

**QUALITY ASSURANCE
QUALITY CONTROL
REPORT**

**NAVAL AIR STATION
MOFFETT FIELD**

DECEMBER 1986

**EARTH SCIENCES ASSOCIATES
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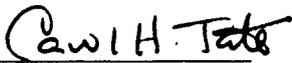
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MOFFETT FIELD QA/QC REPORT

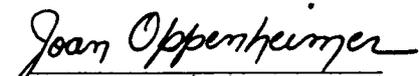
FOREWORD

Montgomery Laboratories is pleased to provide the accompanying QA report on samples analyzed as part of the Moffett Field Confirmation Study (Verification Step). We have reviewed the data incorporated in this report for precision, accuracy, comparability and completeness.

Signed


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EXECUTIVE SUMMARY

This report on the Quality Assurance (QA) results from the Moffett Field Confirmation Study (Verification Step) summarizes information on sample holding times, information on sample chain of custody, documentation that quality assurance guidelines for spike and duplicate ranges have been met, and summarizes any problems observed during the course of this analytical program.

The Quality Assurance/Quality Control (QA/QC) Plan specified sample holding times, analytical methodologies, QA protocols for calibration, chain of custody procedures, duplicate and spike frequencies, and duplicate and spike acceptance criteria. Approximately 70 soil samples and 150 water samples were analyzed for a variety of compounds, including Volatile Organic Analysis (VOA), Base Neutral Acids (BNA), Polychlorinated Biphenyls (PCB), Organolead, Priority Pollutant Metals, pH, Nitrate-Nitrogen (NO₃) and Total Kjeldahl Nitrogen (TKN). Overall the guidelines and criteria in the (QA/QC) Plan were met with few changes or exceptions.

All of the samples were analyzed within EPA specified holding times with the exception of VOAs collected during the third sampling period and a few BNAs which arrived around the end of August during the first sampling period. The VOAs were analyzed within 17 days (as opposed to the 14 day desired period) as a result of GC/MS down time and the Thanksgiving Holiday and the BNAs were extracted within 10 days rather than the desirable 7 days due to the Labor Day holiday. Although these data must be considered suspect because of the deviation from the specified holding times, it should be noted that these holding times are somewhat arbitrary and, in our opinion, this deviation did not affect the quality of the data. There were no other problems in meeting holding times.

Chain of custody procedures were followed for all samples. In one case there was an apparent sample discrepancy observed on the custody sheets. This resulted from mislabelling and was resolved via conversations with the Project Engineer.

Standardization procedures differed from those described in the QA/QC manual. A known external reference sample was not analyzed with every run for VOA/BNA/and PCB analysis due to the unmanageable volume of additional work this check would have generated and the unavailability of large numbers of EPA external reference samples. Instead, the accuracy of standards was verified by monitoring results of blind check samples submitted by the QA Officer during the project and results from Federal and State Certification samples which were analyzed during this same period. Ongoing accuracy was monitored by comparing response factors on a day to day basis with standards verified earlier.

Raw data information and QC trends data are available from the centralized files, at analytical workstations or in the QA Officer's files.

The precision and accuracy data obtained from the duplicate and spike samples were within the acceptance limits specified in the QA/QC plan for all analytes with the exception of the spike recovery data for the more volatile BNA constituents and pentachlorophenol. The recoveries for 1,4 dichlorobenzene, pyrene, 1,2,4 trichlorobenzene, and phenol were unacceptably low for samples collected during the first and part of the second sampling periods because the boiling temperature during extraction was too high. The problem was discovered and corrected during the second sampling period and recoveries were acceptable from then on. These compounds were generally not detected during any sample period even when the recoveries were within acceptable ranges. Recoveries for pentachlorophenol were below acceptable limits for all three sampling periods because the extraction was performed without methylation. Due to these poor recoveries, the possibility exists that these compounds could have been present in some of the samples but were not detected during analysis.

TABLE OF CONTENTS

INTRODUCTION	p. 1
Objectives of QA/QC Plan	p. 1
COMPLIANCE WITH QA/QC PLAN	p. 1
External Reference Samples	p. 1
QA Officer Review	p. 16
Filter Blanks	p. 16
Chain of Custody	p. 17
QA/QC PERFORMANCE AND TRENDS	p. 17
ARCHIVE INVENTORY	p. 19
Raw Data	p. 19
QC Charts	p. 19
Corrective Action Logs	p. 19
Sample Lists	p. 19
Chain of Custody	p. 19
Lab Notebooks	p. 19
CONCLUSIONS	p. 19
APPENDIX A	
APPENDIX B	
APPENDIX C	

LIST OF TABLES

TABLE 1	VOA Spike Recoveries, Groundwater	P. 2
TABLE 2	VOA Duplicate Results, Groundwater	P. 3
TABLE 3	BNA Spike Recoveries, Groundwater	P. 4
TABLE 4	Metals Spikes and Duplicates, Groundwater	P. 5
TABLE 5	PCB Spikes and Duplicates, Groundwater	P. 8
TABLE 6	NO ₃ /TKN/Organo Pb Spikes and Duplicates	P. 9
TABLE 7	VOA and BNA Duplicates, Soils	P. 10
TABLE 8	VOA Spike Recoveries, Soils	P. 11
TABLE 9	BNA Spike Recoveries, Soils	P. 12
TABLE 10	Metals Spike Recoveries & Duplicates, Soils	P. 13
TABLE 11	pH, Organolead and PCB Spike Recoveries and Duplicates, Soils	P. 14

INTRODUCTION

Objectives of QA/QC Program

The objectives of the QA/QC Program for sampling and analyses at the Naval Air Station, Moffett Field are defined below.

- 1) To provide traceability from sample site collection through analysis in order to verify that all QC criteria as outlined in the QA/QC manual were met and documented. Complete traceability is provided by the summary tables in Appendix A since the dates for sampling, extraction, and analysis can be readily cross-referenced to the appropriate chain of custody form, chain of custody log book, extraction log, or analytical run sheet, each of which contains detailed documentation of the QC criteria.
- 2) To maintain proper holding times from initial field collection through final laboratory analysis. The summary tables in Appendix A provide a complete listing of all holding times for each sample for each constituent analyzed.
- 3) To maintain adequate sample custody from initial field collection through final laboratory analysis with the use of chain of custody forms and a chain of custody logbook and storage of samples in a dedicated locked chain of custody refrigerator.
- 4) To insure the precision and accuracy of the analytical results through the use of field blanks, duplicate sample analyses, and spiking of samples. Duplicate and spike recovery analyses were performed for each requested parameter on 10% of the samples. This precision and accuracy data is presented in Tables 1-11.

COMPLIANCE WITH QA/QC MANUAL

All of the QA/QC guidelines and criteria specified in the Moffett Field QA/QC manual were followed for the duration of this project with the following exceptions.

External Reference Samples

A known external reference sample was not analyzed with every run for VOA, BNA, and PCB analysis due to the unmanageable volume of additional work that this would generate and the unavailability of large numbers of EPA external reference samples. The accuracy of the standards used for calibration during this project were verified, from results of blind check samples submitted by the QA Officer and also results of various federal and state certification and QA programs that the laboratory participates in on a routine basis.

TABLE 1
VOA SPIKE RECOVERIES, GROUNDWATER

Parameter	Sample Period							
	1			2			3	
	MW-9 (%)	W2-1A (%)	W3-1B (%)	MW-1 (%)	MW-7 (%)	W3-2A (%)	MW-7 (%)	W3-2A (%)
Benzene	102	105	99.7	94	93	101	110	103
Chlorobenzene	98.8	80.3	87.1	115	86	97	100	106
Chloroform	103	101	106	102	95	91	93	104
1,1-Dichloroethene	99.2	108	96.3	107	83	97	94	101
Toluene	102	88.5	90.1	89	94	100	106	100
Trichloroethene	108	104	102	97	60	97	74	102
Acrolein							92	
Bromoform							102	
Carbon Tetrachloride							91	
Dibromochloromethane							98	
Dichlorobromomethane							81	
1,1-Dichloroethane							91	
1,2-Dichloroethane							92	
1,2-Dichloropropane							81	
Ethylbenzene							98	
Methylene Chloride							92	
1,1,2,2-Tetrachloroethane							103	
Tetrachloroethene							97	
1,1,1-Trichloroethane							91	
1,1,2-Trichloroethane							102	
trans-1,3-Dichloropropene							98	
cis-1,3-Dichloropropene							97	
trans-1,2-Dichloroethene							91	

Note: All samples spiked at 250mg into 25ml.

TABLE 2
VOA DUPLICATE RESULTS, GROUNDWATER

Parameter	Sample Period							
	1			2			3	
	MW-9 ^a (ug/l)	W2-1A (ug/l)	W3-1B (ug/l)	MW-1 (ug/l)	MW-7 (ug/l)	W3-2A (ug/l)	MW-7 (ug/l)	W3-2A (ug/l)
Benzene	0.3/0.3				0.1/0.1			
Chloroform	0.1/0.2		1.6/1.9	0.2/0.2	0.3/0.3			
1,1-Dichloro- ethane	3.4/1.2			0.2/0.2	4/3.6			
1,1-Dichloro- ethene	1.4/1.4			0.1/0.1	1.1/1.0			
Methylene Chloride	0.7/11							
Toluene	0.1/0.3	0.2/<0.5						
Trichloroethene	15/4.4				36/32			
trans-1,2- Dichloroethene	0.8/0.2				0.1/0.1			
m,p-Xylenes	0.1/0.2							
cis-1,2- Dichloroethene	16/8.1	0.2/<0.5		0.8/0.8	2.0/2.0			
Tetrachloro- ethane				7.7/8.2				
1,1,1-Trichloro- ethane				0.2/0.2				
Chlorobenzene					0.1/0.1			
1,2-Dichloro- ethane					0.1/0.2			

^a Duplicates out of two separate bottle pairs may be sampling error or mislabelling since the two vials from each set agreed.

Blank indicates compound not detected.

TABLE 3
BNA SPIKE RECOVERIES, GROUNDWATER

Parameter	Sample Period							
	1			2			3	
	W2-1A (%)	W3-1B (%)	MW-9 (%)	MW-1 (%)	MW-7 (%)	W3-2A (%)	MW-7 (%)	W3-2A (%)
Acenaphthene	84	98	80	100	48	82	92	108
1,4-Dichlorobenzene	26	63	28	96	42	78	86	86
di-n-Butylphthalate	52	105	92	120	74	98	94	110
2,4-Dinitrotoluene	58	133	76	110	80	62	100	98
N-Nitrosodi- N-propylamine	82	105	86	100	120	80	110	84
Pyrene	46	105	104	100	110	90	100	100
1,2,4-Trichloro- benzene	26	63	38	100	48	82	80	90
2-Chlorophenol	48	34	62	84	100	64	120	70
2-Nitrophenol	50	76	94	82	120	86	150	70
p-Chloro-m-cresol	42	78	76	94	100	54	100	94
Pentachlorophenol	80	82	6	NR ^a	50	NR	NR	NR
Phenol	18	19	36	92	100	56	120	92

All samples spiked at 1250 ng into 25 ml.

^a NR = Not Reported (samples were not methylated so recoveries may be low for pentachlorophenol).

TABLE 4

METALS SPIKES AND DUPLICATES, GROUNDWATER
FIRST SAMPLING PERIOD

	W3-1B		W8-1A		W2-1A		MW-9	
	Duplicate (mg/L)	R ^a (%)	Duplicate (mg/L)	R (%)	Duplicate (mg/L)	R (%)	Duplicate (mg/L)	R (%)
Silver	<0.005/<0.005	96	<0.005/<0.005	97	<0.005/<0.005	96	<0.005/<0.005	99
Arsenic	<0.001/<0.001	95	<0.001/<0.001	90	<0.001/<0.001	90	<0.001/<0.001	90
Beryllium	<0.004/<0.004	94	<0.004/<0.004	101	<0.004/<0.004	101	<0.004/<0.004	96
Cadmium	<0.003/<0.003	99	<0.003/<0.003	99	<0.003/<0.003	101	<0.003/<0.003	98
Chromium	<0.029/<0.029	95	<0.029/<0.029	99	<0.029/<0.029	100	<0.029/<0.029	98
Copper	<0.007/<0.007	99	<0.007/<0.007	99	<0.007/<0.007	103	<0.007/<0.007	104
Mercury	0.0007/0.0007	79	<0.0003/<0.0003	100	<0.0003/<0.0003	101	<0.0003/<0.0003	107
Nickel	<0.008/<0.008	99	0.026/0.029	101	<0.008/<0.008	100	<0.008/<0.008	100
Lead	<0.002/<0.002	98	<0.002/<0.002	93	<0.002/<0.002	88	<0.002/<0.002	88
Antimony	<0.002/<0.002	93	<0.002/<0.002	93	<0.002/<0.002	93	<0.002/<0.002	93
Selenium	<0.010/<0.010	101	0.010/0.010	90	0.010/0.010	98	0.010/0.010	91
Thallium	<0.005/<0.005	90	<0.005/<0.005	88	<0.005/<0.005	88	<0.005/<0.005	88
Zinc	<0.005/<0.005	90	<0.005/<0.005	88	<0.005/0.005	88	<0.007/<0.007	98

TABLE 4 - (Continued)

Table 8 Metals Spike Recoveries & Duplicate Results, Groundwater
Second Sampling Period

	MW-1 Duplicate (mg/L)	R (%)	MW-7 Duplicate (mg/L)	R (%)	W3-2A Duplicate (mg/l)	R (%)
Silver	<0.005/<0.005	97	<0.005/<0.005	99	<0.005/<0.005	98
Arsenic	<0.001/<0.001	95	<0.001/<0.001	90	0.024/0.025	90
Beryllium	<0.004/<0.004	101	<0.004/<0.004	101	<0.004/<0.004	100
Cadmium	<0.003/<0.003	97	<0.003/<0.003	99	<0.003/<0.003	97
Chromium	<0.029/<0.029	98	<0.029/<0.029	97	0.029/<0.029	94
Copper	<0.007/<0.007	98	<0.007/<0.007	99	0.007/<0.007	98
Mercury	<0.0003/<0.0003	101	0.0003/0.0003	96	<0.0003/<0.0003	111
Nickel	<0.008/<0.008	99	0.008/0.008	100	0.019/0.016	98
Lead	<0.002/<0.002	93	<0.002/<0.002	98	<0.002/<0.002	93
Antimony	0.004/0.004	87	<0.002/<0.002	93	0.026/0.028	89
Selenium	0.01/0.01	96	0.02/0.02	96	0.03/0.03	102
Thallium	<0.005/<0.005	88	<0.005/<0.005	90	<0.005/<0.005	85
Zinc	0.009/0.007	100	<0.010/<0.007	100	0.021/0.016	102

TABLE 4 - (Continued)

Table 8 Metals Spike Recoveries & Duplicate Results, Groundwater
Third Sampling Period

	MW-7 Duplicate (mg/L)	R (%)	W3-2A Duplicate (mg/L)	R (%)	W2-2A Duplicate (mg/l)	R (%)
Silver	<0.005/<0.005	95	<0.005/<0.005	94	<0.005/<0.005	101
Arsenic	<0.001/<0.001	90	0.010/0.010	90	0.018/0.017	90
Beryllium	<0.004/<0.004	96	<0.004/<0.004	98	<0.004/<0.004	99
Cadmium	<0.003/<0.003	102	<0.003/<0.003	100	<0.003/<0.003	98
Chromium	<0.029/<0.029	96	<0.029/<0.029	94	<0.029/<0.029	95
Copper	<0.007/<0.007	102	<0.007/<0.007	99	<0.007/<0.007	100
Mercury	0.0007/0.0007	92	<0.0003/<0.0003	101	0.0003/0.0003	101
Nickel	<0.008/<0.008	98	<0.008/<0.008	98	0.025/0.026	98
Lead	<0.002/<0.002	88	<0.002/<0.002	88	<0.002/<0.002	90
Antimony	0.005/0.004	93	0.011/0.008	85	0.016/0.018	93
Selenium	0.03/0.03	102	0.04/0.03	92	0.020/0.020	88
Thallium	<0.005/<0.005	85	<0.005/<0.005	90	<0.005/<0.005	88
Zinc	<0.007/<0.007	101	<0.007/<0.007	100	<0.007/<0.007	97

TABLE 5
PCB SPIKES & DUPLICATES, GROUNDWATER

Sampling Period	Location	Arochlor	Duplicate (ug/l)	Recovery (%)
1	W2-1A	1016	ND/ND	125
		1221	ND/ND	
		1232	ND/ND	
		1242	ND/ND	
		1248	ND/ND	
		1254	ND/ND	
		1260	ND/ND	
2	W2-2A	1016	ND/ND	94
		1221	ND/ND	
		1232	ND/ND	
		1242	ND/ND	
		1248	ND/ND	
		1254	ND/ND	
		1260	ND/ND	

TABLE 6

NO3/TKN/ORGANO Pb SPIKES AND DUPLICATES

Sampling Period	Location	Parameter	Duplicate (mg/L)	Recovery (%)
1	W2-1A	NO3	2.3/2.3	106
		TKN	<0.5/<0.5	102
	W9-1A	Organo Pb	<0.05/<0.05	98
2	W2-2A	NO3	3.5/3.5	100
		TKN	0.7/0.8	114
	W5-1A	Organo Pb	<0.05/<0.05	98

TABLE 7

VOA AND BNA DUPLICATES, SOILS

Parameter ^a	W1-1A (3-4.5) ^b (mg/kg)	W2-1A (10-11-5) (mg/kg)	W5-1A (10-11-5) (mg/kg)	W6-1A (6-7-5) (mg/kg)	W8-1A (6-7-5) (mg/kg)	W9-2A (13-14-5) (mg/kg)
VOA						
Toluene	0.002/0.002	ND/ND	0.003/0.002	ND/ND	ND/ND	ND/ND
Trichloro- ethene	0.022/0.062	ND/ND	ND/ND	ND/ND	ND/ND	ND/ND
Cis-1,2- dichloro- propane	0.011/0.025	ND/ND	ND/ND	ND/ND	ND/ND	ND/ND
BNA						
Diethyl- phthalate	0.7/ND	ND/ND	NS ^c	ND/ND	ND/ND	NS

^a Only detected compounds are listed on the Table.

^b Depth of sample in feet.

^c NS = No samples available for duplicate and spike.

TABLE 8

VOA SPIKE RECOVERIES, SOILS

Parameter	W5-1A (10-11.5) ^a (%)	W6-1A (6-7.5) (%)	W2-1A (10-11.5) (%)	W8-1A (6-7.5) (%)	W1-1A (3-4.5) (%)	W9-2A (13-14.5) (%)
Benzene	105	110	103	90	93	93
Chlorobenzene	102	100	90	98	90	91
Chloroform	106	106	102	93	92	96
1,1-Dichloro- ethene	104	118	105	98	96	94
Toluene	102	96	91	86	90	95
Trichloro- ethene	110	113	105	104	106	96

a = Depth of sample in feet.
All samples spiked at 250 ng into 1 gm.

TABLE 9

BNA SPIKE RECOVERIES, SOILS

Parameter	W6-1A (6-7.5) ^a (%)	W2-1A (10-11.5) (%)	W1-1A (3-4.5) (%)	W8-1A (6-7.5) (%)
Acenaphthene	91	84	84	88
1,4-Dichlorobenzene	NA	5	18	21
di-n-Butylphthalate	105	86	100	83
2,4-Dinitrotoluene	110	82	90	91
N-Nitrosodi-N-propylamine	97	75	70	83
Pyrene	120	77	90	83
1,2,4-Trichlorobenzene	NA	23	43	51
2-Chlorophenol	94	82	76	77
2-Nitrophenol	99	83	78	77
p-Chloro-m-cresol	90	91	100	93
Pentachlorophenol	110	77	130	87
Phenol	97	93	87	76

All Samples spiked at 3600 ng into 1 gm.
a = Depth of sample in feet.

TABLE 10

METALS SPIKE RECOVERIES & DUPLICATES, SOILS

Parameter	W6-1A (6-7.5) ^a		W2-1A (10-11.5)		W1-1A (3-4.5)		W8-1A (6-7.5)	
	Recoveries (%)	Duplicate (mg/L)	Spike (%)	Duplicate (mg/L)	Spike (%)	Duplicate (mg/L)	Spike (%)	Duplicate (mg/L)
Silver	100%	<0.46/<0.49	98%	<0.49/<0.47	97%	<0.49/<0.47	99%	<0.45/<0.46
Arsenic	84	7.4/5.9	93	5.8/4.7	83	18/15	94	24/24
Beryllium	98	<0.37/<0.4	98	<0.39/0.38	98	0.29/0.28	98	0.63/0.46
Cadmium	100	<0.28/<0.29	98	<0.29/<0.28	98	<0.29/<0.28	98	<0.27/<0.28
Chromium	91	35/32	85	35/38	97	53/52	93	56/60
Copper	101	25/23	102	29/31	103	34/34	99	38/38
Mercury	102	0.08/0.08	101	0.08/0.08	96	0.065/0.078	102	0.06/0.07
Nickel	100	56/49	97	52/53	98	60/58	98	82/83
Lead	89	<4.6/<4.9	89	<4.9/<4.7	98	<4.9/<4.7	94	<4.5/<4.6
Antimony	98	<0.14/<0.15	93	<0.14/<0.14	93	<0.14/<0.14	98	<0.14/<0.14
Selenium	101	0.92/1.0	86	0.97/0.75	106	0.97/0.94	96	0.90/0.92
Thallium	88	<0.5/<0.53	88	<0.52/<0.51	88	<0.52/<0.51	90	<0.49/<0.5
Zinc	102	46/46	105	51/52	102	56/56	102	69/71

All metals spiked at 5.0 ppm except As, Se, Sb (0.2 ppm), Hg (0.1 ppm) and Tl (0.4 ppm).

a = Depth of sample in feet.

TABLE 11

PH, ORGANOLEAD AND PCB (AROCHLOR)
SPIKE RECOVERIES AND DUPLICATES, SOILS

Location	Parameter	Duplicates (ug/L) ^a	Spikes (%)
W1-1A (3-4.5) ^b	pH Arochlor 1254 ^d	8.8/8.6 ND/ND ^e	NA ^c 113
W2-1A (10-11.5)	pH Arochlor 1254 ^d	8.2/8.2 ND/ND	NA 108
W5-1A (10-11.5)	pH Organolead ^f	8.1/8.1 <0.3/<0.3	NA 104
W6-1A	pH	7.9/8.0	NA
W8-1A	pH Arochlor 1254 ^d	8.7/8.7 ND/ND	NA 101
W9-1A	Organolead ^f	<0.05/<0.05	98
W9-2A	pH Organolead ^f	8.0/7.8 <0.3/<0.3	NA 106

- ^a pH values in units.
^b Depth of sample in feet.
^c NA = Not applicable.
^d Spiked at 129 ng into 1 gm.
^e ND = Not detected.
^f Spiked at 2500 ng into 1 gm.

The results of check samples analyzed for internal and external QA programs during the Moffett Field project are presented in Appendix B. A list of all the priority pollutant compounds detected in the soil and groundwater samples from the Moffett Field site is provided in Appendix C. The Appendix C list contains code letters next to each detected compound which was included in one of the check sample programs listed in Appendix B. Review of this list indicates that 72% of the VOA groundwater compounds, 78% of the VOA soil compounds, 62% of the BNA groundwater compounds, 25% of the BNA soil compounds, and 75% of the PCB soil arochlors were included in at least one of the check sample programs listed in Appendix B. No PCB arochlors were detected in any of the groundwater samples. The check sample programs also covered the metals, TKN, NO₃, and pH although analytical runs for these compounds included the use of an external reference standard. The check sample programs did not cover organolead but none was detected in the site samples and an external reference standard was included with each analytical run.

All of the Appendix B check sample results are acceptable with the following exceptions explained below.

VOA's - Benzene

One of the two blind check samples submitted on 10/2/85 was 9% above the upper limit of the acceptance range. Since the reported value was only slightly above range and the other three benzene check samples were acceptable, this analysis was considered to be in control.

BNA's - 2,4 Dimethylphenol, 2-Nitrophenol, p-chloro-m-cresol, Diethyl Phthalate

The blind check sample submitted on 10/2/85 was 20% below the lower acceptance range for 2,4 Dimethylphenol, 9% below the lower acceptance range for 2-Nitrophenol, 10% above the upper acceptance range for p-chloro-m-cresol, and 18% below the lower acceptance range for Diethyl Phthalate. These deviations outside the acceptance range are probably caused by low or high extraction recoveries. Since surrogate standards were not utilized, correction for recoveries could only be made for 2-Nitrophenol and p-chloro-m-cresol since these compounds were included in the spiking solution. The recovery corrected values are provided in parentheses and bring the values well within the acceptance range. Although the uncorrected recoveries for these two compounds are well within the acceptable recovery ranges provided in Method 625 of the Federal Register Vol. 49, No. 209 of October 1984, the check sample values only fall within the acceptance range when the values are corrected for recovery. EPA protocol requires reporting of BNA results without correcting for recovery and only requires that recoveries fall within an acceptable range specified for each compound. This acceptable recovery range is usually wider than the acceptance range calculated for check samples and accounts for the reason why 4 of the 11 compounds present in the blind check sample were slightly outside of the acceptance range. The acceptance range for most check samples is based on ± 2 standard deviations of the mean value obtained from interlaboratory analyses of the sample.

PCB's

The arochlor 1248 and arochlor 1260 results for WP014 were both 60% of the true values and just outside the acceptance range. Review of the analysis revealed that a recovery sample was not run the day the EPA samples were extracted. Since the results for both arochlors were 60% of the true values, there may have been a low recovery which was not detected by the analyst. The WP014 results were received by the laboratory on 6/25/85 and since that time a recovery is always performed with each set of extracted samples. The laboratory's results for the PCB samples analyzed for WP015 during 9/85 were both acceptable.

TKN

The high level sample for WP014 was 130% of the true value and outside the acceptance limits. Investigation of the TKN run revealed a standardization error. The measured value for the known EPA external reference sample was 15% high, indicating that the stock standard was probably 15% low. This discrepancy should have been investigated, verified, and a new stock standard made up prior to reporting the data for the WP014 samples. Correcting for the standardization error would have given an acceptable value for the high level sample and a more accurate value for the low level sample as summarized below.

True Value	Reported Value	Corrected Reported Value
(mg/L)	(mg/L)	(mg/L)
2.20	2.50	2.17
10.5	13.6	11.6

After determining this cause of error, a new stock standard was prepared prior to shipment of the Moffett Field site samples. The TKN results performed for WP015 in September 1985 were not only acceptable, but the reported values were identical to the true values.

QA Officer Review

The QA Officer no longer reviews all the raw data prior to analyst data entry. Data review is performed by section heads and backup analysts who are familiar with each analysis. In the event that a backup analyst or section head is not available, the Manager of Chemical Services or the QA Officer reviews the data. This program has been in successful operation within the laboratory since October 1985.

Filter Blanks

Filter blanks were not run with each batch of filters used for field filtering the metals samples. However most of the metals results were below detection limits, showing that contamination from filters was not a significant problem.

Chain of Custody

The chain of custody paperwork for sites W7-3A and W7-3B collected during phase III of sampling were incorrectly identified as W7-1A and W7-1B. This discrepancy was noticed upon receipt in the laboratory because the paperwork did not match the bottle ID's and there were two sets of paperwork for sites W7-1A and W7-1B and none for W7-3A and W7-3B. This error was verified with the Project Engineer but the change was never recorded on the incorrect chain of custody forms. This error is noted on the sample list with a footnote (Table 1 in Appendix A).

QA/QC PERFORMANCE AND TRENDS

The results of duplicate and spike analyses on Moffett samples are summarized on Tables 1-11. The tables show the percent recovery for spikes and the duplicate results. The BNA results for the duplicate samples were all not detected and therefore there is no table summarizing the BNA duplicate results. For the VOA and BNA analyses, a set of representative compounds were chosen for the spiking solution and monitored for percent recovery. Each chosen compound is a good model for a particular class of compounds and the performance of the group is a good indicator of overall precision. All results are acceptable except for the following problems.

- 1) Methylene chloride was found in many of the travel blanks with concentrations up to 2 ppb. This is most likely due to contamination introduced into the travel blank water at the time the samples left the laboratory due to the ubiquitous use of this solvent for extractions. This is a common contamination problem for laboratories involved with organic analysis of environmental samples. In addition, there were a number of samples in which the travel blank was contaminated with methylene chloride but the samples were not, suggesting that the source of the contamination was in the laboratory at the time of travel blank preparation.
- 2) Unacceptable VOA duplicates on MW-9 Phase I Aqueous Sample (Table 6) was due to collection of separate sets of two 40 ml vials for the duplicates. This is probably caused by sampling error or mislabelling in the field since each pair of vials for each set agreed within QC criteria but the results of the two sets were very different. All other VOA duplicates for this project as well as duplicates run for other clients during this period were within the specified acceptance criteria. The unacceptable results for site MW-9 during Phase 1 sampling should be considered an anomaly due to sampling error and not indicative of statistical lack of control for this analysis.
- 3) As shown in Table 3, recoveries were unacceptable for 1,4 - Dichlorobenzene, Pyrene, 1,2,4 - Trichlorobenzene, and Phenol. These unacceptable recoveries occurred in the first phase of sampling and improved during the next two phases because the boiling temperature used during extraction for phase 1 was too

high (set for hexane) which volatilized some of the compounds. Boiling was too rapid at this temperature and some of the extracts boiled to dryness resulting in recovery loss. The worst recoveries occurred for the most volatile compounds. Recoveries improved with time and all are acceptable during the third series because the problem was discovered and a lower boiling temperature used. Although it is possible that the low boiling compounds were lost in sample preparation (and may therefore have been present and not detected) it is unlikely since there was always some recovery and no BNA's were detected in later phases when recoveries were good except at site MW-4. Bis(2-ethylhexyl)phthalate was detected at low levels in many of the samples but this compound is a ubiquitous contaminant in the environment and was probably not really present in the samples. It is also not a volatile compound and its recovery through extraction would not be adversely affected by the higher boiling temperatures.

Sample site MW-4 contained several volatile compounds (1,4 dichlorobenzene, 1,2 dichlorobenzene, phenol, and 2,4 dimethylphenol). The levels of these compounds were significant and it is possible that the levels detected during Phase 1 may have been higher than those reported because of the recovery problem.

- 4) Pentachlorophenol (Table 3) had unacceptable recoveries in many cases because the extraction was performed without methylation, which would improve recoveries. There is therefore the possibility that pentachlorophenol could have been present in the samples
- 5) Four of the BNA reports have detection limits which are a factor of 10 higher than normal. This occurred because the initial 1 liter extraction had to be discarded due to phase separation problems and only 100 ml of sample remained for re-extraction leading to the factor of 10 increase in the reported detection limit. Since no contaminants were found at these sites during the two later phases of sampling, it is probable that contaminants were probably not present at levels between the normal and 10-fold increased detection limits.
- 6) Most of the VOA samples in the third series were not analyzed within the 14 day EPA specified holding period because the GC/MS was down during part of the 14 day period and the 15th day occurred on Thanksgiving when the lab was closed. All of the late samples were analyzed within 3 days past the holding period with the exception of one sample which was analyzed 5 days late (Table 2 of Appendix A).
- 7) A few of the BNA samples collected during the first series exceeded the 7 day extraction deadline by several days due to the Labor Day holiday. These were all extracted within 10 days of sampling (Table 2 of Appendix A).

ARCHIVE INVENTORY

Raw Data

Raw Data, which includes chart paper, ADP system output, and calibration charts are stored at the analyst's workstation in binders or in laboratory notebooks, as appropriate.

QC Charts

Separate control charts for each analyte are not maintained, but all precision and accuracy data is on file and available for QC charting to cover the period during which the Moffett samples were analyzed should this be desired. All precision and accuracy data performed specifically on Moffett samples is presented in this report and meets specified guidelines for precision and spike recovery except as noted above.

Corrective Action Logs

Specific corrective action logs are not maintained. Instead changes are noted on analytical worksheets or in laboratory notebooks (or in instrument logbooks when appropriate) and method writeups are modified to take note of corrective actions.

Sample Lists

A record of all samples received by the laboratory is stored with the laboratory clerk in binders. In addition, the sample list is maintained on the laboratory computer system. A full list of all samples received from Moffett is presented in this report.

Chain of Custody

A copy of all chain of custody forms is filed in the main laboratory files. The Chain of Custody notebook with signatures as to sample custody is filed in the office of the Laboratory Operations Manager.

Lab Notebooks

Laboratory notebooks with analytical notes are stored at the analysts' workstations or in centralized locations within the laboratory (after they are completed).

CONCLUSIONS

All of the information presented here supports the conclusion that data obtained for this project are reliable and meet all requisite QC criteria except as noted in this report. For those cases where data did not meet the QC criteria, problems were corrected shortly after they occurred and the possible impact that these problems may have on the data are fully discussed in this report.

TABLE 1 APPENDIX A

AQUEOUS SAMPLE DATA: COLLECTION AND LAB RECEIPT

Location	Period	Date	Time	Sampler	Receipt	Lab Number	
						Sample	VOA Blank
W1-1A	First Series	9/16	11:00	Rodgers/Jones	9/17	F91390	F91391
W1-2A	"	9/16	12:15 ^b	Rodgers/Jones	9/17	F91388	F91389
W1-3A	"	9/16	10:30	a	9/17	F91386	F91387
W1-4A	"	9/16	4:30	Rodgers/Jones	9/17	F91392	F91393
W2-1A	"	9/11	9:00	"	9/12	F90987	F90990
W2-1A	"	9/11	9:00	"	9/12	F90989(Dup)	F90992
W2-1A	"	9/11	9:00	"	9/12	F90988(Spk)	F90991
W2-2A	"	9/12	3:15	"	9/13	F91066	F91069
W2-3A	"	9/12	2:00	"	9/13	F91067	F91070
W3-1A	"	9/12	9:45	"	9/13	F91068	F91071
W3-1B	"	8/28	1:30	"	8/30	F80041	F80044
W3-1B	"	8/28	1:30	"	8/30	F80042(Dup)	-
W3-1B	"	8/28	1:30	"	8/30	F80043(Spk)	-
W3-1C	"	8/28	9:00	"	8/30	F80054	F80056
W3-2A	"	9/12	1:15	"	9/13	F91072	F91074
W3-2B	"	8/29	8:30	"	8/30	F80045	F80047
W3-3A	"	9/12	11:15	"	9/13	F91073	F91075
W3-3B	"	8/29	1:30	"	9/13	F80046	F80048
W4-1A	"	9/12	8:30	"	8/30	F91076	F91077
W4-1B	"	9/3	10:30	Rodgers	9/4	F90348	F90352
W4-2A	"	9/17	8:00	Rodgers/Jones	9/18	F91531	F91532
W5-1A	"	9/17	12:30	"	9/18	F91526	F91527
W5-2A	"	9/17	2:00	"	9/18	F91528	F91529
W5-3A	"	9/17	3:30	"	9/18	F91522	F91523
W6-1A	"	9/11	1:00	"	9/12	F90995	F90998
W6-1B	"	9/9	12:30	"	9/10	F90700	F90701
W7-1A	"	9/11	2:45	"	9/12	F90996	F90999
W7-2A	"	9/11	3:45	"	9/12	F90997	F91000
W7-3A	"	9/18	9:15	"	9/19	F91549	F91550

TABLE 1 APPENDIX A - (Continued)

AQUEOUS SAMPLE DATA: COLLECTION AND LAB RECEIPT

Location	Period	Date	Time	Sampler	Receipt	Lab Number	
						Sample	VOA Blank
W7-3B	"	9/10	10:45	"	9/11	F90910	F90913
W8-1A	"	9/18	10:45	"	9/19	F91551	F91552
W8-1A	"	9/18	10:45	"	9/19	F91547(Dup)	-
W8-1A	"	9/18	10:45	"	9/19	F91548(Spk)	-
W9-1A	"	9/17	9:15	"	9/18	F91524	F91525
W9-1A	"	9/17	9:15	"	9/18	F91513(Dup)	-
W9-1A	"	9/17	9:15	"	9/18	F91514(Spk)	-
W9-2A	"	9/16	8:45	"	9/17	F91384	F91385
W10-1A	"	9/11	12:00	"	9/12	F90993	F90994
W10-1B	"	9/5	4:00	"	9/6	F90527	F90528
W10-2B	"	9/5	1:30	"	9/6	F90525	F90526
W10-2A	"	9/10	2:30	"	9/11	F90915	F90916
MW-1	"	9/4	2:30	"	9/5	F90435	F90436
MW-4	"	9/10	9:00	"	9/11	F90909	F90912
MW-5	"	9/10	12:00	"	9/11	F90911	F90914
MW-6	"	9/9	11:30	"	9/10	F90702	F90703
MW-7	"	9/9	3:00	"	9/10	F90704	F90705
MW-9	"	9/9	8:45	"	9/10	F90694	F90695
MW-9	"	9/9	8:45	"	9/10	F90692(Dup)	-
MW-9	"	9/9	8:45	"	9/10	F90693(Spk)	-
MW-11	"	9/9	10:30	"	9/10	F90698	F90699
MW-12A	"	9/3	1:20	Rodgers	9/4	F90349	F90353
MW-12B	"	9/3	3:00	"	9/4	F90351	F90355
MW-15	"	9/9	2:00	Rodgers/Jones	9/10	F90696	F90697
MW-16	"	9/3	9:00	Rodgers	9/4	F90350	F90354
MW-17A	"	8/27	4:20	"	8/30	F80049	F80051
MW-17B	"	8/27	5:30	"	8/30	F80050	F80052
MW-18	"	8/28	11:00	Rodgers/Jones	8/30	F80053	F80055
MW-19	"	8/29	11:30	"	8/30	F80057	F80058

TABLE 1 APPENDIX A - (Continued)

AQUEOUS SAMPLE DATA: COLLECTION AND LAB RECEIPT

Location	Period	Date	Time	Sampler	Receipt	Lab Number	
						Sample	VOA Blank
MW-20A	"	9/5	11:45	"	9/6	F90529	F90530
MW-20B	"	9/5	10:45	"	9/6	F90531	F90532
W1-1A	Second Series	10/21	2:15	Rodgers/Jones	10/22	FA4473	FA4474
W1-2A	"	10/22	9:45	"	10/23	FA4610	FA4611
W1-3A	"	10/22	10:45	"	10/23	FA4612	FA4613
W1-4A	"	10/22	8:30	"	10/23	FA4608	FA4609
W2-1A	"	10/17	9:00	"	10/18	FA4223	FA4224
W2-2A	"	10/17	10:00	"	10/18	FA4225	FA4226
W2-2A	"	10/17	10:00	"	10/18	FA4253(Dup)	-
W2-2A	"	10/17	10:00	"	10/18	FA4254(Spk)	-
W2-3A	"	10/21	9:00	"	10/22	FA4471	FA4472
W3-1A	"	10/7	3:00	"	10/8	FA3120	FA3124
W3-1B	"	10/9	1:00	"	10/10	FA3427	FA3428
W3-1C	"	10/8	4:00	"	10/9	FA3335	FA3336
W3-2A	"	10/8	2:00	"	10/9	FA3329	FA3332
W3-2A	"	10/8	2:00	"	10/9	FA3330(Spk)	FA3333
W3-2A	"	10/8	2:00	"	10/9	FA3331(Dup)	FA3334
W3-2B	"	10/8	1:15	"	10/9	FA3337	FA3338
W3-3A	"	10/9	9:00	"	10/10	FA3429	FA3430
W3-3B	"	10/9	10:00	"	10/10	FA3423	FA3424
W4-1A	"	10/10	2:00	"	10/11	FA4067	FA4068
W4-1B	"	10/10	10:00	"	10/11	FA3465	FA3466
W4-2A	"	10/10	2:45	"	10/11	FA3459	FA3460
W5-1A	"	10/21	10:30	"	10/22	FA4467	-
W5-1A	"	10/21	10:30	"	10/22	FA4470(Dup)	-
W5-1A	"	10/21	10:30	"	10/22	FA4469(Spk)	-
W5-2A	"	10/21	12:00	"	10/22	FA4475	-
W5-3A	"	10/21	11:00	"	10/22	FA4477	-
W6-1A	"	10/14	3:00	"	10/15	FA4057	FA4065

TABLE 1 APPENDIX A - (Continued)

AQUEOUS SAMPLE DATA: COLLECTION AND LAB RECEIPT

Location	Period	Date	Time	Sampler	Receipt	Lab Number	
						Sample	VOA Blank
W6-1B	"	10/14	11:45	"	10/15	FA4049	FA4059
W7-1A	"	10/16	10:45	"	10/17	FA4149	FA4155
W7-2A	"	10/16	11:30	"	10/17	FA4147	FA4153
W7-3A	"	10/15	9:15	"	10/16	FA4114	FA4120
W7-3B	"	10/15	10:00	"	10/16	FA4113	FA4119
W8-1A	"	10/22	12:00	"	10/23	FA4606	FA4607
W9-1A	"	10/16	2:00	"	10/17	FA4148	FA4154
W9-2A	"	10/16	1:00	"	10/17	FA4146	FA4152
W10-1A	"	10/17	2:00	"	10/18	FA4215	FA4220
W10-2A	"	10/17	12:00	"	10/18	FA4216	FA4221
W10-1B	"	10/17	3:00	"	10/18	FA4217	FA4222
W10-2B	"	10/17	1:00	"	10/18	FA4218	FA4219
MW-1	"	10/15	12:30	"	10/16	FA4109	FA4115
MW-1	"	10/15	12:30	"	10/16	FA4110(Dup)	FA4116
MW-1	"	10/15	12:30	"	10/16	FA4111(Spk)	FA4117
MW-4	"	10/14	2:45	"	10/15	FA4050	FA4060
MW-5	"	10/15	1:30	"	10/16	FA4112	FA4118
MW-6	"	10/14	11:15	"	10/15	FA4054	FA4062
MW-7	"	10/14	10:00	"	10/15	FA4053	FA4061
MW-7	"	10/14	10:00	"	10/15	FA4052(Dup)	-
MW-7	"	10/14	10:00	"	10/15	FA4051(Spk)	-
MW-9	"	10/10	9:00	"	10/11	FA3461	FA3462
MW-11	"	10/10	11:00	"	10/11	FA3463	FA3464
MW-12A	"	10/14	1:15	"	10/15	FA4058	FA4066
MW-12B	"	10/14	2:00	"	10/15	FA4056	FA4064
MW-15	"	10/14	9:15	"	10/15	FA4055	FA4063
MW-16	"	10/10	12:30	"	10/11	FA3457	FA3458
MW-17A	"	10/7	11:15	"	10/8	FA3118	FA3122
MW-17B	"	10/7	12:30	"	10/8	FA3119	FA3123

TABLE 1 APPENDIX A - (Continued)

AQUEOUS SAMPLE DATA: COLLECTION AND LAB RECEIPT

Location	Period	Date	Time	Sampler	Receipt	Lab Number	
						Sample	VOA Blank
MW-18	"	10/9	2:00	"	10/10	FA3425	FA3426
MW-19	"	10/7	1:00	"	10/8	FA3121	FA3125
MW-20A	"	10/16	8:30	"	10/17	FA4150	FA4156
MW-20B	"	10/16	9:30	"	10/17	FA4145	FA4151
M-1	"	10/23	10:00	"	10/24	FA4633	-
M-2	"	10/23	11:00	"	10/24	FA4634	-
M-2(Below Surface)	"	10/23	11:00	"	10/24	FA4635	-
D-1	"	10/23	10:30	"	10/24	FA4632	-
24 W1-1A	Third Series	11/20	2:45	Rodgers/Jones	11/21	FB7009	FB7012
W1-2A	"	11/21	8:45	"	11/22	FB7095	FB7097
W1-3A	"	11/21	11:00	"	11/22	FB7096	FB7098
W1-4A	"	11/20	3:30	"	11/21	FB7010	FB7013
W2-1A	"	11/19	10:00	"	11/20	FB6899	FB6901
W2-2A	"	11/19	9:30	"	11/20	FB6900	FB6902
W2-2A	"	11/19	9:30	"	11/20	FB6903(Spk)	-
W2-2A	"	11/19	9:30	"	11/20	FB6904(Dup)	-
W2-3A	"	11/20	10:30	"	11/20	FB7011	FB7014
W3-1A	"	11/11	11:30	"	11/12	FB5951	FB5956
W3-1B	"	11/12	11:30	"	11/13	FB6102	FB6109
W3-1C	"	11/11	11:30	"	11/12	FB5952	FB5957
W3-2A	"	11/11	2:30	"	11/12	FB5961	FB5964
W3-2A	"	11/11	2:30	"	11/12	FB5962(Spk)	-
W3-2A	"	11/11	2:30	"	11/12	FB5963(Dup)	-
W3-2B	"	11/11	2:30	"	11/12	FB5953	FB5858
W3-3A	"	11/12	8:00	"	11/13	FB6101	FB6108
W3-3B	"	11/12	9:00	"	11/13	FB6103	FB6110
W4-1A	"	11/13	8:00	"	11/14	FB6180	FB6186
W4-1B	"	11/12	2:00	"	11/13	FB6104	FB6111

TABLE 1 APPENDIX A - (Continued)

AQUEOUS SAMPLE DATA: COLLECTION AND LAB RECEIPT

Location	Period	Date	Time	Sampler	Receipt	Lab Number	
						Sample	VOA Blank
W4-2A	"	11/13	8:45	"	11/14	FB6181	FB6187
W5-1A	"	11/20	11:30	"	11/21	FB7015	FB7016
W5-1A	"	11/20	11:30	"	11/21	FB7017(Spk)	-
W5-1A	"	11/20	11:30	"	11/21	FB7018(Dup)	-
W5-2A	"	11/20	12:30	"	11/21	FB7005	FB7007
W5-3A	"	11/20	1:00	"	11/21	FB7006	FB7008
W6-1A	"	11/13	1:30	"	11/14	FB6182	FB6188
W6-1B	"	11/13	1:00	"	11/14	FB6183	FB6189
W7-1A	"	11/18	2:00	"	11/19	FB6740	FB6742
W7-3A ^c	"	11/14	8:15	"	11/15	FB6375	FB6379
W7-3B ^c	"	11/14	9:30	"	11/18	FB6471	FB6472
W7-2A	"	11/18	3:00	"	11/19	FB6741	FB6743
W8-1A	"	11/21	12:00	"	11/22	FB7093	FB7094
W9-1A	"	11/18	11:00	"	11/19	FB6744	FB6746
W9-2A	"	11/18	10:00	"	11/19	FB6745	FB6747
W10-1A	"	11/19	1:00	"	11/20	FB6891	FB6895
W10-1B	"	11/19	-	"	11/20	FB6893	FB6897
W10-2A	"	11/19	11:00	"	11/20	FB6892	FB6896
W10-2B	"	11/19	12:00	"	11/20	FB6894	FB6898
MW-1	"	11/14	12:30	"	11/15	FB6372	FB6376
MW-3	"	11/18	12:45	"	11/19	FB6675	FB6676
MW-3	"	11/18	1:00	"	-	FB6636	-
MW-4	"	11/14	11:30	"	11/15	FB6373	FB6377
MW-6	"	11/13	12:00	"	11/14	FB6178	-
MW-7	"	11/13	10:30	"	11/14	FB6190	FB6193
MW-7	"	11/13	10:30	"	11/14	FB6191(Dup)	-
MW-7	"	11/13	10:30	"	11/14	FB6192(Spk)	-
MW-9	"	11/12	1:30	"	11/13	FB6105	FB6112
MW-11	"	11/12	3:00	"	11/13	FB6106	FB6113

TABLE 1 APPENDIX A - (Continued)

AQUEOUS SAMPLE DATA: COLLECTION AND LAB RECEIPT

Location	Period	Date	Time	Sampler	Receipt	Lab Number	
						Sample	VOA Blank
MW-12A	"	11/14	11:00	"	11/15	FB6374	FB6378
MW-13	"	11/18	12:00	"	11/18	FB6637	-
MW-15	"	11/13	9:30	"	11/14	FB6179	FB6185
MW-17A	"	11/11	9:30	"	11/12	FB5954	FB5959
MW-17B	"	11/11	10:30	"	11/12	FB5955	FB5960
MW-18	"	11/12	10:30	"	11/13	FB6107	FB6114

26
a No signature on chain of custody form
b Bold face type denotes PM
c Misidentified as sites W7-1A and W7-1B on Chain of Custody Form

TABLE 2 APPENDIX A

AQUEOUS SAMPLE DATA: LAB ANALYSIS DATES

Lab Number	Metals					VOA	BNA		PCB		Organo Lead	NO3	TKN
	A	B	C	D	E		Extd	Anlzd	Extd	Anlzd			
F91390	9/24	9/24	9/25	9/27	9/19	9/25	9/20	9/25	9/19	9/26		9/20	9/25
F91388	9/24	9/24	9/25	9/27	9/19	9/25	9/20	9/25	9/19	9/26		9/20	9/25
F91386	9/24	9/24	9/25	9/27	9/19	9/25	9/20	9/25	9/19	9/26		9/26	9/25
F91392	9/24	9/24	9/25	9/27	9/19	9/25	9/20	9/25	9/19	9/26		9/20	9/25
F90987	9/24	9/24	9/25	9/27	9/17	9/16	9/17	9/23	9/15	9/18		9/18	9/25
F90989	9/24	9/24	9/25	9/27	9/17	9/16	9/17	9/23	9/15	9/26		9/18	9/25
F90988	9/24	9/24	9/25	9/27	9/17	9/16	9/17	9/23	9/15	9/18		9/18	9/25
F91066	9/24	9/24	9/25	9/27	9/17	9/24	9/18	9/24	9/15	9/26		9/18	9/25
F91067	9/24	9/24	9/25	9/27	9/17	9/24	9/18	9/24	9/15	9/26		9/18	9/25
F91068	9/24	9/24	9/25	9/27	9/17	9/24	9/18	9/24	9/19	9/20			
F80041	9/17	9/23	9/25	9/27	9/11	9/5	9/5	9/10					
F80042	9/17	9/23	9/25	9/27	9/11	9/5	9/5	9/10					
F88043	9/17	9/23	9/25	9/27	9/11	9/5	9/9	9/10					
F80054	9/17	9/23	9/25	9/27	9/11	9/5	9/5	9/10					
F91072	9/24	9/24	9/25	9/27	9/17	9/24	9/18	9/24					
F80045	9/17	9/23	9/25	9/27	9/11	9/5	9/9	9/11					
F91073	9/24	9/24	9/25	9/27	9/17	9/24	9/18	9/24					
F80046	9/17	9/23	9/25	9/27	9/11	9/5	9/9	9/11					
F91076	9/24	9/24	9/25	9/27	9/17	9/24	9/18	9/24					
F90348	9/17	9/23	9/25	9/27	9/11	9/5	9/9	9/11					
F91531	9/24	9/24	9/25	9/27	9/19	9/25	9/23	9/26					
F91526						9/25	9/23	9/26				10/22	
F91528						9/25	9/23	9/26				10/22	
F91522						9/25	9/23	9/26				10/22	
F90995	9/24	9/24	9/25	9/27	9/17	9/16	9/17	9/23					
F90700	9/24	9/24	9/25	9/27	9/12	9/18	9/12	9/16					
F90996	9/24	9/24	9/25	9/27	9/17	9/16	9/17	9/23					
F90997	9/24	9/24	9/25	9/27	9/17	9/16	9/17	9/23					
F91549	9/24	9/24	9/25	9/27	9/19	9/25	9/23	9/26					
F90910	9/24	9/24	9/25	9/27	9/12	9/24	9/16	9/23					
F91551	9/24	9/24	9/25	9/27	9/19	9/25	9/23	9/26	9/20	9/26			
F91547	9/24	9/24	9/25	9/27	9/19								

TABLE 2 APPENDIX A - (Continued)

AQUEOUS SAMPLE DATA: LAB ANALYSIS DATES

Lab Number	Metals					VOA	BNA		PCB		Organo Lead	NO3	TKN
	A	B	C	D	E		Extd	Anlzd	Extd	Anlzd			
F91548	9/24	9/24	9/25	9/27	9/19								
F91524					9/25	9/23	9/26			10/22			
F91513											10/9		
F91514											10/9		
F91384						9/25	9/20	9/25			9/19		
F90993						9/16							
F91530							9/23	9/26					
F90527						9/18	9/12	9/14					
F90525						9/18	9/12	9/16					
F90915						9/24	9/16	9/23					
F90435	9/17	9/23	9/25	9/27	9/11	9/5	9/10	9/12					
F90909	9/24	9/24	9/25	9/27	9/12	9/24	9/16	9/23					
F90911	9/24	9/24	9/25	9/27	9/12	9/24	9/16	9/23					
F90702	9/24	9/24	9/25	9/27	9/12	9/16	9/14	9/16					
F90704	9/24	9/24	9/25	9/27	9/12	9/16	9/14	9/16					
F90694	9/24	9/24	9/25	9/27	9/12	9/16	9/14	9/16					
F90692	9/24	9/24	9/25	9/27	9/12	9/16	9/12	9/14					
F90693	9/24	9/24	9/25	9/27	9/12	9/16	9/12	9/13					
F90698	9/24	9/24	9/25	9/27	9/12	9/16	9/12	9/16					
F90349	9/17	9/23	9/25	9/27	9/12	9/5	9/10	9/12					
F90351	9/17	9/23	9/25	9/27	9/12	9/5	9/10	9/12					
F90696	9/24	9/24	9/25	9/27	9/12	9/18	9/12	9/16					
F90350	9/17	9/23	9/25	9/27	9/12	9/5	9/10	9/12					
F80049	9/17	9/23	9/25	9/27	9/11	9/5	9/5	9/10					
F80050	9/17	9/23	9/25	9/27	9/11	9/5	9/5	9/10					
F80053	9/17	9/23	9/25	9/27	9/11	9/5	9/5	9/10					
F80057	9/17	9/23	9/25	9/27	9/11	9/5	9/9	9/11					
F90529	9/24	9/24	9/25	9/27	9/12	9/18	9/12	9/14					
F90531	9/24	9/24	9/25	9/27	9/12	9/18	9/12	9/14					
FA4473	10/24	10/27	10/27	10/28	11/6	10/30	10/28	10/30	10/25	10/29		11/6	11/8
FA4610	10/24	10/27	10/27	10/28	11/6	10/31	10/29	11/8	10/28	11/4		11/6	11/8
FA4612	10/24	10/27	10/27	10/28	11/6	10/31	10/29	11/8	10/28	11/4		11/6	11/8

TABLE 2 APPENDIX A - (Continued)

AQUEOUS SAMPLE DATA: LAB ANALYSIS DATES

Lab Number	Metals					VOA	BNA		PCB		Organo Lead	NO3	TKN
	A	B	C	D	E		Extd	Anlzd	Extd	Anlzd			
FA4608	10/24	10/27	10/27	10/28	11/6	10/31	10/29	11/5	10/28	11/4		11/6	11/8
FA4223	10/24	10/27	10/27	10/28	10/22	10/30	10/23	10/26	10/24	10/29		10/20	11/8
FA4225	10/24	10/27	10/27	10/28	10/22	10/30	10/23	10/26	10/24	10/29		10/20	11/8
FA4227												10/20	11/8
FA4228												10/20	11/8
FA4253	10/24	10/27	10/27	10/28	10/22								
FA4254	10/24	10/27	10/27	10/28	10/22								
FA4471	10/24	10/27	10/27	10/28	11/6	10/30	10/28	10/30	10/25	10/29		11/6	11/8
FA3120	10/14	10/14	10/27	10/28	10/14	10/14	10/12	10/14					
FA3427	10/14	10/14	10/27	10/28	10/14	10/18	10/14	10/16					
FA3335	10/14	10/14	10/27	10/28	10/14	10/14	10/14	10/16					
FA3329	10/14	10/14	10/27	10/28	10/14	10/14	10/14	10/16					
FA3330	10/14	10/14	10/27	10/28	10/14	10/14	10/14	10/16					
FA3331	10/14	10/14	10/27	10/28	10/14	10/14	10/14	10/16					
FA3337	10/14	10/14	10/27	10/28	10/14	10/14	10/14	10/16					
FA3429	10/14	10/14	10/27	10/28	10/14	10/18	10/14	10/16					
FA3423	10/14	10/14	10/27	10/28	10/14	10/18	10/14	10/16					
FA4067	10/24	10/27	10/27	10/28	10/22	10/22	10/17	10/23					
FA3465	10/14	10/14	10/27	10/28	10/14	10/18	10/17	10/19					
FA3459	10/14	10/14	10/27	10/28	10/14	10/18	10/17	10/18					
FA4467						10/30	10/28	10/30			10/29		
FA4470						10/30					10/29		
FA4469						10/30					10/29		
FA4475						10/30	10/28	10/30			10/29		
FA4477						10/30	10/28	10/30			10/29		
FA4057	10/24	10/27	10/27	10/28	10/22	10/19	10/21	10/23					
FA4049	10/24	10/27	10/27	10/28	10/22	10/19	10/17	10/19					
FA4149	10/24	10/27	10/27	10/28	10/22	10/27	10/23	10/25					
FA4147	10/24	10/27	10/27	10/28	10/22	10/27	10/23	10/28					
FA4114	10/24	10/27	10/27	10/28	10/22	10/24	10/22	10/23					
FA4113	10/24	10/27	10/27	10/28	10/22	10/24	10/22	10/23					

TABLE 2 APPENDIX A - (Continued)

AQUEOUS SAMPLE DATA: LAB ANALYSIS DATES

Lab Number	Metals					VOA	BNA		PCB		Organo Lead	NO3	TKN
	A	B	C	D	E		Extd	Anlzd	Extd	Anlzd			
FA4606	10/24	10/27	10/27	10/28	11/6	10/30	10/29	11/5	10/28	11/4			
FA4148	10/24	10/27	10/27	10/28	10/22	10/27	10/23	10/25			10/22		
FA4146	10/24	10/27	10/27	10/28	10/22	10/25	10/23	10/28			10/22		
FA4215						10/30	10/23	10/29					
FA4216						10/30	10/23	10/29					
FA4217						10/30	10/23	10/29					
FA4218						10/30	10/23	10/29					
FA4109	10/24	10/27	10/27	10/28	10/22	10/24	10/22	10/23					
FA4110	10/24	10/27	10/27	10/28	10/22	10/24	10/21	10/23					
FA4111	10/24	10/27	10/27	10/28	10/22	10/24	10/21	10/21					
FA4050	10/24	10/27	10/27	10/28	10/22	10/19	10/17	10/19					
FA4112	10/24	10/27	10/27	10/28	10/22	10/24	10/22	10/23					
FA4054	10/24	10/27	10/27	10/28	10/22	10/19	10/21	10/23					
FA4053	10/24	10/27	10/27	10/28	10/22	10/22	10/17	10/19					
FA4052	10/24	10/27	10/27	10/28	10/22	10/22	10/17	10/19					
FA4051	10/24	10/27	10/27	10/28	10/22	10/22	10/17	10/19					
FA3461	10/14	10/14	10/27	10/28	10/14	10/18	10/17	10/18					
FA3463	10/14	10/14	10/27	10/28	10/14	10/18	10/17	10/19					
FA4058	10/24	10/27	10/27	10/28	10/22	10/28	10/21	10/23					
FA4056	10/24	10/27	10/27	10/28	10/22	10/19	10/21	10/23					
FA4055	10/24	10/27	10/27	10/28	10/22	10/22	10/21	10/23					
FA3457	10/14	10/14	10/27	10/28	10/14	10/18	10/16	10/18					
FA3118	10/14	10/14	10/27	10/28	10/14	10/14	10/12	10/14					
FA3119	10/14	10/14	10/27	10/28	10/14	10/14	10/12	10/14					
FA3425	10/14	10/14	10/27	10/28	10/14	10/18	10/14	10/18					
FA3121	10/14	10/14	10/27	10/28	10/14	10/14	10/12	10/14					
FA4150	10/24	10/27	10/27	10/28	10/22	10/29	10/23	10/25					
FA4145	10/24	10/27	10/27	10/28	10/22	10/25	10/23	10/25					
FB7009	12/5	12/9	12/9	12/9	12/9	12/5	11/26	12/5	11/22	12/11		12/2	12/10
FB7095	12/5	12/9	12/9	12/9	12/9	12/5	11/26	12/5	11/25	12/11		12/2	12/10
FB7096	12/5	12/9	12/9	12/9	12/9	12/5	11/27	12/6	11/25	12/12		12/2	12/10

TABLE 2 APPENDIX A - (Continued)

AQUEOUS SAMPLE DATA: LAB ANALYSIS DATES

Lab Number	Metals					VOA	BNA		PCB		Organo Lead	NO3	TKN
	A	B	C	D	E		Extd	Anlzd	Extd	Anlzd			
FB7010	12/5	12/9	12/9	12/9	12/9	12/5	11/26	12/5	11/22	12/11		12/2	12/10
FB6899	12/5	12/9	12/9	12/9	12/9	12/2	11/22	12/5	11/22	12/4		12/2	12/10
FB6900	12/5	12/9	12/9	12/9	12/9	12/2	11/22	12/5	11/22	12/4		12/2	12/10
FA6903	12/5	12/9	12/9	12/9	12/9	12/2			11/22	12/11		12/2	12/10
FB6904	12/5	12/9	12/9	12/9	12/9	12/2			11/22	12/4		12/2	12/10
FB7011	12/5	12/9	12/9	12/9	12/9	12/5	11/26	12/5	11/22	12/4		12/2	12/10
FB5951	11/14	11/14	11/14	11/21	12/4	11/14	11/13	11/19					
FB6102	11/14	11/14	11/14	11/21	12/4	11/19	11/14	11/18					
FB5952	11/14	11/14	11/14	11/21	12/4	11/14	11/13	11/18					
FB5961	11/14	11/14	11/14	11/21	12/4	11/14	11/13	11/19					
FB5962	11/14	11/14	11/14	11/21	12/4	11/14	11/13	11/21					
FB5963	11/14	11/14	11/14	11/21	12/4	11/14	11/13	11/19					
FB5953	11/14	11/14	11/14	11/21	12/4	11/14	11/13	11/18					
FB6101	11/14	11/14	11/14	11/21	12/4	11/19	11/14	11/19					
FB6103	11/14	11/14	11/14	11/21	12/4	11/19	11/14	11/19					
FB6180	11/18	11/18		11/21	12/4	11/29	11/15	11/19					
FB6104	11/14	11/14	11/14	11/21	12/4	11/19	11/14	11/18					
FB6181	11/18	11/18		11/21	12/4	11/29	11/15	11/19					
FB7015						12/5	11/26	12/5				12/19	
FB7017												12/19	
FB7018												12/19	
FB7005						12/5	11/26	12/5				12/19	
FB7006						12/5	11/26	12/5				12/19	
FB6182	11/18	11/18		11/21	12/4	11/29	11/15	11/20					
FB6183	11/18	11/18		11/21	12/4	11/29	11/15	11/20					
FB6740	12/5	12/9	12/9	11/21	12/9	12/2	11/20	11/22					
FB6375 ^a	11/18	11/18	11/18	11/21	12/4	11/29	11/19	11/21					
FB6471 ^a	12/5	12/9	11/18	11/21	12/4	11/29	11/19	11/21					
FB6741	12/5	12/9	12/9	11/21	12/9	12/2	11/20	11/22					
FB7093	12/5	12/9	12/9	11/21	12/9	12/5	11/26	12/5	11/25	12/11			
FB6744						12/2	11/20	11/22				12/19	

TABLE 2 APPENDIX A - (Continued)

AQUEOUS SAMPLE DATA: LAB ANALYSIS DATES

Lab Number	Metals					VOA	BNA		PCB		Organo Lead	NO3	TKN
	A	B	C	D	E		Extd	Anlzd	Extd	Anlzd			
FB6745						12/2	11/20	11/22			12/19		
FB6891						12/2	11/22	12/5					
FB6893						12/2	11/22	12/5					
FB6892						12/2	11/22	12/5					
FB6894						12/2	11/22	12/5					
FB6372	11/18	11/18	11/18	11/21	12/4	11/29	11/19	11/21					
FB6675	12/5	12/9	12/9	11/21	12/4	12/2	11/20	11/22					
FB6636						12/2							
FB6373	11/18	11/18	11/18	11/21	12/4	12/2	11/19	11/21					
FB6178	11/18	11/18	11/18	11/21	12/4	11/18	11/15	11/20					
FB6190	11/18	11/18	11/18	11/21	12/4	11/29	11/15	11/20					
FB6191	11/18	11/18	11/18	11/21	12/4	11/29	11/15	11/20					
FB6192	11/18	11/18	11/18	11/21	12/4	11/29	11/15	11/21					
FB6105	11/14	11/14	11/14	11/21	12/4	11/19	11/14	11/19					
FB6106	11/14	11/14	11/14	11/21	12/4	11/19	11/15	11/18					
FB6374	11/18	11/18	11/18	11/21	12/4	11/29	11/19	11/21					
FB6637						12/2							
FB6179	11/18	11/18	11/18	11/21	12/4	11/29	11/15	11/20					
FB5954	11/14	11/14	11/14	11/21	12/4	11/14	11/13	11/19					
FB5955	11/14	11/14	11/14	11/21	12/4	11/14	11/13	11/18					
FB6107	11/14	11/14	11/14	11/21	12/4	11/19	11/14	11/19					

32

^a Misidentified as sites W7-1A and W7-1B on Chain of Custody Form

Metals Analysis Code: A = Cu, Zn, Cd
 B = Ag, Cr, Ni, Be
 C = As, Sb, Tl, Pb
 D = Se
 E = Hg

TABLE 3 APPENDIX A

SOIL SAMPLE DATA: COLLECTION AND LAB RECEIPT

Location (Depth)	Date	Time	Sampler	No. Of Liners	Date Of Receipt	Lab Number	Date
A1-1(3-4.5)	8/30	1:00 ^a	Peterson	2	9/4	F90369	9/9
A1-1(6-7.5)	8/30	1:30	"	3	9/4	F90370	9/9
A1-2(6-7.5)	8/26	9:40	"	1	8/27	F89676	9/3
A1-2(13-14.5)	8/26	10:20	"	3	8/27	F89677	9/3
A1-3(9-10.5)	8/30	2:00	"	3	9/4	F90371	9/9
A1-4(3-4.5)	8/26	1:00	"	1	8/27	F89678	9/3
A1-4(9-10.5)	8/26	2:00	"	2	8/27	F89679	9/3
A2-1(3-4.5)	8/30	3:00	"	2	9/4	F90356	9/9
A2-1(6-7.5)	8/30	3:15	"	3	9/4	F90357	9/9
A2-2(3-4.5)	8/30	3:30	"	2	9/4	F90358	9/9
A2-2(6-7.5)	8/30	3:45	"	3	9/4	F90359	9/9
A2-3(3-4.5)	8/30	4:00	"	2	9/4	F90360	9/9
A2-3(6-7.5)	8/30	4:15	"	3	9/4	F90361	9/9
A3-1(0-0.5)	8/16	4:30	Jones	3	8/20	F89289	8/25
A3-2(0-0.5)	8/16	4:00	"	3	8/20	F89288	8/26
A3-3(0-0.5)	8/16	3:30	"	3	8/20	F89287	8/25
A5-1(3-4.5)	8/19	2:30	Peterson	3	8/20	F89279	8/25
A5-1(6-7.5)	8/19	2:45	"	3	8/20	F89280	8/25
A5-2(3-4.5)	8/19	3:00	"	3	8/20	F89281	8/25
A5-2(6-7.5)	8/19	3:15	"	3	8/20	F89282	8/25
A5-3(3-4.5)	8/19	3:30	"	1	8/20	F89283	8/26
A5-3(6-7.5)	8/19	3:45	"	3	8/20	F89284	8/25
A9-1(3-4.5)	8/28	2:00	"	2	8/29	F89940	9/3
A9-1(6-7.5)	8/28	2:30	"	2	8/29	F89941	9/3
A9-2(3-4.5)	8/29	10:00	"	2	8/30	F90064	9/10
A9-2(6-7.5)	8/29	10:30	"	2	8/30	F90065	9/10
A9-3(3-4.5)	8/28	3:30	"	2	8/29	F89942	9/3
A9-3(6-7.5)	8/28	4:00	"	2	8/29	F89943	9/3
A9-4(3-4.5)	8/30	7:30	"	2	9/4	F90363	9/9

TABLE 3 APPENDIX A - (Continued)

SOIL SAMPLE DATA: COLLECTION AND LAB RECEIPT

Location (Depth)	Date	Time	Sampler	No. Of Liners	Date Of Receipt	Lab Number	Date
A9-4(6-7.5)	8/30	7:45	"	2	9/4	F90364	9/9
A9-5(3-4.5)	8/30	8:30	"	2	9/4	F90365	9/9
A9-5(6-7.5)	8/30	8:45	"	3	9/4	F90366	9/9
A9-6(3-4/5)	8/30	9:15	"	2	9/4	F90367	9/9
A9-6(6-7.5)	8/30	9:30	"	3	9/4	F90368	9/9
W1-1A(3-4.5)	8/23	2:00	"	3	8/27	F89675	9/3
W1-1A(3-4.5)	8/23	2:00	"		8/27	F89853(Spk)	9/3
W1-1A(3-4.5)	8/23	2:00	"		8/27	F89854(Dup)	9/3
W1-2A(10-11.5)	8/23	9:30	"	3	8/27	F89674	9/3
W1-3A(30-31.5)	8/22	2:30	"	3	8/23	F89460	8/26
W1-4A(3-4.5)	8/29	3:00	"	2	8/30	F80003	9/10
W2-1A(10-11.5)	8/21	2:30	"	3	8/22	F89423	8/26
W2-1A(10-11.5)	8/21	2:30	"		8/22	F89424(Dup)	8/27
W2-1A(10-11.5)	8/21	2:30	"		8/22	F89425(Spk)	8/27
W2-2A(5-6.5)	8/15	2:00	"	3	8/20	F89293	8/26
W2-3A(8-9.5)	8/22	8:30	"	3	8/23	F89459	8/26
W3-1A(5.5-6.5)	8/15	10:00	"	2	8/20	F89290	8/26
W3-1C(4-5.5)	8/30	5:00	"	3	9/4	F90362	9/9
W3-2A(2.5-3.5)	8/14	2:00	"	2	8/20	F89291	9/9

34

^a Bold type denotes P.M.

TABLE 4 APPENDIX A

SOIL SAMPLE DATA: LAB ANALYSIS

Lab Number	Metals					VOA	BNA		PCB		Organo Lead	NO3	TKN
	A	B	E	F	G		Extd	Anlzd	Extd	Anlzd			
F90369	9/17	9/23	9/11		9/19	9/9	9/6	9/9	9/6	9/10			
F90370	9/17	9/23	9/11		9/19	9/9	9/6	9/9	9/6	9/10			
F89676	9/5	9/5	9/13	9/10	9/5	9/3	9/1	9/4	9/1	9/10			
F89677	9/5	9/5	9/10	9/10	9/5	9/3	9/1	9/4	9/1	9/10			
F90371	9/17	9/23	9/11		9/19	9/9	9/6	9/9	9/6	9/10			
F89678	9/5	9/5	9/13	9/10	9/5	9/3	9/1	9/4	9/1	9/8			
F89679	9/5	9/5	9/10	9/10	9/5	9/3	9/1	9/4	9/1	9/8			
F90356	9/17	9/23	9/13	9/25	9/19	9/9	9/6	9/9	9/6	9/12			
F90357	9/17	9/23	9/11	9/25	9/19	9/9	9/6	9/9	9/6	9/12			
F90358	9/17	9/23	9/13	9/25	9/19	9/9	9/6	9/9	9/6	9/10			
F90359	9/17	9/23	9/11	9/25	9/19	9/9	9/6	9/9	9/6	9/12			
F90360	9/17	9/23	9/11	9/25	9/19	9/9	9/6	9/9	9/6	9/10			
F90361	9/17	9/23	9/11	9/25	9/19	9/9	9/6	9/9	9/6	9/10			
F89289	9/5	9/5	9/8	9/9	9/5	8/25	9/5	9/6					
F89288	9/5	9/5	9/8	9/9	9/5	8/26	9/5	9/6					
F89287	9/5	9/5	9/8	9/9	9/5	8/25	9/5	9/6					
F89279						8/25						9/19	
F89280						8/25						9/19	
F89281						8/25						9/19	
F89282						8/25						9/19	
F89283						8/26						9/19	
F89284						8/25						9/19	
F89860									9/1	9/10			
F89861									9/3	9/8			
F89862									8/31	9/8			
F89863									9/3	9/12			
F89864									9/3	9/10			
F89865									8/31	9/8			
F89940						9/3						9/19	
F89941						9/3						9/19	

TABLE 4 APPENDIX A - (Continued)

SOIL SAMPLE DATA: LAB ANALYSIS

36

Lab Number	Metals					VOA	BNA		PCB		Organo Lead	NO3	TKN
	A	B	E	F	G		Extd	Anlzd	Extd	Anlzd			
F90064						9/10							
F80000											9/19		
F90065						9/10							
F80001											9/19		
F89942						9/3					9/19		
F89943						9/3					9/19		
F90363						9/9					9/19		
F90364						9/9					9/19		
F90365						9/9					9/19		
F90366						9/9					9/19		
F90367						9/9					9/19		
F90368						9/9					9/19		
F89675	9/5	9/5	9/10	9/10	9/5	9/3	9/3	9/4	9/3	9/10			
F89853	9/5	9/5	9/10	9/10	9/5	9/3	9/3	9/4	9/3	9/10			
F89854	9/5	9/5	9/10	9/10	9/5	9/3	9/4	9/4	9/4	9/10			
F89674	9/5	9/5	9/10	9/10	9/5	9/3	8/31	9/3	8/31	9/10			
F89460	9/5	9/5	9/10	9/10	9/5	8/26	9/1	9/3	9/1	9/8			
F80003	9/5	9/5	9/13	9/10	9/5	9/10	9/1	9/3	9/1	9/8			
F89423	9/5	9/5	9/10	9/9	9/5	8/26	9/1	9/3	9/1	9/8			
F89424	9/5	9/5	9/10	9/9	9/5	8/27	9/1	9/3	9/1	9/8			
F89425	9/5	9/5	9/10	9/9	9/5	8/27	9/4	9/4	9/4	9/10			
F89293	9/5	9/5	9/8	9/9	9/5	8/26	8/31	9/4	8/31	9/8	9/19		
F89459	9/5	9/5	9/10	9/10	9/5	8/26	8/31	9/6	8/31	9/8			
F89290	9/5	9/5	9/8	9/9	9/5	8/26	9/5	9/6					
F90362	9/17	9/23	9/11	9/25	9/19	9/9	9/6	9/9					
F89291	9/5	9/5	9/8	9/9	9/5								
F89292	9/5	9/5	9/8	9/9	9/5	8/26	9/5	9/6					
F89297	9/5	9/5	9/8	9/9	9/5	8/26	9/5	9/6					
F89298	9/5	9/5	9/8	9/9	9/5	8/26	9/5	9/5					
F89299	9/5	9/5	9/8	9/9	9/5	8/27							

TABLE 4 APPENDIX A - (Continued)

SOIL SAMPLE DATA: LAB ANALYSIS

Lab Number	Metals					VOA	BNA		PCB		Organo Lead	NO3	TKN
	A	B	E	F	G		Extd	Anlzd	Extd	Anlzd			
F89294						8/26					9/19		
F89295						8/27					9/19		
F89296						8/27					9/19		
F89285						8/25					9/19		
F89286					°	8/25					9/19		
F89363	9/5	9/5	9/8	9/9	9/5	8/26	9/5	9/5					
F89364	9/5	9/5	9/8	9/9	9/5	8/27	9/5	9/5					
F89365	9/5	9/5	9/10	9/9	9/5	8/27	9/5	9/5					
F89366	9/5	9/5	9/10	9/9	9/5	8/27	9/5	9/10					
F89367	9/5	9/5	9/8	9/9	9/5	8/26	9/5	9/9					
F89368	9/5	9/5	9/8	9/9	9/5	8/26	9/5	9/6					
F89938	9/5	9/5	9/13	9/10	9/5	9/3	9/4	9/4					
F89939	9/5	9/5	9/13	9/10	9/5	9/3	9/4	9/4					
F89421	9/5	9/5	9/10	9/9	9/5	8/26	9/6	9/9					
F89422	9/5	9/5	9/10	9/9	9/5	8/26	9/6	9/9					
F89857	9/5	9/5	9/10	9/10	9/5	9/3	9/1	9/3	9/1	9/8			
F89858	9/5	9/5	9/10	9/10	9/5	9/3	9/3	9/4	9/3	9/10			
F89859	9/5	9/5	9/10	9/10	9/5	9/3	8/31	9/3	8/31	9/8			
F90066						9/10							
F80002											9/19		
F90061						9/10							
F89997											9/19		
F90062						9/10							
F89998											9/19		
F90063						9/10							
F89999											9/19		

37

Code for Metals: A = Cu, Zn, Cd
 B = Ag, Cr, Ni, Be
 E = Hg
 F = As, Se, Sb, Tl
 G = Pb

APPENDIX B

**SUMMARY OF CHECK SAMPLES
SUBMITTED DURING PERIOD OF MOFFETT FIELD SAMPLE ANALYSES**

Internal Check Samples Submitted Blind

Parameter	True Value (ug/L)	Acceptance Range (ug/L)	Measured Value (ug/L)
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Submitted 10/2/85

Source: Environmental Resource Associates #503

1,2 dichloroethane	8.4	5.4 - 11.2	10
"	4.2	2.7 - 5.6	4.4
1,2 dichloropropane	3.4	2.0 - 4.6	4.5
"	1.7	1.0 - 2.3	2.0
Chlorodibromomethane	9.0	5.4 - 12.4	11
"	4.5	2.7 - 6.2	4.6
Benzene	6.0	4.0 - 7.8	8.5 *
"	3.0	2.0 - 3.9	2.7
1,1,1 Trichloroethane	5.0	2.2 - 7.6	5.0
"	2.5	1.1 - 3.8	2.4
Carbon Tetrachloride	20	10.4 - 30	19
"	10	5.2 - 15	11
Methylene Chloride	22	10.4 - 34	26
"	11	5.2 - 17	15

Submitted 10/10/85

Source: EPA WP781

1,1 Dichloroethane	4.4	Not Provided	5.3
Chloroform	11.0	"	12.0
1,1,1 Trichloroethane	5.0	"	4.3
Bromodichloromethane	4.4	"	4.5
Bromoform	10.2	"	11.0
Tetrachloroethene	4.0	"	3.1

APPENDIX B - (Continued)

Parameter	True Value (ug/L)	Acceptance Range (ug/L)	Measured Value (ug/L)
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Submitted 10/2/85

Source: Environmental Resource Associates #301

2,4 Dimethylphenol	23	10 - 36	8.0 *
Pentachlorophenol	45	13 - 75	25 (48) **
2-Nitrophenol	30	11 - 48	10 (20) **
p-Chloro-m-Cresol	99	50 - 140	154 (120) **
n-Nitro-di-n-Propylamine	25	11 - 37	15 (55) **
Isophorone	52	23 - 80	30
Benzo(b)fluoranthene	14	4.3 - 23	16
Naphthalene	16	7.0 - 25	10
2,4-Dinitrotoluene	65	25 - 105	51 (61) **
Bis(2-ethylhexyl)-Phthalate	11	3.1 - 19	12
Diethylphthalate	70	22 - 115	18 *

10/10/85

Source: Environmental Resource Associates 2502, 2505

Nitrate as N	9.0 (mg/L)	7.7 - 10.3	8.8
"	10.4	8.9 - 11.9	10.0

* Asterisked values are outside of the acceptance range and explanations are provided under the "External Reference Samples" subsection of Section 2 in this report.

** Values in parentheses are corrected for extraction recovery.

APPENDIX C

**LIST OF PRIORITY POLLUTANT PARAMETERS
DETECTED IN MOFFETT FIELD SITE SAMPLES**

AQUEOUS SAMPLES

VOA'S

Benzene (B,C)
Chloroform (B,C)
1,1-Dichloroethene
1,1,1-Trichloroethane (B)
Trichloroethene (C)
1,1-Dichloroethane (B)
1,2-Dichloroethane (B)
Toluene (C)
Trans-1,2-Dichloroethene
Ethylbenzene (C)
Vinyl Chloride
Carbon Tetrachloride (B)
Tetrachloroethene (B)
Dichlorobromomethane (B)
1,2 Dichloropropane (B)
Trans-1,3-Dichloropropane
1,1,2 Trichloroethane
Methylene Chloride (B)

BNA'S

Bis(2-ethylhexyl)phthalate (B)
1,2-Dichlorobenzene (C)
1,4-Dichlorobenzene (C)
Di-n-butylphthalate
Naphthalene (B)
2,4-Dimethylphenol (B)
Phenol
Di-n-Octylphthalate

Definition of Code: B = Internal Check Sample Submitted Blind (Appendix A)
C = EPA WP014 Check Sample Program
D = EPA WP015 Check Sample Program
E = Florida Dept. of Environmental Regulation QA Program

APPENDIX C - (Continued)

METALS

Antimony (C)
Arsenic (B,C)
Beryllium (C)
Cadmium (B,C)
Chromium (B,C)
Copper (C)
Lead (B,C)
Mercury (B,C)
Nickel (C)
Selenium (B,C)
Silver (B,C)
Thallium (C)
Zinc (C)

MISCELLANEOUS PARAMETERS

Nitrate (B,C,D)
Total Kjeldahl Nitrogen (C,D,E)
pH (C)

SOIL SAMPLES

VOA's

Benzene (B,C)
Chlorobenzene
Chloroform (B,C)
Ethylbenzene (C)
Tetrachloroethene (B)
Toluene (C)
Trichloroethene (C)
1,1-Dichloroethane (B)
Trans-1,2-Dichloroethene

Definition of Code: B = Internal Check Sample Submitted Blind (Appendix A)
C = EPA WP014 Check Sample Program
D = EPA WP015 Check Sample Program
E = Florida Dept. of Environmental Regulation QA Program

APPENDIX C - (Continued)

BNA's

Di-n-Butylphthalate
Diethylphthalate (B)
Dimethylphthalate
1,4 Dichlorobenzene (C)
Naphthalene (B)
2,4 Dimethylphenol (B)
Phenol
1,2,4 Trichlorobenzene
Benzo(a)anthracene
Benzo(a)pyrene
3,4 Benzofluoranthene
Benzo(l)fluoranthene
Chrysene
Fluoranthene
Phenanthrene
Pyrene

PCB'S

Arochlor 1260 (C)
Arochlor 1248 (C)
Arochlor 1254 (C,D,E)
Arochlor 1242

METALS

Antimony (C)
Arsenic (B,C)
Beryllium (C)
Cadmium (B,C)
Chromium (B,C)
Copper (C)
Lead (B,C)
Mercury (B,C)
Nickel (C)
Selenium (B,C)
Silver (B,C)
Thallium (C)
Zinc (C)

Definition of Code: B = Internal Check Sample Submitted Blind (Appendix A)
C = EPA WP014 Check Sample Program
D = EPA WP015 Check Sample Program
E = Florida Dept. of Environmental Regulation QA Program