N00296.003390
MOFFET FIELD
SSIC NO. 5090.3

Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, California 92101

ADDENDUM TO THE FINAL SAMPLING AND ANALYSIS PLAN

(Field Sampling Plan and Quality Assurance Project Plan)

Revision 1

December 21, 2004

FORMER NAVAL AIR STATION MOFFETT FIELD
MOFFETT FIELD, CALIFORNIA

Base Realignment and Closure
Program Management Office West
1230 Columbia Street, Suite 1100
San Diego, California 92101

CONTRACT NO. N68711-98-D-5713
CTO NO. 0086

ADDENDUM TO THE FINAL SAMPLING AND ANALYSIS PLAN

(Field Sampling Plan and Quality Assurance Project Plan)

Revision 1
December 21, 2004

FOR

EAST-SIDE AQUIFER TREATMENT SYSTEM
AND WEST-SIDE AQUIFERS TREATMENT SYSTEM

FORMER NAVAL AIR STATION MOFFETT FIELD
MOFFETT FIELD, CALIFORNIA

DCN: FWSD-RAC-05-0246

TETRA TECH FW, INC.
1230 Columbia Street, Suite 500
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REGISTERED GEOLOGIST
MARK CUTLER
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12/21/04
Mark Cutler, RG 4487 — Date
Registered Geologist

12/21/04
Mary Schneider — Date
Quality Control Program Manager

12/21/04
Narciso A. Ancog — Date
NFECSW Quality Assurance Officer

N00296.003390
MOFFETT FIELD
SSIC NO. 5090.3

ADDENDUM TO THE FINAL SAMPLING AND ANALYSIS PLAN

DATED 17 DECEMBER 2004

IS FILED AS ADMINISTRATIVE RECORD NO.
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1.0 INTRODUCTION

This Addendum to the Sampling and Analysis Plan (SAP) was prepared by Tetra Tech FW, Inc. ([TtFW] formerly Foster Wheeler Environmental Corporation [FWENC]) to support continuing compliance monitoring sampling and analysis activities at the East-Side Aquifer Treatment System (EATS) and the West-Side Aquifers Treatment System (WATS) on Former Naval Air Station (NAS) Moffett Field (Moffett), Moffett Field, California. This Addendum to the SAP was prepared on behalf of the Navy's Base Realignment and Closure Program Management Office West. This work is conducted under Remedial Action Contract (RAC) No. N68711-98-D-5713, Contract Task Order (CTO) No. 0086. The preparation of the original SAP (*Final Sampling and Analysis Plan, Revision 0, Moffett Federal Airfield, Moffett Field, California,* DCN: FWSD-RACII-01-0335 [FWENC, 2001]) was awarded under Delivery Order (DO) No. 0090 of the Engineering Field Activities Northwest RAC N44255-95-D-6030. This Addendum complies with the requirements of revising the SAP when a scope or regulation change occurs during the course of the work in conjunction with *Environmental Work Instruction (EWI) #2, 3EN2.2, Review, Approval, Revision, and Amendment of Sampling and Analysis Plans (SAPs)* (Naval Facilities Engineering Command Southwest [NFECSW], 2001). This Addendum will be used in conjunction with the original SAP.

This Addendum to the SAP includes only changes to the sections of the SAP that require modification relevant to sampling activities. These modifications are necessary to comply with the issuance of the new authorization to discharge letters, dated September 9, 2004, and September 15, 2004, for EATS and WATS, respectively. The authorization letters require compliance to the new California Regional Water Quality Control Board Order Number (No.) R2-2004-0055, National Pollutant Discharge Elimination System (NPDES) Permit No. CAG912003, and the new compliance requirements set forth in the order and associated Self-Monitoring Program.

EATS was taken out of operation on July 2, 2003, and is currently in standby status, in accordance with the *Final EATS Evaluation Work Plan* (FWENC, 2003). This Addendum addresses the sampling requirements at EATS in the event that EATS may need to be re-started in accordance with the *Final EATS Evaluation Work Plan* (FWENC, 2003).

3.0 MAPS

Figures 3-1 and 3-2 illustrate the updated process flow diagram, sample port locations, and receiving water location for the West-Side Aquifers Treatment System (WATS). Figures 3-3 and 3-4 illustrate the updated process flow diagram, sample port locations, and receiving water location for East-Side Aquifer Treatment System (EATS).

4.0 SAMPLING STRATEGY

4.1 EATS SAMPLING

Revised text.

A grab sample shall be taken at the following East-Side Aquifer Treatment System (EATS) sample ports according to the frequency indicated in the table. See Section 8.0 for the definition of each analysis and laboratory method.

Analysis	SP1 System Influent	SP2 Air Stripper Effluent	SP3 Bag Filter Effluent	SP4 Lead GAC Effluent	SP5 System Effluent	R1/R2
VOCs [1, 2, and 3]	M	Q	--	Q	M	V
TPH-purgeable	M	--	--	--	M	V
TPH-extractable	M	--	--	--	M	V
Bioassay	--	--	--	--	Y	--
1,4-Dioxane	--	--	--	--	2/Y	--
SVOCs	--	--	--	--	2/Y	--
PAHs	Y	--	--	--	2/Y	--
TAME, DIPE, ETBE, TBA, Ethanol, Methanol	A/Y	--	--	--	A/2Y	--
Cyanide	--	--	--	--	3Y	--
Metals [4 & 5]	--	--	--	--	3Y	--
Hardness	--	--	--	--	--	T
Salinity	--	--	--	--	--	T
FIELD PARAMETERS						
pH	M	Q	--	Q	M	V
Temperature	M	Q	--	Q	M	--
Turbidity	--	--	--	--	Y	--
Conductivity	M	Q	--	Q	M	--
Dissolved Oxygen	--	--	--	--	--	V

Notes:

1. The list of VOC analytes is identified in Table 3 of Section 8.0.
2. Freon 12 (dichlorodifluoromethane) shall be analyzed and reported with the VOCs if detected in the initial sample.
3. Methyl tert-butyl ether (MTBE) shall be analyzed and reported with the VOCs if detected in the initial sample.
4. Metals include antimony, arsenic, beryllium, cadmium, chromium (total), copper, lead, mercury, nickel, selenium, silver, thallium, and zinc.
5. If chromium (total) concentration exceeds 11 µg/L then chromium (VI) shall also be analyzed.

Abbreviations and Acronyms:

μg/L – micrograms per liter
A/Y – Sample should be taken once; annually thereafter if detected or if determined to be present in the influent.
A/2Y – Sample should be taken once; twice annually thereafter if detected or if determined to be present in the influent.
DIPE – di-isopropyl ether
ETBE – ethyl tert-butyl ether
GAC – granulated activated carbon
M – monthly
PAH – polynhuclear aromatic hydrocarbon
Q – quarterly
R1/R2 – denotes receiving water samples. R1 will be collected from the Northern Channel, immediately downstream of Building 191. R2 will be collected from the Northern Channel adjacent to the bridge to the fuel pier.
SP – sample port
SVOC – semivolatile organic compound
T – Sampling should be performed only when cadmium, chromium, copper, lead, nickel, silver, or zinc triggers are exceeded
TAME – tert-amyl methyl ether
TBA – tert-butyl alcohol
TPH-extractable – total extractable petroleum hydrocarbons
TPH-purgeable – total purgeable petroleum hydrocarbons
V – Receiving water samples should be performed within 24 hours after an exceedance is confirmed in effluent and analyzed for that specific exceeded compound and the dissolved oxygen level
VOCs – volatile organic compounds
Y – annually
2/Y – twice annually
3Y – every three years
"- -" – indicates analysis not performed

4.2 WATS SAMPLING

Revised text.

A grab sample shall be taken at the following West-Side Aquifers Treatment System (WATS) sample ports according to the frequency indicated in the table. See Section 8.0 for the definition of each analysis and laboratory method.

Analysis	SP1 System Influent	SP2 Tank T-101 Effluent	SP3 Tank T-102 Effluent	SP4 AOP Effluent	SP307 GAC Effluent	SP308 GAC Effluent	SP309 GAC Effluent	SP310 GAC Effluent	SP6 System Effluent	R1/R2
VOCs [1, 2, and 3]	M	2/Y	2/Y	M	M	M	M	M	M	V
TPH-purgeable	M	--	--	--	--	--	--	--	M	V
TPH-extractable	M	--	--	--	--	--	--	--	M	V
Bioassay	--	--	--	--	--	--	--	--	Y	--
1,4-Dioxane	--	--	--	--	--	--	--	--	2/Y	--
SVOCs	--	--	--	--	--	--	--	--	2/Y	--
PAHs only	Y	--	--	--	--	--	--	--	2/Y	--
TAME, DIPE, ETBE, TBA, Ethanol, Methanol	A/Y	--	--	--	--	--	--	--	A/2Y	--
Cyanide	--	--	--	--	--	--	--	--	3Y	--
Metals [4 & 5]	--	--	--	--	--	--	--	--	3Y	--
Hardness	--	--	--	--	--	--	--	--	--	T
Salinity	--	--	--	--	--	--	--	--	--	T
FIELD PARAMETERS										
pH	M	2/Y	2/Y	M	M	M	M	M	M	V
Temperature	M	2/Y	2/Y	M	M	M	M	M	M	--
Turbidity	--	--	--	--	--	--	--	--	Y	--
Conductivity	M	2/Y	2/Y	M	M	M	M	M	M	--
Dissolved Oxygen	--	--	--	--	--	--	--	--	--	V

Notes:

1. The list of VOC analytes is identified in Table 3 of Section 8.0.
2. Freon 12 (dichlorodifluoromethane) shall be analyzed and reported with the VOCs if detected in the initial sample.
3. Methyl tert-butyl ether (MTBE) shall be analyzed and reported with the VOCs if detected in the initial sample.
4. Metals include antimony, arsenic, beryllium, cadmium, chromium (total), copper, lead, mercury, nickel, selenium, silver, thallium, and zinc.
5. If chromium (total) concentration exceeds 11 µg/L, then chromium (VI) shall also be analyzed.

Abbreviations and Acronyms:

A/Y – Sample should be taken once; annually thereafter if detected or if determined to be present in the influent.
A/2Y – Sample should be taken once; twice annually thereafter if detected or if determined to be present in the influent.
AOP – Advanced Oxidation Process
DIPE – di-isopropyl ether
ETBE – ethyl tert-butyl ether
GAC – granulated activated carbon
M – monthly
PAH – polynhuclear aromatic hydrocarbon
R1/R2 – denotes receiving water samples. R1 will be collected from the Northern Channel, immediately downstream of Building 191. R2 will be collected from the Northern Channel adjacent to the bridge to the fuel pier.
SP – sample port
SVOC – semivolatile organic compound
T – Sampling should be performed only when cadmium, chromium, copper, lead, nickel, silver, or zinc triggers are exceeded
TAME – tert-amyl methyl ether
TBA – tert-butyl alcohol
TPH-extractable – total extractable petroleum hydrocarbons
TPH-purgeable – total purgeable petroleum hydrocarbons
V – Receiving water samples should be performed within 24 hours after an exceedance is confirmed in effluent and analyzed for that specific exceeded compound and the dissolved oxygen level.
VOCs – volatile organic compounds
Y – annually
2/Y – twice annually
3Y – every three years
" - - " – indicates analysis not performed

5.0 REQUEST FOR ANALYSIS

5.1 ANALYTICAL METHODS

Revised text.

- Volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) Method 8260B
- Total purgeable petroleum hydrocarbons (TPH-purgeable) by EPA Method 8015B
- Total extractable petroleum hydrocarbons (TPH-extractable) by EPA Method 8015B
- Bioassay by 96-hour static fish toxicity using rainbow trout
- 1,4,-Dioxane by EPA Method 8270C Selective Ion Monitoring (SIM)
- SVOCs by EPA Method 8270C
- Polynuclear aromatic hydrocarbons (PAHs) only by EPA Method 8270C SIM
- Tert-amyl methyl ether (TAME), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), and tert-butyl alcohol (TBA) by EPA Method 8260B
- Ethanol and Methanol by EPA Method 8015B
- Cyanide by EPA Method 9010B
- Metals (excluding mercury) by EPA Method 6010B/6020/7000
- Mercury by EPA Method 1631
- Hardness by Standard Method (SM) 2340B
- Salinity by SM 2520B

5.2 SAMPLE CONTAINERS, PRESERVATIVES, AND HOLDING TIMES

Table 1 lists the sample containers, preservatives, and holding time requirements for samples.

5.3 FIELD QUALITY CONTROL SAMPLES

5.3.3 Field Blank

New section.

A field blank sample is required when performing the sample collection for mercury by EPA Method 1669 (see Attachment 1). The field blank is collected at the beginning of the day, prior to collecting compliance samples and at a frequency of one for every 10 samples. The field blank will be used to monitor any possible cross-contamination in the field.

6.0 FIELD METHODS AND SAMPLING PROCEDURES

6.1 EATS SAMPLING PROCEDURES

Additional text.

A procedure for mercury sampling by U.S. Environmental Protection Agency (EPA) Method 1669 for analysis by EPA Method 1631 has been included as Attachment 1.

6.2 WATS SAMPLING PROCEDURES

Additional text.

A procedure for mercury sampling by EPA Method 1669 for analysis by EPA Method 1631 has been included as Attachment 1.

6.4 SAMPLE NUMBER

Revised text.

All samples submitted to an analytical laboratory will be uniquely numbered according to the following format:

00XX-WATS-YYY or 00XX-EATS-YYY

Where, 00XX, is the four-digit Contact Task Order (CTO) number, West-Side Aquifers Treatment System/East-Side Aquifer Treatment System (WATS/EATS) is the treatment system, and YYY is a sequential number for this project. The sample number will be recorded in the field logbook and on the chain-of-custody (COC) form at the time of sample collection. A complete description of the sample and sampling circumstances will be recorded in the field logbook and referenced using the unique sample identification number.

7.0 PROJECT ORGANIZATION

An updated Project Organization Chart is shown in Figure 7-1.

7.1 LIST OF POINTS OF CONTACT

The following is an updated list of the key contacts for the project.

Agency	Contact	Title
Base Realignment and Closure Program Management Office West 1220 Pacific Highway San Diego, CA 92132-5190	Ms. Andrea Espinoza (619) 532-0911	Base Realignment and Closure (BRAC) Environmental Coordinator
Naval Facilities Engineering Command Southwest 1220 Pacific Highway San Diego, CA 92132-5190	Ms. Mary Parker (619) 532-0945	Remedial Project Manager (RPM)
Naval Facilities Engineering Command Southwest 1220 Pacific Highway San Diego, CA 92132-5190	Mr. Narciso A. Ancog (619) 532-2540	Quality Assurance Officer
Engineering Field Activities West (EFA West) P. O. Box 68, Building 107 Moffett Field, CA 94035	Mr. Gary Munekawa (650) 603-9834	Project Engineer (PE) and Navy Technical Representative (NTR)/ Resident Officer in Charge of Construction (ROICC)
EFA West P. O. Box 68, Building 107 Moffett Field, CA 94035	Mr. David Smith (650) 603-9836	Construction Management Technician and NTR/ROICC
National Aeronautics and Space Administration (NASA) Ames Building 218, Duran Street Moffett Field, CA 94035	Mr. Don Chuck (650) 604-0237	Environmental Restoration Manager
Tetra Tech FW, Inc. (TtFW) 1230 Columbia Street, Suite 500 San Diego, CA 92101	Mr. Pete Everds (619) 471-3504	Project Manager
TtFW 302 Research Drive Atlanta, GA 30092	Mr. Michael Klosky (770) 825-7144	Task Lead/PE
TtFW 1940 East Deere Avenue, Suite 200 Santa Ana, CA 92705	Ms. Mary Schneider (949) 756-7586	Quality Control Program Manager
TtFW 1940 East Deere Avenue, Suite 200 Santa Ana, CA 92705	Ms. Lisa Bienkowski (949) 756-7592	Project Chemist

8.0 QUALITY ASSURANCE OBJECTIVES

8.2.2 Project Reporting Limits

Table 3 has been updated with reporting limits for this project.

8.2.3 Project Quality Control Limits

Table 4 has been updated with precision and accuracy quality control (QC) limits for each method.

9.0 ANALYTICAL QUALITY CONTROL PROCEDURES

9.5 DATA REVIEW

Updated reference.

At a minimum, the written guidelines must be in accordance with the *Quality Systems Manual for Environmental Laboratories* (Department of Defense [DoD], 2000) and the following requirements.

9.6 DELIVERABLES

9.6.1 Hardcopy Deliverables

Additional text.

- Inorganic raw data sequence:
  - Sample results forms, including method blanks
  - Quality control (QC) summaries
  - Initial calibration
  - Daily calibration checks, including all related continuing calibration verifications
  - Calibration blanks, including all related continuing calibration blanks
  - Interference check standards A and B for inductively coupled plasma-atomic emission spectrometer (ICP-AES) only
  - Post-digestion (analytical) spike results
  - Method of standard additions
  - ICP-AES serial dilutions
  - Instrument run log
  - Sample preparation log

11.0 QUALITY ASSURANCE OVERSIGHT

11.1 FIELD AUDITS

11.1.1 Corrective Action

Updated reference.

All nonconformance and corrective actions will be processed in accordance with TtFW Procedure QC-3. This procedure is presented in Attachment 5 of the *Final Contractor Quality Control Plan* (TtFW, 2004).

12.0 REFERENCES

Updated references.

Department of Defense (DoD). 2000. *Quality Systems Manual for Environmental Laboratories*. October.

Foster Wheeler Environmental Corporation (FWENC). 2001. *Final Sampling and Analysis Plan, Revision 0, Moffett Federal Airfield, Moffett Field, California*. DCN: FWSD-RACII-01-0335. January.

Foster Wheeler Environmental Corporation (FWENC). 2003. *Final EATS Evaluation Work Plan*. DCN: FWSD-RAC-03-0336. January.

Naval Facilities Engineering Command Southwest (NFECSW). 2001. *Environmental Work Instruction (EWI) #2, 3EN2.2, Review, Approval, Revision and Amendment of Sampling and Analysis Plans (SAPs)*.

Tetra Tech FW, Inc (TtFW). 2004. *Final Contractor Quality Control Plan*. DCN: FWSD-RAC-04-1549. April.

TABLES

TABLE 1

SAMPLE CONTAINERS, PRESERVATIVES, AND HOLDING TIME REQUIREMENTS

Analysis	Analytical Method	Container	Preservative	Holding Time
VOCs	EPA Method 8260B	Three 40-mL VOA vials	Cool, 4±2°C	7 days
TPH-purgeable	EPA Method 8015B	Three 40-mL VOA vials	Cool, 4±2°C	7 days
TPH-extractable	EPA Method 8015B	Two 1-liter glass ambers	Cool, 4±2°C	7 days to extract; 40 days to analyze
Bioassay	96-hour static fish toxicity using rainbow trout	5-gallon container	Cool, 4±2°C	36 hours
1,4-Dioxane	EPA Method 8270C SIM	Two 1-liter glass ambers	Cool, 4±2°C	7 days to extract; 40 days to analyze
SVOCs	EPA Method 8270C	Two 1-liter glass ambers	Cool, 4±2°C	7 days to extract; 40 days to analyze
PAHs only	EPA Method 8270C SIM	Two 1-liter glass ambers	Cool, 4±2°C	7 days to extract; 40 days to analyze
TAME, DIPE, ETBE, TBA	EPA Method 8260B	Three 40-mL VOA vials	Cool, 4±2°C	7 days
Methanol and Ethanol	EPA Method 8015B	Three 40-mL VOA vials	Cool, 4±2°C	14 days
Cyanide	EPA Method 9010B	500-mL HDPE	Cool, 4±2°C pH ≥ 12 w/ NaOH	14 days
Metals (except mercury)	EPA Method 6010B/6020/7000	500-mL HDPE	pH ≤ 2 w/ HNO_3	6 months (except mercury which is 28 days)
Mercury	EPA Method 1631	120-mL polyfluoroethylene	pH ≤ 2 w/ HNO_3	28 days
Hardness	SM 2340B	250-mL HDPE	pH ≤ 2 w/ HNO_3	6 months
Salinity	SM 2520B	250-mL glass with wax seal	Cool, 4±2°C	None specified

Abbreviations and Acronyms:

°C – degrees Celsius
DIPE – di-isopropyl ether
ETBE – ethyl tert-butyl ether
EPA – U.S. Environmental Protection Agency
HDPE – high-density polyethylene
HNO3 – nitric acid
mL – milliliter
NaOH – sodium hydroxide
PAH – polynuclear aromatic hydrocarbon
SM – Standard Method
SVOC – semivolatile organic compound
TAME – tert-amyl methyl ether
TBA – tert-butyl alcohol
TPH-extractable – total extractable petroleum hydrocarbons
TPH-purgeable – total purgeable petroleum hydrocarbons
VOA – volatile organic analysis
VOC – volatile organic compound

TABLE 3

PROJECT REPORTING LIMITS

Parameter/Method	Analyte	Water RLs	Permit Limits [a]	Trigger Limits [b]	Units
VOCs	1,1,1-Trichloroethane	5	5	5	µg/L
EPA Method 8260B	1,1,2,2-Tetrachloroethane	0.5	NE	0.1	µg/L
	1,1,2-Trichloroethane	0.5	0.5	5	µg/L
	1,1-Dichloroethane	5	5	5	µg/L
	1,1-Dichloroethene	0.5	0.5	5	µg/L
	1,2-Dichloroethane	0.5	0.5	5	µg/L
	1,2-Dichloropropane	5	NE	0.5	µg/L
	2-Butanone	5	NE	5	µg/L
	2-Hexanone	5	NE	5	µg/L
	4-Methyl-2-pentanone	5	NE	5	µg/L
	Acetone	5	NE	5	µg/L
	Benzene	1	1	5	µg/L
	Bromodichloromethane	5	NE	0.56	µg/L
	Bromoform	5	NE	4.3	µg/L
	Bromomethane	5	NE	5	µg/L
	Carbon disulfide	5	NE	5	µg/L
	Carbon tetrachloride	0.5	0.5	5	µg/L
	Chlorobenzene	5	NE	5	µg/L
	Chloroethane	5	NE	5	µg/L
	Chloroform	5	5	5	µg/L
	Chloromethane	5	NE	5	µg/L
	cis-1,2-Dichloroethene	5	5	5	µg/L
	cis-1,3-Dichloropropene	0.5	NE	0.2	µg/L
	Dibromochloromethane	0.5	NE	0.401	µg/L
	DIPE	0.5	NE	NE	µg/L
	Ethylbenzene	5	5	5	µg/L
	ETBE	0.5	NE	NE	µg/L
	Freon 113	5	5	5	µg/L
	Freon 12	1	NE	0.19	µg/L
	Methylene chloride	5	5	5	µg/L
	Methyl tert-butyl ether	5	5	5	µg/L
	Styrene	5	NE	5	µg/L
	TAME	0.5	NE	NE	µg/L
	TBA	10	NE	NE	µg/L
	Tetrachloroethene	0.5	0.5	5	µg/L
	Toluene	5	5	5	µg/L
	trans-1,2-dichloroethene	5	5	5	µg/L
	trans-1,3-dichloropropene	0.5	NE	0.2	µg/L
	Trichloroethene	0.5	0.5	5	µg/L

TABLE 3

PROJECT REPORTING LIMITS

Parameter/Method	Analyte	Water RLs	Permit Limits [a]	Trigger Limits [b]	Units
	Vinyl chloride	0.5	0.5	5	µg/L
	Xylenes (Total)	5	5	5	µg/L
TPH-purgeable EPA Method 8015B	C6-C12 (Gasoline)	50	50	NE	µg/L
TPH-extractable EPA Method 8015B	C12-C24 (Diesel)	50	50	NE	µg/L
	C24-C36 (Motor Oil)	500	NE		
Bioassay 96-hour static fish	Bioassay-rainbow trout	NA	90% survival	NE	NA
SVOCs EPA Method 8270C SIM	1,4-Dioxane	1	NE	3	µg/L
SVOCs EPA Method 8270C	1,2,4-Trichlorobenzene	10	NE	5	µg/L
	1,2-Dichlorobenzene	10	NE	5	µg/L
	1,2-Diphenylhydrazine	10	NE	0.04	µg/L
	1,3-Dichlorobenzene	10	NE	5	µg/L
	1,4-Dichlorobenzene	10	NE	5	µg/L
	2,4,5-Trichlorophenol	10	NE	5	µg/L
	2,4,6-Trichlorophenol	10	NE	2.1	µg/L
	2,4-Dichlorophenol	10	NE	5	µg/L
	2,4-Dimethylphenol	10	NE	5	µg/L
	2,4-Dinitrophenol	50	NE	5	µg/L
	2,4-Dinitrotoluene	10	NE	0.11	µg/L
	2,6-Dinitrotoluene	10	NE	5	µg/L
	2-Chloronaphthalene	10	NE	5	µg/L
	2-Chlorophenol	10	NE	5	µg/L
	2-Methylphenol	10	NE	5	µg/L
	2-Nitroaniline	20	NE	5	µg/L
	2-Nitrophenol	20	NE	5	µg/L
	3,3'-Dichlorobenzidine	20	NE	0.04	µg/L
	3-Nitroaniline	20	NE	5	µg/L
	4,6-Dinitro-2-methylphenol	50	NE	5	µg/L
	4-Bromophenyl phenyl ether	10	NE	5	µg/L
	4-Chloro-3-methylphenol	10	NE	5	µg/L
	4-Chloroaniline	10	NE	5	µg/L
	4-Chlorophenyl phenyl ether	10	NE	5	µg/L
	4-Methylphenol	10	NE	5	µg/L
	4-Nitroaniline	20	NE	5	µg/L
	4-Nitrophenol	20	NE	5	µg/L
	Acrylonitrile	10	NE	2	µg/L

TABLE 3

PROJECT REPORTING LIMITS

Parameter/Method	Analyte	Water RLs	Permit Limits [a]	Trigger Limits [b]	Units
	Benzidine	10	NE	0.00012	µg/L
	bis(2-Chloroethoxy)methane	10	NE	5	µg/L
	bis(2-Chloroethyl) ether	10	NE	0.031	µg/L
	bis(2-Chloroisopropyl)ether	10	NE	5	µg/L
	bis(2-Ethylhexyl)phthalate	10	NE	1.8	µg/L
	Butyl benzylphthalate	10	NE	5	µg/L
	Di-n-butylphthalate	10	NE	5	µg/L
	Di-n-octylphthalate	10	NE	5	µg/L
	Dibenzofuran	10	NE	5	µg/L
	Diethyl phthalate	10	NE	5	µg/L
	Dimethyl phthalate	10	NE	5	µg/L
	Hexachlorobenzene	10	NE	0.00075	µg/L
	Hexachlorobutadiene	10	NE	0.44	µg/L
	Hexachlorocyclopentadiene	50	NE	5	µg/L
	Hexachloroethane	10	NE	1.9	µg/L
	n-Nitroso-dimethylamine	10	NE	0.00069	µg/L
	n-Nitroso-di-n-propylamine	10	NE	0.005	µg/L
	n-Nitrosodiphenylamine	10	NE	5	µg/L
	Nitrobenzene	10	NE	5	µg/L
	Pentachlorophenol	20	NE	0.28	µg/L
	Phenol	10	NE	5	µg/L
SVOCs EPA Method 8270C/SIM	Acenapthene	0.1	NE	5	µg/L
	Acenaphthylene	0.1	NE	5	µg/L
	Anthracene	0.1	NE	5	µg/L
	Benzo[a]anthracene	0.1	NE	0.0044	µg/L
	Benzo[a]pyrene	0.1	NE	0.004	µg/L
	Benzo[b]fluoranthene	0.1	NE	0.0044	µg/L
	Benzo[g,h,i]perylene	0.1	NE	5	µg/L
	Benzo[k]fluoranthene	0.1	NE	0.0044	µg/L
	Chrysene	0.1	NE	0.0044	µg/L
	Dibenz[a,h]anthracene	0.1	NE	0.0044	µg/L
	Fluoranthene	0.1	NE	5	µg/L
	Fluorene	0.1	NE	5	µg/L
	Indeno[1,2,3-cd]pyrene	0.1	NE	0.0044	µg/L
	Naphthalene	0.1	NE	5	µg/L
	Phenanthrene	0.1	NE	5	µg/L

TABLE 3

PROJECT REPORTING LIMITS

Parameter/Method	Analyte	Water RLs	Permit Limits [a]	Trigger Limits [b]	Units
	Pyrene	0.1	NE	5	µg/L
Ethanol and Methanol EPA Method 8015B	Ethanol	1	NE	NE	mg/L
	Methanol	1	NE	NE	mg/L
Cyanide EPA Method 9010B	Cyanide	0.01	NE	1.0	mg/L
Metals EPA Method 6010B/6020/7000	Antimony	6	NE	6	µg/L
	Arsenic	10	NE	10	µg/L
	Beryllium	1	NE	1	µg/L
	Cadmium	1	NE	0.07	µg/L
	Chromium	10	NE	11	µg/L
	Copper	3.1	NE	3.1	µg/L
	Lead	2	NE	2	µg/L
	Nickel	8.2	NE	8.2	µg/L
	Selenium	10	NE	5	µg/L
	Silver	1.9	NE	1.9	µg/L
	Thallium	1	NE	0.1	µg/L
	Zinc	20	NE	35	µg/L
Mercury EPA Method 1631	Mercury	0.2	NE	0.025	ng/L
Hardness SM 2340B	Hardness	3.3	NE	NE	mg/L
Salinity SM 2520B	Salinity	0.01	NE	NE	Units

Notes:

[a] EATS and WATS permit limits listed are for effluent discharging to drinking water areas, based on a maximum daily effluent limitation.

[b] EATS and WATS trigger limits listed are from the permit and are used to determine if any of the constituents are found in the effluent. Certain limits listed are lower than the lowest achievable laboratory reporting limit listed. In those instances, the reporting limit will be used as the trigger limit.

Abbreviations and Acronyms:

µg/L – micrograms per liter
DIPE – di-isopropyl ether
ETBE – ethyl tert-butyl ether
EATS – East-Side Aquifer Treatment System
EPA – United States Environmental Protection Agency
mg/L – milligrams per liter
NA – not applicable
NE – not established
RL – reporting limit
SIM – Selective Ion Monitoring
SM – Standard Method
SVOC – semivolatile organic compound
TAME – tert-amyl methyl ether
TBA – tert-butyl alcohol
TPH-purgeable – total purgeable petroleum hydrocarbons
TPH-extractable – total extractable petroleum hydrocarbons
VOC – volatile organic compound
WATS – West-Side Aquifers Treatment System

TABLE 4

QUALITY CONTROL ACCEPTANCE CRITERIA

Method	Analyte	Accuracy Water (% R)	Precision Water (% RPD)
EPA Method 8260B	1,1-Dichloroethene	75-125	≤ 30
	Benzene	75-125	≤ 30
	Chlorobenzene	75-125	≤ 30
	Trichloroethene	71-125	≤ 30
	Toluene	74-125	≤ 30
	Surrogates:		
	Dibromofluoromethane	75-124	N/A
	Toluene-D_8	75-125	N/A
	4-Bromofluorobenzene	75-125	N/A
	1,2-Dichloroethane-D_4	62-139	N/A
EPA Method 8015B	TPH–purgeable	65-135	≤ 35
	Surrogate:		
	4-Bromofluorbenzene	65-135	N/A
EPA Method 8015B	TPH–extractable	65-135	≤ 50
	Surrogate:		
	Hexacosane	65-135	N/A
EPA Method 8270C/SIM	1,4,-Dioxane	24-122	≤ 30
	Surrogates:		
	Nitrobenzene-d5	38-132	N/A
	2-Fluorobiphenyl	42-120	N/A
EPA Method 8270C	1,2,4-Trichlorobenzene	41-120	≤ 30
	1,4-Dichlorobenzene	38-120	≤ 30
	2,4-Dinitrotoluene	27-127	≤ 30
	2-Chlorophenol	50-120	≤ 30
	n-Nitrosodi-n-propylamine	42-120	≤ 30
	4-Chloro-3-methyl phenol	51-120	≤ 30
	4-Nitrophenol	37-121	≤ 30
	Acenapthene	48-120	≤ 30
	Pyrene	47-120	≤ 30
	Pentachlorophenol	18-160	≤ 30
	Phenol	46-120	≤ 30
	Surrogates:		
	2,4,6-Tribromophenol	39-120	N/A

TABLE 4

QUALITY CONTROL ACCEPTANCE CRITERIA

Method	Analyte	Accuracy Water (% R)	Precision Water (% RPD)
	2-Fluorbiphenyl	48-120	N/A
	2-Fluorophenol	38-120	N/A
	Nitrobenzene-d_5	50-120	N/A
	Phenol- d_5	36-120	N/A
	Terphenyl- d_{14}	17-120	N/A
EPA Method 8270C/SIM (PAHs only)	Acenapthene	35-138	≤ 30
	Pyrene	38-142	≤ 30
	Surrogates:		
	Nitrobenzene-d_5	38-132	N/A
	2-Fluorbiphenyl	42-120	N/A
	Terphenyl- d_{14}	30-123	N/A
EPA Method 8015B	Ethanol	57-130	≤ 30
	Methanol	55-130	≤ 30
	Surrogate:		
	1-Pentanol	60-120	N/A
EPA Method 9010B	Cyanide	75-125	≤ 20
EPA Method 6010B/6020/7000	All metals	75-125	≤ 30
EPA Method 1631	Mercury	75-125	≤ 30
SM 2340B	Hardness	N/A	N/A
SM 2520B	Salinity	N/A	≤ 30

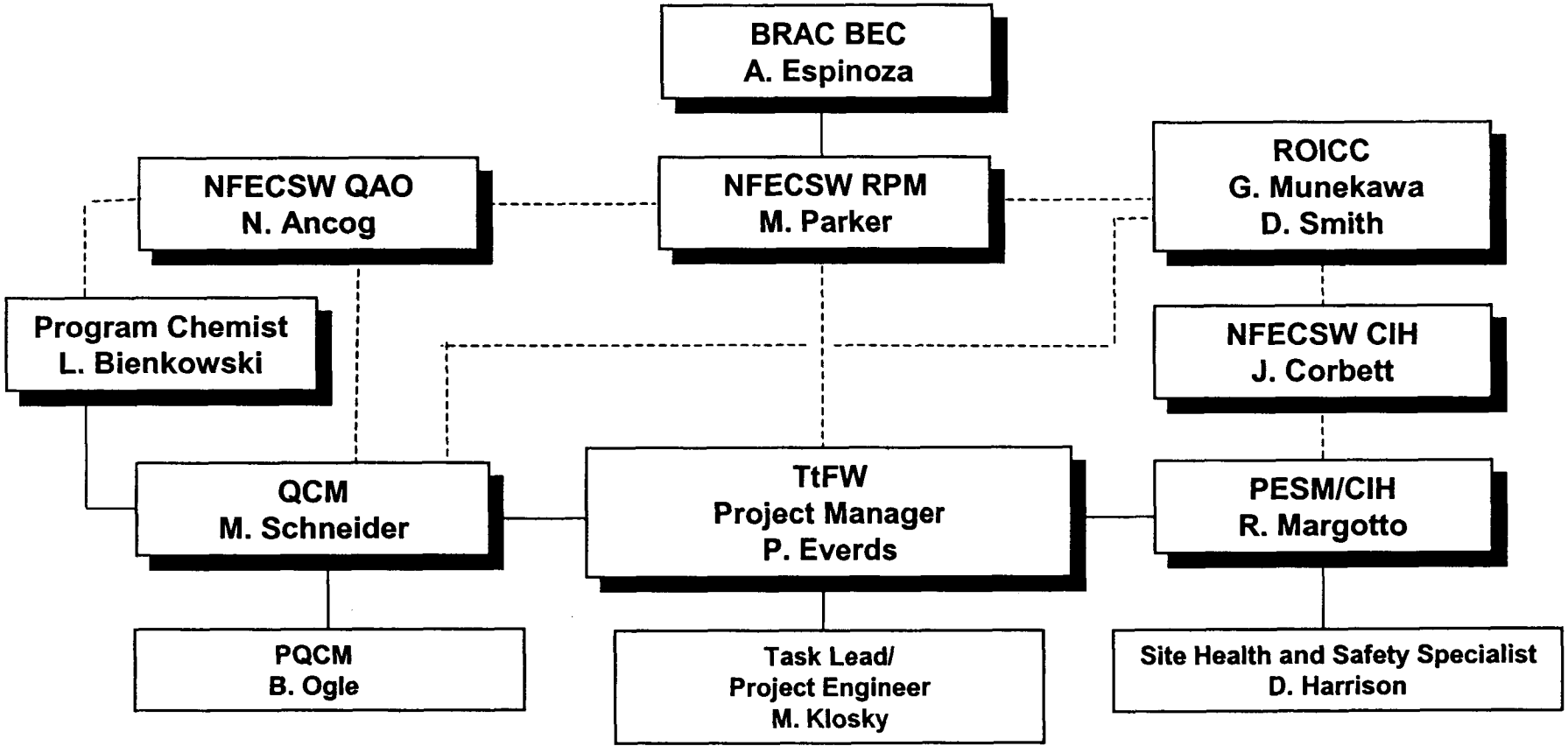
Abbreviations and Acronyms:

%R – percent recovery
EPA – United States Environmental Protection Agency
N/A – not applicable
PAH – polynuclear aromatic hydrocarbon
RPD – relative percent difference
SIM – Selective Ion Monitoring
SM – Standard Method
TPH-extractable – total extractable petroleum hydrocarbons
TPH-purgeable – total purgeable petroleum hydrocarbons

FIGURES

Figure 7-1

Project Organization Chart



Legend

- - - - - = In regular contact and coordination

——— = Directly reports to above

040600DrSAPAppFFigF.7-1_Site 14.ppt

ATTACHMENT 1

SAMPLING PROCEDURE BY EPA METHOD 1669
ULTRACLEAN MERCURY SAMPLING

PURPOSE

To detail the sampling procedure by U.S. Environmental Protection Agency (EPA) Method 1669 to be followed when collecting samples for mercury analysis by EPA Method 1631.

EQUIPMENT AND MATERIALS

Two personnel will be required to complete the sampling in accordance with this method. One member of the sampling team will be designated as "dirty hands", and the second member will be designated "clean hands". All operations involving contact with the sample bottle are handled by the individual designated as "clean hands". "Dirty hands" is responsible for preparation of the sampler (except the sample container itself) and for all activities that do not involve direct contact with the sample.

The following is a list of equipment and materials that are required.

- Personal protective equipment (PPE) including a long-sleeved wind suit constructed of nylon or other synthetic fiber (tyvek), shoulder-length polyethylene gloves (for "clean hands" only), and standard gloves. All gloves must be non-talc polyethylene, latex, vinyl, or polyvinyl chloride (PVC). Personnel with metal fillings should also wear a dust mask.
- 120 milliliter (mL) polyfluoroethylene container with nitric acid as preservative will be provided by the laboratory in double plastic bags. Other materials such as laboratory reagent-grade water for field blank sample collection, coolers, custody seals, temperature blanks, and packing material will also be provided by the laboratory.

Sampling equipment is not required for this project as the samples will be collected directly from the sample port.

SAMPLING

This procedure is for the sampling of mercury being analyzed by EPA Method 1631. All gloves should be changed between samples.

1. All necessary documentation including chain-of-custody (COC), labels, and custody seals should be filled out in advance.
2. "Dirty hands" should open the sampling port, allowing water to flow through for 5 minutes prior to taking the grab sample.
3. "Dirty hands" removes the double-bagged, preserved polyfluoroethylene container from the cooler.

4. "Dirty hands" opens the outer bag.
5. "Clean hands" opens the inner bag, removes the sample bottle, and reseals the inner bag.
6. "Dirty hands" then reseals the outer bag.
7. "Clean hands" removes the lid and collects the sample from the sample port, never touching the bottle to anything.
8. "Clean hands" reseals the lid and affixes the completed sample label.
9. "Dirty hands" reopens the outer bag.
10. "Clean hands" opens the inner bag, places the container inside it, seals the bag, place a custody seal outside of the bag, and puts it in the outer bag.
11. "Dirty hands" seals the outer bag and packs it into the cooler.

FIELD QUALITY CONTROL SAMPLES

Per the method, field quality control samples include field duplicates and field blanks. A field duplicate sample is collected once for every 10 regular samples. It is collected immediately following the regular sample, and has the same location identification, but a unique sample number. Procedure for collecting the sample is the same as for the regular sample. A field blank sample is collected once for every 10 samples. It should be collected on the same day as the regular sample but before the sampling port is opened.

1. "Dirty hands" removes the double-bagged, preserved polyfluoroethylene container from the cooler.
2. "Dirty hands" opens the outer bag.
3. "Clean hands" opens the inner bag, removes the sample bottle, and reseals the inner bag.
4. "Dirty hands", then reseals the outer bag.
5. "Clean hands" pours the laboratory reagent water into the sample bottle.
6. "Clean hands" reseals the lid and affixes the completed sample label.
7. "Dirty hands" reopens the outer bag.
8. "Clean hands" opens the inner bag, places the container inside it, seals the bag, places a custody seal outside of the bag, and puts it in the outer bag.
9. "Dirty hands" seals the outer bag and packs it into the cooler.

TETRA TECH FW, INC.

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