	0.224	0.207	0.176
Methyl methacrylate	0.087	0.087	0.106	0.118	0.124
4-Methyl-2-pentanone	0.142	0.132	0.162	0.187	0.168
MTBE	0.334	0.290	0.314	0.346	0.340
Naphthalene	1.099	0.967	1.202	1.315	1.294
n-Propylbenzene	2.392	2.447	2.581	2.608	2.358
Styrene	1.307	1.216	1.476	1.605	1.479
1,1,1,2-Tetrachloroethane	0.571	0.516	0.576	0.557	0.556
1,1,2,2-Tetrachloroethane	0.588	0.474	0.501	0.522	0.498
Tetrachloroethene	0.831	0.824	0.813	0.745	0.723
Tetrahydrofuran	0.053	0.043	0.041	0.040	0.035
Toluene	1.474	1.404	1.394	1.366	1.298
1,2,3-Trichlorobenzene	0.686	0.672	0.702	0.746	0.735
1,2,4-Trichlorobenzene	0.706	0.704	0.782	0.808	0.806
1,1,1-Trichloroethane	0.317	0.317	0.333	0.302	0.308
1,1,2-Trichloroethane	0.447	0.400	0.410	0.420	0.383
Trichloroethene	0.258	0.251	0.270	0.265	0.256
Trichlorotrifluoroethane	0.211	0.214	0.211	0.204	0.180
Trichlorofluoromethane	0.332	0.357	0.347	0.374	0.335
1,2,3-Trichloropropane	0.150	0.119	0.139	0.143	0.123

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA26531

Instrument ID: VOA5 Calibration Date(s): 01/12/10 01/13/10

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1341 0735

LAB FILE ID: RF2: SEQ-CAL1 RF5: SEQ-CAL2 RF10: SEQ-CAL3
RF20: SEQ-CAL4 RF50: SEQ-CAL5

COMPOUND	RF2	RF5	RF10	RF20	RF50
1,2,4-Trimethylbenzene	1.704	1.663	1.699	1.819	1.693
1,3,5-Trimethylbenzene	1.696	1.540	1.672	1.687	1.682
Vinyl acetate	0.216	0.147	0.192	0.248	0.213
Vinyl chloride	0.196	0.185	0.171	0.242	0.196
m,p-Xylene	2.144	1.869	2.004	2.082	1.852
Xylene(total)	6.315	5.733	6.086	6.256	5.631
Di-Isopropyl Ether	0.689	0.704	0.824	0.777	0.759
ETBE	0.440	0.468	0.558	0.559	0.530
tert-Amyl Methyl Ether	0.591	0.462	0.458	0.463	0.445
Dibromofluoromethane	0.325	0.348	0.365	0.348	0.337
1,2-Dichloroethane-d4	0.049	0.048	0.050	0.050	0.046
Toluene-d8	2.335	2.340	2.302	2.347	2.281
Bromofluorobenzene	0.919	0.903	0.919	0.968	0.929

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA26531

Instrument ID: VOA5 Calibration Date(s): 01/12/10 01/13/10

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1341 0735

LAB FILE ID: RF100: SEQ-CALX RF200: SEQ-CAL7

COMPOUND	RF100	RF200
Acetone	0.086	0.077
Acrolein	0.022	0.020
Acrylonitrile	0.038	0.042
Benzene	0.909	0.912
Bromobenzene	0.727	0.678
Bromochloromethane	0.147	0.151
Bromodichloromethane	0.331	0.335
Bromoform	0.401	0.446
Bromomethane	0.231	0.234
2-Butanone	0.112	0.121
n-Butylbenzene	1.982	1.797
sec-Butylbenzene	2.346	2.213
tert-Butylbenzene	1.441	1.470
Carbon disulfide	0.578	0.585
Carbon tetrachloride	0.326	0.340
Chlorobenzene	1.710	1.601
Chloroethane	0.130	0.140
2-Chloroethyl vinyl ether	0.084	0.093
Chloroform	0.461	0.469
1-Chlorohexane	1.635	1.416
Chloromethane	0.269	0.268
2-Chlorotoluene	1.504	1.452
4-Chlorotoluene	1.516	1.490
Cyclohexane	0.365	0.336
Dibromochloromethane	0.746	0.706
1,2-Dibromo-3-chloropropane	0.105	0.126
1,2-Dibromoethane	0.600	0.619
Dibromomethane	0.158	0.165
1,2-Dichlorobenzene	1.148	1.111
1,3-Dichlorobenzene	1.340	1.212
t-Butyl alcohol	0.014	0.015
1,4-Dichlorobenzene	1.174	1.099
Dichlorodifluoromethane	0.270	0.306
1,1-Dichloroethane	0.344	0.363
1,2-Dichloroethane	0.292	0.286
1,1-Dichloroethene	0.190	0.186
cis-1,2-Dichloroethene	0.288	0.297

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA26531

Instrument ID: VOA5 Calibration Date(s): 01/12/10 01/13/10

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1341 0735

LAB FILE ID: RF100: SEQ-CALX RF200: SEQ-CAL7

COMPOUND	RF100	RF200
1,2-Dichloroethene(total)	0.248	0.250
trans-1,2-Dichloroethene	0.208	0.202
1,2-Dichloropropane	0.262	0.249
1,3-Dichloropropane	0.772	0.770
2,2-Dichloropropane	0.345	0.330
1,1-Dichloropropene	0.341	0.348
cis-1,3-Dichloropropene	0.382	0.359
trans-1,3-Dichloropropene	0.721	0.770
Ethylbenzene	2.896	2.486
Ethyl methacrylate	0.592	0.616
Hexachlorobutadiene	0.544	0.534
2-Hexanone	0.436	0.403
Iodomethane	0.416	0.402
Isopropylbenzene	2.367	2.209
p-Isopropyltoluene	1.786	1.571
Methyl acetate	0.088	0.091
Methyl cyclohexane	0.354	0.334
Methylene chloride	0.207	0.202
Methyl methacrylate	0.147	0.153
4-Methyl-2-pentanone	0.188	0.191
MTBE	0.325	0.336
Naphthalene	1.330	1.413
n-Propylbenzene	2.452	2.141
Styrene	1.790	1.697
1,1,1,2-Tetrachloroethane	0.672	0.672
1,1,2,2-Tetrachloroethane	0.477	0.481
Tetrachloroethene	0.889	0.861
Tetrahydrofuran	0.038	0.044
Toluene	1.497	1.382
1,2,3-Trichlorobenzene	0.775	0.848
1,2,4-Trichlorobenzene	0.892	0.895
1,1,1-Trichloroethane	0.358	0.368
1,1,2-Trichloroethane	0.431	0.437
Trichloroethene	0.277	0.272
Trichlorotrifluoroethane	0.216	0.212
Trichlorofluoromethane	0.367	0.370
1,2,3-Trichloropropane	0.152	0.140

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS   Contract:

Lab Code: EL   Case No.: NA   SAS No.: NA   SDG No.: SDGA26531

Instrument ID: VOA5   Calibration Date(s): 01/12/10   01/13/10

Column: RTX-VRX   ID: 0.25 (mm)   Calibration Time(s): 1341   0735

LAB FILE ID: RF100: SEQ-CALX   RF200: SEQ-CAL7

COMPOUND	RF100	RF200
1,2,4-Trimethylbenzene	1.686	1.599
1,3,5-Trimethylbenzene	1.690	1.630
Vinyl acetate	0.172	0.166
Vinyl chloride	0.206	0.181
m,p-Xylene	1.923	1.652
Xylene(total)	5.971	5.176
Di-Isopropyl Ether	0.921	0.895
ETBE	0.637	0.666
tert-Amyl Methyl Ether	0.508	0.520
Dibromofluoromethane	0.346	0.343
1,2-Dichloroethane-d4	0.048	0.050
Toluene-d8	2.350	2.571
Bromofluorobenzene	1.073	1.047

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA26531

Instrument ID: VOA5 Calibration Date(s): 01/12/10 01/13/10

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1341 0735

COMPOUND	CURVE	A0	COEFFICENTS A1	A2	%RSD OR R^2
Acetone	2ORDR	7.637e-002	11.5159928	1.27361025	0.996
Acrolein	AVRG		2.129e-002		8.3
Acrylonitrile	AVRG		3.811e-002		8.1
Benzene	AVRG		0.85362740		8.8
Bromobenzene	AVRG		0.67088175		5.2
Bromochloromethane	AVRG		0.14476087		6.3
Bromodichloromethane	AVRG		0.30643919		7.2
Bromoform	LINR	0.15754486	0.44830542		0.997
Bromomethane	AVRG		0.21199915		7.2
2-Butanone	AVRG		0.10744686		14.0
n-Butylbenzene	AVRG		1.87153032		4.3
sec-Butylbenzene	AVRG		2.39173211		3.9
tert-Butylbenzene	AVRG		1.47622926		5.5
Carbon disulfide	AVRG		0.52722399		10.5
Carbon tetrachloride	AVRG		0.30323200		8.4
Chlorobenzene	AVRG		1.67316013		5.4
Chloroethane	AVRG		0.12681011		6.5
2-Chloroethyl vinyl ether	LINR	0.49793662	9.508e-002		0.995
Chloroform	AVRG		0.46523745		9.0
1-Chlorohexane	AVRG		1.62979340		6.9
Chloromethane	AVRG		0.26185145		4.6
2-Chlorotoluene	AVRG		1.48589134		3.8
4-Chlorotoluene	AVRG		1.50640234		5.4
Cyclohexane	AVRG		0.32302320		12.1
Dibromochloromethane	AVRG		0.63044382		11.2
1,2-Dibromo-3-chloropropane	2ORDR	2.931e-002	10.5929685	-3.2317463	1.000
1,2-Dibromoethane	AVRG		0.54286833		10.2
Dibromomethane	AVRG		0.15434519		4.4
1,2-Dichlorobenzene	AVRG		1.13876017		4.9
1,3-Dichlorobenzene	AVRG		1.19518953		7.1
t-Butyl alcohol	AVRG		1.491e-002		9.4
1,4-Dichlorobenzene	AVRG		1.28303408		12.3
Dichlorodifluoromethane	AVRG		0.27198178		11.5
1,1-Dichloroethane	LINR	0.00000000	0.36367434		0.996
1,2-Dichloroethane	AVRG		0.26746095		8.1
1,1-Dichloroethene	AVRG		0.17237132		9.1
cis-1,2-Dichloroethene	AVRG		0.26948759		7.4

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA26531

Instrument ID: VOA5 Calibration Date(s): 01/12/10 01/13/10

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1341 0735

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2
1,2-Dichloroethene(total)	AVRG		0.22972331		6.4
trans-1,2-Dichloroethene	AVRG		0.18995903		6.1
1,2-Dichloropropane	AVRG		0.23893464		6.2
1,3-Dichloropropane	AVRG		0.74689811		7.5
2,2-Dichloropropane	AVRG		0.30573040		7.8
1,1-Dichloropropene	AVRG		0.30453064		13.3
cis-1,3-Dichloropropene	AVRG		0.32172739		12.9
trans-1,3-Dichloropropene	LINR	0.00000000	0.75402588		0.995
Ethylbenzene	AVRG		2.63123422		5.2
Ethyl methacrylate	LINR	0.14395635	0.62432945		0.997
Hexachlorobutadiene	AVRG		0.50767694		6.2
2-Hexanone	LINR	0.18362787	0.41427262		0.995
Iodomethane	LINR	0.10364107	0.40953880		0.997
Isopropylbenzene	AVRG		2.18151266		5.5
p-Isopropyltoluene	AVRG		1.85324135		7.9
Methyl acetate	LINR	2.809e-002	9.043e-002		0.998
Methyl cyclohexane	AVRG		0.33732896		4.8
Methylene chloride	LINR	0.00000000	0.20220484		0.998
Methyl methacrylate	LINR	0.13345770	0.15462957		0.998
4-Methyl-2-pentanone	AVRG		0.16722612		14.0
MTBE	AVRG		0.32645134		5.8
Naphthalene	AVRG		1.23126862		12.5
n-Propylbenzene	AVRG		2.42561226		6.4
Styrene	AVRG		1.50991613		13.6
1,1,1,2-Tetrachloroethane	AVRG		0.58881233		10.2
1,1,2,2-Tetrachloroethane	AVRG		0.50576843		7.9
Tetrachloroethene	AVRG		0.81226154		7.3
Tetrahydrofuran	AVRG		4.205e-002		14.1
Toluene	AVRG		1.40226257		4.8
1,2,3-Trichlorobenzene	AVRG		0.73767025		8.2
1,2,4-Trichlorobenzene	AVRG		0.79913631		9.7
1,1,1-Trichloroethane	AVRG		0.32905103		7.7
1,1,2-Trichloroethane	AVRG		0.41822020		5.3
Trichloroethene	AVRG		0.26413250		3.6
Trichlorotrifluoroethane	AVRG		0.20686038		6.0
Trichlorofluoromethane	AVRG		0.35455491		4.8
1,2,3-Trichloropropane	AVRG		0.13798388		9.0

FORM VI VOA

FORM 6
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA26531

Instrument ID: VOA5 Calibration Date(s): 01/12/10 01/13/10

Column: RTX-VRX ID: 0.25 (mm) Calibration Time(s): 1341 0735

COMPOUND	CURVE	A0	COEFFICENTS A1	A2	%RSD OR R^2
1,2,4-Trimethylbenzene	AVRG		1.69472890		3.9
1,3,5-Trimethylbenzene	AVRG		1.65655431		3.4
Vinyl acetate	2ORDR	0.00000000	4.77013621	0.57196182	0.997
Vinyl chloride	AVRG		0.19668168		11.7
m,p-Xylene	AVRG		1.93244179		8.5
Xylene(total)	AVRG		5.88125321		6.8
Di-Isopropyl Ether	AVRG		0.79550653		11.2
ETBE	AVRG		0.55118293		14.9
tert-Amyl Methyl Ether	AVRG		0.49252318		10.5
Dibromofluoromethane	AVRG		0.34465920		3.5
1,2-Dichloroethane-d4	AVRG		4.865e-002		3.3
Toluene-d8	AVRG		2.36096094		4.1
Bromofluorobenzene	AVRG		0.96554354		7.0

FORM VI VOA

VOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS   Contract:

Lab Code: EL   Case No.: NA   SAS No.: NA   SDG No.: SDGA75913

Instrument ID: VOA5   Calibration Date: 01/13/10   Time: 0704

Lab File ID: SEQ-ICV2   Init. Calib. Date(s): 01/12/10   01/13/10

Heated Purge: (Y/N) Y   Init. Calib. Times: 1341   0735

GC Column: RTX-VRX   ID: 0.25 (mm)

COMPOUND	RRF	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D	
Acetone	0.088	0.101	100.0	122.7		2ORDR	22.7	25.0	
Acrolein	0.021	0.027	250.0	312.8		AVRG	25.1	25.0	<
Acrylonitrile	0.038	0.038	250.0	253.0		AVRG	1.2	25.0	
Benzene	0.854	0.941	50.00	55.14		AVRG	10.3	25.0	
Bromobenzene	0.671	0.737	50.00	54.92		AVRG	9.8	25.0	
Bromochloromethane	0.145	0.160	50.00	55.30		AVRG	10.6	25.0	
Bromodichloromethane	0.306	0.344	50.00	56.09		AVRG	12.2	25.0	
Bromoform	0.340	0.407	50.00	50.16	0.100	LINR	0.3	25.0	
Bromomethane	0.212	0.241	50.00	56.92		AVRG	13.8	25.0	
2-Butanone	0.108	0.128	100.0	119.2		AVRG	19.2	25.0	
n-Butylbenzene	1.871	2.218	50.00	59.25		AVRG	18.5	25.0	
sec-Butylbenzene	2.392	2.921	50.00	61.07		AVRG	22.1	25.0	
tert-Butylbenzene	1.476	1.715	50.00	58.09		AVRG	16.2	25.0	
Carbon disulfide	0.527	0.618	50.00	58.64		AVRG	17.3	25.0	
Carbon tetrachloride	0.303	0.346	50.00	56.98		AVRG	14.0	25.0	
Chlorobenzene	1.673	1.802	50.00	53.85	0.300	AVRG	7.7	25.0	
Chloroethane	0.127	0.150	50.00	59.37		AVRG	18.7	25.0	
2-Chloroethyl vinyl ether	0.054	0.074	100.0	93.18		LINR	-6.8	25.0	
Chloroform	0.465	0.483	50.00	51.91		AVRG	3.8	25.0	
1-Chlorohexane	1.630	1.827	50.00	56.04		AVRG	12.1	25.0	
Chloromethane	0.262	0.287	50.00	54.76	0.100	AVRG	9.5	25.0	
2-Chlorotoluene	1.486	1.734	50.00	58.36		AVRG	16.7	25.0	
4-Chlorotoluene	1.506	1.724	50.00	57.23		AVRG	14.4	25.0	
Cyclohexane	0.323	0.389	50.00	60.24		AVRG	20.5	25.0	
Dibromochloromethane	0.630	0.708	50.00	56.12		AVRG	12.2	25.0	
1,2-Dibromo-3-chloropropane	0.095	0.107	50.00	54.47		2ORDR	8.9	25.0	
1,2-Dibromoethane	0.543	0.586	50.00	53.99		AVRG	8.0	25.0	
Dibromomethane	0.154	0.160	50.00	52.00		AVRG	4.0	25.0	
1,2-Dichlorobenzene	1.138	1.255	50.00	55.12		AVRG	10.2	25.0	
1,3-Dichlorobenzene	1.195	1.273	50.00	53.25		AVRG	6.5	25.0	
t-Butyl alcohol	0.014	0.016	250.0	270.8		AVRG	8.3	25.0	
1,4-Dichlorobenzene	1.283	1.388	50.00	54.10		AVRG	8.2	25.0	
Dichlorodifluoromethane	0.272	0.294	50.00	54.05		AVRG	8.1	25.0	
1,1-Dichloroethane	0.384	0.364	50.00	50.02	0.100	LINR	0.0	25.0	
1,2-Dichloroethane	0.267	0.294	50.00	54.91		AVRG	9.8	25.0	
1,1-Dichloroethene	0.172	0.203	50.00	58.84		AVRG	17.7	25.0	
cis-1,2-Dichloroethene	0.269	0.308	50.00	57.25		AVRG	14.5	25.0	

page 1 of 3

ICV VOA

VOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA75913

Instrument ID: VOA5 Calibration Date: 01/13/10 Time: 0704

Lab File ID: SEQ-ICV2 Init. Calib. Date(s): 01/12/10 01/13/10

Heated Purge: (Y/N) Y Init. Calib. Times: 1341 0735

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
1,2-Dichloroethene(total)	0.230	0.262	100.0	113.8		AVRG	14.0	25.0
trans-1,2-Dichloroethene	0.190	0.215	50.00	56.60		AVRG	13.2	25.0
1,2-Dichloropropane	0.239	0.267	50.00	55.87		AVRG	11.7	25.0
1,3-Dichloropropane	0.747	0.710	50.00	47.57		AVRG	-4.9	25.0
2,2-Dichloropropane	0.305	0.350	50.00	57.20		AVRG	14.4	25.0
1,1-Dichloropropene	0.304	0.367	50.00	60.22		AVRG	20.4	25.0
cis-1,3-Dichloropropene	0.322	0.378	50.00	58.77		AVRG	17.5	25.0
trans-1,3-Dichloropropene	0.614	0.728	50.00	48.25		LINR	-3.5	25.0
Ethylbenzene	2.631	2.917	50.00	55.43		AVRG	10.8	25.0
Ethyl methacrylate	0.474	0.513	50.00	45.41		LINR	-9.2	25.0
Hexachlorobutadiene	0.507	0.603	50.00	59.43		AVRG	18.8	25.0
2-Hexanone	0.332	0.423	100.0	107.6		LINR	7.6	25.0
Iodomethane	0.332	0.416	50.00	53.88		LINR	7.8	25.0
Isopropylbenzene	2.181	2.490	50.00	57.07		AVRG	14.1	25.0
p-Isopropyltoluene	1.853	2.043	50.00	55.13		AVRG	10.3	25.0
Methyl acetate	0.096	0.097	50.00	54.46		LINR	8.9	25.0
Methyl cyclohexane	0.337	0.327	50.00	48.53		AVRG	-2.9	25.0
Methylene chloride	0.227	0.247	50.00	61.09		LINR	22.2	25.0
Methyl methacrylate	0.117	0.151	50.00	52.92		LINR	5.8	25.0
4-Methyl-2-pentanone	0.167	0.200	100.0	119.3		AVRG	19.3	25.0
MTBE	0.326	0.351	50.00	53.76		AVRG	7.5	25.0
Naphthalene	1.231	1.508	50.00	61.24		AVRG	22.5	25.0
n-Propylbenzene	2.426	2.768	50.00	57.05		AVRG	14.1	25.0
Styrene	1.510	1.788	50.00	59.22		AVRG	18.4	25.0
1,1,1,2-Tetrachloroethane	0.588	0.658	50.00	55.88		AVRG	11.8	25.0
1,1,2,2-Tetrachloroethane	0.506	0.563	50.00	55.66	0.300	AVRG	11.3	25.0
Tetrachloroethene	0.812	0.879	50.00	54.12		AVRG	8.2	25.0
Tetrahydrofuran	0.042	0.043	50.00	51.17		AVRG	2.3	25.0
Toluene	1.402	1.408	50.00	50.22		AVRG	0.4	25.0
1,2,3-Trichlorobenzene	0.738	0.861	50.00	58.34		AVRG	16.7	25.0
1,2,4-Trichlorobenzene	0.799	0.956	50.00	59.82		AVRG	19.6	25.0
1,1,1-Trichloroethane	0.329	0.369	50.00	56.05		AVRG	12.1	25.0
1,1,2-Trichloroethane	0.418	0.452	50.00	54.03		AVRG	8.0	25.0
Trichloroethene	0.264	0.287	50.00	54.37		AVRG	8.7	25.0
Trichlorotrifluoroethane	0.207	0.229	50.00	55.46		AVRG	10.9	25.0
Trichlorofluoromethane	0.354	0.428	50.00	60.37		AVRG	20.7	25.0
1,2,3-Trichloropropane	0.138	0.152	50.00	55.19		AVRG	10.4	25.0

VOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name: EMPIRICAL LABS Contract:

Lab Code: EL Case No.: NA SAS No.: NA SDG No.: SDGA75913

Instrument ID: VOA5 Calibration Date: 01/13/10 Time: 0704

Lab File ID: SEQ-ICV2 Init. Calib. Date(s): 01/12/10 01/13/10

Heated Purge: (Y/N) Y Init. Calib. Times: 1341 0735

GC Column: RTX-VRX ID: 0.25 (mm)

COMPOUND	$\overline{RRF}$	RRF50	CURVE AMOUNT	CCAL AMOUNT	MIN RRF	CURVE	%D	MAX %D
1,2,4-Trimethylbenzene	1.695	1.976	50.00	58.30		AVRG	16.6	25.0
1,3,5-Trimethylbenzene	1.657	1.891	50.00	57.08		AVRG	14.2	25.0
Vinyl acetate	0.193	0.170	100.0	86.65		2ORDR	-13.4	25.0
Vinyl chloride	0.197	0.242	50.00	61.41		AVRG	22.8	25.0
Xylene(total)	5.881	6.442	150.0	164.3		AVRG	9.5	25.0
Di-Isopropyl Ether	0.796	0.916	50.00	57.58		AVRG	15.2	25.0
ETBE	0.551	0.646	50.00	58.60		AVRG	17.2	25.0
tert-Amyl Methyl Ether	0.492	0.506	50.00	51.41		AVRG	2.8	25.0
Dibromofluoromethane	0.344	0.356	30.00	31.03		AVRG	3.4	25.0
1,2-Dichloroethane-d4	0.049	0.050	30.00	30.66		AVRG	2.2	25.0
Toluene-d8	2.361	2.362	30.00	30.01		AVRG	0.0	25.0
Bromofluorobenzene	0.965	0.937	30.00	29.12		AVRG	-2.9	25.0

CONTINUING CALIBRATION CHECK

SW8260B

Laboratory: Empirical Laboratories, LLC | SDG: RSA287_001

Instrument ID: MS-VOA5 | Calibration: 0013003

Lab File ID: SEQ-CCV1.D | Calibration Date: 01/12/10 14:16

Sequence: 0A02010 | Injection Date: 01/19/10

Lab Sample ID: 0A02010-CCV1 | Injection Time: 07:22

COMPOUND	TYPE	CONC. (ug/L)		RESPONSE FACTOR			% DIFF / DRIFT		
		STD	CCV	ICAL	CCV	MIN (#)	CCV	LIMIT (#)	
Acetone	Q	200.0	232.7	8.847235E-02	9.359654E-02		16.4	20	
Benzene	A	100.0	114.0	0.8536274	0.9731063		14.0	20	
Bromodichloromethane	A	100.0	116.8	0.3064392	0.3577837		16.8	20	
Bromoform	L	100.0	95.81	0.4156005	0.4849385	0.1	-4.2	20	
Bromomethane	A	100.0	112.2	0.2119992	0.2379815		12.3	20	
2-Butanone	A	200.0	227.8	0.1074469	0.1223641		13.9	20	
Carbon disulfide	A	100.0	106.0	0.527224	0.5590417		6.0	20	
Carbon tetrachloride	A	100.0	113.4	0.303232	0.3437594		13.4	20	
Chlorobenzene	A	100.0	98.44	1.67316	1.647003	0.3	-1.6	20	
Chloroethane	A	100.0	109.9	0.1268101	0.1393677		9.9	20	
Chloroform	A	100.0	106.1	0.4652374	0.4935766		6.1	20	
Chloromethane	A	100.0	108.1	0.2618514	0.2829904	0.1	8.1	20	
Cyclohexane	A	100.0	107.6	0.3230232	0.3476226		7.6	20	
Dibromochloromethane	A	100.0	104.6	0.6304438	0.6592425		4.6	20	
1,2-Dibromo-3-chloropropane	Q	100.0	103.0	9.551153E-02	0.108394		3.0	20	
1,2-Dibromoethane (EDB)	A	100.0	102.0	0.5428683	0.5534757		2.0	20	
1,2-Dichlorobenzene	A	100.0	100.3	1.13876	1.142713		0.3	20	
1,3-Dichlorobenzene	A	100.0	104.0	1.195189	1.242799		4.0	20	
1,4-Dichlorobenzene	A	100.0	98.40	1.283034	1.26257		-1.6	20	
Dichlorodifluoromethane	A	100.0	118.4	0.2719818	0.3221026		18.4	20	
1,1-Dichloroethane	A	100.0	102.8	0.384536	0.3738713	0.1	2.8	20	
1,2-Dichloroethane	A	100.0	111.2	0.267461	0.2972881		11.2	20	
1,1-Dichloroethene	A	100.0	114.5	0.1723713	0.1973349		14.5	20	
cis-1,2-Dichloroethene	A	100.0	114.6	0.2694876	0.3087481		14.6	20	
trans-1,2-Dichloroethene	A	100.0	123.3	0.189959	0.2341773		23.3	20	*
1,2-Dichloroethene (total)	A	200.0	237.8	0.2297233	0.2714627		18.2	20	
1,2-Dichloropropane	A	100.0	116.1	0.2389346	0.2773302		16.1	20	
cis-1,3-Dichloropropene	A	100.0	119.4	0.3217274	0.3841891		19.4	20	
trans-1,3-Dichloropropene	A	100.0	93.05	0.6138551	0.7015923		-7.0	20	

CONTINUING CALIBRATION CHECK
SW8260B

Laboratory:	Empirical Laboratories, LLC	SDG:	RSA287_001
Instrument ID:	MS-VOA5	Calibration:	0013003
Lab File ID:	SEQ-CCV1.D	Calibration Date:	01/12/10 14:16
Sequence:	0A02010	Injection Date:	01/19/10
Lab Sample ID:	0A02010-CCV1	Injection Time:	07:22

COMPOUND	TYPE	CONC. (ug/L) STD	CONC. (ug/L) CCV	RESPONSE FACTOR ICAL	RESPONSE FACTOR CCV	RESPONSE FACTOR MIN (#)	% DIFF / DRIFT CCV	% DIFF / DRIFT LIMIT (#)	
Ethylbenzene	A	100.0	97.40	2.631234	2.562958		-2.6	20	
2-Hexanone	L	200.0	196.6	0.3320239	0.3959309		-1.7	20	
Isopropylbenzene	A	100.0	104.6	2.181513	2.282672		4.6	20	
Methylene chloride	A	100.0	102.2	0.2271205	0.2067339		2.2	20	
Methyl Acetate	L	100.0	97.15	9.657819E-02	8.709105E-02		-2.8	20	
Methylcyclohexane	A	100.0	118.8	0.337329	0.4006652		18.8	20	
4-Methyl-2-pentanone	A	200.0	253.2	0.1672261	0.211741		26.6	20	*
Methyl t-Butyl Ether	A	100.0	112.4	0.3264513	0.3670192		12.4	20	
Styrene	A	100.0	114.6	1.509916	1.730647		14.6	20	
1,1,2,2-Tetrachloroethane	A	100.0	100.0	0.5057684	0.5059624	0.3	0.04	20	
Tetrachloroethene	A	100.0	105.4	0.8122615	0.8558173		5.4	20	
Toluene	A	100.0	96.03	1.402263	1.346625		-4.0	20	
1,2,4-Trichlorobenzene	A	100.0	111.8	0.7991363	0.8933172		11.8	20	
1,1,2-Trichloroethane	A	100.0	100.2	0.4182202	0.4191465		0.2	20	
1,1,1-Trichloroethane	A	100.0	114.0	0.329051	0.375231		14.0	20	
Trichloroethene	A	100.0	115.5	0.2641325	0.305186		15.5	20	
Trichlorofluoromethane	A	100.0	110.1	0.3545549	0.3904223		10.1	20	
1,1,2-Trichloro-1,2,2-trifluoroethane	A	100.0	91.86	0.2068604	0.1900192		-8.1	20	
Vinyl chloride	A	100.0	111.0	0.1966817	0.2183817		11.0	20	
m,p-Xylene	A	200.0	198.9	1.932442	1.921449		-0.6	20	
o-Xylene	A	100.0	99.55	2.01637	2.007285		-0.5	20	
Bromofluorobenzene	A	30.00	30.28	0.9655436	0.9746919		0.9	20	
Dibromofluoromethane	A	30.00	31.71	0.3446592	0.3643283		5.7	20	
1,2-Dichloroethane-d4	A	30.00	30.00	4.864923E-02	0.0486531		0.008	20	
Toluene-d8	A	30.00	28.54	2.360961	2.246052		-4.9	20	

Column to be used to flag Response Factor and %Diff/Drift values with an asterisk

* Values outside of QC limits

METHOD BLANK DATA SHEET
SW8260B

Laboratory: Empirical Laboratories, LLC SDG: RSA287_001

Matrix:	Solid	Laboratory ID:	0A19011-BLK1	File ID:	V5BLK01.D
Prepared:	01/19/10 00:00	Preparation:	5035	Initial/Final:	5 g / 5 mL
Analyzed:	01/19/10 09:03	Instrument:	MS-VOA5		
Batch:	0A19011	Sequence:	0A02010	Calibration:	0013003

CAS NO.	COMPOUND	CONC. (ug/Kg wet)	Q
67-64-1	Acetone	50.0	U
71-43-2	Benzene	5.00	U
75-27-4	Bromodichloromethane	5.00	U
75-25-2	Bromoform	5.00	U
74-83-9	Bromomethane	10.0	U
78-93-3	2-Butanone	10.0	U
75-15-0	Carbon disulfide	5.00	U
56-23-5	Carbon tetrachloride	5.00	U
108-90-7	Chlorobenzene	5.00	U
75-00-3	Chloroethane	10.0	U
67-66-3	Chloroform	5.00	U
74-87-3	Chloromethane	10.0	U
124-48-1	Dibromochloromethane	5.00	U
75-34-3	1,1-Dichloroethane	5.00	U
107-06-2	1,2-Dichloroethane	5.00	U
75-35-4	1,1-Dichloroethene	5.00	U
156-59-4	cis-1,2-Dichloroethene	5.00	U
156-60-5	trans-1,2-Dichloroethene	5.00	U
NA	1,2-Dichloroethene (total)	5.00	U
78-87-5	1,2-Dichloropropane	5.00	U
10061-01-5	cis-1,3-Dichloropropene	5.00	U
10061-02-6	trans-1,3-Dichloropropene	5.00	U
100-41-4	Ethylbenzene	5.00	U
591-78-6	2-Hexanone	5.00	U
75-09-2	Methylene chloride	4.55	J
108-10-1	4-Methyl-2-pentanone	5.00	U
100-42-5	Styrene	5.00	U
79-34-5	1,1,2,2-Tetrachloroethane	5.00	U
127-18-4	Tetrachloroethene	5.00	U
108-88-3	Toluene	5.00	U

METHOD BLANK DATA SHEET
SW8260B

Laboratory:	Empirical Laboratories, LLC		SDG:	RSA287_001	
Matrix:	Solid	Laboratory ID:	0A19011-BLK1	File ID:	V5BLK01.D
Prepared:	01/19/10 00:00	Preparation:	5035	Initial/Final:	5 g / 5 mL
Analyzed:	01/19/10 09:03	Instrument:	MS-VOA5		
Batch:	0A19011	Sequence:	0A02010	Calibration:	0013003

CAS NO.	COMPOUND	CONC. (ug/Kg wet)	Q
79-00-5	1,1,2-Trichloroethane	5.00	U
71-55-6	1,1,1-Trichloroethane	5.00	U
79-01-6	Trichloroethene	5.00	U
75-01-4	Vinyl chloride	10.0	U
1330-20-7	Xylenes (total)	5.00	U

SYSTEM MONITORING COMPOUND	ADDED (ug/Kg wet)	CONC (ug/Kg wet)	% REC	QC LIMITS	Q
Bromofluorobenzene	30.00	29.73	99.1	80 - 125	
Dibromofluoromethane	30.00	32.50	108	80 - 125	
1,2-Dichloroethane-d4	30.00	35.67	119	75 - 140	
Toluene-d8	30.00	29.39	98.0	80 - 120	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Fluorobenzene	894824	12.012	961542	12.017	
Chlorobenzene-d5	390061	15.623	422276	15.627	
1,4-Dichlorobenzene-d4	474600	17.482	501479	17.477	

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Attachment 2

Department of Defense
Environmental Laboratory Accreditation Program
certificate for Curtis and Tompkins, LLC

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The American Association for Laboratory Accreditation

World Class Accreditation

Accredited DoD ELAP Laboratory

A2LA has accredited

CURTIS & TOMPKINS, LLC

Berkeley, CA

for technical competence in the field of

Environmental Testing

In recognition of the successful completion of the A2LA evaluation process that includes an assessment of the laboratory's compliance with ISO/IEC 17025:2005, the 2003 NELAC Chapter 5 Standard, and the requirements of the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in the current DoD Quality System Manual for Environmental Laboratories (QSM); accreditation is granted to this laboratory to perform recognized EPA methods as defined on the associated A2LA Environmental Scope of Accreditation. This accreditation demonstrates technical competence for this defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 10th day of January 2012.

President & CEO
For the Accreditation Council
Certificate Number 2943.01
Valid to February 28, 2014

AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION
CORPORATE SEAL 1978
DISTRICT OF COLUMBIA
A2LA

For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Environmental Scope of Accreditation.

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

CURTIS & TOMPKINS, LLC.[1]
2323 5th Street
Berkeley, CA, 94710
Carolyn Brizzolara Phone: (510) 204 2237
carolyn.brizzolara@ctberk.com

ENVIRONMENTAL

Valid To: February 28, 2014 Certificate Number: 2943.01

In recognition of the successful completion of the A2LA evaluation process, (including an assessment of the laboratory's compliance with ISO IEC 17025:2005, the 2003 NELAC Chapter 5 Standard, and the requirements of the DoD Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in the current DoD Quality Systems Manual for Environmental Laboratories) accreditation is granted to this laboratory to perform recognized EPA methods using the following testing technologies and in the analyte categories identified below:

Testing Technologies

Atomic Absorption/ICP-AES Spectrometry, ICP/MS, Gas Chromatography, Gas Chromatography/Mass Spectrometry, Gravimetry, High Performance Liquid Chromatography, Ion Chromatography, Misc.- Electronic Probes (pH, O_2), Oxygen Demand, Hazardous Waste Characteristics Tests, Spectrophotometry (Visible), Spectrophotometry (Automated), IR Spectrometry, Titrimetry, Total Organic Carbon

Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
Metals						
Aluminum	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Antimony	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Arsenic	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Barium	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Beryllium	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B

Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
Cadmium	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Calcium	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Chromium	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Cobalt	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Copper	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Iron	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Lead	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Magnesium	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Manganese	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Mercury	-----	-----	EPA 7470A	EPA 7470A	EPA 7470A / 7471A / 7471B	EPA 7470A / 7471A / 7471B
Molybdenum	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Nickel	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Potassium	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Selenium	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Silver	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Sodium	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Thallium	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B

Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
Vanadium	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Zinc	-----	-----	EPA 6010B / 6010C / 6020 / 6020A	EPA 200.8 / 3010A	EPA 6010B / 6010C / 6020 6020A	EPA 3050B
Nutrients						
Ammonia (as N)	-----	-----	SM 4500NH3-D	SM 4500NH3-D	SM 4500NH3-D	SM 4500NH3-D
Kjeldahl Nitrogen	-----	-----	SM 4500NH3-C	SM 4500NH3-C	SM 4500NH3-C	SM 4500NH3-C
Nitrate (as N)	-----	-----	EPA 300.0 / 9056	EPA 300.0 / 9056	EPA 300.0 / 9056	EPA 300.0 / 9056
Nitrite (as N)	-----	-----	EPA 300.0 / 9056	EPA 300.0 / 9056	EPA 300.0 / 9056	EPA 300.0 / 9056
Perchlorate	-----	-----	EPA 314.0	EPA 314.0	-----	-----
Total phosphorus	-----	-----	SM 4500P-E	SM 4500P-E	-----	-----
Demands						
Biochemical Oxygen Demand	-----	-----	SM 5210B	SM 5210B	-----	-----
Chemical Oxygen Demand	-----	-----	SM 5220D	SM 5220D	-----	-----
Total Organic Carbon	-----	-----	SM 5310C	SM 5310C	-----	-----
Wet Chemistry						
Alkalinity	SM 2320B	SM 2320B	SM 2320B	SM 2320B	-----	-----
Bromide	-----	-----	EPA 300.0 / 9056	EPA 300.0 / 9056	EPA 300.0 / 9056	EPA 300.0 / 9056
Chloride	-----	-----	EPA 300.0 / 9056	EPA 300.0 / 9056	EPA 300.0 / 9056	EPA 300.0 / 9056
Cyanide	-----	-----	SM 4500 CN-E / EPA 9010B / 9014	SM 4500 CN-E / EPA 9010B / 9014	SM 4500 CN-E / EPA 9010B / 9014	SM 4500 CN-E / EPA 9010B / 9014
Amenable Cyanide	-----	-----	SM 4500 CN-E / EPA 9010B / 9014	SM 4500 CN-E / EPA 9010B / 9014	EPA 9010B / 9014	EPA 9010B / 9014
Ferrous Iron	-----	-----	SM 3500Fe-B	SM 3500Fe-B	-----	-----
Flash Point	-----	-----	EPA 1010	EPA 1010	-----	-----
Fluoride	-----	-----	EPA 300.0 / 9056	EPA 300.0 / 9056	EPA 300.0 / 9056	EPA 300.0 / 9056
Hexavalent Chromium	-----	-----	EPA 7196A / 7199 / SM 3500Cr-B,C	EPA 7196A / 7199 / SM 3500Cr-B,C	EPA 3060 / 7196A	EPA 3060 / 7196A
pH	-----	-----	EPA 9040B / SM 4500-H^+ B	EPA 9040B / SM 4500-H^+ B	EPA 9045C	EPA 9045C
Specific Conductance	-----	-----	SM 2510 B	SM 2510 B	-----	-----

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Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
Sulfate	-----	-----	EPA 300.0 / 9056	EPA 300.0 / 9056	EPA 300.0 / 9056	EPA 300.0 / 9056
Sulfide	-----	-----	SM 4500S2-D	SM 4500S2-D	SM 9034	SM 9030B
Total Dissolved Solids	-----	-----	SM 2540C	SM 254C	-----	-----
Total Suspended Solids	-----	-----	SM 2540D	SM 2540 D	-----	-----
Purgeable Organics (volatiles)						
Gas Range Organics (GRO)	-----	-----	EPA 8015B / 8015D	EPA 5030B / 5030C	EPA 8015B / 8015D	EPA 5030B / 5030C / 5035 / 5035A
Acetone	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Benzene	-----	-----	EPA 8260B / 8260C / 8021B	EPA 5030B / 5030C	EPA 8260B / 8260C / 8021B	EPA 5030B / 5030C / 5035 / 5035A
Bromobenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Bromochloromethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Bromodichloromethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Bromoform	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Bromomethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
2-Butanone	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Tert-Butyl Alcohol (TBA)	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
n-Buytlbenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
sec-Butylbenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
tert-Butylbenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Carbon Disulfide	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A

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Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
Carbon Tetrachloride	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Chlorobenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Chloroethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Chloroform	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Chloromethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
2-Chlorotoluene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
4-Chlorotoluene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Dibromochloromethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,2-Dibromo-3-chloropropane (DBCP)	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Dibromomethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,2 Dibromomethane (EDB)	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,2-Dichlorobenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,3-Dichlorobenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,4-Dichlorobenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Dichlorodifluoromethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,1-Dichloroethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,2-Dichloroethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A

Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
1,1-Dichloroethene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
cis-1,2-Dichloroethene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
trans-1,2-Dichloroethene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,2-Dichloropropane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,3-Dichloropropane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
2,2-Dichloropropane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,1-Dichloropropene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
cis-1,3-Dichloropropene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
trans-1,3-Dichloropropene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Ethyl Benzene	-----	-----	EPA 8260B / 8260C / 8021B	EPA 5030B / 5030C	EPA 8260B / 8260C / 8021B	EPA 5030B / 5030C / 5035 / 5035A
Ethyl tert-Butyl Ether (ETBE)	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
2-Hexanone	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Hexachlorobutadiene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Isopropylbenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Isopropyl Ether (DIPE)	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Para-Isopropyltoluene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A

Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
Methylene Chloride	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
4-Methyl-2-pentanone	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Methyl tert-amyl Ether (TAME)	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Methyl tert-butyl ether (MTBE)	-----	-----	EPA 8260B / 8260C / 8021B	EPA 5030B / 5030C	EPA 8260B / 8260C / 8021B	EPA 5030B / 5030C / 5035 / 5035A
Naphthalene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
n-Propylbenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Styrene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,1,1,2-Tetrachloroethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,1,2,2-Tetrachloroethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Tetrachloroethene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Toluene	-----	-----	EPA 8260B / 8260C / 8021B	EPA 5030B / 5030C	EPA 8260B / 8260C / 8021B	EPA 5030B / 5030C / 5035 / 5035A
1,2,3-Trichlorobenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,2,4-Trichlorobenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,1,1-Trichloroethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,1,2-Trichloroethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Trichloroethene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Trichlorofluoromethane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A

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Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
1,2,3-Trichloropropane	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,2,4-Trimethylbenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
1,3,5-Trimethylbenzene	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Vinyl acetate	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
Vinyl chloride	-----	-----	EPA 8260B / 8260C	EPA 5030B / 5030C	EPA 8260B / 8260C	EPA 5030B / 5030C / 5035 / 5035A
m,p-Xylene	-----	-----	EPA 8260B / 8260C / 8021B	EPA 5030B / 5030C	EPA 8260B / 8260C / 8021B	EPA 5030B / 5030C / 5035 / 5035A
o-Xylene	-----	-----	EPA 8260B / 8260C / 8021B	EPA 5030B / 5030C	EPA 8260B / 8260C / 8021B	EPA 5030B / 5030C / 5035 / 5035A
Extractable Organics (semivolatiles)						
DRO	-----	-----	EPA 8015B / 8015D	EPA 3520C	EPA 8015B / 8015C / 8015D/	EPA 3550B / 3550C / 3546
Acenaphthene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 / 8270 C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
Acenaphthylene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 / 8270 C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
Anthracene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 / 8270 C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
Benzoic Acid	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270 C 8270D	EPA 3550B / 3550C
Benzo (a) Anthracene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 / 8270 C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C

Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
Benzo (b) Fluoranthene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 / 8270 C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
Benzo (k) Fluoranthene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 / 8270 C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
Benzo (ghi) Fluoranthene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 / 8270 C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
Benzo (a) Pyrene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 / 8270 C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
Benzyl Alcohol	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Bis (2-chloroethoxy) Methane	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Bis (2-chloroethyl) Ether	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Bis (2-chloroisopropyl) Ether	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Bis (2-ethylhexyl) Phthalate	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
4-Bromophenyl-Phenylether	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Butyl Benzyl Phthalate	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
4-Chloroaniline	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
4-Chloro-3-methylphenol	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
2-Chloronaphthalene	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C

Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
2-Chlorophenol	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
4-Chlorophenyl Phenyl Ether	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Chrysene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
Dibenzo (a,h) Anthracene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
Dibenzofuran	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
1,2-Dichlorobenzene	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
1,3-Dichlorobenzene	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
1,4-Dichlorobenzene	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
3,3'-Dichlorobenzidine	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
2,4-Dichlorophenol	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Diethyl Phthalate	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
2,4-Dimethylphenol	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Dimethyl Phthalate	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Di-n-butyl Phthalate	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Di-n-octyl Phthalate	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C

Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
4,6-Dinitro-2-methylphenol	- - - - -	- - - - -	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
2,4-Dinitrophenol	- - - - -	- - - - -	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
2,4-Dinitrotoluene	- - - - -	- - - - -	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
2,6-Dinitrotoluene	- - - - -	- - - - -	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
1,4 - Dioxane			EPA 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
1,2-Diphenylhydrazine reported as Azobenzene due to breakdown	- - - - -	- - - - -	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Fluoroanthene	- - - - -	- - - - -	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 8270C / 8270D 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
Fluorene	- - - - -	- - - - -	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
Hexachlorobenzene	- - - - -	- - - - -	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Hexachlorobutadiene	- - - - -	- - - - -	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Hexachloro cyclopentadiene	- - - - -	- - - - -	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Hexachloroethane	- - - - -	- - - - -	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Indeno (1,2,3-cd) pyrene	- - - - -	- - - - -	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
Isophorone	- - - - -	- - - - -	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
1-Methylnaphthalene	- - - - -	- - - - -	EPA 8270C-SIM / 8270D-DIM	EPA 3520C	EPA 8270C-SIM / 8270D-DIM	EPA 3550B / 3550C

Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
2-Methylnaphthalene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
2-Methylphenol	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
4-Methylphenol	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Naphthalene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
2-Nitroaniline	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
3-Nitroaniline	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
4-Nitroaniline	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Nitrobenzene	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
2-Nitrophenol	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
4-Nitrophenol	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
N-Nitrosodi-n-propylamine	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
N-Nitrosodimethylamine	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
N-Nitrosodiphenylamine	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Pentachlorophenol	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Phenanthrene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C

Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
Phenol	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Pyrene	-----	-----	EPA 8310 / 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3520C	EPA 8310 8270C / 8270D / 8270C-SIM / 8270D-SIM	EPA 3550B / 3550C
1,2,4-Trichlorobenzene	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
2,4,5-Trichlorophenol	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
2,4,6-Trichlorophenol	-----	-----	EPA 8270C / 8270D	EPA 3520C	EPA 8270C / 8270D	EPA 3550B / 3550C
Pesticides/PCBs						
Aldrin	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
alpha-BHC	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
beta-BHC	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
delta-BHC	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
gamma-BHC	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
Chlordane (technical)	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
alpha-Chlordane	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
gamma-Chlordane	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
4,4'-DDD	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
4,4'-DDE	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
4,4',-DDT	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
Dieldrin	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
Endosulfan I	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
Endosulfan II	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
Endonsulfan Sulfate	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
Endrin	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C

Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
Endrin Aldehyde	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
Endrin Ketone	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
Heptachlor	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
Heptachlor Epoxide	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
Methoxychlor	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
PCB-1016 (Arochlor)	-----	-----	EPA 8082 / 8082A	EPA 3520C	EPA 8082 / 8082A	EPA 3550B / 3550C
PCB-1221	-----	-----	EPA 8082 / 8082A	EPA 3520C	EPA 8082 / 8082A	EPA 3550B / 3550C
PCB-1232	-----	-----	EPA 8082 / 8082A	EPA 3520C	EPA 8082 / 8082A	EPA 3550B / 3550C
PCB-1242	-----	-----	EPA 8082 / 8082A	EPA 3520C	EPA 8082 / 8082A	EPA 3550B / 3550C
PCB-1248	-----	-----	EPA 8082 / 8082A	EPA 3520C	EPA 8082 / 8082A	EPA 3550B / 3550C
PCB-1254	-----	-----	EPA 8082 / 8082A	EPA 3520C	EPA 8082 / 8082A	EPA 3550B / 3550C
PCB-1260	-----	-----	EPA 8082 / 8082A	EPA 3520C	EPA 8082 / 8082A	EPA 3550B / 3550C
Toxaphene	-----	-----	EPA 8081A / 8081B	EPA 3520C	EPA 8081A / 8081B	EPA 3550B / 3550C
Nitroaromatics & Nitramines						
2-Amino-4,6-dinitrotoluene	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A
4-Amino-2,6-dinitrotoluene	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A
1,3-Dinitrotoluene	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A
2,4-Dinitrotoluene	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A
2,6-Dinitrotoluene	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A

Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
HMX	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A
Nitrobenzene	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A
2-Nitrotoluene	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A
3-Nitrotoluene	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A
4-Nitrotoluene	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A
RDX	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A
Tetryl	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A
1,3,5-Trinitrobenzene	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A
2,4,6-Trinitrotoluene	-----	-----	EPA 8330 / 8330A	EPA 3535	EPA 8330 / 8330A / 8330A Modified	EPA 8330 / 8330A
Hazardous Waste Characteristics						
Synthetic Precipitation Leaching Procedure (SPLP)	-----	-----	-----	-----	EPA 1312	EPA1312
Toxicity Characteristic Leaching Procedure (TCLP)	-----	-----	-----	-----	EPA 1311	EPA 1311
Air						
Carbon Dioxide	-----	-----	RSK-175	RSK-175	-----	-----
Ethane	-----	-----	RSK-175	RSK-175		
Ethene	-----	-----	RSK-175	RSK-175	-----	-----
Methane	-----	-----	RSK-175	RSK-175	-----	-----

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Parameter/Analyte	Potable Water	Potable Water Prep Methods	Nonpotable Water	Nonpotable Water Prep Methods	Solid Hazardous Waste	Solid Hazardous Waste Prep Methods
Acetylene	-----	-----	RSK-175	RSK-175	-----	-----

Parameter/Analyte	Air Analysis
1,1,1-Trichloroethane	TO-15
1,1,2,2-Tetrachloroethane	TO-15
1,1,2-Trichloroethane	TO-15
1,1-Dichloroethane	TO-15
1,1-Dichloroethene	TO-15
1,2,4-Trichlorobenzene	TO-15
1,2,4-Trimethylbenzene	TO-15
1,2-Dibromoethane	TO-15
1,2-Dichlorobenzene	TO-15
1,2-Dichloroethane	TO-15
1,2-Dichloropropane	TO-15
1,3,5-Trimethylbenzene	TO-15
1,3-Butadiene	TO-15
1,3-Dichlorobenzene	TO-15
1,4-Dichlorobenzene	TO-15
2-Butanone	TO-15
2-Hexanone	TO-15
4-Ethyltoluene	TO-15
4-Methyl-2-Pentanone	TO-15
Acetone	TO-15
Acrolein	TO-15
Benzene	TO-15
Benzyl chloride	TO-15
Bromodichloromethane	TO-15
Bromoform	TO-15
Bromomethane	TO-15
Carbon Disulfide	TO-15
Carbon Tetrachloride	TO-15
Chlorobenzene	TO-15
Chloroethane	TO-15
Chloroform	TO-15
Chloromethane	TO-15
Cyclohexane	TO-15
Dibromochloromethane	TO-15
Ethyl Acetate	TO-15
Ethylbenzene	TO-15
Freon 113	TO-15
Freon 114	TO-15
Freon 12	TO-15
Hexachlorobutadiene	TO-15
MTBE	TO-15
Methylene Chloride	TO-15
Napthalene	TO-15
Propylene	TO-15
Styrene	TO-15

Parameter/Analyte	Air Analysis
Tetrachloroethene	TO-15
Tetrahydrofuran	TO-15
Toluene	TO-15
Trichloroethene	TO-15
Trichlorofluoromethane	TO-15
Vinyl Acetate	TO-15
Vinyl Chloride	TO-15
cis-1,2-Dichloroethene	TO-15
cis-1,3-Dichloropropene	TO-15
m,p-Xylenes	TO-15
n-Heptane	TO-15
n-Hexane	TO-15
o-Xylene	TO-15
trans-1,2-Dichloroethene	TO-15
trans-1,3-Dichloropropene	TO-15

1. **This accreditation covers testing performed at the main laboratory listed above and the following satellite laboratory listed below for the following tests:**

201A & 201B Fischer Ave
Hunters Point Naval Ship Yard
San Francisco, CA 94124

Gamma Spectroscopy Parameter/Analyte	Solid/Wipe Analysis
Actinium – 228	Modified EPA Method 901.1
Americium – 241	Modified EPA Method 901.1
Bismuth – 212	Modified EPA Method 901.1
Bismuth – 214	Modified EPA Method 901.1
Cesium - 137	Modified EPA Method 901.1
Cobalt – 60	Modified EPA Method 901.1
Europium – 152	Modified EPA Method 901.1
Europium – 154	Modified EPA Method 901.1
Lead - 210	Modified EPA Method 901.1
Lead – 212	Modified EPA Method 901.1
Lead - 214	Modified EPA Method 901.1
Potassium – 40	Modified EPA Method 901.1
Protactinium – 234M	Modified EPA Method 901.1
Radium – 226	Modified EPA Method 901.1
Thallium – 208	Modified EPA Method 901.1
Thorium - 232	Modified EPA Method 901.1
Thorium - 234	Modified EPA Method 901.1
Uranium - 235	Modified EPA Method 901.1
Gross Alpha Beta Spectroscopy Gas Proportional Counter	
Alpha & Beta Radiation	Modified EPA Method 9310

The American Association for Laboratory Accreditation

World Class Accreditation

Accredited DoD ELAP Laboratory

A2LA has accredited

CURTIS & TOMPKINS, LLC

Berkeley, CA

for technical competence in the field of

Environmental Testing

In recognition of the successful completion of the A2LA evaluation process that includes an assessment of the laboratory's compliance with ISO/IEC 17025:2005, the 2003 NELAC Chapter 5 Standard, and the requirements of the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in the current DoD Quality System Manual for Environmental Laboratories (QSM); accreditation is granted to this laboratory to perform recognized EPA methods as defined on the associated A2LA Environmental Scope of Accreditation. This accreditation demonstrates technical competence for this defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION
CORPORATE SEAL 1978
DISTRICT OF COLUMBIA
A2LA

Presented this 10th day of January 2012.

Peter Mlynek

President & CEO
For the Accreditation Council
Certificate Number 2943.01
Valid to February 28, 2014

For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Environmental Scope of Accreditation.