CAFB98

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 27th FIGHTER WING (ACC)
CANNON AIR FORCE BASE NEW MEXICO

26 AUG 1998

Colonel James A. Thomas III
Commander, 27th Support Group
110 E Sextant Avenue Suite 1098
Cannon AFB NM 88103-5323

Mr. Benito J. Garcia, Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044 Galisteo Street
PO Box 26110
Santa Fe NM 54502

ENTERED

Dear Mr. Garcia

Enclosed for your information and files are the latest groundwater monitoring results for sampling on 7-8 April 1998 at the sewage lagoons (SWMU #101) and Landfill 5 (SWMU # 113) at Cannon Air Force Base.

As has happened in the past, well G east of the sewage lagoons exceeded the Maximum Contaminant Level for nitrate.

If you have any questions, please contact Mr. Sanford Hutsell of my Environmental Staff at (505) 784-6378.

Sincerely

JAMES A. THOMAS III, Colonel, USAF

Attachment:
Groundwater Monitoring Report

cc:
NMED w/o atch (C. Will)
NMED GW Bureau (J. Jacobs)
EPA Region VI (D. Neleigh)
EPA Region VI (B. Sturdivant)
HQ ACC CES/ESVW w/o atch (M. Patterson)

LIBRARY COPY

Cannon Air Force Base, New Mexico

RCRA Ground-Water Monitoring at Sewage Lagoons and at Landfill 5

Analytical Results of Samples Collected on April 7-8, 1998

Prepared for

United States Air Force Air Combat Command
Cannon Air Force Base

June 1998

CONTENTS

Page

Executive Summary 1

Figure 1. Location of Cannon Air Force Base, New Mexico 4

Figure 2. Cannon Air Force Base and location of Sewage Lagoons and Landfill 5 5

Figure 3. Location of monitoring wells around Sewage Lagoons 6

Figure 4. Location of monitoring wells around Landfill 5 7

Table 1. Summary of concentrations of analytes in ground water from monitoring wells E, F, G, and H for samples collected April 7-8, 1998, at the Sewage Lagoons, Cannon Air Force Base, New Mexico 8

Table 2. Summary of concentrations of analytes in ground water from monitoring wells C, I, and Q for samples collected April 7, 1998, at the Landfill 5, Cannon Air Force Base, New Mexico 9

Monitoring well identification reports 10

Monitoring well semi-annual sampling reports 17

APPENDIX I

Analytical Results from Quanterra Environmental Services Laboratory for Ground-Water Samples Collected April 7-8, 1998

Quanterra No. 059791 ..... I-1

Volatile organics - Appendix IX I-16

Semivolatile organics - Appendix IX I-52

Pesticides and PCB's - Appendix IX I-77

CONTENTS--Continued

Page

APPENDIX I--Continued

Analytical Results from Quanterra Environmental Services Laboratory for Ground-Water Samples Collected April 7-8, 1998

Polynuclear aromatic hydrocarbons I-91

Total metals I-96

General inorganics I-106

Dioxins and furans - Appendix IX I-116

APPENDIX II

Laboratory Quality Assurance / Quality Control Results

Laboratory data validation checklist for Sewage Lagoon wells II-1

Laboratory data validation checklist for Landfill 5 wells II-26

Quality control summary - Quanterra No. 059791 ..... II-63

U.S. Geological Survey, Water Resources Division, New Mexico District analytical request / chain of custody II-129

Quanterra sample checklists II-138

APPENDIX III

Field Data

Sample container and preservation requirements III-1

Field notes III-3

EXECUTIVE SUMMARY

The U.S. Geological Survey (USGS), Water Resources Division and the U.S. Air Force Air Combat Command (ACC) have a memorandum of understanding that addresses the USGS assisting any ACC base in their hydrology or environmental programs. The USGS has agreed to assist Cannon Air Force Base (CAFB), an ACC base, in their Resource Conservation and Recovery Act (RCRA) ground-water sampling program. Cannon AFB is located in east-central New Mexico about 7 miles west of Clovis as shown on Figure 1. The ground-water sampling is at the Sewage Lagoons and at Landfill 5 on the east and southeast corner of the base as shown on Figure 2. Annual sampling is conducted at the Sewage Lagoons (figure 3). The detection sampling is conducted semi-annually at Landfill 5 (figure 4) as part of the July 13, 1990 Compliance Agreement between CAFB and the New Mexico Environment Department (NMED).

This report presents the water-quality data for samples collected from four wells around the Sewage Lagoons and three wells around Landfill 5, CAFB on April 7- 8, 1998. The monitoring wells sampled at the Sewage Lagoons are well E (upgradient), and downgradient wells F, G, and H. These wells were sampled for Appendix IX parameters: volatile organic compounds by method SW8260; pesticides by method SW8080A; total metals (aluminum, barium, beryllium, calcium, cobalt, copper, iron, magnesium, manganese, molybdenum, nickel, potassium, sodium, vanadium, and zinc by method SW6010, antimony by method SW7041, arsenic by method SW7060A, cadmium by method SW7131A, chromium by method SW7191, lead by method SW7421, selenium by method SW7740, silver by method SW7761, and thallium by method SW7841); sulfate by method E300.0; sulfide by method E376.2; nitrate as N by method E353.2/ E354.1; and total dissolved solids by method E160.1.

The monitoring wells sampled at Landfill 5 are downgradient wells C and I, and an upgradient well Q as shown on figure 4. An attempt was made to sample downgradient well J, but water levels have dropped below the bottom of the well screen. Wells C, I and Q were sampled for the following Appendix-IX parameters: volatile organic compounds (VOC) by method SW8260; semivolatile organic compounds by method SW8270B; dioxins and furans by method SW8280; polynuclear aromatic hydrocarbons by method SW8310; pesticides and PCB's by method SW8080A; herbicides by method SW8150 (Due to laboratory error, herbicides were not analyzed. Herbicides were not detected in any of the previous samples); total metals: (barium, beryllium, calcium, cobalt, copper, iron, magnesium, manganese, molybdenum, nickel, sodium, tin, vanadium, and zinc by

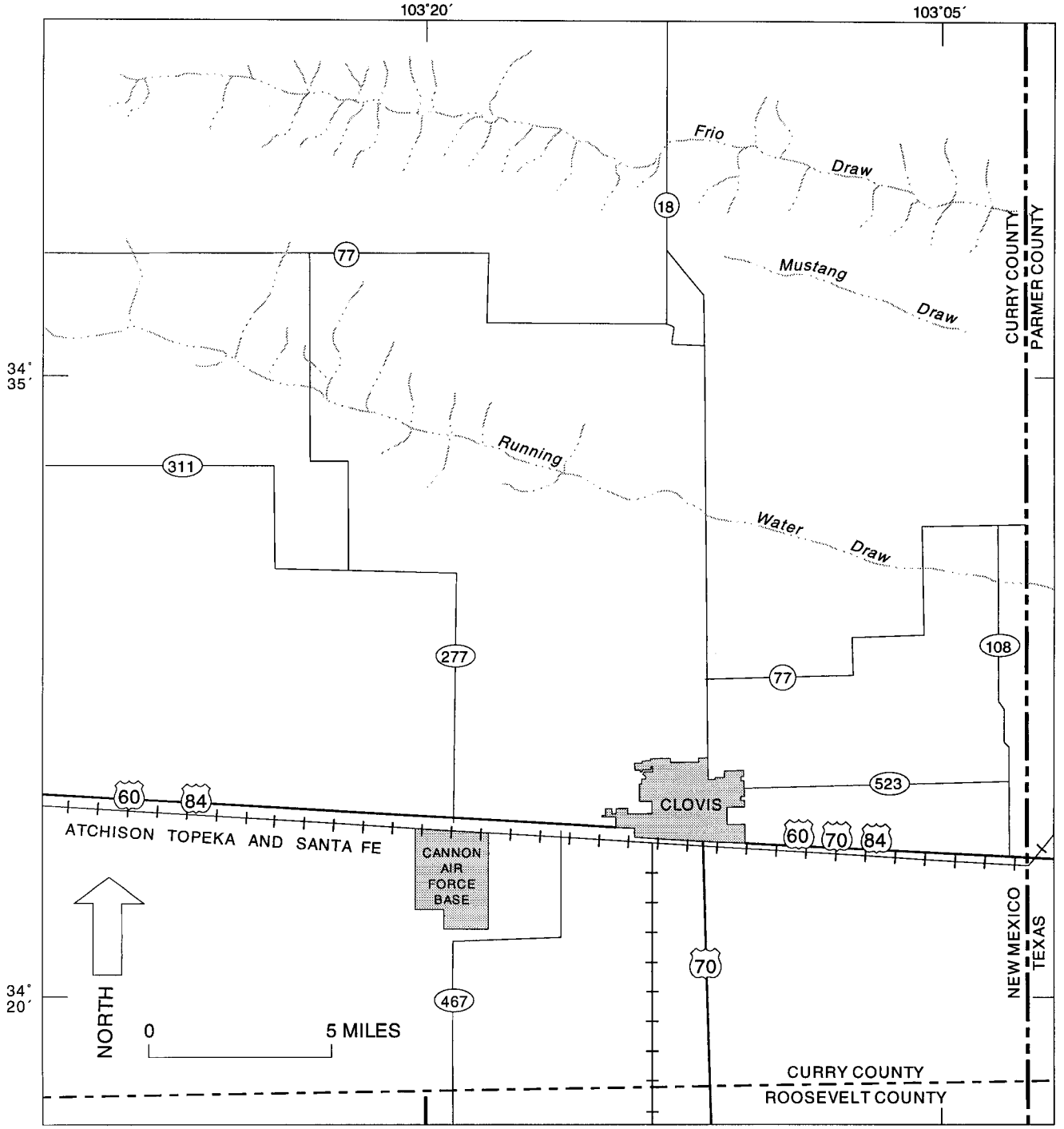
SW6010); antimony by SW7041; silver by SW7761; cadmium by SW7131A; arsenic by SW7060A; chromium by SW7191; lead by SW7421; mercury by SW7470; selenium by SW7740; and thallium by SW7841; and general inorganics (cyanide by SW9012, sulfide by E376.2, total organic carbon (TOC) by SW9060, and total organic halogen as chloride (TOX) by SW9020).

Concentrations of analytes detected in ground water from wells at Sewage Lagoons are presented in table 1. A common laboratory contaminant, methylene chloride was detected in water sample from well E at a concentration of 2.7 μg/L. Concentrations of methylene chloride detected in water samples from other wells (F, G, and H) were j values which means that the concentration was below the reporting limit (1.0 μg/L) or is an estimated value. Only those concentrations detected above the reporting limits are discussed in this summary. Tetrachloroethene was detected in water sample from well E at a concentration of 3.7 μg/L. Tentatively identified compound (TIC), hexane was detected in water sample from well E at a concentration of 2.5 μg/L. This result may be attributed to equipment decontamination procedure. Chromium was detected in water samples from wells E and H at concentrations of 0.0072 and 0.0070 mg/L respectively. The U.S. Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) for drinking water standard for chromium is 0.1 mg/L. Iron was detected in water sample from well H at a concentration of 0.30 mg/L. The USEPA secondary maximum contaminant level (SMCL) stamdard for iron is 0.3 mg/L. Manganese was detected in water sample from well F at a concentration of 0.011 mg/L. The USEPA SMCL standard for manganese is 0.05 mg/L. Selenium was detected in water samples from wells F, duplicate sample of F, and H at concentrations 0.0054, 0.0052, and 0.0073 mg/L respectively. The USEPA MCL standard for selenium is 0.05 mg/L. Zinc was detected in water samples from wells G and H at concentrations of 0.033 and 0.12 mg/L respectively. The USEPA SMCL standard for zinc is 5 mg/L. Nitrate is detected in water samples from all wells. The concentration of nitrate ranged from less than or equal to 2.8 mg/L (wells E, F, and H) to 12.1 mg/L (well G). The USEPA MCL for drinking water standard for nitrate is 10 mg/L.

Concentrations of analytes detected in ground water from wells at Landfill 5 are presented in table 2. Methylene chloride was detected in water sample from all wells (C, I, and duplicate sample of Q) at concentrations 1.5, 1.1, and 1.5 μg/L respectively. TIC, hexane was detected in water sample from all wells at concentrations ranging from 1.0 μg/L (well Q) to 3.2 μg/L (well I). Barium was detected in water samples from all wells at concentrations ranging from 0.027 mg/L (duplicate sample of well Q) to 0.033 μg/L. USEPA MCL standard for barium is

2.0 mg/L. Chromium was detected in water samples from well I at a concentration of 0.0072 mg/L which is slightly more than reporting limit of 0.0050 mg/L. Iron was detected in water samples from wells C and I at concentrations of 0.22, and 0.11 mg/L respectively. Selenium was detected in water samples from wells I, and Q at concentrations of 0.0061, and 0.0066 mg/L respectively.

As part of the quality assurance and quality control (QA/QC) procedures for the Sewage Lagoons and Landfill 5 sites, two trip blanks, one equipment blank, one duplicate sample per site, one pair of matrix spike, and matrix spike duplicate samples were collected. No target parameters were detected above reporting limit in the trip blanks. Methylene chloride was detected in the equipment blank at concentration of 1.4 μg/L. Analytical results of water samples from wells: at Sewage Lagoons, for metals (chromium, iron selenium), and sulfate; at Landfill 5, for metals (chromium, iron, and selenium) should be used with caution because the associated matrix spike or matrix spike duplicate analytical results did not meet quality control acceptance criteria. The percent recoveries of these spiked analytes were either above or below the acceptance criteria, thus indicating potential matrix effect.



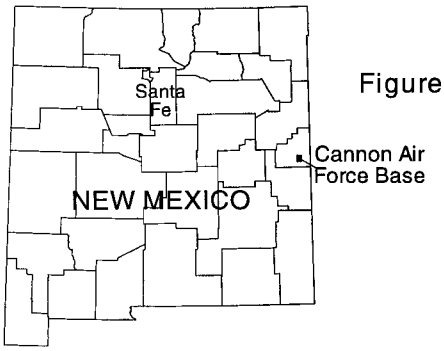


Figure 1.--Location of Cannon Air Force Base, New Mexico.

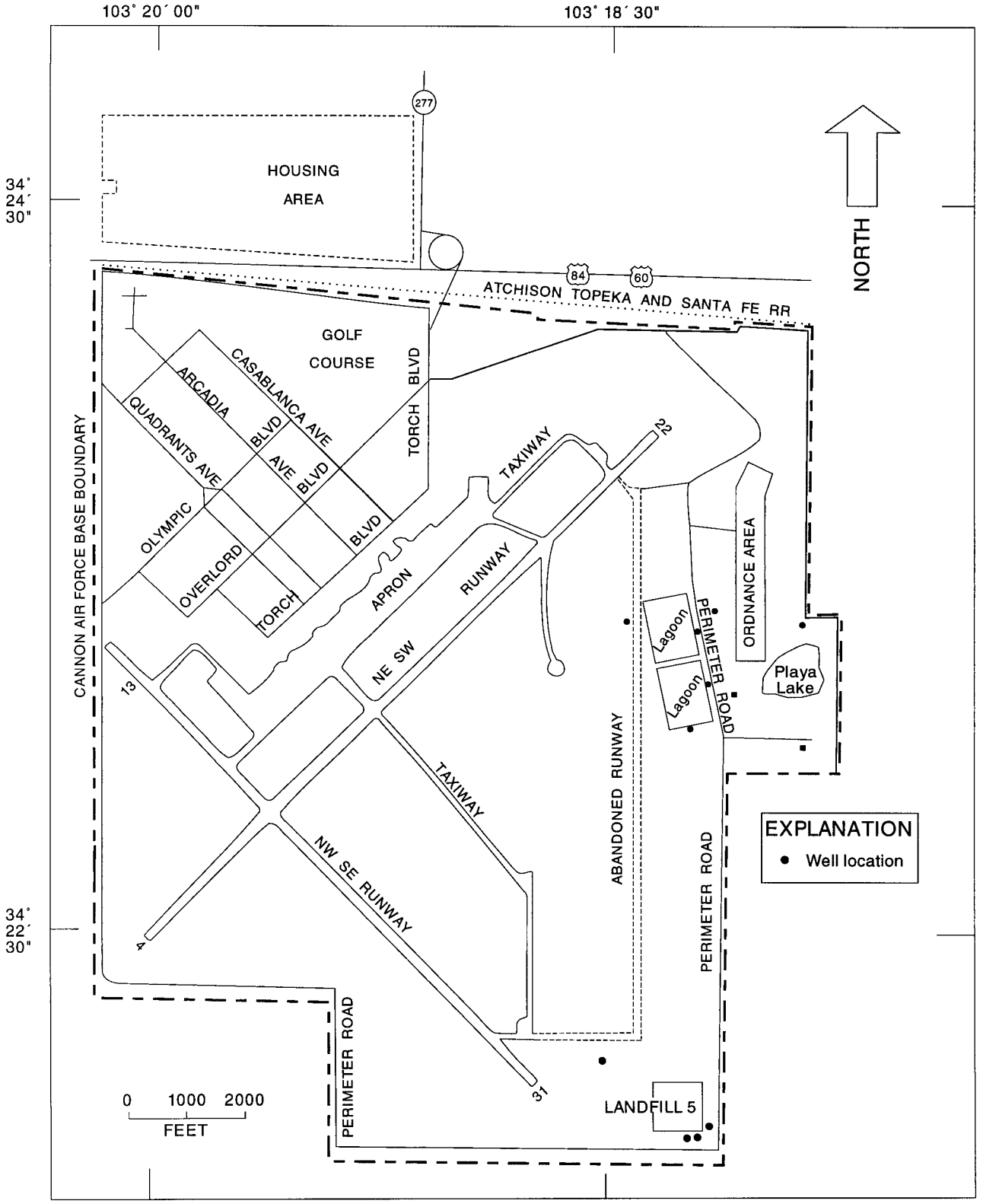


Figure 2.--Cannon Air Force Base and location of sewage lagoons and Landfill 5.

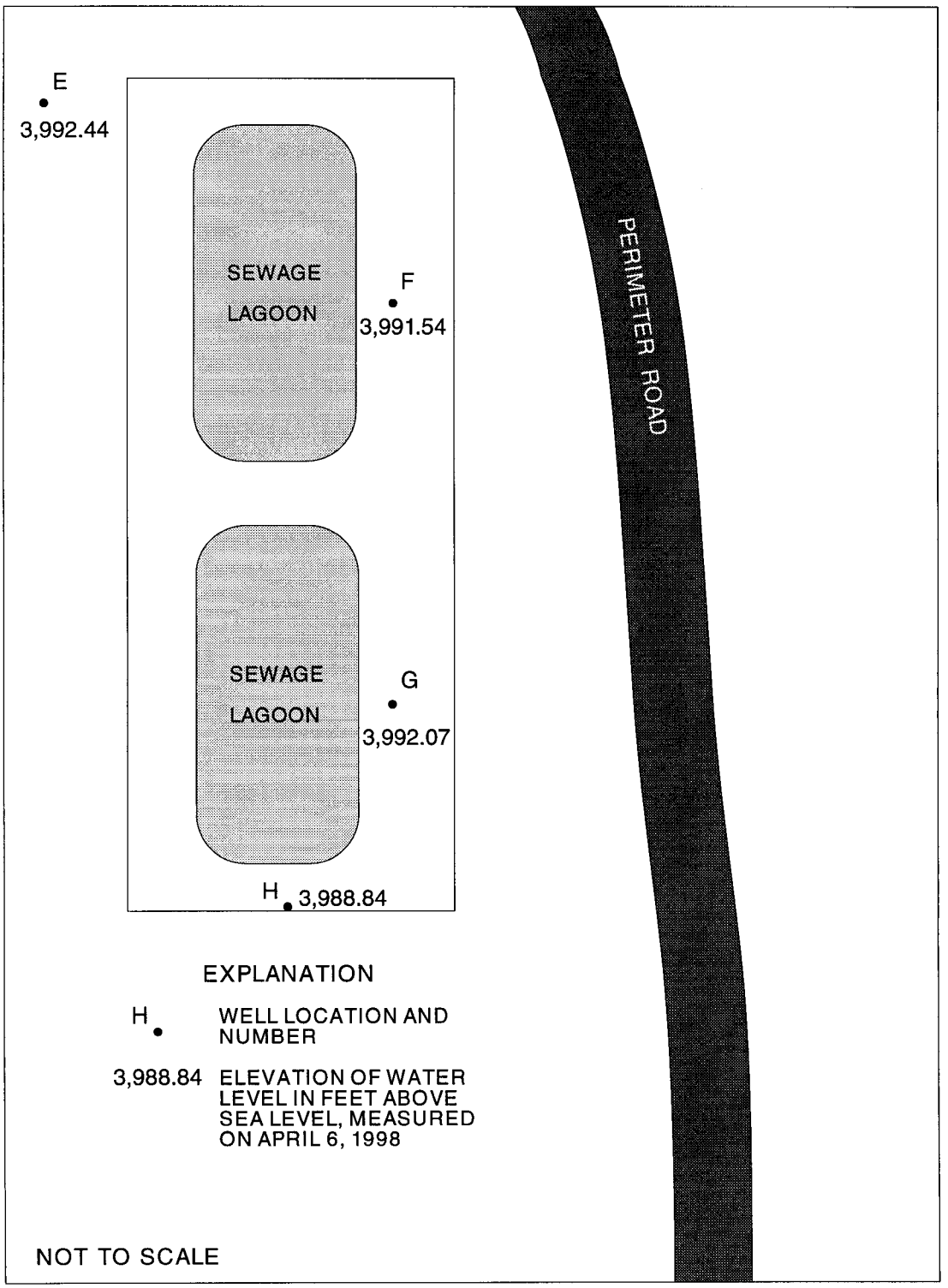


Figure 3.--Location of monitoring wells around the Sewage Lagoons.

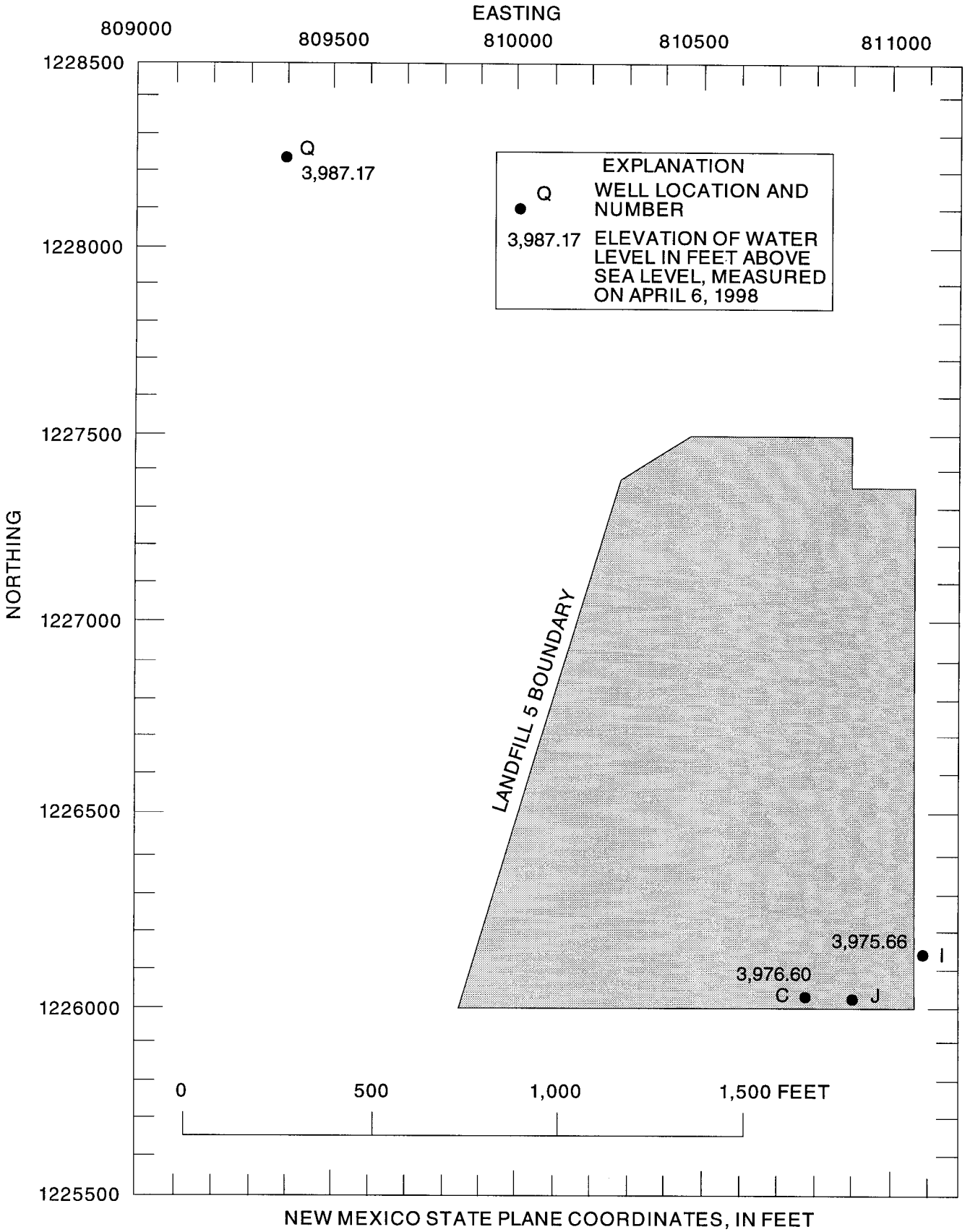


Figure 4.--Location of monitoring wells around Landfill 5.

Table 1.--Summary of concentrations of analytes in ground water from monitoring wells E, F, G, and H for samples collected April 7-8, 1998, at the Sewage Lagoons, Cannon Air Force Base, New Mexico

[RL, reporting limit; µg/L, micrograms per liter; j, result is detected below the reporting limit or is an estimated concentration; ND, not detected; --, no data; mg/L, milligrams per liter; M, associated matrix spike and matrix spike duplicate results did not meet quality control acceptance criteria; q, post-digestion spike recovery fell between 40 and 85 percent due to matrix interference; s, sample diluted due to the concentration of target analytes]

Well/sample ID: Date sampled: :	E/CAFB-E-0498-1 4-7-98		F/CAFB-F-0498-1 4-8-98		F/CAFB-T-0498 4-8-98 Duplicate		G/CAFB-G-0498 4-8-98		H/CAFB-H-0498-1 4-8-98	
Analytes and Method	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Appendix-IX Volatile organics, SW8260A, (µg/L)										
Methylene chloride	2.7	1.0	0.40 j	1.0	0.43 j	1.0	0.20 j	1.0	0.50 j	1.0
Tetrachloroethene	3.7	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Hexane (TIC)	2.5	--	ND	--	ND	--	ND	--	ND	--
Metals, Total (mg/L)										
Barium SW6010	0.044	0.010	0.042	0.010	0.042	0.010	0.032	0.010	0.031	0.010
Calcium SW6010	37.1	0.20	57.6	0.20	57.2	0.20	86.9	0.20	44.2	0.20
Chromium SW7191	0.0072 M	0.0050	0.0044jM	0.0050	0.0018jM	0.0050	0.0018jM	0.0050	0.0070qM	0.0050
Iron SW6010	ND M	0.10	0.053 jM	0.10	0.089 jM	0.10	ND M	0.10	0.30 M	0.10
Magnesium SW6010	33.6	0.20	53.8	0.20	53.6	0.20	83.6	0.20	41.3	0.20
Manganese SW6010	ND	0.010	0.0098 j	0.010	0.011	0.010	ND	0.010	0.0073 j	0.010
Potassium SW6010	6.4	5.0	8.4	5.0	8.1	5.0	10.0	5.0	7.0	5.0
Selenium SW7740	ND M	0.0050	0.0054qM	0.0050	0.0052qM	0.0050	0.0045jM	0.0050	0.0073qM	0.0050
Sodium SW6010	52.0	5.0	43.5	5.0	42.8	5.0	63.9	5.0	55.0	5.0
Vanadium SW6010	0.019	0.010	0.018	0.010	0.016	0.010	0.015	0.010	0.020	0.010
Zinc SW6010	ND	0.020	0.015 j	0.020	0.019 j	0.020	0.033	0.020	0.12	0.020
General Inorganics (mg/L)										
Nitrate + Nitrite E353.2	2.8	0.10	2.4	0.10	2.2	0.10	12.1 s	1.0	1.3	0.10
Nitrate E353.2/354	2.8	0.10	2.4	0.10	2.2	0.10	12.1	1.0	1.3	0.10
Sulfate E300.0	75.0 M	5.0	163 sM	10.0	164 sM	5.0	203 sM	50.0	143 sM	5.0
Total Dissolved Solids, E160.1	401	10.0	535	10.0	528	10.0	856	10.0	459	10.0

Table 2.--Summary of concentrations of analytes in ground water from monitoring wells C, I, and Q for samples collected April 7, 1998, at the Landfill 5, Cannon Air Force Base, New Mexico

[RL, reporting limit; µg/L, micrograms per liter; j, result is detected below the reporting limit or is an estimated concentration; TIC, tentatively identified compound reported at the confirmed identification level; --, no data; mg/L, milligrams per liter; M, associated matrix spike and matrix spike duplicate results did not meet quality control acceptance criteria; q, post-digestion spike recovery fell between 40 and 85 percent due to matrix interference]

Well/sample ID: Date sampled: :		C/CAFB-C-0498 4-7-98		I/CAFB-I-0498 4-7-98		Q/CAFB-Q-0498 4-7-98		Q/CAFB-X-0498 4-7-98 Duplicate	
Analytes and Method		Result	RL	Result	RL	Result	RL	Result	RL
Appendix-IX Volatile organics, SW8260A, µg/L									
Methylene chloride		1.5	1.0	1.1	1.0	0.59 j	1.0	1.5	1.0
Hexane (TIC)		2.2	--	3.2	--	1.0	--	2.9	--
Metals, Total mg/L									
Barium	SW6010	0.030	0.010	0.033	0.010	0.029	0.010	0.027	0.010
Calcium	SW6010	35.6	0.20	56.5	0.20	43.4	0.20	42.4	0.20
Chromium	SW7191	0.0013 jM	0.0050	0.0072 qM	0.0050	0.0017 jM	0.0050	0.0017 jM	0.0050
Iron	SW6010	0.22 M	0.10	0.11 M	0.10	0.076 jM	0.10	0.082 jM	0.10
Magnesium	SW6010	34.5	0.20	48.4	0.20	39.3	0.20	38.4	0.20
Selenium	SW7740	0.0044 jM	0.0050	0.0061 qM	0.0050	0.0066 qM	0.0050	0.0045 jM	0.0050
Sodium	SW6010	51.7	5.0	42.2	5.0	48.9	5.0	47.3	5.0
Vanadium	SW6010	0.040	0.010	0.025	0.010	0.026	0.010	0.024	0.010

MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU
525 CAMINO DE LOS MARQUEZ, SUITE 4
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER E

WELL LOCATION (LONGITUDE) 103° 18' 24.5"

WELL LOCATION (LATITUDE) 34° 23' 28.8"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 11-17-85

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4 inches

BOREHOLE DIAMETER 8 inches

CASING MATERIAL PVC

METHOD OF DEVELOPMENT AIRFT

ELEV BOTTOM OF BOREHOLE 3908.12

ELEV BOTTOM OF WELL CASING 3911.12

ELEV BOTTOM OF SCREENED INT 3911.12

ELEV OF TOP OF SCREENED INT 3926.12

SURVEYED ELEV OF CASING TOP 4281.12

DATE OF REPORT 02-14-89 SIGNATURE F. Elen Rogial for Sanford Hutsell

NAME (TYPED) Sanford Hutsell

MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU
525 CAMINO DE LOS MARQUEZ, SUITE 4
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER F

WELL LOCATION (LONGITUDE) 103° 18' 10.5"

WELL LOCATION (LATITUDE) 34° 23' 21.4"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 11-19-85

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4 inches

BOREHOLE DIAMETER 8 inches

CASING MATERIAL PVC

METHOD OF DEVELOPMENT AIRFT

ELEV BOTTOM OF BOREHOLE 3902.32

ELEV BOTTOM OF WELL CASING 3907.32

ELEV BOTTOM OF SCREENED INT 3907.32

ELEV OF TOP OF SCREENED INT 3922.32

SURVEYED ELEV OF CASING TOP 4277.32

DATE OF REPORT 02-24-89 SIGNATURE T. Eldon Rogers for Sanford Hutsell

NAME (TYPED) Sanford Hutsell

MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU
525 CAMINO DE LOS MARQUEZ, SUITE 4
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER G

WELL LOCATION (LONGITUDE) 103° 18' 08"

WELL LOCATION (LATITUDE) 34° 23' 13.4"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 11-10-85

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4 inches

BOREHOLE DIAMETER 8 inches

CASING MATERIAL PVC

METHOD OF DEVELOPMENT AIRFT

ELEV BOTTOM OF BOREHOLE 3907.99

ELEV BOTTOM OF WELL CASING 3907.90

ELEV BOTTOM OF SCREENED INT 3907.99

ELEV OF TOP OF SCREENED INT 3922.99

SURVEYED ELEV OF CASING TOP 4279.99

DATE OF REPORT 02-24-89 SIGNATURE [illegible] for Sanford Hutsell

NAME (TYPED) Sanford Hutsell

MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU
525 CAMINO DE LOS MARQUEZ, SUITE 4
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER H

WELL LOCATION (LONGITUDE) 103° 18' 16.80"

WELL LOCATION (LATITUDE) 34° 23' 07"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 11-18-85

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4 inches

BOREHOLE DIAMETER 8 inches

CASING MATERIAL PVC

METHOD OF DEVELOPMENT AIRFT

ELEV BOTTOM OF BOREHOLE 3901.15

ELEV BOTTOM OF WELL CASING 3901.15

ELEV BOTTOM OF SCREENED INT 3901.15

ELEV OF TOP OF SCREENED INT 3921.15

SURVEYED ELEV OF CASING TOP 4276.15

DATE OF REPORT 02-24-89 SIGNATURE [illegible] for Sanford Hutsell

NAME (TYPED) Sanford Hutsell

MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU
525 CAMINO DE LOS MARQUEZ, SUITE 4
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER C

WELL LOCATION (LONGITUDE) 103° 18' 08.3"

WELL LOCATION (LATITUDE) 34° 21' 56.8"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 01-11-85

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4 inches

BOREHOLE DIAMETER 8 inches

CASING MATERIAL PVC

METHOD OF DEVELOPMENT AIRFT

ELEV BOTTOM OF BOREHOLE 3905.90

ELEV BOTTOM OF WELL CASING 3905.90

ELEV BOTTOM OF SCREENED INT 3905.90

ELEV OF TOP OF SCREENED INT 3920.90

SURVEYED ELEV OF CASING TOP 4267.90

DATE OF REPORT 02-24-89 SIGNATURE [illegible] for Sanford Hutsell

NAME (TYPED) Sanford Hutsell

MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU
525 CAMINO DE LOS MARQUEZ, SUITE 4
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER I

WELL LOCATION (LONGITUDE) 103° 18' 06.8"

WELL LOCATION (LATITUDE) 34° 21' 58.8"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 08-19-88

DRILLING METHOD HYDRT

INNER CASING DIAMETER 6 inches

BOREHOLE DIAMETER 9 7/8 inches

CASING MATERIAL PVC

METHOD OF DEVELOPMENT BAILD

ELEV BOTTOM OF BOREHOLE 3959.36

ELEV BOTTOM OF WELL CASING 3969.36

ELEV BOTTOM OF SCREENED INT 3969.36

ELEV OF TOP OF SCREENED INT 3989.36

SURVEYED ELEV OF CASING TOP 4262.36

DATE OF REPORT 02-24-89 SIGNATURE F. Elan Rogel for Sanford Hutsell

NAME (TYPED) Sanford Hutsell

MONITORING WELL IDENTIFICATION REPORT

NEW MEXICO ENVIRONMENT DEPARTMENT
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU
525 CAMINO DE LOS MARQUEZ, SUITE 4
SANTA FE, NEW MEXICO 87502

FACILITY NAME Cannon Air Force Base

EPA I.D. NUMBER NM 7572124454

COUNTY Curry

WELL NUMBER Q

WELL LOCATION (LONGITUDE) 103° 18' 31"

WELL LOCATION (LATITUDE) 34° 22' 19"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 02-24-96

DRILLING METHOD _____

INNER CASING DIAMETER 4 inches

BOREHOLE DIAMETER 8 inches

CASING MATERIAL PVC

METHOD OF DEVELOPMENT BAILD

ELEV BOTTOM OF BOREHOLE 3969.30

ELEV BOTTOM OF WELL CASING 3970.30

ELEV BOTTOM OF SCREENED INT 3970.30

ELEV OF TOP OF SCREENED INT 4000.30

SURVEYED ELEV OF CASING TOP 4266.89

DATE OF REPORT 11-27-96 SIGNATURE F. Edwin Reynal for Sanford Hutsell

NAME (TYPED) Sanford Hutsell

MONITORING WELL
SEMI-ANNUAL SAMPLING REPORT

SAMPLE COLLECTED BY Jerry Larson

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-C-0498

WELL DEPTH 362.00 feet WELL CASING VOLUME 46.0 gallons

DATE SAMPLED 04-07-98 LABORATORY SAMPLE I.D.# 059791-0004-SA

TIME SAMPLED 1300 DATE RECEIVED BY LAB 04-08-98

PARAMETERS	STORET CODE	UNITS	VALUE	DATE
Elevation of G. Water	71993	ft.	3976.60	04-06-98
Flow Rate	00059	gal/min	1.27	04-07-98
Pump Period	72004	min.	63.0	04-07-98
Volume Evacuated	73675	gal	80.0	04-07-98
Well Sampling Method	84077	---	PSPMP	N/A

Sampler Material: TEFLON Well Sampling Method: BENNETT PUMP

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	7.58	N/A	04-07-98	field electrometer
Specific Conductivity	00095	umhos/cm	608	N/A	04-07-98	field electrometer
T.O.X.	70354	ug/L	ND	30.0	04-15-98	SW9020
T.O.C.	00680	mg/L	0.43 J	1.0	04-16-98	SW9060

SIGNATURE: F. Eileen Roybal

NAME (PRINTED): F. Eileen Roybal

MONITORING WELL
SEMI-ANNUAL SAMPLING REPORT

SAMPLE COLLECTED BY Jerry Larson

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-I-0498

WELL DEPTH 293.00 feet WELL CASING VOLUME 9.2 gallons

DATE SAMPLED 04-07-98 LABORATORY SAMPLE I.D.# 059791-0005-SA

TIME SAMPLED 1000 DATE RECEIVED BY LAB 04-08-98

PARAMETERS	STORET CODE	UNITS	VALUE	DATE
Elevation of G. Water	71993	ft.	3975.66	04-06-98
Flow Rate	00059	gal/min	1.02	04-06-98
Pump Period	72004	min.	39.0	04-06-98
Volume Evacuated	73675	gal	40.0	04-06-98
Well Sampling Method	84077	---	PSPMP	N/A

Sampler Material: TEFLON Well Sampling Method: BENNETT PUMP

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	7.52	N/A	04-07-98	field electrometer
Specific Conductivity	00095	umhos/cm	766	N/A	04-07-98	field electrometer
T.O.X.	70354	ug/L	ND	30.0	04-15-98	SW9020
T.O.C.	00680	mg/L	ND	1.0	04-16-98	SW9060

SIGNATURE: F. Eileen Roybal

NAME (PRINTED): F. Eileen Roybal

MONITORING WELL
SEMI-ANNUAL SAMPLING REPORT

SAMPLE COLLECTED BY Jerry Larson

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-Q-0498

WELL DEPTH 296.69 feet WELL CASING VOLUME 11.0 gallons

DATE SAMPLED 04-07-98 LABORATORY SAMPLE I.D.# 059791-0006-SA

TIME SAMPLED 0845 DATE RECEIVED BY LAB 04-08-98

PARAMETERS	STORET CODE	UNITS	VALUE	DATE
Elevation of G. Water	71993	ft.	3987.17	04-06-98
Flow Rate	00059	gal/min	1.03	04-07-98
Pump Period	72004	min.	34.0	04-07-98
Volume Evacuated	73675	gal	35.0	04-07-98
Well Sampling Method	84077	---	PSPMP	N/A

Sampler Material: TEFLON Well Sampling Method: BENNETT PUMP

PARAMETERS	STORET CODE	UNITS	VALUE	DETECTION LIMIT	DATE ANALYZED	METHOD USED
pH	00400	S.U.	7.60	N/A	04-07-98	field electrometer
Specific Conductivity	00095	umhos/cm	667	N/A	04-07-98	field electrometer
T.O.X.	70354	ug/L	11.6 J	30.0	04-15-98	SW9020
T.O.C.	00680	mg/L	0.31 J	1.0	04-16-98	SW9060

SIGNATURE: F. Eileen Roybal

NAME (PRINTED): F. Eileen Roybal

APPENDIX I

Analytical Results from Quanterra Environmental Services Laboratory
for Ground-Water Samples Collected April 7-8, 1998

Quanterra
Environmental Services

ANALYTICAL RESULTS

FOR

U.S. GEOLOGICAL SURVEY

QUANTERRA NO. 059791

JUNE 12, 1998

Reviewed by: Ellen L. Riviere

Program Manager

Quanterra
Environmental Services

Table Of Contents

Standard Deliverables With Supporting Documentation

Report Contents	Section	Number Of Pages
Standard Deliverables		
Introduction	A	196
• Table of Contents		
• Narrative		
• LIMs Report Key		
• Sample Description		
• Test Requests		
• Analytical Results		
• QC Summary		
• Chain-of-Custody		
• Miscellaneous		
Supporting Documentation		
[Please Note: A one-page "Description of Supporting Documentation" is provided in the Supporting Documentation section(s).]		
Volatile GC/MS	B	448
Semivolatile GC/MS	C	373
Volatile GC	D	
Semivolatile GC	E	897
LC/MS or HPLC	F	166
Metals	G	137
General Chemistry	H	124
Subcontracted Data	I	372

Quanterra
Environmental Services

NARRATIVE

On April 8, 9,1998, Quanterra Environmental Services, Denver received twelve samples from the U.S. Geological Survey.

This report presents the analytical results as well as supporting information to aid in the evaluation and interpretation of the data.

With the exceptions noted below or on the data sheets, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory QC samples analyzed in conjunction with the samples in this project were within established control limits.

Sample Receipt/Chain-of-Custody

General Comments

Dilution factors listed on the data sheets for the aqueous semivolatile organic parameters are based on the volume of sample actually extracted relative to the nominal volume of 1.0 liter. Any additional dilutions performed on the samples after extraction are also included in the dilution factor and will be indicated by G or s footnotes on the data sheets. All results and reporting limits are adjusted relative to the sample volume extracted and any subsequent dilutions performed. Dilution factors are rounded to two significant figures for reporting; all calculations are performed before rounding.

GC/MS Volatile Organics

The surrogate Toluene-d8 recovery is out of control limits for sample 059791-0010-SA which suggests a matrix effect. Because this would indicate a high bias to the data and no-target compounds were detected in the samples, the data were not adversely affected and no further action was required by the laboratory.

Semivolatile Organics

The percent recoveries for 2-chlorophenol, 1,4-dichlorobenzene, 1,2,4-trichlorobenzene, acenaphthene and the surrogate 2-fluorophenol in the matrix spike/matrix spike duplicate (MS/MSD) associated with the samples, were outside the control limits. Because the laboratory control sample was within acceptable limits, a matrix effect is indicated, and no further action was required by the laboratory.

Several compounds are not consistently recovered using Method 8270, and reporting limits cannot be established. These compounds include hexachlorophene and benzenethiol. Two compounds, pyridine and quinoline, are not recovered after alumina column cleanup.

Benzo(b) and benzo(k) fluoranthene cannot be differentiated based on their mass spectra and their retention times are almost identical. The isomer which is the closest in retention time to the sample is reported.

1,2-diphenylhydrazine is measured and reported as azobenzene.

N-nitrosodiphenylamine degrades to diphenylamine in the injection port of the instrument. Therefore, these two compounds cannot be distinguished from one another.

3-Methyl phenol and 4-methyl phenol cannot be differentiated based on their mass spectra and their retention times are identical. Results are reported as a combined value for 3/4-methyl phenol (or m&p-cresols).

Tentatively Identified Compounds

This report presents results for the "identification" of unknown compounds that were detected in the GC/MS analysis. The results from this work are presented as "tentatively identified compounds" (TICs). The approach used for reporting TICs was based on the protocol established for this purpose in the EPA Superfund methods and on guidelines established by the American Chemical Society (ACS).

In summary, the mass spectra of chromatographic peaks in concentrations in excess of 10% of the internal standard were obtained. Normally, the number of unknown compounds identified is limited to 20 compounds in the volatile fraction and 30 compounds in the semivolatile fraction. Each mass spectrum was then compared to a library of over 30,000 reference spectra in a computerized "library search." The three "best" matches obtained by the computer were hardcopied along with the mass spectrum of the unknown peak. This information was then reviewed by an analyst who "identified" the compound based on the available information. In general, mass spectrometry cannot distinguish isomers (compounds with the same molecular formula). Therefore, an identified compound may be any one of several different isomers.

All identifications were based on the "Guidelines for GC/MS Identification" developed by the American Chemical Society (Environmental Science and Technology, 1982, 16 143A). As recommended in these guidelines, identifications of unknown substances were reported with a level of confidence. The three levels of confidence cited in the ACS guidelines and used in this report are as follows:

3 Confirmed Identification; the identification is based on the analysis of an authentic standard.

2 Confident Identification; good agreement was observed between the unknown compound and a specific library spectrum.

1 Tentative Identification; the unknown compound is only indicative of a specific library spectrum.

If the unknown compound was not similar to a specific library spectrum, but it did contain ions characteristic of a class of compounds (saturated hydrocarbon, chlorinated hydrocarbon, etc.), a class identification is made without assigning a level of confidence.

If there were no library spectra similar to the unknown, and it could not be assigned to a particular class of compounds, the compound is reported as "unknown."

Quantitation of TICs is based on the total ionization peak area relative to an internal standard, assuming a response factor of one. Accordingly, the reported concentration is an estimate.

The tentatively identified compounds in this report may include some compounds reported as "siloxanes." Siloxanes are common laboratory and field artifacts or contaminants. Potential sources include silicon-based grease in the field or laboratory plus the liquid phase coating on gas chromatography columns, as well as other equipment in the laboratory. However, siloxanes may also be present in environmental samples from spills of silicone oils or lubricating oils with siloxane additives.

Dioxins and Furans

Detection limits for dioxins and furans are reported on a sample-specific basis and all results are recovery corrected per the isotope dilution technique. For an analyte reported as "Not Detected" (ND), the associated detection limit represents its maximum possible concentration.

Chromatography

In Method 8080, the relative percent differences (RPD) in the duplicate control sample (DCS) were out of control in QC Lot 15 APR 98-01. Samples 059791-0008 through –0011-SA were reprepped (out of holding time limits) and re-analyzed along with the duplicate control sample (DCS) QC Lot 01 MAY 98-01. These data were within the control limits.

In Method 8310, the percent recovery for benzo(a)pyrene in the matrix spike/matrix spike duplicate (MS/MSD) associated with the samples was outside the control limits. Because the laboratory control sample was within acceptable limits, a matrix effect is indicated,

Analyte identification in chromatographic analysis is based upon retention time. Since it is possible for more than one compound to have the same retention time, analyte identification by these methods is not definitive. Most methods require analysis on a second dissimilar chromatographic column to confirm the presence of target analytes detected in a sample. Only confirmed hits are reported without further qualification or supporting data.

Some analytes (e.g. hydrocarbon products, technical chlordane, toxaphene, and the aroclors) consist of mixtures of a number of different compounds. These multicomponent analytes produce distinct patterns of peaks in the chromatograms and do not have a single retention time. The pattern of peaks observed is characteristic of the analyte and provides qualitative information about the analyte(s) present in the sample. For these analytes, second column confirmations are not generally required. Instead, identification is based on matching the pattern of peaks observed in the samples to the patterns observed for standards containing known concentrations of the analytes of interest.

All analytes are quantitated against multipoint calibration curves as specified in the applicable analytical methods. In some cases it is not practical to maintain multipoint calibration curves for every analyte on every instrument. These analytes include three Appendix IX compounds (diallate, isodrin, and kepone) and the multicomponent analytes (technical chlordane, toxaphene, and aroclors) analyzed by method 8080. For these analytes, a single calibration standard at the reporting limit is analyzed to establish

instrument sensitivity for each compound. If the analyte is detected in any sample at greater than half the reporting limit, a multipoint calibration curve is prepared and the sample re-analyzed for quantitation against this curve.

Metals

The percent recoveries for selenium, chromium, tin, lead and iron in the matrix spike/matrix spike duplicate (MS/MSD) associated with the samples were outside the control limits. Because the laboratory control sample was within acceptable limits, a matrix effect is indicated, and no further action was required by the laboratory.

The relative percent difference (%RPD) for iron in the matrix spike/matrix spike duplicate (MS/MSD) associated with the samples was outside the control limits. The laboratory control sample was within acceptable limits, therefore no further action was required by the laboratory.

Metals analyzed by Graphite Furnace Atomic Absorption (GFAA) are subject to matrix interferences. Consequently, Quanterra Environmental Services, Denver laboratory's protocol is to analyze a spiked aliquot of every sample (post digestion spike or PDS). The severity of the interference, based upon analyte level and spike recovery, is assessed against specific criteria and the need for further action determined as indicated below:

PDS Recovery	Sample Result	Action Taken
< 40%	Any	Matrix interference causing low bias. Dilute 5-fold and reanalyze, reporting the result for this dilution with a "p" flag. Use of an alternate analytical method may be advisable.
40 - 85%	Any	Matrix interference causing low bias. Report result with "q" flag
85 - 115%	Any	No apparent matrix interference. Report result unflagged.
115 - 150%	< RL	Matrix interference causing high bias. Report result unflagged.
115 – 150%	> RL	Matrix interference causing high bias. Report result with "t" flag.
> 150%	< RL	Matrix interference causing high bias. Report result unflagged.
115 – 150%	> RL	Matrix interference causing high bias. Dilute and reanalyze until the above criteria are met.

General Inorganics

The percent recoveries for sulfate and total organic halogen as Cl in the matrix spike/matrix spike duplicate (MS/MSD) associated with the samples were outside the control limits. Because the laboratory

control sample was within acceptable limits, a matrix effect is indicated, and no further action was required by the laboratory.

Footnotes and Data Qualifiers

The data sheets contained in this report may contain a variety of footnotes and data qualifiers. Those used to indicate the confidence level for Tentatively Identified Compounds (GC/MS methods) are described above. Other footnotes are used with specific tests; for example, footnotes used with the GC/FID Petroleum Hydrocarbon methods to indicate (in the analysts judgment) the product that appears to be present. Finally, there are a number of general qualifiers that serve to identify problems and pertinent observations made during sample analysis that may not discussed in the Overview. These are described below:

B Compound is also detected in the blank.

The indicated compound was detected in the sample as well as the method blank. Please note that the B flag is not used when the sample result is ND (Not Detected).

G Reporting limit raised due to the matrix of the sample.

Indicates that reporting limits were raised due to the presence of non-target compounds or other matrix interferences. The sample may or may not have been diluted. For inorganic methods, the footnote applies only to the flagged analyte. For organic methods, the footnote pertains to all analytes determined by the method.

J Result is detected below the reporting limit or is an estimated concentration.

Most commonly, a "J" value indicates that the reported result for the analyte is below the stated reporting limit and is an estimated value. "J" values are generally reported to 1/5 of the reporting limit for GC/MS Volatiles, 1/10 of the reporting limit for GC/MS Semivolatiles, 1/2 the reporting limit for GC and HPLC, or to the Instrument Detection Limit for metals and general inorganics. Analytes which are not detected at or below the reporting limit are reported as "ND" and do not have "J" flags. Because "J" values may represent false positive concentrations, care should be used when interpreting these data. If there is uncertainty about the quantitation of an analyte, this footnote may also indicate that a reported result is an estimated concentration, even if it is above the reporting limit.

p Reporting limit raised due to a dilution necessitated by initial post-digestion spike recovery of less than 40% due to matrix interference.

This footnote is applicable to GFAA analyses only. See discussion under Metals section above.

q Post-digestion spike recovery fell between 40% and 85% due to matrix interference.

This footnote is applicable to GFAA analyses only. See discussion under Metals section above.

s Sample diluted due to the concentration of target compounds.

Indicates that reporting limits were raised due to the presence of target analytes outside the calibration range of the method. For multi-analyte methods, the footnote will appear only for the first analyte but pertains to all analytes determined by the method.

t Post-digestion spike recovery between 115-150% due to matrix interference.

This footnote is applicable to GFAA analyses only. See discussion under Metals section above.

T Preferred values unless footnoted on secondary column test.

This footnote is used with GC tests to indicate the primary column results. The footnote will be listed only for the first compound but pertains to all analytes determined by the method. It is used in conjunction the footnote V.

V Secondary column result is the preferred value.

This footnote is used for GC tests in conjunction the T footnote. It indicates that the value from the second column is preferred over the primary column result and pertains only to the indicated compound.

Quanterra
Environmental Services

LIMs Report Key

Section	Description
Cover Letter	Signature page, report narrative as applicable.
Sample Description Information	Tabulated cross-reference between the Lab ID and Client ID, including matrix, date and time sampled, and the date received for all samples in the project.
Sample Analysis Results Sheets	Lists sample results, test components, reporting limits, dates prepared and analyzed, and any data qualifiers. Pages are organized by test.
QC LOT Assignment Report	Cross-reference between lab IDs and applicable QC batches (DCS, LCS, Blank, MS/SD, DU)
Duplicate Control Sample Report	Percent recovery and RPD results, with acceptance limits, for the laboratory duplicate control samples for each test are tabulated in this report. These are measures of accuracy and precision for each test. Acceptance limits are based upon laboratory historical data.
Laboratory Control Sample Report	Percent recovery results for a single Laboratory Control Sample (if applicable) are tabulated in this report, with the applicable acceptance limits for each test.
Matrix Spike/Matrix Spike Duplicate Report	Percent recovery and RPD results for matrix-specific QC samples and acceptance limits, where applicable. This report can be used to assess matrix effects on an analysis.
Single Control Sample Report	A tabulation of the surrogate recoveries for the blank for organic analyses.
Method Blank Report	A summary of the results of the analysis of the method blank for each test.

List of Abbreviations and Terms

Abbreviation	Term	Abbreviation	Term
DCS	Duplicate Control Sample	MSD	Matrix Spike Duplicate
DU	Sample Duplicate	QC Run	Preparation Batch
EB	Equipment Blank	QC Category	LIMs QC Category
FB	Field Blank	QC Lot	DCS Batch
FD	Field Duplicate	ND	Not Detected at or above the reporting limit expressed
IDL	Instrument Detection Limit (Metals)	QC Matrix	Matrix of the laboratory control sample(s)
LCS	Laboratory Control Sample	RL	Reporting Limit
MB	Method Blank	QC	Quality Control
MDL	Method Detection Limit	SA	Sample
MS	Matrix Spike	SD	Spike Duplicate
RPD	Relative Percent Difference	TB	Trip Blank
ppm (part-per-million)	mg/L or mg/kg (usually)	ppb (part-per-billion)	ug/L or ug/kg (usually)
QUAL	Qualifier flag	DIL	Dilution Factor

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION/ANALYTICAL TEST REQUESTS

Sample Description Information

The Sample Description Information lists all of the samples received in this project together with the internal laboratory identification number assigned for each sample. Each project received at Quanterra's Denver laboratory is assigned a unique six digit number. Samples within the project are numbered sequentially. The laboratory identification number is a combination of the six digit project code and the sample sequence number.

Also given in the Sample Description Information is the Sample Type (matrix), Date of Sampling (if known) and Date of Receipt at the laboratory.

Analytical Test Requests

The Analytical Test Requests lists the analyses that were performed on each sample. The Custom Test column indicates where tests have been modified to conform to the specific requirements of this project.

Quanterra
Environmental Services

SAMPLE DESCRIPTION INFORMATION
for
U.S. Geological Survey

Lab ID	Client ID	Matrix	Sampled Date	Sampled Time	Received Date
059791-0001-SA	CAFB-E-0498-1	AQUEOUS	07 APR 98	15:30	08 APR 98
059791-0002-EB	CAFB-C-0498 EB	AQUEOUS	07 APR 98	10:45	08 APR 98
059791-0002-MB	Method Blank	AQUEOUS	07 APR 98		08 APR 98
059791-0003-SA	CAFB-X-0498	AQUEOUS	07 APR 98	09:00	08 APR 98
059791-0004-SA	CAFB-C-0498	AQUEOUS	07 APR 98	13:00	08 APR 98
059791-0005-SA	CAFB-I-0498	AQUEOUS	07 APR 98	10:00	08 APR 98
059791-0005-MS	CAFB-I-0498 MS	AQUEOUS	07 APR 98	10:00	08 APR 98
059791-0005-SD	CAFB-I-0498 SD	AQUEOUS	07 APR 98	10:00	08 APR 98
059791-0006-SA	CAFB-Q-0498	AQUEOUS	07.APR 98	08:45	08 APR 98
059791-0007-TB	TRIP BLANK	AQUEOUS	07 APR 98		08 APR 98
059791-0008-SA	CAFB-H-0498-1	AQUEOUS	08 APR 98	09:00	09 APR 98
059791-0008-RE	CAFB-H-0498-1	AQUEOUS	08 APR 98	09:00	09 APR 98
059791-0009-SA	CAFB-G-0498	AQUEOUS	08 APR 98	11:00	09 APR 98
059791-0009-RE	CAFB-G-0498	AQUEOUS	08 APR 98	11:00	09 APR 98
059791-0010-SA	CAFB-F-0498-1	AQUEOUS	08 APR 98	12:45	09 APR 98
059791-0010-RE	CAFB-F-0498-1	AQUEOUS	08 APR 98	12:45	09 APR 98
059791-0011-SA	CAFB-T-0498	AQUEOUS	08 APR 98	13:00	09 APR 98
059791-0011-RE	CAFB-T-0498	AQUEOUS	08 APR 98	13:00	09 APR 98
059791-0012-TB	TRIP BLANK	AQUEOUS	08 APR 98		09 APR 98

Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 059791	Group Code	Analysis Description	Custom Test?
0001 , 0008, 0009 - 0011	A	Sulfide, Total	N
		Selenium, Furnace AA (Total)	N
		Chromium, Furnace AA (Total)	N
		Antimony, Furnace AA (Total)	N
		Chlorinated Pesticides and PCB's Appendix IX List	N
		Prep - Organochlorine Pesticides/PCBs by GC (Appendix IX)	N
		Chlorinated Pesticides and PCB's Appendix IX List	N
		Volatiles Library Search (20 Compound TID)	N
		ICP Metals (Total)	Y
		Prep - Total Metals, ICP	N
		Sulfate, Ion Chromatography	N
		Total Dissolved Solids (TDS)	N
		Nitrate Plus Nitrite	N
		Nitrite, as Nitrogen	N
		Nitrate, as Nitrogen by Calculation	N
		Arsenic, Furnace AA (Total)	N
		Prep - Arsenic, Selenium - Total, Furnace AA	N
		Cadmium,Furnace AA	N
		Prep - Total Metals, Furnace AA	N
		Lead, Furnace AA (Total)	N
		Silver, Furnace AA	N
		Volatile Organics	Y
		Appendix IX List	Y
		Screen - Volatile Organics for 25mL Purge	N
		Thallium, Furnace AA (Total)	N
0002 - 0006	B	Total Organic Halogen (TOX)	N
		Cyanide, Total	N
		Prep - Cyanide, Total	N
		Sulfide, Total	N
		Selenium, Furnace AA (Total)	N
		Mercury, Cold Vapor AA (Total)	N
		Prep - Mercury, Cold Vapor AA (Total)	N
		Chromium, Furnace AA (Total)	N
		Antimony, Furnace AA (Total)	N
		Polynuclear Aromatic Hydrocarbons, HPLC	N
		Prep - Polynuclear Aromatic Hydrocarbons by HPLC	N
		Chlorinated Pesticides and PCB's Appendix IX List	N

Quanterra
Environmental Services

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 059791	Group Code	Analysis Description	Custom Test?
		Prep - Organochlorine Pesticides/PCBs by GC (Appendix IX)	N
		Chlorinated Pesticides and PCB's Appendix IX List	N
		Total Organic Carbon (TOC)	N
		Semivolatile Organics	N
		Appendix IX List	
		Prep - Semivolatile Organics by GC/MS	N
		Semivolatiles Library Search (30 Compound TID)	N
		Volatiles Library Search (20 Compound TID)	N
		ICP Metals (Total)	Y
		Prep - Total Metals, ICP	N
		Volatile Organics	Y
		Appendix IX List	Y
		Screen - Volatile Organics for 25mL Purge	N
		Appendix IX C14-C16 Dioxins and Furans	N
		Prep - Low Res. Method 613 L-L Extraction for Dioxins/Furans	N
		Arsenic, Furnace AA (Total)	N
		Prep - Arsenic, Selenium - Total, Furnace AA	N
		Cadmium,Furnace AA	N
		Prep - Total Metals, Furnace AA	N
		Lead, Furnace AA (Total)	N
		Silver, Furnace AA	N
		Thallium, Furnace AA (Total)	N
0007 . 0012	D	Volatiles Library Search (20 Compound TID)	N
		Volatile Organics	Y
		Appendix IX List	Y
		Screen - Volatile Organics for 25mL Purge	N

Quanterra
Environmental Services

ANALYTICAL RESULTS

The analytical results for this project are presented in the following data tables. Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization date is the date when the project was defined by the client such that laboratory work could begin. The date prepared is typically the date an extraction or digestion was initiated. For volatile organic compounds in water, the date prepared is the date the screening of the sample was performed.

Data sheets contain a listing of the parameters measured in each test, the analytical results and the Quanterra reporting limit. Reporting limits are adjusted to reflect dilution of the sample, when appropriate. Solid and waste samples are reported on an "as received" basis, i.e. no correction is made for moisture content.

Quanterra does not routinely blank-correct analytical data. Uncorrected analytical results are reported, along with associated blank results, for all organic and metals analyses. Analytical results and blank results are reported for conventional inorganic parameters as specified in the method. In addition, surrogate recovery data is presented for all GC/MS analyses. The surrogate recovery is an indication of the affect of the sample matrix on the performance of the method.

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-E-0498-1
Lab ID: 059791-0001-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 09 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	20
Acrolein	ND	ug/L	20
Acrylonitrile	ND	ug/L	20
Allyl chloride	ND	ug/L	2.0
Benzene	ND	ug/L	1.0
Bromodichloromethane	ND	ug/L	1.0
Bromoform	ND	ug/L	1.0
Bromomethane	ND	ug/L	2.0
2-Butanone (MEK)	ND	ug/L	5.0
Carbon disulfide	ND	ug/L	1.0
Carbon tetrachloride	ND	ug/L	1.0
Chlorobenzene	ND	ug/L	1.0
Chloroethane	ND	ug/L	2.0
Chloroform	ND	ug/L	1.0
Chloromethane	ND	ug/L	2.0
Chloroprene	ND	ug/L	1.0
Dibromochloromethane	ND	ug/L	1.0
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0
1,2-Dibromoethane (EDB)	ND	ug/L	1.0
Dibromomethane	ND	ug/L	1.0
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0
Dichlorodifluoromethane	ND	ug/L	2.0
1,1-Dichloroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1-Dichloroethene	ND	ug/L	1.0
cis-1,2-Dichloroethene	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
1,2-Dichloropropane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
1,4-Dioxane	ND	ug/L	200
Ethylbenzene	ND	ug/L	1.0
Ethyl methacrylate	ND	ug/L	1.0
2-Hexanone	ND	ug/L	5.0
Iodomethane	ND	ug/L	1.0
Isobutyl alcohol	ND	ug/L	50
Methacrylonitrile	ND	ug/L	1.0
Methylene chloride	2.7	ug/L	1.0
Methyl methacrylate	ND	ug/L	1.0

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra Environmental Services (cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-E-0498-1
Lab ID: 059791-0001-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 09 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	3.7	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	101	%	78-113
4-Bromofluorobenzene	106	%	88-113
Toluene-d8	104	%	90-108

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-E-0498-1
Lab ID: 059791-0001-SA
Matrix AQUEOUS Sampled: 07 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit	
Hexane	2.5	ug/L		3B

Dilution factor is 1.0. All results and limits are corrected for dilution.

3 = Confirmed Identification
B = Compound is also detected in the blank.

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498 EB
Lab ID: 059791-0002-EB
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 09 APR 98
Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	20
Acrolein	ND	ug/L	20
Acrylonitrile	ND	ug/L	20
Allyl chloride	ND	ug/L	2.0
Benzene	ND	ug/L	1.0
Bromodichloromethane	ND	ug/L	1.0
Bromoform	ND	ug/L	1.0
Bromomethane	ND	ug/L	2.0
2-Butanone (MEK)	ND	ug/L	5.0
Carbon disulfide	ND	ug/L	1.0
Carbon tetrachloride	ND	ug/L	1.0
Chlorobenzene	ND	ug/L	1.0
Chloroethane	ND	ug/L	2.0
Chloroform	ND	ug/L	1.0
Chloromethane	ND	ug/L	2.0
Chloroprene	ND	ug/L	1.0
Dibromochloromethane	ND	ug/L	1.0
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0
1,2-Dibromoethane (EDB)	ND	ug/L	1.0
Dibromomethane	ND	ug/L	1.0
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0
Dichlorodifluoromethane	ND	ug/L	2.0
1,1-Dichloroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1-Dichloroethene	ND	ug/L	1.0
cis-1,2-Dichloroethene	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
1,2-Dichloropropane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
1,4-Dioxane	ND	ug/L	200
Ethylbenzene	ND	ug/L	1.0
Ethyl methacrylate	ND	ug/L	1.0
2-Hexanone	ND	ug/L	5.0
Iodomethane	ND	ug/L	1.0
Isobutyl alcohol	ND	ug/L	50
Methacrylonitrile	ND	ug/L	1.0
Methylene chloride	1.4	ug/L	1.0
Methyl methacrylate	ND	ug/L	1.0

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis

Approved By: Audrey Cornell

Quanterra Environmental Services (cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498 EB
Lab ID: 059791-0002-EB
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 09 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	101	%	78-113
4-Bromofluorobenzene	104	%	88-113
Toluene-d8	103	%	90-108

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498 EB
Lab ID: 059791-0002-EB
Matrix AQUEOUS Sampled: 07 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit	
Hexane	2.2	ug/L		3B

Dilution factor is 1.0. All results and limits are corrected for dilution.

3 = Confirmed Identification
B = Compound is also detected in the blank.

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0498
Lab ID: 059791-0003-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 09 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit	
Acetone	ND	ug/L	10	
Acetonitrile	ND	ug/L	20	
Acrolein	ND	ug/L	20	
Acrylonitrile	ND	ug/L	20	
Allyl chloride	ND	ug/L	2.0	
Benzene	ND	ug/L	1.0	
Bromodichloromethane	ND	ug/L	1.0	
Bromoform	ND	ug/L	1.0	
Bromomethane	ND	ug/L	2.0	
2-Butanone (MEK)	ND	ug/L	5.0	
Carbon disulfide	ND	ug/L	1.0	
Carbon tetrachloride	ND	ug/L	1.0	
Chlorobenzene	ND	ug/L	1.0	
Chloroethane	ND	ug/L	2.0	
Chloroform	ND	ug/L	1.0	
Chloromethane	ND	ug/L	2.0	
Chloroprene	ND	ug/L	1.0	
Dibromochloromethane	ND	ug/L	1.0	
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	
Dibromomethane	ND	ug/L	1.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0	
Dichlorodifluoromethane	ND	ug/L	2.0	
1,1-Dichloroethane	ND	ug/L	1.0	
1,2-Dichloroethane	ND	ug/L	1.0	
1,1-Dichloroethene	ND	ug/L	1.0	
cis-1,2-Dichloroethene	ND	ug/L	0.50	
trans-1,2-Dichloroethene	ND	ug/L	0.50	
1,2-Dichloropropane	ND	ug/L	1.0	
cis-1,3-Dichloropropene	ND	ug/L	1.0	
trans-1,3-Dichloropropene	ND	ug/L	1.0	
1,4-Dioxane	ND	ug/L	200	
Ethylbenzene	ND	ug/L	1.0	
Ethyl methacrylate	ND	ug/L	1.0	
2-Hexanone	ND	ug/L	5.0	
Iodomethane	ND	ug/L	1.0	
Isobutyl alcohol	ND	ug/L	50	
Methacrylonitrile	ND	ug/L	1.0	
Methylene chloride	1.5	ug/L	1.0	J

Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A (cont.)

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0498
Lab ID: 059791-0003-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 09 APR 98
Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit
Methyl methacrylate	ND	ug/L	1.0
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	99	%	78-113
4-Bromofluorobenzene	102	%	88-113
Toluene-d8	103	%	90-108

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis

Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0498
Lab ID: 059791-0003-SA
Matrix AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: NA
Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit	
Hexane	2.9	ug/L		3B

Dilution factor is 1.0. All results and limits are corrected for dilution.

3 = Confirmed Identification
B = Compound is also detected in the blank.

Reported By: Steven Francis

Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498
Lab ID: 059791-0004-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 09 APR 98
Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	20
Acrolein	ND	ug/L	20
Acrylonitrile	ND	ug/L	20
Allyl chloride	ND	ug/L	2.0
Benzene	ND	ug/L	1.0
Bromodichloromethane	ND	ug/L	1.0
Bromoform	ND	ug/L	1.0
Bromomethane	ND	ug/L	2.0
2-Butanone (MEK)	ND	ug/L	5.0
Carbon disulfide	ND	ug/L	1.0
Carbon tetrachloride	ND	ug/L	1.0
Chlorobenzene	ND	ug/L	1.0
Chloroethane	ND	ug/L	2.0
Chloroform	ND	ug/L	1.0
Chloromethane	ND	ug/L	2.0
Chloroprene	ND	ug/L	1.0
Dibromochloromethane	ND	ug/L	1.0
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0
1,2-Dibromoethane (EDB)	ND	ug/L	1.0
Dibromomethane	ND	ug/L	1.0
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0
Dichlorodifluoromethane	ND	ug/L	2.0
1,1-Dichloroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1-Dichloroethene	ND	ug/L	1.0
cis-1,2-Dichloroethene	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
1,2-Dichloropropane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
1,4-Dioxane	ND	ug/L	200
Ethylbenzene	ND	ug/L	1.0
Ethyl methacrylate	ND	ug/L	1.0
2-Hexanone	ND	ug/L	5.0
Iodomethane	ND	ug/L	1.0
Isobutyl alcohol	ND	ug/L	50
Methacrylonitrile	ND	ug/L	1.0
Methylene chloride	1.5	ug/L	1.0
Methyl methacrylate	ND	ug/L	1.0

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis

Approved By: Audrey Cornell

Quanterra Environmental Services

Volatile Organics
Appendix IX List
Method 8260A (cont.)

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498
Lab ID: 059791-0004-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 09 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	
Propionitrile	ND	ug/L	4.0	
Styrene	ND	ug/L	1.0	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	
Tetrachloroethene	ND	ug/L	1.0	
Toluene	ND	ug/L	1.0	
1,1,1-Trichloroethane	ND	ug/L	1.0	
1,1,2-Trichloroethane	ND	ug/L	1.0	
Trichloroethene	0.33	ug/L	1.0	J
Trichlorofluoromethane	ND	ug/L	2.0	
1,2,3-Trichloropropane	ND	ug/L	1.0	
Vinyl acetate	ND	ug/L	2.0	
Vinyl chloride	ND	ug/L	2.0	
m- & p-Xylenes	ND	ug/L	0.50	
o-Xylene	ND	ug/L	0.50	

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	98	%	78-113
4-Bromofluorobenzene	107	%	88-113
Toluene-d8	105	%	90-108

Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498
Lab ID: 059791-0004-SA
Matrix AQUEOUS Sampled: 07 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit	
Hexane	2.2	ug/L		3B

Dilution factor is 1.0. All results and limits are corrected for dilution.

3 = Confirmed Identification
B = Compound is also detected in the blank.

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0498
Lab ID: 059791-0005-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 09 APR 98
Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit	
Acetone	ND	ug/L	10	
Acetonitrile	ND	ug/L	20	
Acrolein	ND	ug/L	20	
Acrylonitrile	ND	ug/L	20	
Allyl chloride	ND	ug/L	2.0	
Benzene	ND	ug/L	1.0	
Bromodichloromethane	ND	ug/L	1.0	
Bromoform	ND	ug/L	1.0	
Bromomethane	ND	ug/L	2.0	
2-Butanone (MEK)	ND	ug/L	5.0	
Carbon disulfide	ND	ug/L	1.0	
Carbon tetrachloride	ND	ug/L	1.0	
Chlorobenzene	ND	ug/L	1.0	
Chloroethane	ND	ug/L	2.0	
Chloroform	ND	ug/L	1.0	
Chloromethane	ND	ug/L	2.0	
Chloroprene	ND	ug/L	1.0	
Dibromochloromethane	ND	ug/L	1.0	
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	
Dibromomethane	ND	ug/L	1.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0	
Dichlorodifluoromethane	0.76	ug/L	2.0	J
1,1-Dichloroethane	ND	ug/L	1.0	
1,2-Dichloroethane	ND	ug/L	1.0	
1,1-Dichloroethene	ND	ug/L	1.0	
cis-1,2-Dichloroethene	ND	ug/L	0.50	
trans-1,2-Dichloroethene	ND	ug/L	0.50	
1,2-Dichloropropane	ND	ug/L	1.0	
cis-1,3-Dichloropropene	ND	ug/L	1.0	
trans-1,3-Dichloropropene	ND	ug/L	1.0	
1,4-Dioxane	ND	ug/L	200	
Ethylbenzene	ND	ug/L	1.0	
Ethyl methacrylate	ND	ug/L	1.0	
2-Hexanone	ND	ug/L	5.0	
Iodomethane	ND	ug/L	1.0	
Isobutyl alcohol	ND	ug/L	50	
Methacrylonitrile	ND	ug/L	1.0	
Methylene chloride	1.1	ug/L	1.0	

Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis

Approved By: Audrey Cornell

Quanterra Environmental Services

Volatile Organics
Appendix IX List
Method 8260A (cont.)

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0498
Lab ID: 059791-0005-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 09 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit	
Methyl methacrylate	ND	ug/L	1.0	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	
Propionitrile	ND	ug/L	4.0	
Styrene	ND	ug/L	1.0	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	
Tetrachloroethene	0.22	ug/L	1.0	J
Toluene	ND	ug/L	1.0	
1,1,1-Trichloroethane	ND	ug/L	1.0	
1,1,2-Trichloroethane	ND	ug/L	1.0	
Trichloroethene	ND	ug/L	1.0	
Trichlorofluoromethane	0.34	ug/L	2.0	J
1,2,3-Trichloropropane	ND	ug/L	1.0	
Vinyl acetate	ND	ug/L	2.0	
Vinyl chloride	ND	ug/L	2.0	
m- & p-Xylenes	ND	ug/L	0.50	
o-Xylene	ND	ug/L	0.50	

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	100	%	78-113
4-Bromofluorobenzene	104	%	88-113
Toluene-d8	104	%	90-108

Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0498
Lab ID: 059791-0005-SA
Matrix AQUEOUS Sampled: 07 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit	
Hexane	3.2	ug/L		3B

Dilution factor is 1.0. All results and limits are corrected for dilution.

3 = Confirmed Identification
B = Compound is also detected in the blank.

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0498
Lab ID: 059791-0006-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 09 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit	
Acetone	ND	ug/L	10	
Acetonitrile	ND	ug/L	20	
Acrolein	ND	ug/L	20	
Acrylonitrile	ND	ug/L	20	
Allyl chloride	ND	ug/L	2.0	
Benzene	ND	ug/L	1.0	
Bromodichloromethane	ND	ug/L	1.0	
Bromoform	ND	ug/L	1.0	
Bromomethane	ND	ug/L	2.0	
2-Butanone (MEK)	ND	ug/L	5.0	
Carbon disulfide	ND	ug/L	1.0	
Carbon tetrachloride	ND	ug/L	1.0	
Chlorobenzene	ND	ug/L	1.0	
Chloroethane	ND	ug/L	2.0	
Chloroform	ND	ug/L	1.0	
Chloromethane	ND	ug/L	2.0	
Chloroprene	ND	ug/L	1.0	
Dibromochloromethane	ND	ug/L	1.0	
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	
Dibromomethane	ND	ug/L	1.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0	
Dichlorodifluoromethane	ND	ug/L	2.0	
1,1-Dichloroethane	ND	ug/L	1.0	
1,2-Dichloroethane	ND	ug/L	1.0	
1,1-Dichloroethene	ND	ug/L	1.0	
cis-1,2-Dichloroethene	ND	ug/L	0.50	
trans-1,2-Dichloroethene	ND	ug/L	0.50	
1,2-Dichloropropane	ND	ug/L	1.0	
cis-1,3-Dichloropropene	ND	ug/L	1.0	
trans-1,3-Dichloropropene	ND	ug/L	1.0	
1,4-Dioxane	ND	ug/L	200	
Ethylbenzene	ND	ug/L	1.0	
Ethyl methacrylate	ND	ug/L	1.0	
2-Hexanone	ND	ug/L	5.0	
Iodomethane	ND	ug/L	1.0	
Isobutyl alcohol	ND	ug/L	50	
Methacrylonitrile	ND	ug/L	1.0	
Methylene chloride	0.59	ug/L	1.0	J

Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0498
Lab ID: 059791-0006-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 09 APR 98
Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit
Methyl methacrylate	ND	ug/L	1.0
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	100	%	78-113
4-Bromofluorobenzene	105	%	88-113
Toluene-d8	104	%	90-108

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis

Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0498
Lab ID: 059791-0006-SA
Matrix AQUEOUS Sampled: 07 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit	
Hexane	1.0	ug/L		3B

Dilution factor is 1.0. All results and limits are corrected for dilution.

3 = Confirmed Identification
B = Compound is also detected in the blank.

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: TRIP BLANK
Lab ID: 059791-0007-TB
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 09 APR 98
Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit	
Acetone	ND	ug/L	10	
Acetonitrile	ND	ug/L	20	
Acrolein	ND	ug/L	20	
Acrylonitrile	ND	ug/L	20	
Allyl chloride	ND	ug/L	2.0	
Benzene	ND	ug/L	1.0	
Bromodichloromethane	ND	ug/L	1.0	
Bromoform	ND	ug/L	1.0	
Bromomethane	ND	ug/L	2.0	
2-Butanone (MEK)	ND	ug/L	5.0	
Carbon disulfide	ND	ug/L	1.0	
Carbon tetrachloride	ND	ug/L	1.0	
Chlorobenzene	ND	ug/L	1.0	
Chloroethane	ND	ug/L	2.0	
Chloroform	ND	ug/L	1.0	
Chloromethane	ND	ug/L	2.0	
Chloroprene	ND	ug/L	1.0	
Dibromochloromethane	ND	ug/L	1.0	
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	
Dibromomethane	ND	ug/L	1.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0	
Dichlorodifluoromethane	ND	ug/L	2.0	
1,1-Dichloroethane	ND	ug/L	1.0	
1,2-Dichloroethane	ND	ug/L	1.0	
1,1-Dichloroethene	ND	ug/L	1.0	
cis-1,2-Dichloroethene	ND	ug/L	0.50	
trans-1,2-Dichloroethene	ND	ug/L	0.50	
1,2-Dichloropropane	ND	ug/L	1.0	
cis-1,3-Dichloropropene	ND	ug/L	1.0	
trans-1,3-Dichloropropene	ND	ug/L	1.0	
1,4-Dioxane	ND	ug/L	200	
Ethylbenzene	ND	ug/L	1.0	
Ethyl methacrylate	ND	ug/L	1.0	
2-Hexanone	ND	ug/L	5.0	
Iodomethane	ND	ug/L	1.0	
Isobutyl alcohol	ND	ug/L	50	
Methacrylonitrile	ND	ug/L	1.0	
Methylene chloride	0.80	ug/L	1.0	J

Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis

Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: TRIP BLANK
Lab ID: 059791-0007-TB
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 09 APR 98
Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit
Methyl methacrylate	ND	ug/L	1.0
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	100	%	78-113
4-Bromofluorobenzene	105	%	88-113
Toluene-d8	104	%	90-108

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis

Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: TRIP BLANK
Lab ID: 059791-0007-TB
Matrix AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: NA
Analyzed: 17 APR 98

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis

Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-H-0498-1
Lab ID: 059791-0008-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Received: 09 APR 98

Prepared: 11 APR 98
Analyzed: 20 APR 98

Parameter	Result	Units	Reporting Limit	
Acetone	ND	ug/L	10	
Acetonitrile	ND	ug/L	20	
Acrolein	ND	ug/L	20	
Acrylonitrile	ND	ug/L	20	
Allyl chloride	ND	ug/L	2.0	
Benzene	ND	ug/L	1.0	
Bromodichloromethane	ND	ug/L	1.0	
Bromoform	ND	ug/L	1.0	
Bromomethane	ND	ug/L	2.0	
2-Butanone (MEK)	ND	ug/L	5.0	
Carbon disulfide	ND	ug/L	1.0	
Carbon tetrachloride	ND	ug/L	1.0	
Chlorobenzene	ND	ug/L	1.0	
Chloroethane	ND	ug/L	2.0	
Chloroform	ND	ug/L	1.0	
Chloromethane	ND	ug/L	2.0	
Chloroprene	ND	ug/L	1.0	
Dibromochloromethane	ND	ug/L	1.0	
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	
Dibromomethane	ND	ug/L	1.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0	
Dichlorodifluoromethane	ND	ug/L	2.0	
1,1-Dichloroethane	ND	ug/L	1.0	
1,2-Dichloroethane	ND	ug/L	1.0	
1,1-Dichloroethene	ND	ug/L	1.0	
cis-1,2-Dichloroethene	ND	ug/L	0.50	
trans-1,2-Dichloroethene	ND	ug/L	0.50	
1,2-Dichloropropane	ND	ug/L	1.0	
cis-1,3-Dichloropropene	ND	ug/L	1.0	
trans-1,3-Dichloropropene	ND	ug/L	1.0	
1,4-Dioxane	ND	ug/L	200	
Ethylbenzene	ND	ug/L	1.0	
Ethyl methacrylate	ND	ug/L	1.0	
2-Hexanone	ND	ug/L	5.0	
Iodomethane	ND	ug/L	1.0	
Isobutyl alcohol	ND	ug/L	50	
Methacrylonitrile	ND	ug/L	1.0	
Methylene chloride	0.50	ug/L	1.0	J

Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis

Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-H-0498-1
Lab ID: 059791-0008-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Received: 09 APR 98

Prepared: 11 APR 98
Analyzed: 20 APR 98

Parameter	Result	Units	Reporting Limit
Methyl methacrylate	ND	ug/L	1.0
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	99	%	78-113
4-Bromofluorobenzene	104	%	88-113
Toluene-d8	104	%	90-108

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis

Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-H-0498-1
Lab ID: 059791-0008-SA
Matrix AQUEOUS Sampled: 08 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 09 APR 98 Analyzed: 20 APR 98

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-G-0498
Lab ID: 059791-0009-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Received: 09 APR 98

Prepared: 11 APR 98
Analyzed: 20 APR 98

Parameter	Result	Units	Reporting Limit	
Acetone	ND	ug/L	10	
Acetonitrile	ND	ug/L	20	
Acrolein	ND	ug/L	20	
Acrylonitrile	ND	ug/L	20	
Allyl chloride	ND	ug/L	2.0	
Benzene	ND	ug/L	1.0	
Bromodichloromethane	ND	ug/L	1.0	
Bromoform	ND	ug/L	1.0	
Bromomethane	ND	ug/L	2.0	
2-Butanone (MEK)	ND	ug/L	5.0	
Carbon disulfide	ND	ug/L	1.0	
Carbon tetrachloride	ND	ug/L	1.0	
Chlorobenzene	ND	ug/L	1.0	
Chloroethane	ND	ug/L	2.0	
Chloroform	ND	ug/L	1.0	
Chloromethane	ND	ug/L	2.0	
Chloroprene	ND	ug/L	1.0	
Dibromochloromethane	ND	ug/L	1.0	
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	
Dibromomethane	ND	ug/L	1.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0	
Dichlorodifluoromethane	ND	ug/L	2.0	
1,1-Dichloroethane	ND	ug/L	1.0	
1,2-Dichloroethane	ND	ug/L	1.0	
1,1-Dichloroethene	ND	ug/L	1.0	
cis-1,2-Dichloroethene	ND	ug/L	0.50	
trans-1,2-Dichloroethene	ND	ug/L	0.50	
1,2-Dichloropropane	ND	ug/L	1.0	
cis-1,3-Dichloropropene	ND	ug/L	1.0	
trans-1,3-Dichloropropene	ND	ug/L	1.0	
1,4-Dioxane	ND	ug/L	200	
Ethylbenzene	ND	ug/L	1.0	
Ethyl methacrylate	ND	ug/L	1.0	
2-Hexanone	ND	ug/L	5.0	
Iodomethane	ND	ug/L	1.0	
Isobutyl alcohol	ND	ug/L	50	
Methacrylonitrile	ND	ug/L	1.0	
Methylene chloride	0.20	ug/L	1.0	J

Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis

Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-G-0498
Lab ID: 059791-0009-SA
Matrix: AQUEOUS Sampled: 08 APR 98 Prepared: 11 APR 98
Authorized: 08 APR 98 Received: 09 APR 98 Analyzed: 20 APR 98

Parameter	Result	Units	Reporting Limit
Methyl methacrylate	ND	ug/L	1.0
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	101	%	78-113
4-Bromofluorobenzene	105	%	88-113
Toluene-d8	103	%	90-108

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-G-0498
Lab ID: 059791-0009-SA
Matrix AQUEOUS Sampled: 08 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 09 APR 98 Analyzed: 20 APR 98

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-F-0498-1
Lab ID: 059791-0010-SA
Matrix: AQUEOUS Sampled: 08 APR 98 Prepared: 11 APR 98
Authorized: 08 APR 98 Received: 09 APR 98 Analyzed: 21 APR 98

Parameter	Result	Units	Reporting Limit	
Acetone	ND	ug/L	10	
Acetonitrile	ND	ug/L	20	
Acrolein	ND	ug/L	20	
Acrylonitrile	ND	ug/L	20	
Allyl chloride	ND	ug/L	2.0	
Benzene	ND	ug/L	1.0	
Bromodichloromethane	ND	ug/L	1.0	
Bromoform	ND	ug/L	1.0	
Bromomethane	ND	ug/L	2.0	
2-Butanone (MEK)	ND	ug/L	5.0	
Carbon disulfide	ND	ug/L	1.0	
Carbon tetrachloride	ND	ug/L	1.0	
Chlorobenzene	ND	ug/L	1.0	
Chloroethane	ND	ug/L	2.0	
Chloroform	ND	ug/L	1.0	
Chloromethane	ND	ug/L	2.0	
Chloroprene	ND	ug/L	1.0	
Dibromochloromethane	ND	ug/L	1.0	
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	
Dibromomethane	ND	ug/L	1.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0	
Dichlorodifluoromethane	ND	ug/L	2.0	
1,1-Dichloroethane	ND	ug/L	1.0	
1,2-Dichloroethane	ND	ug/L	1.0	
1,1-Dichloroethene	0.46	ug/L	1.0	J
cis-1,2-Dichloroethene	ND	ug/L	0.50	
trans-1,2-Dichloroethene	ND	ug/L	0.50	
1,2-Dichloropropane	ND	ug/L	1.0	
cis-1,3-Dichloropropene	ND	ug/L	1.0	
trans-1,3-Dichloropropene	ND	ug/L	1.0	
1,4-Dioxane	ND	ug/L	200	
Ethylbenzene	ND	ug/L	1.0	
Ethyl methacrylate	ND	ug/L	1.0	
2-Hexanone	ND	ug/L	5.0	
Iodomethane	ND	ug/L	1.0	
Isobutyl alcohol	ND	ug/L	50	
Methacrylonitrile	ND	ug/L	1.0	
Methylene chloride	0.40	ug/L	1.0	J

Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra Environmental Services (cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-F-0498-1
Lab ID: 059791-0010-SA
Matrix: AQUEOUS Sampled: 08 APR 98 Prepared: 11 APR 98
Authorized: 08 APR 98 Received: 09 APR 98 Analyzed: 21 APR 98

Parameter	Result	Units	Reporting Limit
Methyl methacrylate	ND	ug/L	1.0
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	98	%	78-113
4-Bromofluorobenzene	100	%	88-113
Toluene-d8	109	%	90-108

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-F-0498-1
Lab ID: 059791-0010-SA
Matrix AQUEOUS Sampled: 08 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 09 APR 98 Analyzed: 21 APR 98

Parameter	Result	Units	Reporting Limit
Unknown	1.6	ug/L	
Unknown	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-T-0498
Lab ID: 059791-0011-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Received: 09 APR 98

Prepared: 11 APR 98
Analyzed: 20 APR 98

Parameter	Result	Units	Reporting Limit	
Acetone	ND	ug/L	10	
Acetonitrile	ND	ug/L	20	
Acrolein	ND	ug/L	20	
Acrylonitrile	ND	ug/L	20	
Allyl chloride	ND	ug/L	2.0	
Benzene	ND	ug/L	1.0	
Bromodichloromethane	ND	ug/L	1.0	
Bromoform	ND	ug/L	1.0	
Bromomethane	ND	ug/L	2.0	
2-Butanone (MEK)	ND	ug/L	5.0	
Carbon disulfide	ND	ug/L	1.0	
Carbon tetrachloride	ND	ug/L	1.0	
Chlorobenzene	ND	ug/L	1.0	
Chloroethane	ND	ug/L	2.0	
Chloroform	ND	ug/L	1.0	
Chloromethane	ND	ug/L	2.0	
Chloroprene	ND	ug/L	1.0	
Dibromochloromethane	ND	ug/L	1.0	
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	
Dibromomethane	ND	ug/L	1.0	
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0	
Dichlorodifluoromethane	ND	ug/L	2.0	
1,1-Dichloroethane	ND	ug/L	1.0	
1,2-Dichloroethane	ND	ug/L	1.0	
1,1-Dichloroethene	0.46	ug/L	1.0	J
cis-1,2-Dichloroethene	ND	ug/L	0.50	
trans-1,2-Dichloroethene	ND	ug/L	0.50	
1,2-Dichloropropane	ND	ug/L	1.0	
cis-1,3-Dichloropropene	ND	ug/L	1.0	
trans-1,3-Dichloropropene	ND	ug/L	1.0	
1,4-Dioxane	ND	ug/L	200	
Ethylbenzene	ND	ug/L	1.0	
Ethyl methacrylate	ND	ug/L	1.0	
2-Hexanone	ND	ug/L	5.0	
Iodomethane	ND	ug/L	1.0	
Isobutyl alcohol	ND	ug/L	50	
Methacrylonitrile	ND	ug/L	1.0	
Methylene chloride	0.43	ug/L	1.0	J

Dilution factor is 1.0. All results and limits are corrected for dilution.

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Steven Francis

Approved By: Audrey Cornell

Quanterra Environmental Services (cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-T-0498
Lab ID: 059791-0011-SA
Matrix: AQUEOUS Sampled: 08 APR 98 Prepared: 11 APR 98
Authorized: 08 APR 98 Received: 09 APR 98 Analyzed: 20 APR 98

Parameter	Result	Units	Reporting Limit
Methyl methacrylate	ND	ug/L	1.0
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl cnloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	101	%	78-113
4-Bromofluorobenzene	103	%	88-113
Toluene-d8	104	%	90-108

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: CAFB-T-0498
Lab ID: 059791-0011-SA
Matrix AQUEOUS Sampled: 08 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 09 APR 98 Analyzed: 20 APR 98

Parameter	Result	Units	Reporting Limit
Unknown	1.5	ug/L	
Unknown	ND	ug/L	
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: TRIP BLANK
Lab ID: 059791-0012-TB
Matrix: AQUEOUS Sampled: 08 APR 98 Prepared: 11 APR 98
Authorized: 08 APR 98 Received: 09 APR 98 Analyzed: 20 APR 98

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	20
Acrolein	ND	ug/L	20
Acrylonitrile	ND	ug/L	20
Allyl chloride	ND	ug/L	2.0
Benzene	ND	ug/L	1.0
Bromodichloromethane	ND	ug/L	1.0
Bromoform	ND	ug/L	1.0
Bromomethane	ND	ug/L	2.0
2-Butanone (MEK)	ND	ug/L	5.0
Carbon disulfide	ND	ug/L	1.0
Carbon tetrachloride	ND	ug/L	1.0
Chlorobenzene	ND	ug/L	1.0
Chloroethane	ND	ug/L	2.0
Chloroform	ND	ug/L	1.0
Chloromethane	ND	ug/L	2.0
Chloroprene	ND	ug/L	1.0
Dibromochloromethane	ND	ug/L	1.0
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0
1,2-Dibromoethane (EDB)	ND	ug/L	1.0
Dibromomethane	ND	ug/L	1.0
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0
Dichlorodifluoromethane	ND	ug/L	2.0
1,1-Dichloroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1-Dichloroethene	ND	ug/L	1.0
cis-1,2-Dichloroethene	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
1,2-Dichloropropane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
1,4-Dioxane	ND	ug/L	200
Ethylbenzene	ND	ug/L	1.0
Ethyl methacrylate	ND	ug/L	1.0
2-Hexanone	ND	ug/L	5.0
Iodomethane	ND	ug/L	1.0
Isobutyl alcohol	ND	ug/L	50
Methacrylonitrile	ND	ug/L	1.0
Methylene chloride	ND	ug/L	1.0
Methyl methacrylate	ND	ug/L	1.0

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Volatile Organics
Appendix IX List
Method 8260A

Client Name: U.S. Geological Survey
Client ID: TRIP BLANK
Lab ID: 059791-0012-TB
Matrix: AQUEOUS Sampled: 08 APR 98 Prepared: 11 APR 98
Authorized: 08 APR 98 Received: 09 APR 98 Analyzed: 20 APR 98

Parameter	Result	Units	Reporting Limit
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Surrogate	Recovery		Limits
1,2-Dichloroethane-d4	99	%	78-113
4-Bromofluorobenzene	105	%	88-113
Toluene-d8	105	%	90-108

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Volatiles Library Search (20 Compound TID)
Method 8260A

Client Name: U.S. Geological Survey
Client ID: TRIP BLANK
Lab ID: 059791-0012-TB
Matrix AQUEOUS Sampled: 08 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 09 APR 98 Analyzed: 20 APR 98

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Steven Francis Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498 EB
Lab ID: 059791-0002-EB
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.5
Acenaphthylene	ND	ug/L	9.5
Acetophenone	ND	ug/L	9.5
2-Acetylaminofluorene	ND	ug/L	95
4-Aminobiphenyl	ND	ug/L	48
Aniline	ND	ug/L	9.5
Anthracene	ND	ug/L	9.5
Aramite	ND	ug/L	19
Benzo(a)anthracene	ND	ug/L	9.5
Benzo(b)fluoranthene	ND	ug/L	9.5
Benzo(k)fluoranthene	ND	ug/L	9.5
Benzo(g,h,i)perylene	ND	ug/L	9.5
Benzo(a)pyrene	ND	ug/L	9.5
Benzyl alcohol	ND	ug/L	9.5
4-Bromophenyl phenyl ether	ND	ug/L	9.5
Butyl benzyl phthalate	ND	ug/L	9.5
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	19
4-Chloroaniline	ND	ug/L	9.5
bis(2-Chloroethoxy)methane	ND	ug/L	9.5
bis(2-Chloroethyl) ether	ND	ug/L	9.5
2,2'-oxybis(1-Chloropropane)	ND	ug/L	9.5
4-Chloro-3-methylphenol	ND	ug/L	9.5
2-Chloronaphthalene	ND	ug/L	9.5
2-Chlorophenol	ND	ug/L	9.5
4-Chloropnenyl phenyl ether	ND	ug/L	9.5
Chrysene	ND	ug/L	9.5
Dibenz(a,h)anthracene	ND	ug/L	9.5
Dibenzofuran	ND	ug/L	9.5
Di-n-butyl phthalate	ND	ug/L	9.5
1,2-Dichlorobenzene	ND	ug/L	9.5
1,3-Dichlorobenzene	ND	ug/L	9.5
1,4-Dichlorobenzene	ND	ug/L	9.5
3,3'-Dichlorobenzidine	ND	ug/L	48
2,4-Dichlorophenol	ND	ug/L	9.5
2,6-Dichlorophenol	ND	ug/L	9.5
Diethyl phthalate	ND	ug/L	9.5
Dimethoate	ND	ug/L	19
p-Dimethylaminoazobenzene	ND	ug/L	19
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	19
3,3'-Dimethylbenzidine	ND	ug/L	48
a,a-Dimethylphenethyl-amine	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Audrey Cornell

Quanterra Environmental Services (cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498 EB
Lab ID: 059791-0002-EB
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.5
Dimethyl phthalate	ND	ug/L	9.5
1,3-Dinitrobenzene	ND	ug/L	9.5
4,6-Dinitro-2-methylphenol	ND	ug/L	48
2,4-Dinitrophenol	ND	ug/L	48
2,4-Dinitrotoluene	ND	ug/L	9.5
2,6-Dinitrotoluene	ND	ug/L	9.5
Di-n-octyl phthalate	ND	ug/L	9.5
Diphenylamine	ND	ug/L	9.5
Disulfoton	ND	ug/L	48
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.5
Ethyl methanesulfonate	ND	ug/L	9.5
Famphur	ND	ug/L	95
Fluoranthene	ND	ug/L	9.5
Fluorene	ND	ug/L	9.5
Hexachlorobenzene	ND	ug/L	9.5
Hexachlorobutadiene	ND	ug/L	9.5
Hexachlorocyclopentadiene	ND	ug/L	48
Hexachloroethane	ND	ug/L	9.5
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	95
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.5
Isophorone	ND	ug/L	9.5
Isosafrole	ND	ug/L	19
Methapyrilene	ND	ug/L	48
3-Methylcholanthrene	ND	ug/L	19
Methyl methanesulfonate	ND	ug/L	9.5
2-Methylnaphthalene	ND	ug/L	9.5
Methyl parathion	ND	ug/L	48
2-Methylphenol	ND	ug/L	9.5
3/4-Methylphenol	ND	ug/L	9.5
Naphthalene	ND	ug/L	9.5
1,4-Naphthoquinone	ND	ug/L	48
1-Naphthylamine	ND	ug/L	9.5
2-Naphthylamine	ND	ug/L	9.5
2-Nitroaniline	ND	ug/L	48
3-Nitroaniline	ND	ug/L	48
4-Nitroaniline	ND	ug/L	48
Nitrobenzene	ND	ug/L	9.5
2-Nitrophenol	ND	ug/L	9.5
4-Nitrophenol	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498 EB
Lab ID: 059791-0002-EB
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	95
N-Nitroso-di-n-butylamine	ND	ug/L	9.5
N-Nitrosodiethylamine	ND	ug/L	9.5
N-Nitrosodimethylamine	ND	ug/L	9.5
N-Nitrosodiphenylamine	ND	ug/L	9.5
N-Nitroso-di-n-propylamine	ND	ug/L	9.5
N-Nitrosomethylethylamine	ND	ug/L	9.5
N-Nitrosomorpholine	ND	ug/L	9.5
N-Nitrosopiperidine	ND	ug/L	9.5
N-Nitrosopyrrolidine	ND	ug/L	9.5
5-Nitro-o-toluidine	ND	ug/L	19
Parathion	ND	ug/L	48
Pentachlorobenzene	ND	ug/L	9.5
Pentachloroethane	ND	ug/L	48
Pentachloronitrobenzene	ND	ug/L	48
Pentachlorophenol	ND	ug/L	48
Phenacetin	ND	ug/L	19
Phenanthrene	ND	ug/L	9.5
Phenol	ND	ug/L	9.5
p-Phenylenediamine	ND	ug/L	95
Phorate	ND	ug/L	48
2-Picoline	ND	ug/L	19
Pronamide	ND	ug/L	19
Pyrene	ND	ug/L	9.5
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	19
Sulfotepp	ND	ug/L	48
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.5
2,3,4,6-Tetrachlorophenol	ND	ug/L	48
Thionazin	ND	ug/L	48
o-Toluidine	ND	ug/L	9.5
1,2,4-Trichlorobenzene	ND	ug/L	9.5
2,4,5-Trichlorophenol	ND	ug/L	9.5
2,4,6-Trichlorophenol	ND	ug/L	9.5
0,0,0-Triethylphosphoro-thioate	ND	ug/L	48
1,3,5-Trinitrobenzene	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498 EB
Lab ID: 059791-0002-EB
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	69	%	54-116
2-Fluorobiphenyl	58	%	49-102
Terphenyl-d14	89	%	57-117
Phenol-d5	67	%	49-131
2-Fluorophenol	59	%	54-110
2,4,6-Tribromophenol	62	%	46-127

Dilution factor is 0.95. All results and limits are corrected for dilution.

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498 EB
Lab ID: 059791-0002-EB
Matrix AQUEOUS Sampled: 07 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit	
Toluene	3.9	ug/L		2

Dilution factor is 0.95. All results and limits are corrected for dilution.

2 = Confident Identification

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0498
Lab ID: 059791-0003-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.5
Acenaphthylene	ND	ug/L	9.5
Acetophenone	ND	ug/L	9.5
2-Acetylaminofluorene	ND	ug/L	95
4-Aminobiphenyl	ND	ug/L	48
Aniline	ND	ug/L	9.5
Anthracene	ND	ug/L	9.5
Aramite	ND	ug/L	19
Benzo(a)anthracene	ND	ug/L	9.5
Benzo(b)fluoranthene	ND	ug/L	9.5
Benzo(k)fluoranthene	ND	ug/L	9.5
Benzo(g,h,i)perylene	ND	ug/L	9.5
Benzo(a)pyrene	ND	ug/L	9.5
Benzyl alcohol	ND	ug/L	9.5
4-Bromophenyl phenyl ether	ND	ug/L	9.5
Butyl benzyl phthalate	ND	ug/L	9.5
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	19
4-Chloroaniline	ND	ug/L	9.5
bis(2-Chloroethoxy)methane	ND	ug/L	9.5
bis(2-Chloroethyl) ether	ND	ug/L	9.5
2,2'-oxybis(1-Chloropropane)	ND	ug/L	9.5
4-Chloro-3-methylphenol	ND	ug/L	9.5
2-Chloronaphthalene	ND	ug/L	9.5
2-Chlorophenol	ND	ug/L	9.5
4-Chlorophenyl phenyl ether	ND	ug/L	9.5
Chrysene	ND	ug/L	9.5
Dibenz(a,h)anthracene	ND	ug/L	9.5
Dibenzofuran	ND	ug/L	9.5
Di-n-butyl phthalate	ND	ug/L	9.5
1,2-Dichlorobenzene	ND	ug/L	9.5
1,3-Dichlorobenzene	ND	ug/L	9.5
1,4-Dichlorobenzene	ND	ug/L	9.5
3,3'-Dichlorobenzidine	ND	ug/L	48
2,4-Dichlorophenol	ND	ug/L	9.5
2,6-Dichlorophenol	ND	ug/L	9.5
Diethyl phthalate	ND	ug/L	9.5
Dimethoate	ND	ug/L	19
p-Dimethylaminoazobenzene	ND	ug/L	19
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	19
3,3'-Dimethylbenzidine	ND	ug/L	48
a,a-Dimethylphenethyl-amine	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0498
Lab ID: 059791-0003-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.5
Dimethyl phthalate	ND	ug/L	9.5
1,3-Dinitrobenzene	ND	ug/L	9.5
4,6-Dinitro-2-methylphenol	ND	ug/L	48
2,4-Dinitrophenol	ND	ug/L	48
2,4-Dinitrotoluene	ND	ug/L	9.5
2,6-Dinitrotoluene	ND	ug/L	9.5
Di-n-octyl phthalate	ND	ug/L	9.5
Diphenylamine	ND	ug/L	9.5
Disulfoton	ND	ug/L	48
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.5
Ethyl methanesulfonate	ND	ug/L	9.5
Famphur	ND	ug/L	95
Fluoranthene	ND	ug/L	9.5
Fluorene	ND	ug/L	9.5
Hexachlorobenzene	ND	ug/L	9.5
Hexachlorobutadiene	ND	ug/L	9.5
Hexachlorocyclopentadiene	ND	ug/L	48
Hexachloroethane	ND	ug/L	9.5
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	95
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.5
Isophorone	ND	ug/L	9.5
Isosafrole	ND	ug/L	19
Methapyrilene	ND	ug/L	48
3-Methylcholanthrene	ND	ug/L	19
Methyl methanesulfonate	ND	ug/L	9.5
2-Methylnaphthalene	ND	ug/L	9.5
Methyl parathion	ND	ug/L	48
2-Methylphenol	ND	ug/L	9.5
3/4-Methylphenol	ND	ug/L	9.5
Naphthalene	ND	ug/L	9.5
1,4-Naphthoquinone	ND	ug/L	48
1-Naphthylamine	ND	ug/L	9.5
2-Naphthylamine	ND	ug/L	9.5
2-Nitroaniline	ND	ug/L	48
3-Nitroaniline	ND	ug/L	48
4-Nitroaniline	ND	ug/L	48
Nitrobenzene	ND	ug/L	9.5
2-Nitrophenol	ND	ug/L	9.5
4-Nitrophenol	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0498
Lab ID: 059791-0003-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	95
N-Nitroso-di-n-butylamine	ND	ug/L	9.5
N-Nitrosodiethylamine	ND	ug/L	9.5
N-Nitrosodimethylamine	ND	ug/L	9.5
N-Nitrosodiphenylamine	ND	ug/L	9.5
N-Nitroso-di-n-propylamine	ND	ug/L	9.5
N-Nitrosomethylethylamine	ND	ug/L	9.5
N-Nitrosomorpholine	ND	ug/L	9.5
N-Nitrosopiperidine	ND	ug/L	9.5
N-Nitrosopyrrolidine	ND	ug/L	9.5
5-Nitro-o-toluidine	ND	ug/L	19
Parathion	ND	ug/L	48
Pentachlorobenzene	ND	ug/L	9.5
Pentachloroethane	ND	ug/L	48
Pentachloronitrobenzene	ND	ug/L	48
Pentachlorophenol	ND	ug/L	48
Phenacetin	ND	ug/L	19
Phenanthrene	ND	ug/L	9.5
Phenol	ND	ug/L	9.5
p-Phenylenediamine	ND	ug/L	95
Phorate	ND	ug/L	48
2-Picoline	ND	ug/L	19
Pronamide	ND	ug/L	19
Pyrene	ND	ug/L	9.5
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	19
Sulfotepp	ND	ug/L	48
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.5
2,3,4,6-Tetrachlorophenol	ND	ug/L	48
Thionazin	ND	ug/L	48
o-Toluidine	ND	ug/L	9.5
1,2,4-Trichlorobenzene	ND	ug/L	9.5
2,4,5-Trichlorophenol	ND	ug/L	9.5
2,4,6-Trichlorophenol	ND	ug/L	9.5
O,O,O-Triethylphosphoro-thioate	ND	ug/L	48
1,3,5-Trinitrobenzene	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0498
Lab ID: 059791-0003-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	90	%	54-116
2-Fluorobiphenyl	75	%	49-102
Terphenyl-d14	106	%	57-117
Phenol-d5	85	%	49-131
2-Fluorophenol	78	%	54-110
2,4,6-Tribromophenol	78	%	46-127

Dilution factor is 0.95. All results and limits are corrected for dilution.

Reported By: Sandra Jones

Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0498
Lab ID: 059791-0003-SA
Matrix AQUEOUS Sampled: 07 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
Toluene	4.1	ug/L	2

Dilution factor is 0.95. All results and limits are corrected for dilution.

2 = Confident Identification

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498
Lab ID: 059791-0004-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.5
Acenaphthylene	ND	ug/L	9.5
Acetophenone	ND	ug/L	9.5
2-Acetylaminofluorene	ND	ug/L	95
4-Aminobiphenyl	ND	ug/L	48
Aniline	ND	ug/L	9.5
Anthracene	ND	ug/L	9.5
Aramite	ND	ug/L	19
Benzo(a)anthracene	ND	ug/L	9.5
Benzo(b)fluoranthene	ND	ug/L	9.5
Benzo(k)fluoranthene	ND	ug/L	9.5
Benzo(g,h,i)perylene	ND	ug/L	9.5
Benzo(a)pyrene	ND	ug/L	9.5
Benzyl alcohol	ND	ug/L	9.5
4-Bromophenyl phenyl ether	ND	ug/L	9.5
Butyl benzyl phthalate	ND	ug/L	9.5
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	19
4-Chloroaniline	ND	ug/L	9.5
bis(2-Chloroethoxy)methane	ND	ug/L	9.5
bis(2-Chloroethyl) ether	ND	ug/L	9.5
2,2'-oxybis(1-Chloropropane)	ND	ug/L	9.5
4-Chloro-3-methylphenol	ND	ug/L	9.5
2-Chloronaphthalene	ND	ug/L	9.5
2-Chlorophenol	ND	ug/L	9.5
4-Chlorophenyl phenyl ether	ND	ug/L	9.5
Chrysene	ND	ug/L	9.5
Dibenz(a,h)anthracene	ND	ug/L	9.5
Dibenzofuran	ND	ug/L	9.5
Di-n-butyl phthalate	ND	ug/L	9.5
1,2-Dichlorobenzene	ND	ug/L	9.5
1,3-Dichlorobenzene	ND	ug/L	9.5
1,4-Dichlorobenzene	ND	ug/L	9.5
3,3'-Dichlorobenzidine	ND	ug/L	48
2,4-Dichlorophenol	ND	ug/L	9.5
2,6-Dichlorophenol	ND	ug/L	9.5
Diethyl phthalate	ND	ug/L	9.5
Dimethoate	ND	ug/L	19
p-Dimethylaminoazobenzene	ND	ug/L	19
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	19
3,3'-Dimethylbenzidine	ND	ug/L	48
a,a-Dimethylphenethyl-amine	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498
Lab ID: 059791-0004-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.5
Dimethyl phthalate	ND	ug/L	9.5
1,3-Dinitrobenzene	ND	ug/L	9.5
4,6-Dinitro-2-methylphenol	ND	ug/L	48
2,4-Dinitrophenol	ND	ug/L	48
2,4-Dinitrotoluene	ND	ug/L	9.5
2,6-Dinitrotoluene	ND	ug/L	9.5
Di-n-octyl phthalate	ND	ug/L	9.5
Diphenylamine	ND	ug/L	9.5
Disulfoton	ND	ug/L	48
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.5
Ethyl methanesulfonate	ND	ug/L	9.5
Famphur	ND	ug/L	95
Fluoranthene	ND	ug/L	9.5
Fluorene	ND	ug/L	9.5
Hexachlorobenzene	ND	ug/L	9.5
Hexachlorobutadiene	ND	ug/L	9.5
Hexachlorocyclopentadiene	ND	ug/L	48
Hexachloroethane	ND	ug/L	9.5
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	95
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.5
Isophorone	ND	ug/L	9.5
Isosafrole	ND	ug/L	19
Methapyrilene	ND	ug/L	48
3-Methylcholanthrene	ND	ug/L	19
Methyl methanesulfonate	ND	ug/L	9.5
2-Methylnaphthalene	ND	ug/L	9.5
Methyl parathion	ND	ug/L	48
2-Methylphenol	ND	ug/L	9.5
3/4-Methylphenol	ND	ug/L	9.5
Naphthalene	ND	ug/L	9.5
1,4-Naphthoquinone	ND	ug/L	48
1-Naphthylamine	ND	ug/L	9.5
2-Naphthylamine	ND	ug/L	9.5
2-Nitroaniline	ND	ug/L	48
3-Nitroaniline	ND	ug/L	48
4-Nitroaniline	ND	ug/L	48
Nitrobenzene	ND	ug/L	9.5
2-Nitrophenol	ND	ug/L	9.5
4-Nitrophenol	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Audrey Cornell

Quanterra Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B (cont.)

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498
Lab ID: 059791-0004-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	95
N-Nitroso-di-n-butylamine	ND	ug/L	9.5
N-Nitrosodiethylamine	ND	ug/L	9.5
N-Nitrosodimethylamine	ND	ug/L	9.5
N-Nitrosodiphenylamine	ND	ug/L	9.5
N-Nitroso-di-n-propylamine	ND	ug/L	9.5
N-Nitrosomethylethylamine	ND	ug/L	9.5
N-Nitrosomorpholine	ND	ug/L	9.5
N-Nitrosopiperidine	ND	ug/L	9.5
N-Nitrosopyrrolidine	ND	ug/L	9.5
5-Nitro-o-toluidine	ND	ug/L	19
Parathion	ND	ug/L	48
Pentachlorobenzene	ND	ug/L	9.5
Pentachloroethane	ND	ug/L	48
Pentachloronitrobenzene	ND	ug/L	48
Pentachlorophenol	ND	ug/L	48
Phenacetin	ND	ug/L	19
Phenanthrene	ND	ug/L	9.5
Phenol	ND	ug/L	9.5
p-Phenylenediamine	ND	ug/L	95
Phorate	ND	ug/L	48
2-Picoline	ND	ug/L	19
Pronamide	ND	ug/L	19
Pyrene	ND	ug/L	9.5
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	19
Sulfotepp	ND	ug/L	48
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.5
2,3,4,6-Tetrachlorophenol	ND	ug/L	48
Thionazin	ND	ug/L	48
o-Toluidine	ND	ug/L	9.5
1,2,4-Trichlorobenzene	ND	ug/L	9.5
2,4,5-Trichlorophenol	ND	ug/L	9.5
2,4,6-Trichlorophenol	ND	ug/L	9.5
O,O,O-Triethylphosphoro-thioate	ND	ug/L	48
1,3,5-Trinitrobenzene	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra
Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498
Lab ID: 059791-0004-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
Surrogate	Recovery		Limits
Nitrobenzene-d5	84	%	54-116
2-Fluorobiphenyl	75	%	49-102
Terphenyl-d14	108	%	57-117
Phenol-d5	82	%	49-131
2-Fluorophenol	73	%	54-110
2,4,6-Tribromophenol	75	%	46-127

Dilution factor is 0.95. All results and limits are corrected for dilution.

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498
Lab ID: 059791-0004-SA
Matrix AQUEOUS Sampled: 07 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0498
Lab ID: 059791-0005-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.5
Acenaphthylene	ND	ug/L	9.5
Acetophenone	ND	ug/L	9.5
2-Acetylaminofluorene	ND	ug/L	95
4-Aminobiphenyl	ND	ug/L	48
Aniline	ND	ug/L	9.5
Anthracene	ND	ug/L	9.5
Aramite	ND	ug/L	19
Benzo(a)anthracene	ND	ug/L	9.5
Benzo(b)fluoranthene	ND	ug/L	9.5
Benzo(k)fluoranthene	ND	ug/L	9.5
Benzo(g,h,i)perylene	ND	ug/L	9.5
Benzo(a)pyrene	ND	ug/L	9.5
Benzyl alcohol	ND	ug/L	9.5
4-Bromophenyl phenyl ether	ND	ug/L	9.5
Butyl benzyl phthalate	ND	ug/L	9.5
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	19
4-Chloroaniline	ND	ug/L	9.5
bis(2-Chloroethoxy)methane	ND	ug/L	9.5
bis(2-Chloroethyl) ether	ND	ug/L	9.5
2,2'-oxybis(1-Chloropropane)	ND	ug/L	9.5
4-Chloro-3-methylphenol	ND	ug/L	9.5
2-Chloronaphthalene	ND	ug/L	9.5
2-Chlorophenol	ND	ug/L	9.5
4-Chlorophenyl phenyl ether	ND	ug/L	9.5
Chrysene	ND	ug/L	9.5
Dibenz(a,h)anthracene	ND	ug/L	9.5
Dibenzofuran	ND	ug/L	9.5
Di-n-butyl phthalate	ND	ug/L	9.5
1,2-Dichlorobenzene	ND	ug/L	9.5
1,3-Dichlorobenzene	ND	ug/L	9.5
1,4-Dichlorobenzene	ND	ug/L	9.5
3,3'-Dichlorobenzidine	ND	ug/L	48
2,4-Dichlorophenol	ND	ug/L	9.5
2,6-Dichlorophenol	ND	ug/L	9.5
Diethyl phthalate	ND	ug/L	9.5
Dimethoate	ND	ug/L	19
p-Dimethylaminoazobenzene	ND	ug/L	19
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	19
3,3'-Dimethylbenzidine	ND	ug/L	48
a,a-Dimethylphenethyl-amine	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra
Environmental Services (cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0498
Lab ID: 059791-0005-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.5
Dimethyl phthalate	ND	ug/L	9.5
1,3-Dinitrobenzene	ND	ug/L	9.5
4,6-Dinitro-2-methylphenol	ND	ug/L	48
2,4-Dinitrophenol	ND	ug/L	48
2,4-Dinitrotoluene	ND	ug/L	9.5
2,6-Dinitrotoluene	ND	ug/L	9.5
Di-n-octyl phthalate	ND	ug/L	9.5
Diphenylamine	ND	ug/L	9.5
Disulfoton	ND	ug/L	48
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.5
Ethyl methanesulfonate	ND	ug/L	9.5
Famphur	ND	ug/L	95
Fluoranthene	ND	ug/L	9.5
Fluorene	ND	ug/L	9.5
Hexachlorobenzene	ND	ug/L	9.5
Hexachlorobutadiene	ND	ug/L	9.5
Hexachlorocyclopentadiene	ND	ug/L	48
Hexachloroethane	ND	ug/L	9.5
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	95
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.5
Isophorone	ND	ug/L	9.5
Isosafrole	ND	ug/L	19
Methapyrilene	ND	ug/L	48
3-Methylcholanthrene	ND	ug/L	19
Methyl methanesulfonate	ND	ug/L	9.5
2-Methylnaphthalene	ND	ug/L	9.5
Methyl parathion	ND	ug/L	48
2-Methylphenol	ND	ug/L	9.5
3/4-Methylphenol	ND	ug/L	9.5
Naphthalene	ND	ug/L	9.5
1,4-Naphthoquinone	ND	ug/L	48
1-Naphthylamine	ND	ug/L	9.5
2-Naphthylamine	ND	ug/L	9.5
2-Nitroaniline	ND	ug/L	48
3-Nitroaniline	ND	ug/L	48
4-Nitroaniline	ND	ug/L	48
Nitrobenzene	ND	ug/L	9.5
2-Nitrophenol	ND	ug/L	9.5
4-Nitrophenol	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0498
Lab ID: 059791-0005-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	95
N-Nitroso-di-n-butylamine	ND	ug/L	9.5
N-Nitrosodiethylamine	ND	ug/L	9.5
N-Nitrosodimethylamine	ND	ug/L	9.5
N-Nitrosodiphenylamine	ND	ug/L	9.5
N-Nitroso-di-n-propylamine	ND	ug/L	9.5
N-Nitrosomethylethylamine	ND	ug/L	9.5
N-Nitrosomorpholine	ND	ug/L	9.5
N-Nitrosopiperidine	ND	ug/L	9.5
N-Nitrosopyrrolidine	ND	ug/L	9.5
5-Nitro-o-toluidine	ND	ug/L	19
Parathion	ND	ug/L	48
Pentachlorobenzene	ND	ug/L	9.5
Pentachloroethane	ND	ug/L	48
Pentachloronitrobenzene	ND	ug/L	48
Pentachlorophenol	ND	ug/L	48
Phenacetin	ND	ug/L	19
Phenanthrene	ND	ug/L	9.5
Phenol	ND	ug/L	9.5
p-Phenylenediamine	ND	ug/L	95
Phorate	ND	ug/L	48
2-Picoline	ND	ug/L	19
Pronamide	ND	ug/L	19
Pyrene	ND	ug/L	9.5
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	19
Sulfotepp	ND	ug/L	48
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.5
2,3,4,6-Tetrachlorophenol	ND	ug/L	48
Thionazin	ND	ug/L	48
o-Toluidine	ND	ug/L	9.5
1,2,4-Trichlorobenzene	ND	ug/L	9.5
2,4,5-Trichlorophenol	ND	ug/L	9.5
2,4,6-Trichlorophenol	ND	ug/L	9.5
0,0,0-Triethylphosphoro-thioate	ND	ug/L	48
1,3,5-Trinitrobenzene	ND	ug/L	48

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B (cont.)

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0498
Lab ID: 059791-0005-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
Surrogate	**Recovery**		**Limits**
Nitrobenzene-d5	65	%	54-116
2-Fluorobiphenyl	51	%	49-102
Terphenyl-d14	85	%	57-117
Phenol-d5	65	%	49-131
2-Fluorophenol	59	%	54-110
2,4,6-Tribromophenol	58	%	46-127

Dilution factor is 0.95. All results and limits are corrected for dilution.

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0498
Lab ID: 059791-0005-SA
Matrix AQUEOUS Sampled: 07 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit	
Toluene	4.3	ug/L		2

Dilution factor is 0.95. All results and limits are corrected for dilution.

2 = Confident Identification

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra Environmental Services

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0498
Lab ID: 059791-0006-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	9.6
Acenaphthylene	ND	ug/L	9.6
Acetophenone	ND	ug/L	9.6
2-Acetylaminofluorene	ND	ug/L	96
4-Aminobiphenyl	ND	ug/L	48
Aniline	ND	ug/L	9.6
Anthracene	ND	ug/L	9.6
Aramite	ND	ug/L	19
Benzo(a)anthracene	ND	ug/L	9.6
Benzo(b)fluoranthene	ND	ug/L	9.6
Benzo(k)fluoranthene	ND	ug/L	9.6
Benzo(g,h,i)perylene	ND	ug/L	9.6
Benzo(a)pyrene	ND	ug/L	9.6
Benzyl alcohol	ND	ug/L	9.6
4-Bromophenyl phenyl ether	ND	ug/L	9.6
Butyl benzyl phthalate	ND	ug/L	9.6
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	19
4-Chloroaniline	ND	ug/L	9.6
bis(2-Chloroethoxy)methane	ND	ug/L	9.6
bis(2-Chloroethyl) ether	ND	ug/L	9.6
2,2'-oxybis(1-Chloropropane)	ND	ug/L	9.6
4-Chloro-3-methylphenol	ND	ug/L	9.6
2-Chloronaphthalene	ND	ug/L	9.6
2-Chlorophenol	ND	ug/L	9.6
4-Chlorophenyl phenyl ether	ND	ug/L	9.6
Chrysene	ND	ug/L	9.6
Dibenz(a,h)anthracene	ND	ug/L	9.6
Dibenzofuran	ND	ug/L	9.6
Di-n-butyl phthalate	ND	ug/L	9.6
1,2-Dichlorobenzene	ND	ug/L	9.6
1,3-Dichlorobenzene	ND	ug/L	9.6
1,4-Dichlorobenzene	ND	ug/L	9.6
3,3'-Dichlorobenzidine	ND	ug/L	48
2,4-Dichlorophenol	ND	ug/L	9.6
2,6-Dichlorophenol	ND	ug/L	9.6
Diethyl phthalate	ND	ug/L	9.6
Dimethoate	ND	ug/L	19
p-Dimethylaminoazobenzene	ND	ug/L	19
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	19
3,3'-Dimethylbenzidine	ND	ug/L	48
a,a-Dimethylphenethyl-amine	ND	ug/L	48

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0498
Lab ID: 059791-0006-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
2,4-Dimethylphenol	ND	ug/L	9.6
Dimethyl phthalate	ND	ug/L	9.6
1,3-Dinitrobenzene	ND	ug/L	9.6
4,6-Dinitro-2-methylphenol	ND	ug/L	48
2,4-Dinitrophenol	ND	ug/L	48
2,4-Dinitrotoluene	ND	ug/L	9.6
2,6-Dinitrotoluene	ND	ug/L	9.6
Di-n-octyl phthalate	ND	ug/L	9.6
Diphenylamine	ND	ug/L	9.6
Disulfoton	ND	ug/L	48
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.6
Ethyl methanesulfonate	ND	ug/L	9.6
Famphur	ND	ug/L	96
Fluoranthene	ND	ug/L	9.6
Fluorene	ND	ug/L	9.6
Hexachlorobenzene	ND	ug/L	9.6
Hexachlorobutadiene	ND	ug/L	9.6
Hexachlorocyclopentadiene	ND	ug/L	48
Hexachloroethane	ND	ug/L	9.6
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	96
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.6
Isophorone	ND	ug/L	9.6
Isosafrole	ND	ug/L	19
Methapyrilene	ND	ug/L	48
3-Methylcholanthrene	ND	ug/L	19
Methyl methanesulfonate	ND	ug/L	9.6
2-Methylnaphthalene	ND	ug/L	9.6
Methyl parathion	ND	ug/L	48
2-Methylphenol	ND	ug/L	9.6
3/4-Methylphenol	ND	ug/L	9.6
Naphthalene	ND	ug/L	9.6
1,4-Naphthoquinone	ND	ug/L	48
1-Naphthylamine	ND	ug/L	9.6
2-Naphthylamine	ND	ug/L	9.6
2-Nitroaniline	ND	ug/L	48
3-Nitroaniline	ND	ug/L	48
4-Nitroaniline	ND	ug/L	48
Nitrobenzene	ND	ug/L	9.6
2-Nitrophenol	ND	ug/L	9.6
4-Nitrophenol	ND	ug/L	48

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones

Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0498
Lab ID: 059791-0006-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
4-Nitroquinoline-1-oxide	ND	ug/L	96
N-Nitroso-di-n-butylamine	ND	ug/L	9.6
N-Nitrosodiethylamine	ND	ug/L	9.6
N-Nitrosodimethylamine	ND	ug/L	9.6
N-Nitrosodiphenylamine	ND	ug/L	9.6
N-Nitroso-di-n-propylamine	ND	ug/L	9.6
N-Nitrosomethylethylamine	ND	ug/L	9.6
N-Nitrosomorpholine	ND	ug/L	9.6
N-Nitrosopiperidine	ND	ug/L	9.6
N-Nitrosopyrrolidine	ND	ug/L	9.6
5-Nitro-o-toluidine	ND	ug/L	19
Parathion	ND	ug/L	48
Pentachlorobenzene	ND	ug/L	9.6
Pentachloroethane	ND	ug/L	48
Pentachloronitrobenzene	ND	ug/L	48
Pentachlorophenol	ND	ug/L	48
Phenacetin	ND	ug/L	19
Phenanthrene	ND	ug/L	9.6
Phenol	ND	ug/L	9.6
p-Phenylenediamine	ND	ug/L	96
Phorate	ND	ug/L	48
2-Picoline	ND	ug/L	19
Pronamide	ND	ug/L	19
Pyrene	ND	ug/L	9.6
Pyridine	ND	ug/L	19
Safrole	ND	ug/L	19
Sulfotepp	ND	ug/L	48
1,2,4,5-Tetrachloro-benzene	ND	ug/L	9.6
2,3,4,6-Tetrachlorophenol	ND	ug/L	48
Thionazin	ND	ug/L	48
o-Toluidine	ND	ug/L	9.6
1,2,4-Trichlorobenzene	ND	ug/L	9.6
2,4,5-Trichlorophenol	ND	ug/L	9.6
2,4,6-Trichlorophenol	ND	ug/L	9.6
0,0,0-Triethylphosphoro-thioate	ND	ug/L	48
1,3,5-Trinitrobenzene	ND	ug/L	48

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra Environmental Services

(cont.)

Semivolatile Organics
Appendix IX List
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0498
Lab ID: 059791-0006-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
Surrogate	**Recovery**		**Limits**
Nitrobenzene-d5	79	%	54-116
2-Fluorobiphenyl	65	%	49-102
Terphenyl-d14	93	%	57-117
Phenol-d5	74	%	49-131
2-Fluorophenol	67	%	54-110
2,4,6-Tribromophenol	69	%	46-127

Dilution factor is 0.96. All results and limits are corrected for dilution.

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra
Environmental Services

Semivolatiles Library Search (30 Compound TID)
Method 8270B

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0498
Lab ID: 059791-0006-SA
Matrix AQUEOUS Sampled: 07 APR 98 Prepared: NA
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 22 APR 98

Parameter	Result	Units	Reporting Limit
None Detected	ND	ug/L	

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Sandra Jones Approved By: Audrey Cornell

Quanterra
Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-E-0498-1
Lab ID: 059791-0001-SA
Matrix: AQUEOUS — Sampled: 07 APR 98 — Prepared: 14 APR 98
Authorized: 08 APR 98 — Received: 08 APR 98 — Analyzed: 24 APR 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.048
Aroclor 1016	ND	ug/L	0.95
Aroclor 1221	ND	ug/L	0.95
Aroclor 1232	ND	ug/L	0.95
Aroclor 1242	ND	ug/L	0.95
Aroclor 1248	ND	ug/L	0.95
Aroclor 1254	ND	ug/L	0.95
Aroclor 1260	ND	ug/L	0.95
alpha-BHC	ND	ug/L	0.048
beta-BHC	ND	ug/L	0.048
delta-BHC	ND	ug/L	0.048
gamma-BHC (Lindane)	ND	ug/L	0.048
alpha-Chlordane	ND	ug/L	0.048
gamma-Chlordane	ND	ug/L	0.048
Chlorobenzilate	ND	ug/L	0.95
4,4'-DDD	ND	ug/L	0.095
4,4'-DDE	ND	ug/L	0.095
4,4'-DDT	ND	ug/L	0.095
Diallate	ND	ug/L	0.95
Dieldrin	ND	ug/L	0.095
Endosulfan I	ND	ug/L	0.048
Endosulfan II	ND	ug/L	0.095
Endosulfan sulfate	ND	ug/L	0.095
Endrin	ND	ug/L	0.095
Endrin aldehyde	ND	ug/L	0.095
Heptachlor	ND	ug/L	0.048
Heptachlor epoxide	ND	ug/L	0.048
Isodrin	ND	ug/L	0.095
Kepone	ND	ug/L	2.4
Methoxychlor	ND	ug/L	0.48
Toxaphene	ND	ug/L	4.8

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	70	%	51-103
Dibutyl chlorendate	83	%	71-109
Decachlorobiphenyl	89	%	50-138

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham — Approved By: Barbara Sullivan

Quanterra Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498 EB
Lab ID: 059791-0002-EB
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 14 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 24 APR 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.048
Aroclor 1016	ND	ug/L	0.96
Aroclor 1221	ND	ug/L	0.96
Aroclor 1232	ND	ug/L	0.96
Aroclor 1242	ND	ug/L	0.96
Aroclor 1248	ND	ug/L	0.96
Aroclor 1254	ND	ug/L	0.96
Aroclor 1260	ND	ug/L	0.96
alpha-BHC	ND	ug/L	0.048
beta-BHC	ND	ug/L	0.048
delta-BHC	ND	ug/L	0.048
gamma-BHC (Lindane)	ND	ug/L	0.048
alpha-Chlordane	ND	ug/L	0.048
gamma-Chlordane	ND	ug/L	0.048
Chlorobenzilate	ND	ug/L	0.96
4,4'-DDD	ND	ug/L	0.096
4,4'-DDE	ND	ug/L	0.096
4,4'-DDT	ND	ug/L	0.096
Diallate	ND	ug/L	0.96
Dieldrin	ND	ug/L	0.096
Endosulfan I	ND	ug/L	0.048
Endosulfan II	ND	ug/L	0.096
Endosulfan sulfate	ND	ug/L	0.096
Endrin	ND	ug/L	0.096
Endrin aldehyde	ND	ug/L	0.096
Heptachlor	ND	ug/L	0.048
Heptachlor epoxide	ND	ug/L	0.048
Isodrin	ND	ug/L	0.096
Kepone	ND	ug/L	2.4
Methoxychlor	ND	ug/L	0.48
Toxaphene	ND	ug/L	4.8

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	81	%	51-103
Dibutyl chlorendate	90	%	71-109
Decachlorobiphenyl	68	%	50-138

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham Approved By: Barbara Sullivan

Quanterra
Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0498
Lab ID: 059791-0003-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 24 APR 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.048
Aroclor 1016	ND	ug/L	0.96
Aroclor 1221	ND	ug/L	0.96
Aroclor 1232	ND	ug/L	0.96
Aroclor 1242	ND	ug/L	0.96
Aroclor 1248	ND	ug/L	0.96
Aroclor 1254	ND	ug/L	0.96
Aroclor 1260	ND	ug/L	0.96
alpha-BHC	ND	ug/L	0.048
beta-BHC	ND	ug/L	0.048
delta-BHC	ND	ug/L	0.048
gamma-BHC (Lindane)	ND	ug/L	0.048
alpha-Chlordane	ND	ug/L	0.048
gamma-Chlordane	ND	ug/L	0.048
Chlorobenzilate	ND	ug/L	0.96
4,4'-DDD	ND	ug/L	0.096
4,4'-DDE	ND	ug/L	0.096
4,4'-DDT	ND	ug/L	0.096
Diallate	ND	ug/L	0.96
Dieldrin	ND	ug/L	0.096
Endosulfan I	ND	ug/L	0.048
Endosulfan II	ND	ug/L	0.096
Endosulfan sulfate	ND	ug/L	0.096
Endrin	ND	ug/L	0.096
Endrin aldehyde	ND	ug/L	0.096
Heptachlor	ND	ug/L	0.048
Heptachlor epoxide	ND	ug/L	0.048
Isodrin	ND	ug/L	0.096
Kepone	ND	ug/L	2.4
Methoxychlor	ND	ug/L	0.48
Toxaphene	ND	ug/L	4.8

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	76	%	51-103
Dibutyl chlorendate	85	%	71-109
Decachlorobiphenyl	92	%	50-138

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham

Approved By: Barbara Sullivan

Quanterra
Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498
Lab ID: 059791-0004-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 24 APR 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.047
Aroclor 1016	ND	ug/L	0.95
Aroclor 1221	ND	ug/L	0.95
Aroclor 1232	ND	ug/L	0.95
Aroclor 1242	ND	ug/L	0.95
Aroclor 1248	ND	ug/L	0.95
Aroclor 1254	ND	ug/L	0.95
Aroclor 1260	ND	ug/L	0.95
alpha-BHC	ND	ug/L	0.047
beta-BHC	ND	ug/L	0.047
delta-BHC	ND	ug/L	0.047
gamma-BHC (Lindane)	ND	ug/L	0.047
alpha-Chlordane	ND	ug/L	0.047
gamma-Chlordane	ND	ug/L	0.047
Chlorobenzilate	ND	ug/L	0.95
4,4'-DDD	ND	ug/L	0.095
4,4'-DDE	ND	ug/L	0.095
4,4'-DDT	ND	ug/L	0.095
Diallate	ND	ug/L	0.95
Dieldrin	ND	ug/L	0.095
Endosulfan I	ND	ug/L	0.047
Endosulfan II	ND	ug/L	0.095
Endosulfan sulfate	ND	ug/L	0.095
Endrin	ND	ug/L	0.095
Endrin aldehyde	ND	ug/L	0.095
Heptachlor	ND	ug/L	0.047
Heptachlor epoxide	ND	ug/L	0.047
Isodrin	ND	ug/L	0.095
Kepone	ND	ug/L	2.4
Methoxychlor	ND	ug/L	0.47
Toxaphene	ND	ug/L	4.7

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	72	%	51-103
Dibutyl chlorendate	87	%	71-109
Decachlorobiphenyl	90	%	50-138

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham

Approved By: Barbara Sullivan

Quanterra
Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0498
Lab ID: 059791-0005-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 24 APR 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.049
Aroclor 1016	ND	ug/L	0.97
Aroclor 1221	ND	ug/L	0.97
Aroclor 1232	ND	ug/L	0.97
Aroclor 1242	ND	ug/L	0.97
Aroclor 1248	ND	ug/L	0.97
Aroclor 1254	ND	ug/L	0.97
Aroclor 1260	ND	ug/L	0.97
alpha-BHC	ND	ug/L	0.049
beta-BHC	ND	ug/L	0.049
delta-BHC	ND	ug/L	0.049
gamma-BHC (Lindane)	ND	ug/L	0.049
alpha-Chlordane	ND	ug/L	0.049
gamma-Chlordane	ND	ug/L	0.049
Chlorobenzilate	ND	ug/L	0.97
4,4'-DDD	ND	ug/L	0.097
4,4'-DDE	ND	ug/L	0.097
4,4'-DDT	ND	ug/L	0.097
Diallate	ND	ug/L	0.97
Dieldrin	ND	ug/L	0.097
Endosulfan I	ND	ug/L	0.049
Endosulfan II	ND	ug/L	0.097
Endosulfan sulfate	ND	ug/L	0.097
Endrin	ND	ug/L	0.097
Endrin aldehyde	ND	ug/L	0.097
Heptachlor	ND	ug/L	0.049
Heptachlor epoxide	ND	ug/L	0.049
Isodrin	ND	ug/L	0.097
Kepone	ND	ug/L	2.4
Methoxychlor	ND	ug/L	0.49
Toxaphene	ND	ug/L	4.9

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	81	%	51-103
Dibutyl chlorendate	88	%	71-109
Decachlorobiphenyl	86	%	50-138

Dilution factor is 0.97. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham

Approved By: Barbara Sullivan

Quanterra
Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0498
Lab ID: 059791-0006-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 24 APR 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.048
Aroclor 1016	ND	ug/L	0.96
Aroclor 1221	ND	ug/L	0.96
Aroclor 1232	ND	ug/L	0.96
Aroclor 1242	ND	ug/L	0.96
Aroclor 1248	ND	ug/L	0.96
Aroclor 1254	ND	ug/L	0.96
Aroclor 1260	ND	ug/L	0.96
alpha-BHC	ND	ug/L	0.048
beta-BHC	ND	ug/L	0.048
delta-BHC	ND	ug/L	0.048
gamma-BHC (Lindane)	ND	ug/L	0.048
alpha-Chlordane	ND	ug/L	0.048
gamma-Chlordane	ND	ug/L	0.048
Chlorobenzilate	ND	ug/L	0.96
4,4'-DDD	ND	ug/L	0.096
4,4'-DDE	ND	ug/L	0.096
4,4'-DDT	ND	ug/L	0.096
Diallate	ND	ug/L	0.96
Dieldrin	ND	ug/L	0.096
Endosulfan I	ND	ug/L	0.048
Endosulfan II	ND	ug/L	0.096
Endosulfan sulfate	ND	ug/L	0.096
Endrin	ND	ug/L	0.096
Endrin aldehyde	ND	ug/L	0.096
Heptachlor	ND	ug/L	0.048
Heptachlor epoxide	ND	ug/L	0.048
Isodrin	ND	ug/L	0.096
Kepone	ND	ug/L	2.4
Methoxychlor	ND	ug/L	0.48
Toxaphene	ND	ug/L	4.8

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	78	%	51-103
Dibutyl chlorendate	85	%	71-109
Decachlorobiphenyl	94	%	50-138

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham

Approved By: Barbara Sullivan

Quanterra
Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-H-0498-1
Lab ID: 059791-0008-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Received: 09 APR 98

Prepared: 15 APR 98
Analyzed: 27 APR 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.047
Aroclor 1016	ND	ug/L	0.95
Aroclor 1221	ND	ug/L	0.95
Aroclor 1232	ND	ug/L	0.95
Aroclor 1242	ND	ug/L	0.95
Aroclor 1248	ND	ug/L	0.95
Aroclor 1254	ND	ug/L	0.95
Aroclor 1260	ND	ug/L	0.95
alpha-BHC	ND	ug/L	0.047
beta-BHC	ND	ug/L	0.047
delta-BHC	ND	ug/L	0.047
gamma-BHC (Lindane)	ND	ug/L	0.047
alpha-Chlordane	ND	ug/L	0.047
gamma-Chlordane	ND	ug/L	0.047
Chlorobenzilate	ND	ug/L	0.95
4,4'-DDD	ND	ug/L	0.095
4,4'-DDE	ND	ug/L	0.095
4,4'-DDT	ND	ug/L	0.095
Diallate	ND	ug/L	0.95
Dieldrin	ND	ug/L	0.095
Endosulfan I	ND	ug/L	0.047
Endosulfan II	ND	ug/L	0.095
Endosulfan sulfate	ND	ug/L	0.095
Endrin	ND	ug/L	0.095
Endrin aldehyde	ND	ug/L	0.095
Heptachlor	ND	ug/L	0.047
Heptachlor epoxide	ND	ug/L	0.047
Isodrin	ND	ug/L	0.095
Kepone	ND	ug/L	2.4
Methoxychlor	ND	ug/L	0.47
Toxaphene	ND	ug/L	4.7

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	75	%	51-103
Dibutyl chlorendate	89	%	71-109
Decachlorobiphenyl	95	%	50-138

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham

Approved By: Barbara Sullivan

Quanterra
Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-H-0498-1
Lab ID: 059791-0008-RE
Matrix: AQUEOUS Sampled: 08 APR 98 Prepared: 01 MAY 98
Authorized: 08 APR 98 Received: 09 APR 98 Analyzed: 08 MAY 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.052
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0
alpha-BHC	ND	ug/L	0.052
beta-BHC	ND	ug/L	0.052
delta-BHC	ND	ug/L	0.052
gamma-BHC (Lindane)	ND	ug/L	0.052
alpha-Chlordane	ND	ug/L	0.052
gamma-Chlordane	ND	ug/L	0.052
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.052
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.052
Heptachlor epoxide	ND	ug/L	0.052
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	2.6
Methoxychlor	ND	ug/L	0.52
Toxaphene	ND	ug/L	5.2

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	88	%	51-103
Dibutyl chlorendate	94	%	71-109
Decachlorobiphenyl	95	%	50-138

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham Approved By: Barbara Sullivan

Quanterra
Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-G-0498
Lab ID: 059791-0009-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Received: 09 APR 98

Prepared: 15 APR 98
Analyzed: 27 APR 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.048
Aroclor 1016	ND	ug/L	0.96
Aroclor 1221	ND	ug/L	0.96
Aroclor 1232	ND	ug/L	0.96
Aroclor 1242	ND	ug/L	0.96
Aroclor 1248	ND	ug/L	0.96
Aroclor 1254	ND	ug/L	0.96
Aroclor 1260	ND	ug/L	0.96
alpha-BHC	ND	ug/L	0.048
beta-BHC	ND	ug/L	0.048
delta-BHC	ND	ug/L	0.048
gamma-BHC (Lindane)	ND	ug/L	0.048
alpha-Chlordane	ND	ug/L	0.048
gamma-Chlordane	ND	ug/L	0.048
Chlorobenzilate	ND	ug/L	0.96
4,4'-DDD	ND	ug/L	0.096
4,4'-DDE	ND	ug/L	0.096
4,4'-DDT	ND	ug/L	0.096
Diallate	ND	ug/L	0.96
Dieldrin	ND	ug/L	0.096
Endosulfan I	ND	ug/L	0.048
Endosulfan II	ND	ug/L	0.096
Endosulfan sulfate	ND	ug/L	0.096
Endrin	ND	ug/L	0.096
Endrin aldehyde	ND	ug/L	0.096
Heptachlor	ND	ug/L	0.048
Heptachlor epoxide	ND	ug/L	0.048
Isodrin	ND	ug/L	0.096
Kepone	ND	ug/L	2.4
Methoxychlor	ND	ug/L	0.48
Toxaphene	ND	ug/L	4.8

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	73	%	51-103
Dibutyl chlorendate	86	%	71-109
Decachlorobiphenyl	88	%	50-138

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham

Approved By: Barbara Sullivan

Quanterra
Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-G-0498
Lab ID: 059791-0009-RE
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Received: 09 APR 98

Prepared: 01 MAY 98
Analyzed: 08 MAY 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.052
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0
alpha-BHC	ND	ug/L	0.052
beta-BHC	ND	ug/L	0.052
delta-BHC	ND	ug/L	0.052
gamma-BHC (Lindane)	ND	ug/L	0.052
alpha-Chlordane	ND	ug/L	0.052
gamma-Chlordane	ND	ug/L	0.052
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.052
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.052
Heptachlor epoxide	ND	ug/L	0.052
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	2.6
Methoxychlor	ND	ug/L	0.52
Toxaphene	ND	ug/L	5.2

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	82	%	51-103
Dibutyl chlorendate	90	%	71-109
Decachlorobiphenyl	88	%	50-138

Dilution factor is 1.0. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham

Approved By: Barbara Sullivan

Quanterra
Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-F-0498-1
Lab ID: 059791-0010-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Received: 09 APR 98

Prepared: 15 APR 98
Analyzed: 27 APR 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.048
Aroclor 1016	ND	ug/L	0.96
Aroclor 1221	ND	ug/L	0.96
Aroclor 1232	ND	ug/L	0.96
Aroclor 1242	ND	ug/L	0.96
Aroclor 1248	ND	ug/L	0.96
Aroclor 1254	ND	ug/L	0.96
Aroclor 1260	ND	ug/L	0.96
alpha-BHC	ND	ug/L	0.048
beta-BHC	ND	ug/L	0.048
delta-BHC	ND	ug/L	0.048
gamma-BHC (Lindane)	ND	ug/L	0.048
alpha-Chlordane	ND	ug/L	0.048
gamma-Chlordane	ND	ug/L	0.048
Chlorobenzilate	ND	ug/L	0.96
4,4'-DDD	ND	ug/L	0.096
4,4'-DDE	ND	ug/L	0.096
4,4'-DDT	ND	ug/L	0.096
Diallate	ND	ug/L	0.96
Dieldrin	ND	ug/L	0.096
Endosulfan I	ND	ug/L	0.048
Endosulfan II	ND	ug/L	0.096
Endosulfan sulfate	ND	ug/L	0.096
Endrin	ND	ug/L	0.096
Endrin aldehyde	ND	ug/L	0.096
Heptachlor	ND	ug/L	0.048
Heptachlor epoxide	ND	ug/L	0.048
Isodrin	ND	ug/L	0.096
Kepone	ND	ug/L	2.4
Methoxychlor	ND	ug/L	0.48
Toxaphene	ND	ug/L	4.8

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	74	%	51-103
Dibutyl chlorendate	88	%	71-109
Decachlorobiphenyl	92	%	50-138

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham

Approved By: Barbara Sullivan

Quanterra
Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-F-0498-1
Lab ID: 059791-0010-RE
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Received: 09 APR 98

Prepared: 01 MAY 98
Analyzed: 08 MAY 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.048
Aroclor 1016	ND	ug/L	0.96
Aroclor 1221	ND	ug/L	0.96
Aroclor 1232	ND	ug/L	0.96
Aroclor 1242	ND	ug/L	0.96
Aroclor 1248	ND	ug/L	0.96
Aroclor 1254	ND	ug/L	0.96
Aroclor 1260	ND	ug/L	0.96
alpha-BHC	ND	ug/L	0.048
beta-BHC	ND	ug/L	0.048
delta-BHC	ND	ug/L	0.048
gamma-BHC (Lindane)	ND	ug/L	0.048
alpha-Chlordane	ND	ug/L	0.048
gamma-Chlordane	ND	ug/L	0.048
Chlorobenzilate	ND	ug/L	0.96
4,4'-DDD	ND	ug/L	0.096
4,4'-DDE	ND	ug/L	0.096
4,4'-DDT	ND	ug/L	0.096
Diallate	ND	ug/L	0.96
Dieldrin	ND	ug/L	0.096
Endosulfan I	ND	ug/L	0.048
Endosulfan II	ND	ug/L	0.096
Endosulfan sulfate	ND	ug/L	0.096
Endrin	ND	ug/L	0.096
Endrin aldehyde	ND	ug/L	0.096
Heptachlor	ND	ug/L	0.048
Heptachlor epoxide	ND	ug/L	0.048
Isodrin	ND	ug/L	0.096
Kepone	ND	ug/L	2.4
Methoxychlor	ND	ug/L	0.48
Toxaphene	ND	ug/L	4.8

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	88	%	51-103
Dibutyl chlorendate	92	%	71-109
Decachlorobiphenyl	90	%	50-138

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham

Approved By: Barbara Sullivan

Quanterra
Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-T-0498
Lab ID: 059791-0011-SA
Matrix: AQUEOUS — Sampled: 08 APR 98 — Prepared: 15 APR 98
Authorized: 08 APR 98 — Received: 09 APR 98 — Analyzed: 27 APR 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.048
Aroclor 1016	ND	ug/L	0.95
Aroclor 1221	ND	ug/L	0.95
Aroclor 1232	ND	ug/L	0.95
Aroclor 1242	ND	ug/L	0.95
Aroclor 1248	ND	ug/L	0.95
Aroclor 1254	ND	ug/L	0.95
Aroclor 1260	ND	ug/L	0.95
alpha-BHC	ND	ug/L	0.048
beta-BHC	ND	ug/L	0.048
delta-BHC	ND	ug/L	0.048
gamma-BHC (Lindane)	ND	ug/L	0.048
alpha-Chlordane	ND	ug/L	0.048
gamma-Chlordane	ND	ug/L	0.048
Chlorobenzilate	ND	ug/L	0.95
4,4'-DDD	ND	ug/L	0.095
4,4'-DDE	ND	ug/L	0.095
4,4'-DDT	ND	ug/L	0.095
Diallate	ND	ug/L	0.95
Dieldrin	ND	ug/L	0.095
Endosulfan I	ND	ug/L	0.048
Endosulfan II	ND	ug/L	0.095
Endosulfan sulfate	ND	ug/L	0.095
Endrin	ND	ug/L	0.095
Endrin aldehyde	ND	ug/L	0.095
Heptachlor	ND	ug/L	0.048
Heptachlor epoxide	ND	ug/L	0.048
Isodrin	ND	ug/L	0.095
Kepone	ND	ug/L	2.4
Methoxychlor	ND	ug/L	0.48
Toxaphene	ND	ug/L	4.8

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	77	%	51-103
Dibutyl chlorendate	93	%	71-109
Decachlorobiphenyl	94	%	50-138

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham — Approved By: Barbara Sullivan

Quanterra
Environmental Services

Chlorinated Pesticides and PCB's
Appendix IX List
Method 8080A

Client Name: U.S. Geological Survey
Client ID: CAFB-T-0498
Lab ID: 059791-0011-RE
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Received: 09 APR 98

Prepared: 01 MAY 98
Analyzed: 08 MAY 98

Parameter	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.049
Aroclor 1016	ND	ug/L	0.98
Aroclor 1221	ND	ug/L	0.98
Aroclor 1232	ND	ug/L	0.98
Aroclor 1242	ND	ug/L	0.98
Aroclor 1248	ND	ug/L	0.98
Aroclor 1254	ND	ug/L	0.98
Aroclor 1260	ND	ug/L	0.98
alpha-BHC	ND	ug/L	0.049
beta-BHC	ND	ug/L	0.049
delta-BHC	ND	ug/L	0.049
gamma-BHC (Lindane)	ND	ug/L	0.049
alpha-Chlordane	ND	ug/L	0.049
gamma-Chlordane	ND	ug/L	0.049
Chlorobenzilate	ND	ug/L	0.98
4,4'-DDD	ND	ug/L	0.098
4,4'-DDE	ND	ug/L	0.098
4,4'-DDT	ND	ug/L	0.098
Diallate	ND	ug/L	0.98
Dieldrin	ND	ug/L	0.098
Endosulfan I	ND	ug/L	0.049
Endosulfan II	ND	ug/L	0.098
Endosulfan sulfate	ND	ug/L	0.098
Endrin	ND	ug/L	0.098
Endrin aldehyde	ND	ug/L	0.098
Heptachlor	ND	ug/L	0.049
Heptachlor epoxide	ND	ug/L	0.049
Isodrin	ND	ug/L	0.098
Kepone	ND	ug/L	2.5
Methoxychlor	ND	ug/L	0.49
Toxaphene	ND	ug/L	4.9

Surrogate	Recovery		Limits
Tetrachloro-m-xylene	90	%	51-103
Dibutyl chlorendate	94	%	71-109
Decachlorobiphenyl	94	%	50-138

Dilution factor is 0.99. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Andy Burcham

Approved By: Barbara Sullivan

Quanterra
Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498 EB
Lab ID: 059791-0002-EB
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 08 MAY 98

Parameter	Result	Units	Reporting Limit
Naphthalene	ND	ug/L	0.95
Acenaphthylene	ND	ug/L	0.95
Acenaphthene	ND	ug/L	0.95
Fluorene	ND	ug/L	0.19
Phenanthrene	ND	ug/L	0.19
Anthracene	ND	ug/L	0.095
Fluoranthene	ND	ug/L	0.19
Pyrene	ND	ug/L	0.19
Benzo(a)anthracene	ND	ug/L	0.095
Chrysene	ND	ug/L	0.19
Benzo(b)fluoranthene	ND	ug/L	0.095
Benzo(k)fluoranthene	ND	ug/L	0.095
Benzo(a)pyrene	ND	ug/L	0.095
Dibenz(a,h)anthracene	ND	ug/L	0.19
Benzo(g,h,i)perylene	ND	ug/L	0.19
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.19

Surrogate	Recovery		Limits
Terphenyl-d14	92	%	37-123

Dilution factor is 0.95. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Blake Besser

Approved By: Barbara Sullivan

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0498
Lab ID: 059791-0003-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 08 MAY 98

Parameter	Result	Units	Reporting Limit
Naphthalene	ND	ug/L	0.96
Acenaphthylene	ND	ug/L	0.96
Acenaphthene	ND	ug/L	0.96
Fluorene	ND	ug/L	0.19
Phenanthrene	ND	ug/L	0.19
Anthracene	ND	ug/L	0.096
Fluoranthene	ND	ug/L	0.19
Pyrene	ND	ug/L	0.19
Benzo(a)anthracene	ND	ug/L	0.096
Chrysene	ND	ug/L	0.19
Benzo(b)fluoranthene	ND	ug/L	0.096
Benzo(k)fluoranthene	ND	ug/L	0.096
Benzo(a)pyrene	ND	ug/L	0.096
Dibenz(a,h)anthracene	ND	ug/L	0.19
Benzo(g,h,i)perylene	ND	ug/L	0.19
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.19

Surrogate	Recovery		Limits
Terphenyl-d14	78	%	37-123

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Blake Besser

Approved By: Barbara Sullivan

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498
Lab ID: 059791-0004-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 08 MAY 98

Parameter	Result	Units	Reporting Limit
Naphthalene	ND	ug/L	0.96
Acenaphthylene	ND	ug/L	0.96
Acenaphthene	ND	ug/L	0.96
Fluorene	ND	ug/L	0.19
Phenanthrene	ND	ug/L	0.19
Anthracene	ND	ug/L	0.096
Fluoranthene	ND	ug/L	0.19
Pyrene	ND	ug/L	0.19
Benzo(a)anthracene	ND	ug/L	0.096
Chrysene	ND	ug/L	0.19
Benzo(b)fluoranthene	ND	ug/L	0.096
Benzo(k)fluoranthene	ND	ug/L	0.096
Benzo(a)pyrene	ND	ug/L	0.096
Dibenz(a,h)anthracene	ND	ug/L	0.19
Benzo(g,h,i)perylene	ND	ug/L	0.19
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.19

Surrogate	Recovery		Limits
Terphenyl-d14	93	%	37-123

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Blake Besser

Approved By: Barbara Sullivan

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0498
Lab ID: 059791-0005-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 08 MAY 98

Parameter	Result	Units	Reporting Limit
Naphthalene	ND	ug/L	0.96
Acenaphthylene	ND	ug/L	0.96
Acenaphthene	ND	ug/L	0.96
Fluorene	ND	ug/L	0.19
Phenanthrene	ND	ug/L	0.19
Anthracene	ND	ug/L	0.096
Fluoranthene	ND	ug/L	0.19
Pyrene	ND	ug/L	0.19
Benzo(a)anthracene	ND	ug/L	0.096
Chrysene	ND	ug/L	0.19
Benzo(b)fluoranthene	ND	ug/L	0.096
Benzo(k)fluoranthene	ND	ug/L	0.096
Benzo(a)pyrene	ND	ug/L	0.096
Dibenz(a,h)anthracene	ND	ug/L	0.19
Benzo(g,h,i)perylene	ND	ug/L	0.19
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.19

Surrogate	Recovery		Limits
Terphenyl-d14	76	%	37-123

Dilution factor is 0.96. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Blake Besser

Approved By: Barbara Sullivan

Quanterra Environmental Services

Polynuclear Aromatic Hydrocarbons, HPLC
Method 8310

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0498
Lab ID: 059791-0006-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 14 APR 98
Analyzed: 08 MAY 98

Parameter	Result	Units	Reporting Limit
Naphthalene	ND	ug/L	0.97
Acenaphthylene	ND	ug/L	0.97
Acenaphthene	ND	ug/L	0.97
Fluorene	ND	ug/L	0.19
Phenanthrene	ND	ug/L	0.19
Anthracene	ND	ug/L	0.097
Fluoranthene	ND	ug/L	0.19
Pyrene	ND	ug/L	0.19
Benzo(a)anthracene	ND	ug/L	0.097
Chrysene	ND	ug/L	0.19
Benzo(b)fluoranthene	ND	ug/L	0.097
Benzo(k)fluoranthene	ND	ug/L	0.097
Benzo(a)pyrene	ND	ug/L	0.097
Dibenz(a,h)anthracene	ND	ug/L	0.19
Benzo(g,h,i)perylene	ND	ug/L	0.19
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.19

Surrogate	Recovery		Limits
Terphenyl-d14	88	%	37-123

Dilution factor is 0.97. All results and limits are corrected for dilution.

ND = Not Detected

Reported By: Blake Besser

Approved By: Barbara Sullivan

Quanterra Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-E-0498-1
Lab ID: 059791-0001-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Received: 08 APR 98
Authorized: 08 APR 98 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND	q	1.0	0.010	mg/L	7041	10 APR 98	14 APR 98
Aluminum	ND		1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Silver	ND		1.0	0.0010	mg/L	7761	13 APR 98	15 APR 98
Cadmium	ND		1.0	0.0010	mg/L	7131A	13 APR 98	15 APR 98
Arsenic	0.0026J		1.0	0.010	mg/L	7060A	10 APR 98	14 APR 98
Chromium	0.0072q		1.0	0.0050	mg/L	7191	13 APR 98	14 APR 98
Barium	0.044		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Beryllium	ND		1.0	0.0020	mg/L	6010	10 APR 98	20 APR 98
Calcium	37.1		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Cobalt	ND		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Copper	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Iron	ND		1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Lead	ND		1.0	0.0030	mg/L	7421	13 APR 98	14 APR 98
Magnesium	33.6		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Manganese	ND		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Molybdenum	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Nickel	ND		1.0	0.040	mg/L	6010	10 APR 98	20 APR 98
Potassium	6.4		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Selenium	ND		1.0	0.0050	mg/L	7740	10 APR 98	14 APR 98
Sodium	52.0		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Thallium	ND		1.0	0.010	mg/L	7841	13 APR 98	15 APR 98
Vanadium	0.019		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Zinc	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40% and 85% due to matrix interference.
ND = Not Detected

Reported By: Jennifer Oxelson Approved By: Kathy Wakeman

Quanterra Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498 EB
Lab ID: 059791-0002-EB
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Prepared: See Below

Received: 08 APR 98
Analyzed: See Below

Parameter	Result Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND	1.0	0.010	mg/L	7041	10 APR 98	14 APR 98
Silver	ND	1.0	0.0010	mg/L	7761	13 APR 98	15 APR 98
Cadmium	ND	1.0	0.0010	mg/L	7131A	13 APR 98	15 APR 98
Arsenic	ND	1.0	0.010	mg/L	7060A	10 APR 98	14 APR 98
Chromium	0.00050J	1.0	0.0050	mg/L	7191	13 APR 98	14 APR 98
Barium	ND	1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Beryllium	ND	1.0	0.0020	mg/L	6010	10 APR 98	20 APR 98
Calcium	0.092 J	1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Cobalt	ND	1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Copper	ND	1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Iron	ND	1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Lead	ND	1.0	0.0030	mg/L	7421	13 APR 98	14 APR 98
Magnesium	ND	1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Manganese	ND	1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Mercury	ND	1.0	0.00020	mg/L	7470	14 APR 98	15 APR 98
Molybdenum	ND	1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Nickel	ND	1.0	0.040	mg/L	6010	10 APR 98	20 APR 98
Selenium	ND	1.0	0.0050	mg/L	7740	10 APR 98	14 APR 98
Sodium	ND	1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Thallium	ND	1.0	0.010	mg/L	7841	13 APR 98	15 APR 98
Tin	0.031 J	1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Vanadium	ND	1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Zinc	ND	1.0	0.020	mg/L	6010	10 APR 98	20 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Jennifer Oxelson

Approved By: Kathy Wakeman

Quanterra Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0498
Lab ID: 059791-0003-SA
Matrix: AQUEOUS — Sampled: 07 APR 98 — Received: 08 APR 98
Authorized: 08 APR 98 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.010	mg/L	7041	10 APR 98	14 APR 98
Silver	ND		1.0	0.0010	mg/L	7761	13 APR 98	15 APR 98
Cadmium	ND		1.0	0.0010	mg/L	7131A	13 APR 98	15 APR 98
Arsenic	0.0041	J	1.0	0.010	mg/L	7060A	10 APR 98	14 APR 98
Chromium	0.0017	J	1.0	0.0050	mg/L	7191	13 APR 98	14 APR 98
Barium	0.027		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Beryllium	ND		1.0	0.0020	mg/L	6010	10 APR 98	20 APR 98
Calcium	42.4		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Cobalt	ND		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Copper	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Iron	0.082	J	1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Lead	ND	q	1.0	0.0030	mg/L	7421	13 APR 98	14 APR 98
Magnesium	38.4		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Manganese	0.0050	J	1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Mercury	ND		1.0	0.00020	mg/L	7470	14 APR 98	15 APR 98
Molybdenum	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Nickel	0.025	J	1.0	0.040	mg/L	6010	10 APR 98	20 APR 98
Selenium	0.0045	J	1.0	0.0050	mg/L	7740	10 APR 98	14 APR 98
Sodium	47.3		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Thallium	ND		1.0	0.010	mg/L	7841	13 APR 98	15 APR 98
Tin	0.044	J	1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Vanadium	0.024		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Zinc	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40% and 85% due to matrix interference.
ND = Not Detected

Reported By: Jennifer Oxelson — Approved By: Kathy Wakeman

Quanterra Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498
Lab ID: 059791-0004-SA
Matrix: AQUEOUS — Sampled: 07 APR 98 — Received: 08 APR 98
Authorized: 08 APR 98 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND	q	1.0	0.010	mg/L	7041	10 APR 98	14 APR 98
Silver	ND		1.0	0.0010	mg/L	7761	13 APR 98	15 APR 98
Cadmium	ND		1.0	0.0010	mg/L	7131A	13 APR 98	15 APR 98
Arsenic	0.0048J		1.0	0.010	mg/L	7060A	10 APR 98	14 APR 98
Chromium	0.0013J		1.0	0.0050	mg/L	7191	13 APR 98	14 APR 98
Barium	0.030		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Beryllium	ND		1.0	0.0020	mg/L	6010	10 APR 98	20 APR 98
Calcium	35.6		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Cobalt	ND		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Copper	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Iron	0.22		1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Lead	ND	q	1.0	0.0030	mg/L	7421	13 APR 98	14 APR 98
Magnesium	34.5		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Manganese	0.0073J		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Mercury	ND		1.0	0.00020	mg/L	7470	14 APR 98	15 APR 98
Molybdenum	0.0046J		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Nickel	ND		1.0	0.040	mg/L	6010	10 APR 98	20 APR 98
Selenium	0.0044J		1.0	0.0050	mg/L	7740	10 APR 98	14 APR 98
Sodium	51.7		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Thallium	ND		1.0	0.010	mg/L	7841	13 APR 98	15 APR 98
Tin	ND		1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Vanadium	0.040		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Zinc	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40% and 85% due to matrix interference.
ND = Not Detected

Reported By: Jennifer Oxelson — Approved By: Kathy Wakeman

Quanterra Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0498
Lab ID: 059791-0005-SA
Matrix: AQUEOUS — Sampled: 07 APR 98 — Received: 08 APR 98
Authorized: 08 APR 98 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND	q	1.0	0.010	mg/L	7041	10 APR 98	14 APR 98
Silver	ND	q	1.0	0.0010	mg/L	7761	13 APR 98	15 APR 98
Cadmium	ND		1.0	0.0010	mg/L	7131A	13 APR 98	15 APR 98
Arsenic	0.0038	J	1.0	0.010	mg/L	7060A	10 APR 98	14 APR 98
Chromium	0.0072	q	1.0	0.0050	mg/L	7191	13 APR 98	14 APR 98
Barium	0.033		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Beryllium	ND		1.0	0.0020	mg/L	6010	10 APR 98	20 APR 98
Calcium	56.5		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Cobalt	ND		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Copper	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Iron	0.11		1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Lead	ND	q	1.0	0.0030	mg/L	7421	13 APR 98	14 APR 98
Magnesium	48.4		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Manganese	0.0063	J	1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Mercury	ND		1.0	0.00020	mg/L	7470	14 APR 98	15 APR 98
Molybdenum	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Nickel	ND		1.0	0.040	mg/L	6010	10 APR 98	20 APR 98
Selenium	0.0061	q	1.0	0.0050	mg/L	7740	10 APR 98	14 APR 98
Sodium	42.2		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Thallium	ND		1.0	0.010	mg/L	7841	13 APR 98	15 APR 98
Tin	ND		1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Vanadium	0.025		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Zinc	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40% and 85% due to matrix interference.
ND = Not Detected

Reported By: Jennifer Oxelson — Approved By: Kathy Wakeman

Quanterra Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0498
Lab ID: 059791-0006-SA
Matrix: AQUEOUS — Sampled: 07 APR 98 — Received: 08 APR 98
Authorized: 08 APR 98 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.010	mg/L	7041	10 APR 98	14 APR 98
Silver	ND		1.0	0.0010	mg/L	7761	13 APR 98	15 APR 98
Cadmium	ND		1.0	0.0010	mg/L	7131A	13 APR 98	15 APR 98
Arsenic	0.0034	J	1.0	0.010	mg/L	7060A	10 APR 98	14 APR 98
Chromium	0.0017	J	1.0	0.0050	mg/L	7191	13 APR 98	14 APR 98
Barium	0.029		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Beryllium	ND		1.0	0.0020	mg/L	6010	10 APR 98	20 APR 98
Calcium	43.4		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Cobalt	ND		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Copper	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Iron	0.076	J	1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Lead	ND	q	1.0	0.0030	mg/L	7421	13 APR 98	14 APR 98
Magnesium	39.3		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Manganese	0.0052	J	1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Mercury	ND		1.0	0.00020	mg/L	7470	14 APR 98	15 APR 98
Molybdenum	0.0032	J	1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Nickel	0.029	J	1.0	0.040	mg/L	6010	10 APR 98	20 APR 98
Selenium	0.0066	q	1.0	0.0050	mg/L	7740	10 APR 98	14 APR 98
Sodium	48.9		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Thallium	ND		1.0	0.010	mg/L	7841	13 APR 98	15 APR 98
Tin	0.035	J	1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Vanadium	0.026		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Zinc	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40% and 85% due to matrix interference.
ND = Not Detected

Reported By: Jennifer Oxelson — Approved By: Kathy Wakeman

Quanterra Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-H-0498-1
Lab ID: 059791-0008-SA
Matrix: AQUEOUS — Sampled: 08 APR 98 — Received: 09 APR 98
Authorized: 08 APR 98 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.010	mg/L	7041	10 APR 98	14 APR 98
Aluminum	ND		1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Silver	ND		1.0	0.0010	mg/L	7761	13 APR 98	15 APR 98
Cadmium	ND		1.0	0.0010	mg/L	7131A	13 APR 98	15 APR 98
Arsenic	0.0027	J	1.0	0.010	mg/L	7060A	10 APR 98	14 APR 98
Chromium	0.0070	q	1.0	0.0050	mg/L	7191	13 APR 98	14 APR 98
Barium	0.031		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Beryllium	ND		1.0	0.0020	mg/L	6010	10 APR 98	20 APR 98
Calcium	44.2		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Cobalt	ND		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Copper	0.0033	J	1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Iron	0.30		1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Lead	0.0024	J	1.0	0.0030	mg/L	7421	13 APR 98	14 APR 98
Magnesium	41.3		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Manganese	0.0073	J	1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Molybdenum	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Nickel	ND		1.0	0.040	mg/L	6010	10 APR 98	20 APR 98
Potassium	7.0		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Selenium	0.0073	q	1.0	0.0050	mg/L	7740	10 APR 98	14 APR 98
Sodium	55.0		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Thallium	ND		1.0	0.010	mg/L	7841	13 APR 98	15 APR 98
Vanadium	0.020		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Zinc	0.12		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40% and 85% due to matrix interference.
ND = Not Detected

Reported By: Jennifer Oxelson — Approved By: Kathy Wakeman

Quanterra Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-G-0498
Lab ID: 059791-0009-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Prepared: See Below

Received: 09 APR 98
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND	q	1.0	0.010	mg/L	7041	10 APR 98	14 APR 98
Aluminum	ND		1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Silver	ND	q	1.0	0.0010	mg/L	7761	13 APR 98	15 APR 98
Cadmium	ND		1.0	0.0010	mg/L	7131A	13 APR 98	15 APR 98
Arsenic	0.0016J		1.0	0.010	mg/L	7060A	10 APR 98	14 APR 98
Chromium	0.0018J		1.0	0.0050	mg/L	7191	13 APR 98	14 APR 98
Barium	0.032		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Beryllium	ND		1.0	0.0020	mg/L	6010	10 APR 98	20 APR 98
Calcium	86.9		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Cobalt	ND		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Copper	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Iron	ND		1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Lead	ND	q	1.0	0.0030	mg/L	7421	13 APR 98	14 APR 98
Magnesium	83.6		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Manganese	ND		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Molybdenum	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Nickel	ND		1.0	0.040	mg/L	6010	10 APR 98	20 APR 98
Potassium	10.0		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Selenium	0.0045J		1.0	0.0050	mg/L	7740	10 APR 98	14 APR 98
Sodium	63.9		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Thallium	ND		1.0	0.010	mg/L	7841	13 APR 98	15 APR 98
Vanadium	0.015		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Zinc	0.033		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40% and 85% due to matrix interference.
ND = Not Detected

Reported By: Jennifer Oxelson

Approved By: Kathy Wakeman

Quanterra Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-F-0498-1
Lab ID: 059791-0010-SA
Matrix: AQUEOUS — Sampled: 08 APR 98 — Received: 09 APR 98
Authorized: 08 APR 98 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.010	mg/L	7041	10 APR 98	14 APR 98
Aluminum	ND		1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Silver	ND		1.0	0.0010	mg/L	7761	13 APR 98	15 APR 98
Cadmium	ND		1.0	0.0010	mg/L	7131A	13 APR 98	15 APR 98
Arsenic	0.0021	J	1.0	0.010	mg/L	7060A	10 APR 98	14 APR 98
Chromium	0.0044	J	1.0	0.0050	mg/L	7191	13 APR 98	14 APR 98
Barium	0.042		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Beryllium	ND		1.0	0.0020	mg/L	6010	10 APR 98	20 APR 98
Calcium	57.6		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Cobalt	ND		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Copper	0.0032	J	1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Iron	0.053	J	1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Lead	ND	q	1.0	0.0030	mg/L	7421	13 APR 98	14 APR 98
Magnesium	53.8		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Manganese	0.0098	J	1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Molybdenum	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Nickel	ND		1.0	0.040	mg/L	6010	10 APR 98	20 APR 98
Potassium	8.4		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Selenium	0.0054	q	1.0	0.0050	mg/L	7740	10 APR 98	14 APR 98
Sodium	43.5		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Thallium	ND		1.0	0.010	mg/L	7841	13 APR 98	15 APR 98
Vanadium	0.018		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Zinc	0.015	J	1.0	0.020	mg/L	6010	10 APR 98	20 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40% and 85% due to matrix interference.
ND = Not Detected

Reported By: Jennifer Oxelson — Approved By: Kathy Wakeman

Quanterra Environmental Services

Metals
Total Metals

Client Name: U.S. Geological Survey
Client ID: CAFB-T-0498
Lab ID: 059791-0011-SA
Matrix: AQUEOUS — Sampled: 08 APR 98 — Received: 09 APR 98
Authorized: 08 APR 98 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Antimony	ND		1.0	0.010	mg/L	7041	10 APR 98	14 APR 98
Aluminum	0.062	J	1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Silver	ND		1.0	0.0010	mg/L	7761	13 APR 98	15 APR 98
Cadmium	ND		1.0	0.0010	mg/L	7131A	13 APR 98	15 APR 98
Arsenic	0.0027	J	1.0	0.010	mg/L	7060A	10 APR 98	14 APR 98
Chromium	0.0018	J	1.0	0.0050	mg/L	7191	13 APR 98	14 APR 98
Barium	0.042		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Beryllium	ND		1.0	0.0020	mg/L	6010	10 APR 98	20 APR 98
Calcium	57.2		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Cobalt	ND		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Copper	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Iron	0.089	J	1.0	0.10	mg/L	6010	10 APR 98	20 APR 98
Lead	ND	q	1.0	0.0030	mg/L	7421	13 APR 98	14 APR 98
Magnesium	53.6		1.0	0.20	mg/L	6010	10 APR 98	20 APR 98
Manganese	0.011		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Molybdenum	ND		1.0	0.020	mg/L	6010	10 APR 98	20 APR 98
Nickel	ND		1.0	0.040	mg/L	6010	10 APR 98	20 APR 98
Potassium	8.1		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Selenium	0.0052	q	1.0	0.0050	mg/L	7740	10 APR 98	14 APR 98
Sodium	42.8		1.0	5.0	mg/L	6010	10 APR 98	20 APR 98
Thallium	ND		1.0	0.010	mg/L	7841	13 APR 98	15 APR 98
Vanadium	0.016		1.0	0.010	mg/L	6010	10 APR 98	20 APR 98
Zinc	0.019	J	1.0	0.020	mg/L	6010	10 APR 98	20 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40% and 85% due to matrix interference.
ND = Not Detected

Reported By: Jennifer Oxelson — Approved By: Kathy Wakeman

Quanterra Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-E-0498-1
Lab ID: 059791-0001-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Prepared: See Below

Received: 08 APR 98
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Nitrite as N	ND		1.0	0.010	mg/L	354.1	NA	08 APR 98
Nitrate plus Nitrite as N	2.8		1.0	0.10	mg/L	353.2	NA	30 APR 98
Nitrate as N	2.8		1.0	0.10	mg/L	353.2/354	NA	30 APR 98
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	10 APR 98
Sulfate	75.0		1.0	5.0	mg/L	300.0	NA	28 APR 98
Total Dissolved Solids	401		1.0	10.0	mg/L	160.1	NA	14 APR 98

ND = Not Detected

Reported By: Susan Schwarz

Approved By: Linda Sullivan

Quanterra Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498 EB
Lab ID: 059791-0002-EB
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Prepared: See Below

Received: 08 APR 98
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	14 APR 98	14 APR 98
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	10 APR 98
Total Organic Carbon	ND		1.0	1.0	mg/L	9060	NA	16 APR 98
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	15 APR 98

ND = Not Detected

Reported By: Judy Lange

Approved By: Linda Sullivan

Quanterra Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0498
Lab ID: 059791-0003-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Prepared: See Below

Received: 08 APR 98
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	14 APR 98	14 APR 98
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	10 APR 98
Total Organic Carbon	0.49	J	1.0	1.0	mg/L	9060	NA	16 APR 98
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	15 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Judy Lange

Approved By: Linda Sullivan

Quanterra Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498
Lab ID: 059791-0004-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Prepared: See Below

Received: 08 APR 98
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	14 APR 98	14 APR 98
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	10 APR 98
Total Organic Carbon	0.43	J	1.0	1.0	mg/L	9060	NA	16 APR 98
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	15 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Judy Lange

Approved By: Linda Sullivan

Quanterra Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0498
Lab ID: 059791-0005-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Received: 08 APR 98
Authorized: 08 APR 98 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	14 APR 98	14 APR 98
Sulfide, Total	0.0099	J	1.0	0.050	mg/L	376.2	NA	10 APR 98
Total Organic Carbon	ND		1.0	1.0	mg/L	9060	NA	16 APR 98
Total Organic Halogen as Cl	ND		1.0	30.0	ug/L	9020	NA	15 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Judy Lange Approved By: Linda Sullivan

Quanterra
Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0498
Lab ID: 059791-0006-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Prepared: See Below

Received: 08 APR 98
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Cyanide	ND		1.0	0.010	mg/L	9012	14 APR 98	14 APR 98
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	10 APR 98
Total Organic Carbon	0.31	J	1.0	1.0	mg/L	9060	NA	16 APR 98
Total Organic Halogen as Cl	11.6	J	1.0	30.0	ug/L	9020	NA	15 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Reported By: Judy Lange

Approved By: Linda Sullivan

Quanterra Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-H-0498-1
Lab ID: 059791-0008-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Prepared: See Below

Received: 09 APR 98
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Nitrite as N	ND		1.0	0.010	mg/L	354.1	NA	09 APR 98
Nitrate plus Nitrite as N	1.3		1.0	0.10	mg/L	353.2	NA	30 APR 98
Nitrate as N	1.3		1.0	0.10	mg/L	353.2/354	NA	30 APR 98
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	10 APR 98
Sulfate	143	s	2.0	5.0	mg/L	300.0	NA	28 APR 98
Total Dissolved Solids	459		1.0	10.0	mg/L	160.1	NA	14 APR 98

s = Sample diluted due to the concentration of target analytes.
ND = Not Detected

Reported By: Susan Schwarz

Approved By: Linda Sullivan

Quanterra Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-G-0498
Lab ID: 059791-0009-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Prepared: See Below

Received: 09 APR 98
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Nitrite as N	ND		1.0	0.010	mg/L	354.1	NA	09 APR 98
Nitrate plus Nitrite as N	12.1	s	10	1.0	mg/L	353.2	NA	30 APR 98
Nitrate as N	12.1		10	1.0	mg/L	353.2/354	NA	30 APR 98
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	10 APR 98
Sulfate	203	s	10	50.0	mg/L	300.0	NA	28 APR 98
Total Dissolved Solids	856		1.0	10.0	mg/L	160.1	NA	14 APR 98

s = Sample diluted due to the concentration of target analytes.
ND = Not Detected

Reported By: Susan Schwarz

Approved By: Linda Sullivan

Quanterra Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-F-0498-1
Lab ID: 059791-0010-SA
Matrix: AQUEOUS — Sampled: 08 APR 98 — Received: 09 APR 98
Authorized: 08 APR 98 — Prepared: See Below — Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Nitrite as N	ND		1.0	0.010	mg/L	354.1	NA	09 APR 98
Nitrate plus Nitrite as N	2.4		1.0	0.10	mg/L	353.2	NA	30 APR 98
Nitrate as N	2.4		1.0	0.10	mg/L	353.2/354	NA	30 APR 98
Sulfide, Total	ND		1.0	0.050	mg/L	376.2	NA	10 APR 98
Sulfate	163	s	2.0	10.0	mg/L	300.0	NA	28 APR 98
Total Dissolved Solids	535		1.0	10.0	mg/L	160.1	NA	14 APR 98

s = Sample diluted due to the concentration of target analytes.
ND = Not Detected

Reported By: Susan Schwarz — Approved By: Linda Sullivan

Quanterra Environmental Services

General Inorganics

Client Name: U.S. Geological Survey
Client ID: CAFB-T-0498
Lab ID: 059791-0011-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 08 APR 98
Prepared: See Below

Received: 09 APR 98
Analyzed: See Below

Parameter	Result	Qual	Dil	RL	Units	Test Method	Prepared Date	Analyzed Date
Nitrite as N	ND		1.0	0.010	mg/L	354.1	NA	09 APR 98
Nitrate plus Nitrite as N	2.2		1.0	0.10	mg/L	353.2	NA	30 APR 98
Nitrate as N	2.2		1.0	0.10	mg/L	353.2/354	NA	30 APR 98
Sulfide, Total	0.0099	J	1.0	0.050	mg/L	376.2	NA	10 APR 98
Sulfate	164	s	2.0	5.0	mg/L	300.0	NA	28 APR 98
Total Dissolved Solids	528		1.0	10.0	mg/L	160.1	NA	14 APR 98

J = Result is detected below the reporting limit or is an estimated concentration.
s = Sample diluted due to the concentration of target analytes.
ND = Not Detected

Reported By: Susan Schwarz

Approved By: Linda Sullivan

Quanterra Environmental Services

Appendix IX Dioxins/Furans
Low Resolution

Client Name: U.S. Geological Survey
Client ID: Method Blank
Lab ID: 059791-0002-MB
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 13 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 16 APR 98

Sample Amt: 1.0

Parameter	Result	Units	Reporting Limit	
TCDFs (total)	ND	ng/L	0.69	
PeCDFs (total)	ND	ng/L	2.1	v
HxCDFs (total)	ND	ng/L	0.34	
TCDDs (total)	ND	ng/L	0.35	
2,3,7,8-TCDD	ND	ng/L	0.35	
PeCDDs (total)	ND	ng/L	25	v
HxCDDs (total)	ND	ng/L	0.71	

Surrogate	Recovery		Limits
13C-2,3,7,8-TCDF	76	%	40-120
13C-2,3,7,8-TCDD	75	%	40-120
13C-1,2,3,6,7,8-HxCDD	77	%	40-120
13C-1,2,3,4,6,7,8-HpCDF	72	%	40-120

Dilution factor is 1.0. All results and limits are corrected for dilution.

v = This sample has GC/FID characteristics for which reliable identification of a product could not be achieved.
ND = Not Detected

Reported By: MBAQUERFO Approved By: TSTONE

Quanterra
Environmental Services

Appendix IX Dioxins/Furans
Low Resolution

Client Name: U.S. Geological Survey
Client ID: CAFB-X-0498
Lab ID: 059791-0003-SA
Matrix: AQUEOUS — Sampled: 07 APR 98 — Prepared: 13 APR 98
Authorized: 08 APR 98 — Received: 08 APR 98 — Analyzed: 16 APR 98

Sample Amt: 1.0

Parameter	Result	Units	Reporting Limit	
TCDFs (total)	ND	ng/L	0.56	
PeCDFs (total)	ND	ng/L	1.2	
HxCDFs (total)	ND	ng/L	0.47	
TCDDs (total)	ND	ng/L	0.23	
2,3,7,8-TCDD	ND	ng/L	0.23	
PeCDDs (total)	ND	ng/L	5.2	v
HxCDDs (total)	ND	ng/L	0.72	

Surrogate	Recovery		Limits
13C-2,3,7,8-TCDF	79	%	40-120
13C-2,3,7,8-TCDD	81	%	40-120
13C-1,2,3,6,7,8-HxCDD	83	%	40-120
13C-1,2,3,4,6,7,8-HpCDF	78	%	40-120

Dilution factor is 1.0. All results and limits are corrected for dilution.

v = This sample has GC/FID characteristics for which reliable identification of a product could not be achieved.
ND = Not Detected

Reported By: MBAQUERFO — Approved By: TSTONE

Quanterra Environmental Services

Appendix IX Dioxins/Furans
Low Resolution

Client Name: U.S. Geological Survey
Client ID: CAFB-C-0498
Lab ID: 059791-0004-SA
Matrix: AQUEOUS — Sampled: 07 APR 98 — Prepared: 13 APR 98
Authorized: 08 APR 98 — Received: 08 APR 98 — Analyzed: 16 APR 98

Sample Amt: 1.0

Parameter	Result	Units	Reporting Limit	
TCDFs (total)	ND	ng/L	0.46	
PeCDFs (total)	ND	ng/L	0.97	
HxCDFs (total)	ND	ng/L	0.54	
TCDDs (total)	ND	ng/L	0.28	
2,3,7,8-TCDD	ND	ng/L	0.28	
PeCDDs (total)	ND	ng/L	3.2	v
HxCDDs (total)	ND	ng/L	0.90	

Surrogate	Recovery		Limits
13C-2,3,7,8-TCDF	82	%	40-120
13C-2,3,7,8-TCDD	84	%	40-120
13C-1,2,3,6,7,8-HxCDD	76	%	40-120
13C-1,2,3,4,6,7,8-HpCDF	74	%	40-120

Dilution factor is 1.0. All results and limits are corrected for dilution.

v = This sample has GC/FID characteristics for which reliable identification of a product could not be achieved.
ND = Not Detected

Reported By: MBAQUERFO — Approved By: TSTONE

Quanterra Environmental Services

Appendix IX Dioxins/Furans
Low Resolution

Client Name: U.S. Geological Survey
Client ID: CAFB-I-0498
Lab ID: 059791-0005-SA
Matrix: AQUEOUS Sampled: 07 APR 98 Prepared: 13 APR 98
Authorized: 08 APR 98 Received: 08 APR 98 Analyzed: 16 APR 98

Sample Amt: 1.0

Parameter	Result	Units	Reporting Limit	
TCDFs (total)	ND	ng/L	0.50	
PeCDFs (total)	ND	ng/L	1.3	
HxCDFs (total)	ND	ng/L	0.46	
TCDDs (total)	ND	ng/L	0.33	
2,3,7,8-TCDD	ND	ng/L	0.33	
PeCDDs (total)	ND	ng/L	4.1	v
HxCDDs (total)	ND	ng/L	0.52	

Surrogate	Recovery		Limits
13C-2,3,7,8-TCDF	81	%	40-120
13C-2,3,7,8-TCDD	80	%	40-120
13C-1,2,3,6,7,8-HxCDD	86	%	40-120
13C-1,2,3,4,6,7,8-HpCDF	82	%	40-120

Dilution factor is 1.0. All results and limits are corrected for dilution.

v = This sample has GC/FID characteristics for which reliable identification of a product could not be achieved.
ND = Not Detected

Reported By: MBAQUERFO Approved By: TSTONE

Quanterra Environmental Services

Appendix IX Dioxins/Furans
Low Resolution

Client Name: U.S. Geological Survey
Client ID: CAFB-Q-0498
Lab ID: 059791-0006-SA
Matrix: AQUEOUS
Authorized: 08 APR 98

Sampled: 07 APR 98
Received: 08 APR 98

Prepared: 13 APR 98
Analyzed: 16 APR 98

Sample Amt: 1.0

Parameter	Result	Units	Reporting Limit	
TCDFs (total)	ND	ng/L	0.64	
PeCDFs (total)	ND	ng/L	1.2	
HxCDFs (total)	ND	ng/L	0.46	
TCDDs (total)	ND	ng/L	0.35	
2,3,7,8-TCDD	ND	ng/L	0.35	
PeCDDs (total)	ND	ng/L	4.7	v
HxCDDs (total)	ND	ng/L	0.76	

Surrogate	Recovery		Limits
13C-2,3,7,8-TCDF	76	%	40-120
13C-2,3,7,8-TCDD	77	%	40-120
13C-1,2,3,6,7,8-HxCDD	76	%	40-120
13C-1,2,3,4,6,7,8-HpCDF	72	%	40-120

Dilution factor is 1.0. All results and limits are corrected for dilution.

v = This sample has GC/FID characteristics for which reliable identification of a product could not be achieved.
ND = Not Detected

Reported By: MBAQUERFO

Approved By: TSTONE

APPENDIX II

Laboratory Quality Assurance / Quality Control Results

LABORATORY DATA VALIDATION CHECKLIST

SECTION 1.0: GENERAL INFORMATION *(also see Appendix A)*

Data reviewer(s) name, affiliation, title, signature, and date of review:

F. Eileen Roybal, USGS-WRD, Hydrologist F. Eil. Roybal 24JUN98

DATA INVENTORY

1.1 Sample project number: Quanterra Environmental Services 059791.

1.2 Operable unit and site: Sewage Lagoon

Sample collection date: 7,8APR98

1.3 Sample locations (location IDs): Wells CAFB-E, CAFB-F, CAFB-G, and CAFB-H; CAFB-T-0498-1 was a duplicate sample for CAFB-F.

1.4 Sample matrix (ground water, soil, other): ground water

1.5 Type and number of field samples (environmental and quality control) in sample project:

Type	number	Type	number
environmental	4	MS/MSD	1 pair
field duplicate	1	trip blank	2
equipment blank	0	ambient blank	0

Data validation level: **(circle one)** note--see appendix A for description of different levels

LEVEL 1 **LEVEL 2**

OTHER CHECKLIST SECTIONS COMPLETED FOR SAMPLE PROJECT:

√ 2.0 Data Reports and Completeness

√ 3.0 Appendix-IX, Volatile organic compounds (VOC)--Method SW5030/SW8260A

√ 4.0 Appendix-IX, Pesticides and PCB's--Method SW3520/SW8080A

√ 5.0 Appendix-IX, Metals (Total)--Methods SW3005/SW6010 (Aluminum, Barium, Beryllium, Calcium, Cobalt, Copper, Iron, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Sodium, Vanadium, and Zinc), SW3020/SW7041 (Antimony), SW3020/SW7060A (Arsenic), SW3020/SW7131A (Cadmium), SW3020/SW7191 (Chromium), SW3020/SW7421 (Lead), SW3020/SW7740 (Selenium), SW3020/SW7761 (Silver), and SW3020/SW7841 (Thallium)

√ 6.0 Sulfate--Method E300.0
√ 7.0 Nitrate--Method E353.2/E354.1
√ 8.0 Sulfide--Method E376.2
√ 9.0 Total Dissolved Solids (TDS)--Method E160.1

SECTION 2.0: DATA REPORTS AND COMPLETENESS

Name of reviewer(s) and review date: F. Eileen Roybal 24JUN98

LABORATORY DATA REPORTS

2.1 Analytical Results Report--report date: 12JUN98

2.2 Raw Data Report--number of volumes: N/A

2.3 Was completeness of lab reports acceptable? yes √ no ____
(overview, analytical results, quality-control report)

Lab reports were complete and acceptable.

DATA COMPLETENESS

2.4 Were all samples requested on chain of custody form analyzed by lab? yes √ no ____

All appendix IX parameters:

	VOC SW8260A	Pesticide SW8080A	Total Metals: 15 by ICP, 8 by GFAA	Sulfate E300.0	Nitrate E353.2/354
requested:	9	7	7	7	7
analyzed:	9	7	7	7	7

	TDS E160.1
requested:	7
analyzed:	7

2.5 List cancelled analyses on cancelled-data worksheet: None.

2.6 Was sample cooler seal intact upon receipt by lab? Yes

2.7 What was the sample cooler temperature upon receipt by lab? Temperatures ranged from 0.4 - 2.0 °C.

2.8 Additional comments: Equipment blank was not collected because dedicated pumps were installed in each well at various times by contractors.

SECTION 3.0: APPENDIX-IX, VOLATILE ORGANIC COMPOUNDS-- METHOD SW5030/SW8260A

Name of reviewer(s) and review date: F. Eileen Roybal 24JUN98

LEVEL I AND II -- Data Validation

HOLDING TIMES

3.1 Were project-required analytical holding times met? yes √ no ____

(14-day limit from sample date to analysis date for water samples)

[FG-ORG, p. 6-8]

sample date: 7,8APR98 analysis date limit: 21,22APR98

Samples were analyzed by 21APR98, and met required holding times.

SURROGATE SPIKE RECOVERY

3.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(all samples and blanks: SW8260A:%R varies)

[FG-ORG, p. 26-29]

All surrogate spike recovery results met Quanterra QC accetance criteria except for sample CAFB-F. Surrogate for toluene-d8 (109) was slightly above upper limits of 108 which suggests a matrix effect. No target compounds were detected in the sample.

PROJECT REPORTING LIMIT (PRL)

3.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in Sampling and Analysis Plan (SAP). Reporting limits were not raised for any of the sample.

FIELD DUPLICATES

3.4 Did field duplicate results meet frequency and QC acceptance criteria?yes √ no ____

(1 set per sampling period; RPD < 30 %)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

3.5 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; analytes <3 x RL)

[FG-ORG, p. 20-25]

N/A - See Comment 2.8.

AMBIENT and TRIP BLANKS (water samples only)

3.6 Did blank results meet frequency and QC acceptance criteria? yes √ no ____

(ambient and trip blank frequency varies per sampling period)

[FG-ORG, p. 20-25]

All results were ND or j value (below reporting limit) and met QC acceptance criteria. Ambient condition blank was not collected for this sampling period.

TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

3.7 List number and level of TICs for each sample analyzed on TIC data sheet.

[FG-ORG, p. 41-44]

Hexane was detected at confirmed level in sample CAFB-E at concentration of 2.5 µg/L.

DUPLICATE CONTROL SAMPLES (DCSs)

3.8 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 32-33]

All DCS results met QC acceptance criteria.

SINGLE CONTROL SAMPLES (SCSs)

3.9 Did SCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 SCS per sample lot; %R limits established by laboratory)

[FG-ORG, p. 32-33]

All SCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

3.10 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch; analyte concentration ≤ RL except for common lab contaminants ≤ 5 times RL)

[FG-ORG, p. 20-25]

All method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

3.11 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; method SW8260A: %R and RPD varies)

[FG-ORG, p. 30-31]

All MS/MSD results met QC acceptance criteria.

LEVEL I and II -- Data Validation

ANALYTE RESULTS WITH DATA QUALIFIERS

3.12 Summarize analyte results with data qualifiers. List pertinent information on qualified-data worksheet: None.

3.13 Additional comments: None.

SECTION 4.0: APPENDIX-IX, PESTICIDES AND PCB'S-- METHOD SW3520/SW8080A

Name of reviewer(s) and review date: F. Eileen Roybal 24JUN98

LEVEL I AND II -- Data Validation

HOLDING TIMES

4.1 Were project-required analytical holding times met? yes √ no ____

(7-day limit from sample date to extraction date and 40-day limit from extraction date to analysis date for method SW8080A)

[FG-ORG, p. 49-50]

sample date: 7,8APR98 extraction date limit: 14,15APR98

extraction date: 14,15APR98 analysis date limit: 24,25MAY98

Samples were extracted by 15APR98 and were analyzed by 27APR98.
All samples met required holding times.

SURROGATE SPIKE RECOVERY

4.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(frequency: all samples and blanks: SW8080A:%R varies)

[FG-ORG, p. 66-68]

All surrogate spike recovery results met QC acceptance criteria.

PROJECT REPORTING LIMIT

4.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples.

FIELD DUPLICATES

4.4 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per sampling period; RPD ≤ 30%)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

4.5 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; target compound concentration ≤ RL)

[FG-ORG, p. 62-65]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

4.6 Did DCS results meet frequency and QC acceptance criteria? yes ____ no √

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 71-72]

RPD results were outside control limits. Associated samples F, G, H, and T were reprepped (outside hold time) and reanalyzed along with DCS (QC lot 01MAY98-01). These data were within control limit.

SINGLE CONTROL SAMPLES (SCSs)

4.7 Did SCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 SCS per quarter; %R limits established by laboratory)

[FG-ORG, p. 71-72]

SCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

4.8 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-ORG, p. 62-65]

All method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

4.9 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R and RPD limits varies)

[FG-ORG, p. 69-70]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

4.10 Did initial and continuing calibrations meet frequency and QC criteria?yes ____ no ____

[FG-ORG, p. 55-58]

Not reviewed

SAMPLE RESULT VERIFICATION

4.11 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes ____ no ____

Not reviewed

4.12 Additional comments: None.

SECTION 5.0: APPENDIX-IX, METALS (TOTAL)-- METHODS SW3005/SW6010 (ALUMINUM, BARIUM, BERYLLIUM, CALCIUM, COBALT, COPPER, IRON, MAGNESIUM, MANGANESE, MOLYBDENUM, NICKEL, POTASSIUM, SODIUM, VANADIUM, AND ZINC), SW3020/SW7041 (ANTIMONY), SW3020/SW7060A (ARSENIC), SW3020/SW7131A (CADMIUM), SW3020/ SW7191 (CHROMIUM), SW3020/SW7421 (LEAD), SW3020/SW7740 (SELENIUM), SW3020/SW7761 (SILVER), AND SW3020/SW7841 (THALLIUM).

Name of reviewer(s) and review date: F. Eileen Roybal 24JUN98

LEVEL I AND II -- Data Validation

HOLDING TIMES

5.1 Were project-required analytical holding times met? yes √ no ____

(180-day limit from sample date to analysis)

[FG-INORG, p. 6-7]

sample date: 7,8APR98 analysis date limit: 4,5OCT98

Samples were analyzed by 20APR98 and met required hold times.

PROJECT REPORTING LIMIT (PRL)

5.2 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in SAP. Quanterra reporting limits were not raised for any of the samples.

FIELD DUPLICATES

5.3 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set for each sampling period; RPD < 30 %)

[FG-INORG, p. 35]

All field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

5.4 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; analytes < 3 x RL)

[FG-INORG, p. 16-18]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

5.5 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per quarter; % R and RPD within 3 SD of historical results of lab performance)

[FG-INORG, p. 25-26]

All DCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

5.6 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch; analyte concentration ≤ RL except for common lab contaminants ≤ 2 times RL)

[FG-INORG, p. 16-18]

All method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

5.7 Did MS/MSD results meet frequency and QC acceptance criteria? yes ____ no √

(1 set per quarter; %R and RPD varies)

[FG-INORG, p. 27-29]

The percent recoveries for selenium, chromium, lead, and iron were outside the control limits. A matrix effect is indicated.

LEVEL II -- Data Validation

CALIBRATION

5.8 Did initial (ICV) and continuing (CCV) calibrations meet QC acceptance criteria?
[FG-INORG, p. 8-15] yes _____ no _____

Not reviewed.

INTERELEMENT CHECK SAMPLES (method SW6010 only)

5.9 Did interelement check results meet frequency and QC criteria? yes _____ no _____

(within 20% of known value)
[FG-INORG, p. 19-21]

Not reviewed.

ANALYTICAL SPIKE RECOVERY (all methods except SW6010 and mercury)

5.10 Did analytical spike results meet frequency and QC acceptance criteria? yes _____ no _____

(every sample; %R within 80-120% except when sample results are ND, the %R within 40-120%)the %R within 40-120%)
[FG-INORG, p. 27-29]

Not reviewed.

SAMPLE RESULT VERIFICATION

5.11 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? **[FG-INORG, p. 36]** yes _____ no _____

Not reviewed.

LEVEL I AND II -- Data Validation

ANALYTE RESULTS WITH DATA QUALIFIERS

5.12 Summarize analyte results with data qualifiers. List pertinent information on qualified-data worksheet: All samples had qualifier q for: antimony and chromium in E; chromium and selenium in H; antimony, silver, and lead in G; lead and selenium in F; lead and selenium in duplicate for F.

q = Post-digestion spike recovery fell between 40% and 85% due to matrix interference.

5.13 Additional comments: None.

SECTION 6.0: SULFATE--METHOD E300.0

Name of reviewer(s) and review date: F. Eileen Roybal 24JUN98

LEVEL I AND II -- Data Validation

HOLDING TIMES

6.1 Were project-required analytical holding times met? yes √ no ____

(28-day limit from sample date to analysis date for water samples)
[FG-INORG, p. 6-7]

sample date: 7,8APR98 analysis date limit: 5,6MAY98

All samples were analyzed by 28APR98 and met required holding times.

PROJECT REPORTING LIMIT

6.2 Did sample results meet project reporting limits? yes ____ no √

PRL's were not provided in SAP. Reporting limits were raised for all samples except for sample CAFB-E due to sample dilution.

FIELD DUPLICATES

6.3 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per each sampling period; RPD < 30%)
[FG-INORG, p. 35]

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

6.4 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicted pump; target compound concentration ≤ 3 times RL)
[FG-INORG, p. 16-18]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

6.5 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per batch; %R and RPD within 3 SD of historical results of lab performance)

[FG-INORG, p. 25-26]

All DCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

6.6 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-INORG, p. 16-18]

Laborotory method blank result was ND and met QC acceptance criteria

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

6.7 Did MS/MSD results meet frequency and QC acceptance criteria? yes ____ no √

(1 set per quarter; %R and RPD varies)

[FG-INORG, p. 27-29]

The percent recovery for MSD was slightly below control limits.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

6.8 Did initial and continuing calibrations meet frequency and QC criteria? yes ____ no ____

(%R within 90-110%)

[FG-INORG, p. 8-15]

Not reviewed

SAMPLE RESULT VERIFICATION

6.9 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? **[FG-INORG, p. 36]** yes ____ no ____

Not reviewed

6.10 Additional comments: All samples had qualifier s except for sample CAFB-E.

s = Sample diluted due to the concentration of target analytes.

SECTION 7.0: NITRATE--METHOD E353.2/E354.1

Name of reviewer(s) and review date: F. Eileen Roybal 24JUN98

LEVEL I AND II -- Data Validation

HOLDING TIMES

7.1 Were project-required analytical holding times met? yes √ no ____

(48-hour limit from sample date to analysis date for Nitrite-E354.1)
(28-day limit from sample date to analysis date for Nitrate plus Nitrite-E353.2)

[FG-INORG, p. 6-7]

Nitrite sample date: 7,8APR98 analysis date limit: 9,10APR98
Nitrate & Nitrite sample date: 7,8APR98 analysis date limit: 5,6MAY98

Nitrite samples were analyzed by 9APR98. Nitrate & nitrite samples were analyzed by 30APR98. All samples met required holding times.

PROJECT REPORTING LIMIT

7.2 Did sample results meet project reporting limits? yes ____ no √

E353.2 method reporting limit was raised for a sample CAFB-G due to dilution.

FIELD DUPLICATES

7.3 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per each sampling period; RPD < 30%)

[FG-INORG, p. 35]

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

7.4 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicted pump; target compound concentration < 3 times RL)

[FG-INORG, p. 16-18]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

7.5 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per batch; %R and RPD within 3 SD of historical results of lab performance)

[FG-INORG, p. 25-26]

All DCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

7.6 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-INORG, p. 16-18]

Laborotory method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

7.7 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R and RPD varies)

[FG-INORG, p. 27-29]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

7.8 Did initial and continuing calibrations meet frequency and QC criteria? yes ____ no ____

(%R within 90-110%)

[FG-INORG, p. 8-15]

Not reviewed

SAMPLE RESULT VERIFICATION

7.9 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? **[FG-INORG, p. 36]** yes ____ no ____

Not reviewed

7.10 Additional comments: Qualifier s (sample diluted due to concentration of target analytes) for sample CAFB-G by method E353.2.

SECTION 8.0: SULFIDE--METHOD E376.2

Name of reviewer(s) and review date: F. Eileen Roybal 24JUN98

LEVEL I AND II -- Data Validation

HOLDING TIMES

8.1 Were project-required analytical holding times met? yes √ no ____

(7-day limit from sample date to analysis date for water samples)
[FG-INORG, p. 6-7]

sample date: 7,8APR98 analysis date limit: 14,15APR98

All samples were analyzed by 10APR98 and met required holding times.

PROJECT REPORTING LIMIT

8.2 Did sample results meet project reporting limits? yes √ no ____
(Quanterra RL: 0.05 mg/L)

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples.

FIELD DUPLICATES

8.3 Did field duplicate results meet frequency and QC acceptance criteria? yes ____ no √
(1 set per each sampling period; RPD ≤ 30%)
[FG-INORG, p. 35]

RPD was 133%. Use this result with caution because the detected vaue has qualifier j (less than reporting limit or estimated concentration.

EQUIPMENT BLANKS

8.4 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____
(1 set for non-dedicted pump; target compound concentration ≤ 3 times RL)
[FG-INORG, p. 16-18]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

8.5 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per batch; %R and RPD within 3 SD of historical results of lab performance)

[FG-INORG, p. 25-26]

All DCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

8.6 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-INORG, p. 16-18]

Laborotory method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

8.7 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R and RPD varies)

[FG-INORG, p. 27-29]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

8.8 Did initial and continuing calibrations meet frequency and QC criteria? yes ____ no ____

(%R within 90-110%)

[FG-INORG, p. 8-15]

Not reviewed

SAMPLE RESULT VERIFICATION

8.9 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? **[FG-INORG, p. 36]** yes ____ no ____

Not reviewed

8.10 Additional comments: Qualifier j for sample CAFB-T.

j = Result is detected below the reporting limit or is an estimated concentration.

SECTION 9.0: TOTAL DISSOLVED SOLIDS (TDS)--METHOD E160.1

Name of reviewer(s) and review date: F. Eileen Roybal 24JUN98

LEVEL I AND II -- Data Validation

HOLDING TIMES

9.1 Were project-required analytical holding times met? yes √ no ____

(7-day limit from sample date to analysis date for water samples)

[FG-INORG, p. 6-7]

sample date: 7,8APR98 analysis date limit: 14,15APR98

Samples were analyzed by 14APR98 and met required holding times.

PROJECT REPORTING LIMIT (PRL)

9.2 Did sample results meet project reporting limits? yes √ no ____

(Quanterra RL: 10 mg/L)

PRL was not provided in SAP. Reporting limit was not raised on any of the samples for method E160.1.

FIELD DUPLICATES

9.3 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per each sampling period; RPD <30 %)

[FG-INORG, p. 35]

Field duplicate resuts were within acceptance criteria.

EQUIPMENT BLANKS

9.4 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pum; target compound concentration ≤ 3XRL)

[FG-INORG, p. 16-18]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

9.5 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per batch; %R 87-107% and RPD ≤ 10 %)

[FG-INORG, p. 25-26]

All DCS results were within acceptance criteria.

LABORATORY METHOD BLANK

9.6 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch; concentration ≤ 2 X RL)

[FG-INORG, p. 16-18]

Laboratory method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

9.7 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R 87-107% and RPD ≤ 10%)

[FG-INORG, p. 27-29]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

9.8 Did initial and continuing calibrations meet frequency and QC criteria? yes ____ no ____

(%R within 90-110%)

[FG-INORG, p. 8-15]

Not reviewed.

SAMPLE RESULT VERIFICATION

9.9 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? **[FG-INORG, p. 36]** yes ____ no ____

Not reviewed.

9.10 Additional comments: None.

Appendix A -- Laboratory Data Validation Checklist

Instruction Notes for the Data Validation Checklist

This data validation checklist will be used when validating the chemical analytical results. Data validation is a systematic and independent verification of data quality and consists of checking, verifying, evaluating, and qualifying the chemical analytical results.

Two different levels of data validation are used with level I being not as detailed or as rigorous as level II. Level I data validation includes: (1) checking holding times limits, (2) evaluating the results of field and laboratory quality-control (QC) samples such as field replicates, matrix spikes, surrogate samples, and duplicate control samples, and (3) checking that contamination during sample processing has not occurred in QC blanks such as equipment, method, ambient, and trip blanks. Most of the information and data used to conduct a level I data validation is contained in the summary-data reports prepared by the reporting laboratory. Level II data validation includes all the level I guidelines plus using the raw-data reports prepared by the reporting laboratory to: (1) check that the laboratory instruments have been properly tuned and calibrated, and (2) verify that selected sample results do not have any omissions, problems, discrepancies, transcription errors, and reduction (dilution, conversion) errors.

Field samples (environmental and QC) are processed and analyzed by the reporting laboratory in specific groups of samples called sample projects (also called sample cases). A sample project usually consists of 20 or fewer samples that are collected from one or more sampling locations (monitoring well) in a given sampling period. Numerous laboratory QC samples also are analyzed with the field samples for each sample project.

This data validation checklist is designed to be used when validating the analytical results for a given sample project and it has a multi-level organization. The first part of the checklist contains general information (section 1.0) about the scope (who, when, how, and what) of the data validation and data reports and completeness (section 2.0) for each sample project. Sections 1.0 and 2.0 will be completed and included with all data validation checklists. The data validation checklist also contains numerous supplemental sections which are listed at the bottom of the first page of this document. These supplemental checklist sections are used for specific analytical methods and will be marked with a checkmark (√) when they are completed for a given sample project. Specific project-required frequency and QC acceptance criteria, and pertinent reference page numbers are listed with most of the checklist items. The major data-validation references are the USEPA guidance documents (USEPA 1994).

Checklist Abbreviations, Acronyms, and Notes

Abbreviations:

Al	aluminum
Ag	silver
As	arsenic
CAP	Chromic Acid Pit
CCV	continuing calibration verification
Cr	chromium
DCS	duplicate control sample
Ba	barium
Be	beryllium
Ca	calcium
Cd	cadmium
Cl	chloride
Co	cobalt
Conc.	concentration
Cu	copper
Diss.	dissolved
DRO	diesel range organics with GC/FID analysis C10-C28
DU	duplicate environmental sample
EB	equipment blank
Fe	iron
FG-INORG	Functional guidelines (EPA) for evaluating inorganic analyses
FG-ORG	Functional guidelines (EPA) for evaluating organic analyses
Fl	fluoride
GFAA	graphite furnace atomic absorption
Hg	mercury
ICP	inductively coupled plasma
ID	identification
IS	internal standards
J	estimated value qualifier
K	potassium
Mg	magnesium
mg/L	milligrams per liter
Mn	manganese
Mo	molybdenum
MS/MSD	matrix spike/matrix spike duplicate
MW	monitoring well
Na	sodium

Checklist Abbreviations, Acronyms, and Notes -- *continued*

Abbreviations:

Ni	nickel
NO_2	nitrate
NO_3	nitrite
PAC	Chromic Acid Pit duplicate sample identification
PAH	polynuclear aromatic hydrocarbons
Pb	lead
PO_4	orthophosphate
PRL	project reporting limit
QC	quality control
RCLs	Recovery Control Limits
RL	reporting limits
RMAL	Rocky Mountain Analytical Laboratory
RPD	relative percent difference
SA	environmental sample
SAP	Sampling and Analysis Plan
Sb	antimony
SCS	single control sample
Se	selenium
Sn	tin
SO_4	sulfate
SVOC	semivolatile organic compounds
TB	trip blank
TDS	total dissolved solids
TIC	tentatively identified compound
Tl	thallium
TOC	total organic carbon
Tot.	total
TOX	total organic halogen
TPH	total petroleum hydrocarbons
TSS	total suspended solids
USEPA	United States Environmental Protection Agency
USGS/WRD	United States Geological Survey, Water Resources Division
V	vanadium
VOC	volatile organic compounds
Zn	zinc
µg/L	microgram per liter

Checklist Abbreviations, Acronyms, and Notes -- *continued*

Abbreviations:

<	less than
>	greater than
%	percent
%R	percent recovery

USEPA, 1994, USEPA Contract laboratory program national functional guidelines for organic data review, February, 1994, Publication 9240.1-05, Document number PB94-963501, 124 p.

NOTE: this reference is abbreviated FG-ORG in this checklist.

USEPA, 1994, USEPA contract laboratory program national functional guidelines for inorganic data review, February, 1994, Publication 9240.1-05-01, Document number PB94-963502, 42 p.

NOTE: this reference is abbreviated FG-INORG in this checklist.

USGS, 1992, Laboratory data validation checklist: Wyoming District, U.S. Geological Survey checklist prepared for the U.S. Air Force, multiple pages.

LABORATORY DATA VALIDATION CHECKLIST

SECTION 1.0: GENERAL INFORMATION *(also see Appendix A)*

Data reviewer(s) name, affiliation, title, signature, and date of review:

F. Eileen Roybal, USGS-WRD, Hydrologist F. Eileen Roybal 22JUN98

DATA INVENTORY

1.1 Sample project number: Quanterra Environmental Services 053362.

1.2 Operable unit and site: Landfill 5 unit, Cell 3

Sample collection date: 7APR98

1.3 Sample locations (location IDs): Wells CAFB-C, CAFB-I, and CAFB-Q; CAFB-X-0498-1 was a duplicate sample for CAFB-Q.

1.4 Sample matrix (ground water, soil, other): ground water

1.5 Type and number of field samples (environmental and quality control) in sample project:

Type	number	Type	number
environmental	3	MS/MSD	1 pair
field duplicate	1	trip blank	0
equipment blank	1	ambient blank	0

Data validation level: **(circle one)** note--see appendix A for description of different levels

LEVEL 1 **LEVEL 2**

OTHER CHECKLIST SECTIONS COMPLETED FOR SAMPLE PROJECT:

√ 2.0 Data Reports and Completeness
√ 3.0 Appendix-IX, Volatile organic compounds (VOC)--Method SW5030/SW8260A
√ 4.0 Appendix-IX, Semivolatile organic compounds (SVOC)--Method SW3510/SW8270B
√ 5.0 Appendix-IX, Pesticides and PCB's--Method SW3520/SW8080A
√ 6.0 Appendix-IX, Herbicides--Method SW3520/SW8150
√ 7.0 Appendix-IX, Dioxins and Furans--Method SW3520/SW8280
√ 8.0 Appendix-IX, Polynuclear aromatic hydrocarbons (PAH)--Method SW3510/SW8310

__√__ 9.0 Appendix-IX, Metals (Total)--Methods SW3005/SW6010 (Barium, Beryllium, Calcium, Cobalt, Copper, Iron, Magnesium, Manganese, Molybdenum, Nickel, Sodium, Tin, Vanadium, and Zinc), SW3020/SW7041 (Antimony), SW3020/SW7060 (Arsenic), SW3020/SW7131 (Cadmium), SW3020/SW7191 (Chromium), SW3020/SW7421 (Lead), SW3020/SW7470 (Mercury), SW3020/SW7740 (Selenium), SW3020/SW7761 (Silver), and SW3020/SW7841 (Thallium)

__√__ 10.0 Cyanide and Sulfide--Methods SW9012 (cyanide), E376.2 (sulfide)

__√__ 11.0 Total Organic Carbon (TOC)--Method SW9060

__√__ 12.0 Total Organic Halogens (TOX)--Method SW9020

SECTION 2.0: DATA REPORTS AND COMPLETENESS

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LABORATORY DATA REPORTS

2.1 Analytical Results Report--report date: 24JUN97

2.2 Raw Data Report--number of volumes: N/A

2.3 Was completeness of lab reports acceptable? yes __√__ no ____

(overview, analytical results, quality-control report)

Lab reports were complete and acceptable.

DATA COMPLETENESS

2.4 Were all samples requested on chain of custody form analyzed by lab? yes __√__ no ____

All appendix IX parameters:

	VOC SW8260A	SVOC SW8270B	Pesticide SW8080A	Herbicide SW8150	Dioxin SW8280
requested:	9	7	7	7	7
analyzed:	9	7	7	7	7

	PAH SW8310	Total Metals: 14 by ICP, 9 by GFAA	Cyanide by SW9012, Sulfide by E376.2	TOC SW9060	TOX SW9020
requested:	7	7	7	7	7
analyzed:	7	7	7	7	7

2.5 List cancelled analyses on cancelled-data worksheet: None.

2.6 Was sample cooler seal intact upon receipt by lab? Yes

2.7 What was the sample cooler temperature upon receipt by lab? Temperatures ranged from 2.8 - 6.0 °C.

2.8 Additional comments:
Equipment blank was not collected because dedicated pumps were installed in each well at various times by contractors.

SECTION 3.0: APPENDIX-IX, VOLATILE ORGANIC COMPOUNDS-- METHOD SW5030/SW8260A

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

3.1 Were project-required analytical holding times met? yes √ no ____

(14-day limit from sample date to analysis date for water samples)

[FG-ORG, p. 6-8]

sample date: 27,28MAY97 analysis date limit: 10,11JUN97

Samples were analyzed by 5JUN97, and met required holding times.

SURROGATE SPIKE RECOVERY

3.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(all samples and blanks: SW8260A:%R varies)

[FG-ORG, p. 26-29]

All surrogate spike recovery results met Quanterra QC accetance criteria.

PROJECT REPORTING LIMIT (PRL)

3.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in Sampling and Analysis Plan (SAP). Reporting limits were not raised for any of the sample.

FIELD DUPLICATES

3.4 Did field duplicate results meet frequency and QC acceptance criteria?yes √ no ____

(1 set per sampling period; RPD < 30 %)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

3.5 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; analytes <3 x RL)

[FG-ORG, p. 20-25]

N/A - See Comment 2.8.

AMBIENT and TRIP BLANKS (water samples only)

3.6 Did blank results meet frequency and QC acceptance criteria? yes √ no ____

(ambient and trip blank frequency varies per sampling period)

[FG-ORG, p. 20-25]

All results were ND for both trip blanks. Ambient condition blank was not collected for this sampling period.

TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

3.7 List number and level of TICs for each sample analyzed on TIC data sheet.

[FG-ORG, p. 41-44]

Sample ID	Page Number	Number of TICs	Reporting Level*
CAFB-X-0597-1(well-L)	I-32	1	3
CAFB-M-0597-1	I-17	1	3
CAFB-Q-0597-1	I-20	1	2

* 1 = tentative identification, 2 = confident identification, and 3 = confirmed identification.

DUPLICATE CONTROL SAMPLES (DCSs)

3.8 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 32-33]

All DCS results met QC acceptance criteria.

SINGLE CONTROL SAMPLES (SCSs)

3.9 Did SCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 SCS per sample lot; %R limits established by laboratory)

[FG-ORG, p. 32-33]

All SCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

3.10 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch; analyte concentration ≤ RL except for common lab contaminants ≤ 5 times RL)

[FG-ORG, p. 20-25]

All method blank results were ND or J value (less than RL) and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

3.11 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; method SW8260A: %R and RPD varies)

[FG-ORG, p. 30-31]

All MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

3.12 Did initial calibrations meet frequency and QC acceptance criteria? yes ____ no ____

[FG-ORG, p. 12-16]

Not reviewed.

3.13 Did continuing calibrations meet frequency and QC acceptance criteria? yes ____ no ____

[FG-ORG, p. 17-19]

Not reviewed.

GC/MS TUNING

3.14 Did BFB tuning results meet frequency and QC acceptance criteria? yes ____ no ____

[FG-ORG, p. 9-11]

Not reviewed.

INTERNAL STANDARDS (IS)

3.15 Did IS results meet frequency and QC acceptance criteria? yes _____ no _____

(all blanks, standards, and samples; IS area limits within 50 to 200%)
[FG-ORG, p. 35-36]

Not reviewed

SAMPLE RESULT VERIFICATION

3.16 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? [FG-ORG, p. 47] yes _____ no _____

Not reviewed

LEVEL I and II -- Data Validation

ANALYTE RESULTS WITH DATA QUALIFIERS

3.17 Summarize analyte results with data qualifiers. List pertinent information on qualified-data worksheet: _____

3.18 Additional comments: _____

SECTION 4.0: APPENDIX-IX SEMIVOLATILE ORGANIC COMPOUNDS--METHOD SW3510/SW8270B

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

4.1 Were project-required analytical holding times met? yes √ no ____

(7-day limit from sample date to extraction date for water samples)

(40-day limit from sample extraction date to analysis date for water samples)

[FG-ORG, p. 49-50]

sample date: 27,28MAY97 extraction date limit: 3, 4JUN97

extraction date: 2JUN97 analysis date limit: 12JUL97

Samples were extracted by 2JUN97.

Samples were analyzed by 20JUN97 and met required holding times.

SURROGATE SPIKE RECOVERY

4.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(frequency: all samples and blanks: SW8270B:%R varies)

[FG-ORG, p. 66-68]

All surrogate recoveries were within QC acceptance criteria.

PROJECT REPORTING LIMIT (PRL)

4.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples.

FIELD DUPLICATES

4.4 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per sampling period; RPD ≤ 30%)

Field duplicate results met QC acceptance criteria except for bis(2-Ethylhexyl)phthalate. The RPD for bis(2-Ethylhexyl)phthalate was 82 %.

EQUIPMENT BLANKS

4.5 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; analytes < 3 x RL)

[FG-ORG, p. 62-65]

N/A - See Comment 2.8.

TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

4.6 List number and level of TICs for each sample analyzed on TIC data sheet.

[FG-ORG, p. 80-83]

Sample ID	Page Number	Number of TICs	Reporting Level*
CAFB-Q-0597-1	I-45	2	1

* 1 = tentative identification, 2 = confident identification, and 3 = confirmed identification.

DUPLICATE CONTROL SAMPLES (DCSs)

4.7 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 71-72]

All DCS results met QC acceptance criteria.

SINGLE CONTROL SAMPLES (SCSs)

4.8 Did SCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 SCS per quarter; %R limits established by laboratory)

[FG-ORG, p. 71-72]

All SCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

4.9 Did method blank results meet frequency and QC acceptance criteria?yes √ no ____

(1 method blank per batch; analyte concentration ≤ RL except for common lab contaminants ≤ 5 times RL)

[FG-ORG, p. 62-65]

All results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

4.10 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; method SW8270B:%R and RPD varies)

[FG-ORG, p. 69-70]

All MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

4.11 Did initial calibration meet frequency and QC acceptance criteria? yes ____ no ____

[FG-ORG, p. 55-58]

Not reviewed

4.12 Did continuing calibrations meet frequency and QC acceptance criteria? yes ____ no ____

[FG-ORG, p. 59-61]

Not reviewed

GC/MS TUNING

4.13 Did BFB tuning results meet frequency and QC acceptance criteria? yes ____ no ____

[FG-ORG, p. 51-54]

Not reviewed

INTERNAL STANDARDS (IS)

4.14 Did IS results meet frequency and QC acceptance criteria? yes ____ no ____

(all blanks, standards, and samples; IS area limits within 50 to 200%)

[FG-ORG, p. 74-75]

Not reviewed

SAMPLE RESULT VERIFICATION

4.15 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes _____ no _____

Not reviewed

LEVEL I and II -- Data Validation

ANALYTE RESULTS WITH DATA QUALIFIERS

4.16 Summarize analyte results with data qualifiers. List pertinent information on qualified-data worksheet: _____

4.17 Additional comments: _____

SECTION 5.0: APPENDIX-IX, PESTICIDES AND PCB'S-- METHOD SW3520/SW8080A

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

5.1 Were project-required analytical holding times met? yes √ no ____

(7-day limit from sample date to extraction date and 40-day limit from extraction date to analysis date for method SW8080A)

[FG-ORG, p. 49-50]

sample date: 27,28MAY97 extraction date limit: 3,4JUN97

extraction date: 3JUN97 analysis date limit: 13JUL97

Samples were extracted by 3JUN97.

Samples were analyzed by 20JUN97 and met required holding times.

SURROGATE SPIKE RECOVERY

5.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(frequency: all samples and blanks: SW8080A:%R varies)

[FG-ORG, p. 66-68]

All surrogate spike recovery results met QC acceptance criteria.

PROJECT REPORTING LIMIT

5.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples.

FIELD DUPLICATES

5.4 Did field duplicate results meet frequency and QC acceptance criteria?yes √ no ____

(1 set per sampling period; RPD ≤ 30%)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

5.5 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; target compound concentration ≤ RL)

[FG-ORG, p. 62-65]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

5.6 Did DCS results meet frequency and QC acceptance criteria? yes ____ no √

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 71-72]

DCS results did not meet QC acceptance criteria. RPD for gamma-BHC, heptachlor, aldrin, and dieldrin were outside control limits.

SINGLE CONTROL SAMPLES (SCSs)

5.7 Did SCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 SCS per quarter; %R limits established by laboratory)

[FG-ORG, p. 71-72]

SCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

5.8 Did method blank results meet frequency and QC acceptance criteria?yes √ no ____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-ORG, p. 62-65]

All method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

5.9 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R and RPD limits varies)

[FG-ORG, p. 69-70]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

5.10 Did initial and continuing calibrations meet frequency and QC criteria?yes ____ no ____

[FG-ORG, p. 55-58]

Not reviewed

SAMPLE RESULT VERIFICATION

5.11 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes ____ no ____

Not reviewed

5.12 Additional comments: Analyte results with data qualifiers were:

Sample ID	Page number	Qualifier
CAFB-I-0597-1	I-68	T
CAFB-L-0597-1	I-69	T
CAFB-X-0597-1(Duplicate of L)	I-70	T
CAFB-M-0597-1	I-66	T
CAFB-Q-0597-1	I-67	T

T = Preferred values unless footnoted on secondary column test.

SECTION 6.0: APPENDIX-IX, HERBICIDES--METHOD SW3520/SW8150

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

6.1 Were project-required analytical holding times met? yes √ no ____

(7-day limit from sample date to extraction date and 40-day limit from extraction date to analysis date for method SW8150)

[FG-ORG, p. 49-50]

sample date: 27,28MAY97 extraction date limit: 3,4JUN97

extraction date: 3JUN97 analysis date limit: 13JUL97

Samples were extracted by 3JUN97.

Samples were analyzed by 10JUN97 and met required holding times.

SURROGATE SPIKE RECOVERY

6.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(frequency: all samples and blanks: SW8150:%R varies)

[FG-ORG, p. 66-68]

All surrogate spike recovery results met QC acceptance criteria.

PROJECT REPORTING LIMIT

6.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples.

FIELD DUPLICATES

6.4 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per sampling period; RPD ≤ 30%)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

6.5 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; target compound concentration ≤ RL)

[FG-ORG, p. 62-65]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

6.6 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 71-72]

DCS results met QC acceptance criteria.

SINGLE CONTROL SAMPLES (SCSs)

6.7 Did SCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 SCS per quarter; %R limits established by laboratory)

[FG-ORG, p. 71-72]

SCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

6.8 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-ORG, p. 62-65]

All method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

6.9 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R and RPD limits varies)

[FG-ORG, p. 69-70]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

6.10 Did initial and continuing calibrations meet frequency and QC criteria? yes ____ no ____

[FG-ORG, p. 55-58]

Not reviewed

SAMPLE RESULT VERIFICATION

6.11 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes ____ no ____

Not reviewed

6.12 Additional comments: Analyte results with data qualifiers were:

Sample ID	Page number	Qualifier
CAFB-I-0597-1	I-63	T
CAFB-L-0597-1	I-64	T
CAFB-X-0597-1(Duplicate of L)	I-65	T
CAFB-M-0597-1	I-61	T
CAFB-Q-0597-1	I-62	T

T = Preferred values unless footnoted on secondary column test.

SECTION 7.0: APPENDIX-IX, DIOXINS AND FURANS-- METHOD SW3520/SW8280

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

7.1 Were project-required analytical holding times met? yes √ no ____

(30-day limit from sample date to extraction date and 45-day limit from extraction date to analysis date for method SW8280)

[FG-ORG, p. 49-50]

sample date: 27,28MAY97 extraction date limit: 27,28JUN97

extraction date: 5JUN97 analysis date limit: 20JUL97

Samples were extracted by 5JUN97.

Samples were analyzed by 9JUN97 and met required holding times.

SURROGATE SPIKE RECOVERY

7.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(frequency: all samples and blanks: SW8280:%R varies)

[FG-ORG, p. 66-68]

All surrogate spike recovery results met QC acceptance criteria.

PROJECT REPORTING LIMIT

7.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples.

FIELD DUPLICATES

7.4 Did field duplicate results meet frequency and QC acceptance criteria?yes __√__ no ____

(1 set per sampling period; RPD ≤ 30%)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

7.5 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; target compound concentration ≤ RL)

[FG-ORG, p. 62-65]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

7.6 Did DCS results meet frequency and QC acceptance criteria? yes __√__ no ____

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 71-72]

DCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

7.7 Did method blank results meet frequency and QC acceptance criteria?yes __√__ no ____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-ORG, p. 62-65]

All method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

7.8 Did MS/MSD results meet frequency and QC acceptance criteria? yes __√__ no ____

(1 set per quarter; %R and RPD limits varies)

[FG-ORG, p. 69-70]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

7.9 Did initial and continuing calibrations meet frequency and QC criteria? yes _____ no _____
[FG-ORG, p. 55-58]

Not reviewed

SAMPLE RESULT VERIFICATION

7.10 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes _____ no _____

Not reviewed

7.11 Additional comments: _____

SECTION 8.0: APPENDIX-IX, POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)--METHOD SW3510/SW8310

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

8.1 Were project-required analytical holding times met? yes √ no ____

(7-day limit from sample date to extraction date and 40-day limit from extraction date to analysis date for method SW8310)

[FG-ORG, p. 49-50]

sample date: 27,28MAY97 extraction date limit: 3,4JUN97

extraction date: 3JUN97 analysis date limit: 13JUL97

Samples were extracted by 3JUN97.

Samples were analyzed by 18JUN97 and met required holding times.

SURROGATE SPIKE RECOVERY

8.2 Did surrogate spike results meet frequency and QC acceptance criteria? yes √ no ____

(frequency: all samples and blanks: SW8310:%R varies)

[FG-ORG, p. 66-68]

All surrogate spike recovery results met QC acceptance criteria.

PROJECT REPORTING LIMIT

8.3 Did sample results meet project reporting limits? yes √ no ____

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples.

FIELD DUPLICATES

8.4 Did field duplicate results meet frequency and QC acceptance criteria?yes √ no ____

(1 set per sampling period; RPD ≤ 30%)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

8.5 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; target compound concentration ≤ RL)

[FG-ORG, p. 62-65]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

8.6 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per quarter; %R and RPD within 3 SD of historical results of lab performance)

[FG-ORG, p. 71-72]

DCS results met QC acceptance criteria.

SINGLE CONTROL SAMPLES (SCSs)

8.7 Did SCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 SCS per quarter; %R limits established by laboratory)

[FG-ORG, p. 71-72]

SCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

8.8 Did method blank results meet frequency and QC acceptance criteria?yes √ no ____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-ORG, p. 62-65]

All method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

8.9 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R and RPD limits varies)

[FG-ORG, p. 69-70]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

8.10 Did initial and continuing calibrations meet frequency and QC criteria?yes ____ no ____

[FG-ORG, p. 55-58]

Not reviewed

SAMPLE RESULT VERIFICATION

8.11 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes ____ no ____

Not reviewed

8.12 Additional comments: ____

SECTION 9.0: APPENDIX-IX, METALS (TOTAL)-- METHODS SW3005/SW6010 (BARIUM, BERYLLIUM, CALCIUM, COBALT, COPPER, IRON, MAGNESIUM, MANGANESE, MOLYBDENUM, NICKEL, SODIUM, TIN, VANADIUM, AND ZINC), SW3020/SW7041 (ANTIMONY), SW3020/SW7060 (ARSENIC), SW3020/SW7131 (CADMIUM), SW3020/ SW7191 (CHROMIUM), SW3020/SW7421 (LEAD), SW3020/SW7470 (MERCURY), SW3020/SW7740 (SELENIUM), SW3020/SW7761 (SILVER), AND SW3020/SW7841 (THALLIUM).

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

9.1 Were project-required analytical holding times met? yes √ no ____

(180-day limit from sample date to analysis, except mercury-28 days)

[FG-INORG, p. 6-7]

Mercury sample date: 27,28MAY97 analysis date limit: 24,25JUN97

All rest sample date: 27,28MAY97 analysis date limit: 24,25NOV97

Mercury samples were analyzed by 30MAY97 and met required hold time.
All rest were analyzed by 18JUN97 and met required hold time.

PROJECT REPORTING LIMIT (PRL)

9.2 Did sample results meet project reporting limits? yes ____ no √

PRL's were not provided in SAP. Quanterra reporting limits were raised for arsenic(SW7060) for samples CAFB-I, L, and X. RL's were raised for silver(SW7761), lead(SW7421), and thallium(SW7841) for all the samples. RL was raised for selenium(SW7740) for a sample CAFB-M.

FIELD DUPLICATES

9.3 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set for each sampling period; RPD < 30 %)

[FG-INORG, p. 35]

All field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

9.4 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; analytes < 3 x RL)

[FG-INORG, p. 16-18]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

9.5 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per quarter; % R and RPD within 3 SD of historical results of lab performance)

[FG-INORG, p. 25-26]

All DCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

9.6 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch; analyte concentration ≤ RL except for common lab contaminants ≤ 2 times RL)

[FG-INORG, p. 16-18]

All method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

9.7 Did MS/MSD results meet frequency and QC acceptance criteria? yes ____ no √

(1 set per quarter; %R and RPD varies)

[FG-INORG, p. 27-29]

MS/MSD for lead, selenium, thallium, and silver for GFAA analyses were recovered below control limits. Matrix effects are suspected.

LEVEL II -- Data Validation

CALIBRATION

9.8 Did initial (ICV) and continuing (CCV) calibrations meet QC acceptance criteria? **[FG-INORG, p. 8-15]** yes _____ no _____

Not reviewed.

INTERELEMENT CHECK SAMPLES (method SW6010 only)

9.9 Did interelement check results meet frequency and QC criteria? yes _____ no _____

(within 20% of known value)
[FG-INORG, p. 19-21]

Not reviewed.

ANALYTICAL SPIKE RECOVERY (all methods except SW6010 and mercury)

9.10 Did analytical spike results meet frequency and QC acceptance criteria? yes _____ no _____

(every sample; %R within 80-120% except when sample results are ND, the %R within 40-120%)the %R within 40-120%)
[FG-INORG, p. 27-29]

Not reviewed.

SAMPLE RESULT VERIFICATION

9.11 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? **[FG-INORG, p. 36]** yes _____ no _____

Not reviewed.

LEVEL I AND II -- Data Validation

ANALYTE RESULTS WITH DATA QUALIFIERS

9.12 Summarize analyte results with data qualifiers. List pertinent information on qualified-data worksheet: All samples had qualifier G for silver, lead, and thallium. Samples CAFB-I, L, and X had arsenic with qualifier G. A sample CAFB-M had selenium with qualifer G.

G = Reporting limit raised due to the matrix of the sample.

9.13 Additional comments: None.

SECTION 10.0: CYANIDE--METHOD SW9012 AND SULFIDE--METHOD E376.2

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

10.1 Were project-required analytical holding times met? yes √ no ____

(Cyanide: 14-day limit from sample date to analysis date for water samples)
(Sulfide: 7-day limit from sample date to analysis date for water samples)
[FG-INORG, p. 6-7]

Cyanide sample date: 27,28MAY97 analysis date limit: 10,11JUN97
Sulfide sample date: 27,28MAY97 analysis date limit: 3,4JUN97

Cyanide samples were analyzed by 9JUN97.
Sulfide samples were analyzed by 2JUN97. All samples met required holding times.

PROJECT REPORTING LIMIT

10.2 Did sample results meet project reporting limits? yes √ no ____

(Quanterra RL for: Cyanide 0.01 mg/L, Sulfide 0.05 mg/L)

PRL's were not provided in SAP. Reporting limits were not raised for any of the samples for methods SW9012, or E376.2.

FIELD DUPLICATES

10.3 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per each sampling period; RPD ≤ 30%)
[FG-INORG, p. 35]

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

10.4 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicted pump; target compound concentration ≤ 3 times RL)
[FG-INORG, p. 16-18]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

10.5 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per batch; %R and RPD within 3 SD of historical results of lab performance)

[FG-INORG, p. 25-26]

All DCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

10.6 Did method blank results meet frequency and QC acceptance criteria?yes √ no ____

(1 method blank per batch; concentration ≤ 2 times RL)

[FG-INORG, p. 16-18]

Laborotory method blank results for both cyanide and sulfide were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

10.7 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R and RPD varies)

[FG-INORG, p. 27-29]

MS/MSD results met QC acceptance criteria for both sulfide and cyanide.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

10.8 Did initial and continuing calibrations meet frequency and QC criteria?yes ____ no ____

(%R within 90-110%)

[FG-INORG, p. 8-15]

Not reviewed

SAMPLE RESULT VERIFICATION

10.9 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? **[FG-INORG, p. 36]** yes ____ no ____

Not reviewed

10.10 Additional comments: No qualifiers for data results by methods SW9012 and E376.2.

SECTION 11.0: TOTAL ORGANIC CARBON (TOC)-- METHOD SW9060

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

11.1 Were project-required analytical holding times met? yes √ no ____

(28-day limit from sample date to analysis date for water samples)

[FG-ORG, p. 6-8]

sample date: 27,28MAY97 analysis date limit: 24,25JUN97

Samples were analyzed by 13JUN97 and met required holding times.

PROJECT REPORTING LIMIT (PRL)

11.2 Did sample results meet project reporting limits? yes √ no ____

(Quanterra RL: 1.0 mg/L)

PRL was not provided in SAP. Reporting limit was not raised on any of the samples for method SW9060.

FIELD DUPLICATES

11.3 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per each sampling period; RPD <30 %)

Field duplicate resuts were within acceptance criteria.

EQUIPMENT BLANKS

11.4 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pum; target compound concentration ≤ RL)

[FG-ORG, p. 20-25]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

11.5 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per batch; %R and RPD within 3 SD of historical results of Lab performance)

[FG-ORG, p. 32-33]

All DCS results were within acceptance criteria.

LABORATORY METHOD BLANK

11.6 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per batch)

[FG-ORG, p. 20-25]

Laboratory method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

11.7 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter)

[FG-ORG, p. 30-31]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

11.8 Did initial and continuing calibrations meet frequency and QC criteria? yes ____ no ____

[FG-ORG, p. 12-16]

Not reviewed.

SAMPLE RESULT VERIFICATION

11.9 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes ____ no ____

Not reviewed.

11.10 Additional comments: None.

SECTION 12.0: TOTAL ORGANIC HALOGENS (TOX) METHOD SW9020

Name of reviewer(s) and review date: F. Eileen Roybal 22AUG97

LEVEL I AND II -- Data Validation

HOLDING TIMES

12.1 Were project-required analytical holding times met? yes √ no ____

(28-day limit from sample date to analysis date for water samples)

[FG-ORG, p. 6-8]

sample date: 27,28MAY97 analysis date limit: 24,25JUN97

Samples were analyzed by 19JUN97 and met required holding times.

PROJECT REPORTING LIMIT

12.2 Did sample results meet project reporting limits? yes √ no ____

(Quanterra RL: 30 µg/L)

PRL was not provided in SAP. Reporting limits were not raised for any of the samples for TOX analyses.

FIELD DUPLICATES

12.3 Did field duplicate results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per each sampling period; RPD ≤ 30 %)

Field duplicate results met QC acceptance criteria.

EQUIPMENT BLANKS

12.4 Did equipment blank results meet frequency and QC acceptance criteria? yes ____ no ____

(1 set for non-dedicated pump; target compound concentration ≤ RL)

[FG-ORG, p. 20-25]

N/A - See Comment 2.8.

DUPLICATE CONTROL SAMPLES (DCSs)

12.5 Did DCS results meet frequency and QC acceptance criteria? yes √ no ____

(1 DCS per batch; %R within 80 to 120% and RPD < 20%)

[FG-ORG, p. 32-33]

DCS results met QC acceptance criteria.

LABORATORY METHOD BLANKS

12.6 Did method blank results meet frequency and QC acceptance criteria? yes √ no ____

(1 method blank per quarter)

[FG-ORG, p. 20-25]

Laboratory method blank results were ND and met QC acceptance criteria.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE (MS/MSD)

12.7 Did MS/MSD results meet frequency and QC acceptance criteria? yes √ no ____

(1 set per quarter; %R within 80 to 120 %; RPD < 20 %)

[FG-ORG, p. 30-31]

MS/MSD results met QC acceptance criteria.

LEVEL II -- Data Validation

INSTRUMENT CALIBRATION

12.8 Did initial and continuing calibrations meet frequency and QC criteria? yes ____ no ____

[FG-ORG, p. 12-16]

Not reviewed.

SAMPLE RESULT VERIFICATION

12.9 No omissions, problems, discrepancies, transcription errors, or reduction (dilution, conversion) errors in selected raw data? yes ____ no ____

Not reviewed.

12.10 Additional comments: No qualifiers reported for TOX analyses.

Appendix A -- Laboratory Data Validation Checklist

Instruction Notes for the Data Validation Checklist

This data validation checklist will be used when validating the chemical analytical results. Data validation is a systematic and independent verification of data quality and consists of checking, verifying, evaluating, and qualifying the chemical analytical results.

Two different levels of data validation are used with level I being not as detailed or as rigorous as level II. Level I data validation includes: (1) checking holding times limits, (2) evaluating the results of field and laboratory quality-control (QC) samples such as field replicates, matrix spikes, surrogate samples, and duplicate control samples, and (3) checking that contamination during sample processing has not occurred in QC blanks such as equipment, method, ambient, and trip blanks. Most of the information and data used to conduct a level I data validation is contained in the summary-data reports prepared by the reporting laboratory. Level II data validation includes all the level I guidelines plus using the raw-data reports prepared by the reporting laboratory to: (1) check that the laboratory instruments have been properly tuned and calibrated, and (2) verify that selected sample results do not have any omissions, problems, discrepancies, transcription errors, and reduction (dilution, conversion) errors.

Field samples (environmental and QC) are processed and analyzed by the reporting laboratory in specific groups of samples called sample projects (also called sample cases). A sample project usually consists of 20 or fewer samples that are collected from one or more sampling locations (monitoring well) in a given sampling period. Numerous laboratory QC samples also are analyzed with the field samples for each sample project.

This data validation checklist is designed to be used when validating the analytical results for a given sample project and it has a multi-level organization. The first part of the checklist contains general information (section 1.0) about the scope (who, when, how, and what) of the data validation and data reports and completeness (section 2.0) for each sample project. Sections 1.0 and 2.0 will be completed and included with all data validation checklists. The data validation checklist also contains numerous supplemental sections which are listed at the bottom of the first page of this document. These supplemental checklist sections are used for specific analytical methods and will be marked with a checkmark (√) when they are completed for a given sample project. Specific project-required frequency and QC acceptance criteria, and pertinent reference page numbers are listed with most of the checklist items. The major data-validation references are the USEPA guidance documents (USEPA 1994).

Checklist Abbreviations, Acronyms, and Notes

Abbreviations:

Al	aluminum
Ag	silver
As	arsenic
CAP	Chromic Acid Pit
CCV	continuing calibration verification
Cr	chromium
DCS	duplicate control sample
Ba	barium
Be	beryllium
Ca	calcium
Cd	cadmium
Cl	chloride
Co	cobalt
Conc.	concentration
Cu	copper
Diss.	dissolved
DRO	diesel range organics with GC/FID analysis C10-C28
DU	duplicate environmental sample
EB	equipment blank
Fe	iron
FG-INORG	Functional guidelines (EPA) for evaluating inorganic analyses
FG-ORG	Functional guidelines (EPA) for evaluating organic analyses
Fl	fluoride
GFAA	graphite furnace atomic absorption
Hg	mercury
ICP	inductively coupled plasma
ID	identification
IS	internal standards
J	estimated value qualifier
K	potassium
Mg	magnesium
mg/L	milligrams per liter
Mn	manganese
Mo	molybdenum
MS/MSD	matrix spike/matrix spike duplicate
MW	monitoring well
Na	sodium

Checklist Abbreviations, Acronyms, and Notes -- *continued*

Abbreviations:

Ni	nickel
NO_2	nitrate
NO_3	nitrite
PAC	Chromic Acid Pit duplicate sample identification
PAH	polynuclear aromatic hydrocarbons
Pb	lead
PO_4	orthophosphate
PRL	project reporting limit
QC	quality control
RCLs	Recovery Control Limits
RL	reporting limits
RMAL	Rocky Mountain Analytical Laboratory
RPD	relative percent difference
SA	environmental sample
SAP	Sampling and Analysis Plan
Sb	antimony
SCS	single control sample
Se	selenium
Sn	tin
SO_4	sulfate
SVOC	semivolatile organic compounds
TB	trip blank
TDS	total dissolved solids
TIC	tentatively identified compound
Tl	thallium
TOC	total organic carbon
Tot.	total
TOX	total organic halogen
TPH	total petroleum hydrocarbons
TSS	total suspended solids
USEPA	United States Environmental Protection Agency
USGS/WRD	United States Geological Survey, Water Resources Division
V	vanadium
VOC	volatile organic compounds
Zn	zinc
µg/L	microgram per liter

Checklist Abbreviations, Acronyms, and Notes -- *continued*

Abbreviations:

<	less than
>	greater than
%	percent
%R	percent recovery

USEPA, 1994, USEPA Contract laboratory program national functional guidelines for organic data review, February, 1994, Publication 9240.1-05, Document number PB94-963501, 124 p.

NOTE: this reference is abbreviated FG-ORG in this checklist.

USEPA, 1994, USEPA contract laboratory program national functional guidelines for inorganic data review, February, 1994, Publication 9240.1-05-01, Document number PB94-963502, 42 p.

NOTE: this reference is abbreviated FG-INORG in this checklist.

USGS, 1992, Laboratory data validation checklist: Wyoming District, U.S. Geological Survey checklist prepared for the U.S. Air Force, multiple pages.

Quanterra
Environmental Services

QC SUMMARY

The Quanterra laboratories operate under a vigorous QA/QC program designed to ensure the generation of scientifically valid, legally defensible data by monitoring every aspect of laboratory operations. Routine QA/QC procedures include the use of approved methodologies, independent verification of analytical standards, use of duplicate Laboratory Control Samples to assess the precision and accuracy of the methodology on a routine basis, and a rigorous system of data review.

The standard laboratory QC package is designed to:

1. establish a strong, cost-effective QC program that ensures the generation of scientifically valid, legally defensible data,

2. assess the laboratory's performance of the analytical method using control limits generated with a well-defined matrix,

3. establish clear-cut guidelines for acceptability of analytical data so that QC decisions can be made immediately at the bench, and

4. provide a standard set of reportables which assures the client of the quality of his data.

The Quanterra QC program is based upon monitoring the precision and accuracy of an analytical method by analyzing a set of Duplicate Control Samples (DCS) at frequent, well-defined intervals. Each DCS is a well-characterized matrix which is spiked with target compounds at 5-100 times the reporting limit, depending upon the methodology being monitored. The purpose of the DCS is not to duplicate the sample matrix, but rather to provide an interference-free, homogeneous matrix from which to gather data to establish control limits. These limits are used to determine whether data generated by the laboratory on any given day is in control.

Quanterra
Environmental Services

Control limits for accuracy (percent recovery) are based on the average, historical percent recovery +/- 3 standard deviation units. Control limits for precision (relative percent difference) range from 0 (identical duplicate DCS results) to the average, historical relative percent difference + 3 standard deviation units. These control limits are fairly narrow based on the consistency of the matrix being monitored and are updated on a quarterly basis.

For each batch of samples analyzed, an additional control measure is taken in the form of a Single Control Sample (SCS). The SCS consists of a control matrix that is spiked with surrogate compounds appropriate to the method being used. In cases where no surrogate is available, (e.g., metals or conventional analyses) a single DCS serves as the control sample. An SCS is prepared for each sample lot for which the DCS pair are not analyzed. The recovery of the SCS is charted in exactly the same manner as described for the DCS, and provides a daily check on the performance of the method.

Accuracy for DCS and SCS is measured by Percent Recovery.

$$\% \text{ Recovery} = \frac{\text{Measured Concentration}}{\text{Actual Concentration}} \times 100$$

Precision for DCS is measured by Relative Percent Difference (RPD).

$$\text{RPD} = \frac{|\text{Measured Concentration DCS1} - \text{Measured Concentration DCS2}|}{(\text{Measured Concentration DCS1} + \text{Measured Concentration DCS2})/2} \times 100$$

All samples analyzed concurrently by the same test are assigned the same QC lot number. Projects which contain numerous samples, analyzed over several days, may have multiple QC lot numbers associated with each test. The QC information which follows includes a listing of the QC lot numbers associated with each of the samples reported, DCS and SCS (where applicable) recoveries from the QC lots associated with the samples, and control limits for these lots. The QC data is reported by test code, in the order that the tests are reported in the analytical results section of this report.

Quanterra
Environmental Services

QC LOT ASSIGNMENT REPORT
Volatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
059791-0001-SA	AQUEOUS	Q8260-A	17 APR 98-Z	17 APR 98-Z
059791-0002-EB	AQUEOUS	Q8260-A	17 APR 98-Z	17 APR 98-Z
059791-0003-SA	AQUEOUS	Q8260-A	17 APR 98-Z	17 APR 98-Z
059791-0004-SA	AQUEOUS	Q8260-A	17 APR 98-Z	17 APR 98-Z
059791-0005-SA	AQUEOUS	Q8260-A	17 APR 98-Z	17 APR 98-Z
059791-0005-MS	AQUEOUS	Q8260-A	17 APR 98-Z	17 APR 98-Z
059791-0005-SD	AQUEOUS	Q8260-A	17 APR 98-Z	17 APR 98-Z
059791-0006-SA	AQUEOUS	Q8260-A	17 APR 98-Z	17 APR 98-Z
059791-0007-TB	AQUEOUS	Q8260-A	17 APR 98-Z	17 APR 98-Z
059791-0008-SA	AQUEOUS	Q8260-A	20 APR 98-Z	20 APR 98-Z
059791-0009-SA	AQUEOUS	Q8260-A	20 APR 98-Z	20 APR 98-Z
059791-0010-SA	AQUEOUS	Q8260-A	20 APR 98-Z	20 APR 98-Z
059791-0011-SA	AQUEOUS	Q8260-A	20 APR 98-Z	20 APR 98-Z
059791-0012-TB	AQUEOUS	Q8260-A	20 APR 98-Z	20 APR 98-Z

Quanterra Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS
Project: 059791

Category: Q8260-A Volatile Organics
Matrix: AQUEOUS
QC Lot: 17 APR 98-Z
Concentration Units: ug/L

Date Analyzed: 17 APR 98

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
1,1-Dichloroethene	10.0	8.99		8.88		8.94	89	69-126	1.2	20
Trichloroethene	10.0	9.80		9.76		9.78	98	85-111	0.42	20
Benzene	10.0	9.82		9.86		9.84	98	85-115	0.39	20
Toluene	10.0	9.68		9.69		9.69	97	89-112	0.00	20
Chlorobenzene	10.0	10.1		10.0		10.1	101	91-112	0.74	20

Surrogate	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	Accuracy Average(%) DCS	Limits
1,2-Dichloroethane-d4	10.0	9.98		10.2		101	78-113
4-Bromofluorobenzene	10.0	10.5		10.5		105	88-113
Toluene-d8	10.0	10.2		10.3		102	90-108

Category: Q8260-A Volatile Organics
Matrix: AQUEOUS
QC Lot: 20 APR 98-Z
Concentration Units: ug/L

Date Analyzed: 20 APR 98

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
1,1-Dichloroethene	10.0	9.59		8.67		9.13	91	69-126	10	20
Trichloroethene	10.0	9.67		9.84		9.75	98	85-111	1.7	20
Benzene	10.0	9.67		9.95		9.81	98	85-115	2.9	20
Toluene	10.0	9.90		9.77		9.84	98	89-112	1.3	20
Chlorobenzene	10.0	9.95		10.1		10.0	100	91-112	1.3	20

Surrogate	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	Accuracy Average(%) DCS	Limits
1,2-Dichloroethane-d4	10.0	9.96		10.2		101	78-113
4-Bromofluorobenzene	10.0	10.1		10.5		103	88-113
Toluene-d8	10.0	10.5		10.3		104	90-108

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: Q8260-A Matrix: AQUEOUS QC Lot: 17 APR 98-Z QC Run: 17 APR 98-Z Concentration Units: ug/L				
1,2-Dichloroethane-d4	10.0	9.91	99	78-113
4-Bromofluorobenzene	10.0	10.5	105	88-113
Toluene-d8	10.0	10.2	102	90-108
Category: Q8260-A Matrix: AQUEOUS QC Lot: 20 APR 98-Z QC Run: 20 APR 98-Z Concentration Units: ug/L				
1,2-Dichloroethane-d4	10.0	9.89	99	78-113
4-Bromofluorobenzene	10.0	10.4	104	88-113
Toluene-d8	10.0	10.4	104	90-108

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

METHOD BLANK REPORT
Volatile Organics by GC/MS

Test: Q8260-AP9-AP
Matrix: AQUEOUS
QC Lot: 17 APR 98-Z QC Run: 17 APR 98-Z

Analyte	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	20
Acrolein	ND	ug/L	20
Acrylonitrile	ND	ug/L	20
Allyl chloride	ND	ug/L	2.0
Benzene	ND	ug/L	1.0
Bromodichloromethane	ND	ug/L	1.0
Bromoform	ND	ug/L	1.0
Bromomethane	ND	ug/L	2.0
2-Butanone (MEK)	ND	ug/L	5.0
Carbon disulfide	ND	ug/L	1.0
Carbon tetrachloride	ND	ug/L	1.0
Chlorobenzene	ND	ug/L	1.0
Chloroethane	ND	ug/L	2.0
Chloroform	ND	ug/L	1.0
Chloromethane	ND	ug/L	2.0
Chloroprene	ND	ug/L	1.0
Dibromochloromethane	ND	ug/L	1.0
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0
1,2-Dibromoethane (EDB)	ND	ug/L	1.0
Dibromomethane	ND	ug/L	1.0
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0
Dichlorodifluoromethane	ND	ug/L	2.0
1,1-Dichloroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1-Dichloroethene	ND	ug/L	1.0
cis-1,2-Dichloroethene	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
1,2-Dichloropropane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
1,4-Dioxane	ND	ug/L	200
Ethylbenzene	ND	ug/L	1.0
Ethyl methacrylate	ND	ug/L	1.0
2-Hexanone	ND	ug/L	5.0
Iodomethane	ND	ug/L	1.0
Isobutyl alcohol	ND	ug/L	50
Methacrylonitrile	ND	ug/L	1.0
Methylene chloride	ND	ug/L	1.0
Methyl methacrylate	ND	ug/L	1.0

Quanterra
Environmental Services

METHOD BLANK REPORT
Volatile Organics by GC/MS (cont.)

Test: Q8260-AP9-AP
Matrix: AQUEOUS
QC Lot: 17 APR 98-Z QC Run: 17 APR 98-Z

Analyte	Result	Units	Reporting Limit
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Test: Q8260-AP9-AP
Matrix: AQUEOUS
QC Lot: 17 APR 98-Z QC Run: 17 APR 98-Z

Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	20
Acrolein	ND	ug/L	20
Acrylonitrile	ND	ug/L	20
Allyl chloride	ND	ug/L	2.0
Benzene	ND	ug/L	1.0
Bromodichloromethane	ND	ug/L	1.0
Bromoform	ND	ug/L	1.0
Bromomethane	ND	ug/L	2.0
2-Butanone (MEK)	ND	ug/L	5.0
Carbon disulfide	ND	ug/L	1.0
Carbon tetrachloride	ND	ug/L	1.0
Chlorobenzene	ND	ug/L	1.0
Chloroethane	ND	ug/L	2.0
Chloroform	ND	ug/L	1.0
Chloromethane	ND	ug/L	2.0
Chloroprene	ND	ug/L	1.0
Dibromochloromethane	ND	ug/L	1.0

Quanterra Environmental Services

METHOD BLANK REPORT
Volatile Organics by GC/MS (cont.)

Test: Q8260-AP9-AP
Matrix: AQUEOUS
QC Lot: 17 APR 98-Z QC Run: 17 APR 98-Z

Analyte	Result	Units	Reporting Limit
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0
1,2-Dibromoethane (EDB)	ND	ug/L	1.0
Dibromomethane	ND	ug/L	1.0
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0
Dichlorodifluoromethane	ND	ug/L	2.0
1,1-Dichloroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1-Dichloroethene	ND	ug/L	1.0
cis-1,2-Dichloroethene	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
1,2-Dichloropropane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
1,4-Dioxane	ND	ug/L	200
Ethylbenzene	ND	ug/L	1.0
Ethyl methacrylate	ND	ug/L	1.0
2-Hexanone	ND	ug/L	5.0
Iodomethane	ND	ug/L	1.0
Isobutyl alcohol	ND	ug/L	50
Methacrylonitrile	ND	ug/L	1.0
Methylene chloride	ND	ug/L	1.0
Methyl methacrylate	ND	ug/L	1.0
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Quanterra Environmental Services

METHOD BLANK REPORT
Volatile Organics by GC/MS (cont.)

Test: Q8260-AP9-AP
Matrix: AQUEOUS
QC Lot: 20 APR 98-Z QC Run: 20 APR 98-Z

Analyte	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	20
Acrolein	ND	ug/L	20
Acrylonitrile	ND	ug/L	20
Allyl chloride	ND	ug/L	2.0
Benzene	ND	ug/L	1.0
Bromodichloromethane	ND	ug/L	1.0
Bromoform	ND	ug/L	1.0
Bromomethane	ND	ug/L	2.0
2-Butanone (MEK)	ND	ug/L	5.0
Carbon disulfide	ND	ug/L	1.0
Carbon tetrachloride	ND	ug/L	1.0
Chlorobenzene	ND	ug/L	1.0
Chloroethane	ND	ug/L	2.0
Chloroform	ND	ug/L	1.0
Chloromethane	ND	ug/L	2.0
Chloroprene	ND	ug/L	1.0
Dibromochloromethane	ND	ug/L	1.0
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0
1,2-Dibromoethane (EDB)	ND	ug/L	1.0
Dibromomethane	ND	ug/L	1.0
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0
Dichlorodifluoromethane	ND	ug/L	2.0
1,1-Dichloroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1-Dichloroethene	ND	ug/L	1.0
cis-1,2-Dichloroethene	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
1,2-Dichloropropane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
1,4-Dioxane	ND	ug/L	200
Ethylbenzene	ND	ug/L	1.0
Ethyl methacrylate	ND	ug/L	1.0
2-Hexanone	ND	ug/L	5.0
Iodomethane	ND	ug/L	1.0
Isobutyl alcohol	ND	ug/L	50
Methacrylonitrile	ND	ug/L	1.0
Methylene chloride	ND	ug/L	1.0
Methyl methacrylate	ND	ug/L	1.0

Quanterra Environmental Services

METHOD BLANK REPORT
Volatile Organics by GC/MS (cont.)

Test: Q8260-AP9-AP
Matrix: AQUEOUS
QC Lot: 20 APR 98-Z QC Run: 20 APR 98-Z

Analyte	Result	Units	Reporting Limit
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Test: Q8260-AP9-AP
Matrix: AQUEOUS
QC Lot: 20 APR 98-Z QC Run: 20 APR 98-Z

Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	20
Acrolein	ND	ug/L	20
Acrylonitrile	ND	ug/L	20
Allyl chloride	ND	ug/L	2.0
Benzene	ND	ug/L	1.0
Bromodichloromethane	ND	ug/L	1.0
Bromoform	ND	ug/L	1.0
Bromomethane	ND	ug/L	2.0
2-Butanone (MEK)	ND	ug/L	5.0
Carbon disulfide	ND	ug/L	1.0
Carbon tetrachloride	ND	ug/L	1.0
Chlorobenzene	ND	ug/L	1.0
Chloroethane	ND	ug/L	2.0
Chloroform	ND	ug/L	1.0
Chloromethane	ND	ug/L	2.0
Chloroprene	ND	ug/L	1.0
Dibromochloromethane	ND	ug/L	1.0

Quanterra Environmental Services

METHOD BLANK REPORT
Volatile Organics by GC/MS (cont.)

Test: Q8260-AP9-AP
Matrix: AQUEOUS
QC Lot: 20 APR 98-Z QC Run: 20 APR 98-Z

Analyte	Result	Units	Reporting Limit
1,2-Dibromo-3-chloro-propane (DBCP)	ND	ug/L	2.0
1,2-Dibromoethane (EDB)	ND	ug/L	1.0
Dibromomethane	ND	ug/L	1.0
trans-1,4-Dichloro-2-butene	ND	ug/L	1.0
Dichlorodifluoromethane	ND	ug/L	2.0
1,1-Dichloroethane	ND	ug/L	1.0
1,2-Dichloroethane	ND	ug/L	1.0
1,1-Dichloroethene	ND	ug/L	1.0
cis-1,2-Dichloroethene	ND	ug/L	0.50
trans-1,2-Dichloroethene	ND	ug/L	0.50
1,2-Dichloropropane	ND	ug/L	1.0
cis-1,3-Dichloropropene	ND	ug/L	1.0
trans-1,3-Dichloropropene	ND	ug/L	1.0
1,4-Dioxane	ND	ug/L	200
Ethylbenzene	ND	ug/L	1.0
Ethyl methacrylate	ND	ug/L	1.0
2-Hexanone	ND	ug/L	5.0
Iodomethane	ND	ug/L	1.0
Isobutyl alcohol	ND	ug/L	50
Methacrylonitrile	ND	ug/L	1.0
Methylene chloride	ND	ug/L	1.0
Methyl methacrylate	ND	ug/L	1.0
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0
Propionitrile	ND	ug/L	4.0
Styrene	ND	ug/L	1.0
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0
Tetrachloroethene	ND	ug/L	1.0
Toluene	ND	ug/L	1.0
1,1,1-Trichloroethane	ND	ug/L	1.0
1,1,2-Trichloroethane	ND	ug/L	1.0
Trichloroethene	ND	ug/L	1.0
Trichlorofluoromethane	ND	ug/L	2.0
1,2,3-Trichloropropane	ND	ug/L	1.0
Vinyl acetate	ND	ug/L	2.0
Vinyl chloride	ND	ug/L	2.0
m- & p-Xylenes	ND	ug/L	0.50
o-Xylene	ND	ug/L	0.50

Quanterra Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Volatile Organics by GC/MS
Project: 059791

Category: Q8260-A Volatile Organics
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 17 APR 98-Z
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
1,1-Dichloroethene	ND	9.17	9.10	10.0	10.0	92	91	69-126	0.8	20
Trichloroethene	ND	9.99	10.2	10.0	10.0	100	102	85-111	2.1	20
Benzene	ND	9.96	10.2	10.0	10.0	100	102	85-115	2.3	20
Toluene	ND	9.81	9.96	10.0	10.0	98	100	89-112	1.6	20
Chlorobenzene	ND	10.1	10.2	10.0	10.0	101	102	91-112	1.2	20

Surrogates		%Recovery		Rec. Accept. Limits
1,2-Dichloroethane-d4	99.8	100	98.8	78-113
4-Bromofluorobenzene	104	105	105	88-113
Toluene-d8	104	102	102	90-108

Category: Q8260-A Volatile Organics
Matrix: AQUEOUS
Sample: 059770-0008
MS Run: 20 APR 98-Z
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
1,1-Dichloroethene	ND	8.96	8.86	10.0	10.0	90	89	69-126	1.1	20
Trichloroethene	3.87	13.5	13.5	10.0	10.0	96	97	85-111	0.2	20
Benzene	ND	9.59	9.48	10.0	10.0	96	95	85-115	1.1	20
Toluene	ND	9.49	9.25	10.0	10.0	95	93	89-112	2.6	20
Chlorobenzene	ND	9.77	9.65	10.0	10.0	98	96	91-112	1.3	20

Surrogates		%Recovery		Rec. Accept. Limits
1,2-Dichloroethane-d4	100	102	101	78-113
4-Bromofluorobenzene	101	101	102	88-113
Toluene-d8	106	104	104	90-108

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra
Environmental Services

QC LOT ASSIGNMENT REPORT
Semivolatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
059791-0002-EB	AQUEOUS	Q8270-A	14 APR 98-01	14 APR 98-01
059791-0003-SA	AQUEOUS	Q8270-A	14 APR 98-01	14 APR 98-01
059791-0004-SA	AQUEOUS	Q8270-A	14 APR 98-01	14 APR 98-01
059791-0005-SA	AQUEOUS	Q8270-A	14 APR 98-01	14 APR 98-01
059791-0005-MS	AQUEOUS	Q8270-A	14 APR 98-01	14 APR 98-01
059791-0005-SD	AQUEOUS	Q8270-A	14 APR 98-01	14 APR 98-01
059791-0006-SA	AQUEOUS	Q8270-A	14 APR 98-01	14 APR 98-01

Quanterra Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS
Project: 059791

Category: Q8270-A Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS
QC Lot: 14 APR 98-01
Concentration Units: ug/L

Date Analyzed: 22 APR 98

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Phenol	150	118		116		117	78	46-107	1.0	20
2-Chlorophenol	150	119		117		118	79	59-105	1.0	22
1,4-Dichlorobenzene	100	72.2		67.6		69.9	70	55-108	6.6	27
N-Nitroso-di-n-propylamine	100	79.0		79.9		79.4	79	52-125	1.1	20
1,2,4-Trichlorobenzene	100	71.8		66.4		69.1	69	55-112	7.8	27
4-Chloro-3-methylphenol	150	120		118		119	79	53-112	1.7	20
Acenaphthene	100	80.1		77.2		78.6	79	63-110	3.8	20
4-Nitrophenol	150	126		129		128	85	22-133	2.9	32
2,4-Dinitrotoluene	100	88.9		97.4		93.2	93	69-124	9.1	21
Pentachlorophenol	150	118		124		121	80	49-112	5.0	30
Pyrene	100	98.8		103		101	101	52-140	4.4	20

Surrogate	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	Accuracy Average(%) DCS	Limits
Nitrobenzene-d5	100	81.0		80.4		81	54-116
2-Fluorobiphenyl	100	68.7		66.5		68	49-102
Terphenyl-d14	100	100		99.5		100	57-117
2-Fluorophenol	150	105		99.9		68	54-110
Phenol-d5	150	119		117		79	49-131
2,4,6-Tribromophenol	150	116		115		77	46-127

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra
Environmental Services

SINGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS

Category: Q8270-A
Matrix: AQUEOUS
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01
Concentration Units: ug/L

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Nitrobenzene-d5	100	90.6	91	54-116
2-Fluorobiphenyl	100	78.2	78	49-102
Terphenyl-d14	100	107	107	57-117
2-Fluorophenol	150	117	78	54-110
Phenol-d5	150	131	88	49-131
2,4,6-Tribromophenol	150	124	83	46-127

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC/MS

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01

Analyte	Result	Units	Reporting Limit
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	50
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	20
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitro-phenol	ND	ug/L	20
4-Chloroaniline	ND	ug/L	10
bis(2-Chloroethoxy) methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
2,2'-oxybis(1-Chloropropane)	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	50
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	20

Quanterra Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC/MS (cont.)

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01

Analyte	Result	Units	Reporting Limit
p-Dimethylaminoazobenzene	ND	ug/L	20
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	20
3,3'-Dimethylbenzidine	ND	ug/L	50
a,a-Dimethylphenethylamine	ND	ug/L	50
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl) phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	100
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	50
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	100
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	50
3-Methylcholanthrene	ND	ug/L	20
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	50

Quanterra Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC/MS (cont.)

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01

Analyte	Result	Units	Reporting Limit
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	20
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	50
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	20
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
p-Phenylenediamine	ND	ug/L	100
Phorate	ND	ug/L	50
2-Picoline	ND	ug/L	20
Pronamide	ND	ug/L	20
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	20
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachlorobenzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
o-Toluidine	ND	ug/L	10

Quanterra Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: Q8270-AP9-3520-A			
Matrix: AQUEOUS			
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01			
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	10
2,4,6-Trichlorophenol	ND	ug/L	10
O,O,O-Triethylphosphorothioate	ND	ug/L	50
1,3,5-Trinitrobenzene	ND	ug/L	50
Test: Q8270-AP9-3520-A			
Matrix: AQUEOUS			
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01			
Acenaphthene	ND	ug/L	10
Acenaphthylene	ND	ug/L	10
Acetophenone	ND	ug/L	10
2-Acetylaminofluorene	ND	ug/L	100
4-Aminobiphenyl	ND	ug/L	50
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	20
Benzo(a)anthracene	ND	ug/L	10
Benzo(b)fluoranthene	ND	ug/L	10
Benzo(k)fluoranthene	ND	ug/L	10
Benzo(g,h,i)perylene	ND	ug/L	10
Benzo(a)pyrene	ND	ug/L	10
Benzyl alcohol	ND	ug/L	10
4-Bromophenyl phenyl ether	ND	ug/L	10
Butyl benzyl phthalate	ND	ug/L	10
2-sec-Butyl-4,6-dinitrophenol	ND	ug/L	20
4-Chloroaniline	ND	ug/L	10
bis(2-Chloroethoxy) methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
2,2'-oxybis(1-Chloropropane)	ND	ug/L	10
4-Chloro-3-methylphenol	ND	ug/L	10
2-Chloronaphthalene	ND	ug/L	10
2-Chlorophenol	ND	ug/L	10
4-Chlorophenyl phenyl ether	ND	ug/L	10

Quanterra Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC/MS (cont.)

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01

Analyte	Result	Units	Reporting Limit
Chrysene	ND	ug/L	10
Dibenz(a,h)anthracene	ND	ug/L	10
Dibenzofuran	ND	ug/L	10
Di-n-butyl phthalate	ND	ug/L	10
1,2-Dichlorobenzene	ND	ug/L	10
1,3-Dichlorobenzene	ND	ug/L	10
1,4-Dichlorobenzene	ND	ug/L	10
3,3'-Dichlorobenzidine	ND	ug/L	50
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10
Dimethoate	ND	ug/L	20
p-Dimethylaminoazobenzene	ND	ug/L	20
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	20
3,3'-Dimethylbenzidine	ND	ug/L	50
a,a-Dimethylphenethylamine	ND	ug/L	50
2,4-Dimethylphenol	ND	ug/L	10
Dimethyl phthalate	ND	ug/L	10
1,3-Dinitrobenzene	ND	ug/L	10
4,6-Dinitro-2-methylphenol	ND	ug/L	50
2,4-Dinitrophenol	ND	ug/L	50
2,4-Dinitrotoluene	ND	ug/L	10
2,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
bis(2-Ethylhexyl) phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	100
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	50
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	100

Quanterra Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC/MS (cont.)

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01

Analyte	Result	Units	Reporting Limit
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	50
3-Methylcholanthrene	ND	ug/L	20
Methyl methanesulfonate	ND	ug/L	10
2-Methylnaphthalene	ND	ug/L	10
Methyl parathion	ND	ug/L	50
2-Methylphenol	ND	ug/L	10
3/4-Methylphenol	ND	ug/L	10
Naphthalene	ND	ug/L	10
1,4-Naphthoquinone	ND	ug/L	50
1-Naphthylamine	ND	ug/L	10
2-Naphthylamine	ND	ug/L	10
2-Nitroaniline	ND	ug/L	50
3-Nitroaniline	ND	ug/L	50
4-Nitroaniline	ND	ug/L	50
Nitrobenzene	ND	ug/L	10
2-Nitrophenol	ND	ug/L	10
4-Nitrophenol	ND	ug/L	50
4-Nitroquinoline-1-oxide	ND	ug/L	100
N-Nitroso-di-n-butylamine	ND	ug/L	10
N-Nitrosodiethylamine	ND	ug/L	10
N-Nitrosodimethylamine	ND	ug/L	10
N-Nitrosodiphenylamine	ND	ug/L	10
N-Nitroso-di-n-propylamine	ND	ug/L	10
N-Nitrosomethylethylamine	ND	ug/L	10
N-Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	20
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	50
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	20
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
p-Phenylenediamine	ND	ug/L	100

Quanterra Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC/MS (cont.)

Test: Q8270-AP9-3520-A
Matrix: AQUEOUS
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01

Analyte	Result	Units	Reporting Limit
Phorate	ND	ug/L	50
2-Picoline	ND	ug/L	20
Pronamide	ND	ug/L	20
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	20
Sulfotepp	ND	ug/L	50
1,2,4,5-Tetrachloro-benzene	ND	ug/L	10
2,3,4,6-Tetrachlorophenol	ND	ug/L	50
Thionazin	ND	ug/L	50
o-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	10
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphoro-thioate	ND	ug/L	50
1,3,5-Trinitrobenzene	ND	ug/L	50

Quanterra Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC/MS
Project: 059791

Category: Q8270-A Acid, Base and Neutrals by GC/MS.
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 14 APR 98-01
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
Phenol	ND	77.0	77.9	143	146	54	53	46-107	0.7	20
2-Chlorophenol	ND	78.5	79.4	143	146	55	54	59-105	0.7	22
1,4-Dichlorobenzene	ND	50.2	47.6	95.2	97.1	53	49	55-108	7.1	27
N-Nitroso-di-n-propylamine	ND	51.9	54.1	95.2	97.1	54	56	52-125	2.2	20
1,2,4-Trichlorobenzene	ND	49.9	47.6	95.2	97.1	52	49	55-112	6.6	27
4-Chloro-3-methylphenol	ND	81.2	80.3	143	146	57	55	53-112	3.0	20
Acenaphthene	ND	53.0	56.0	95.2	97.1	56	58	63-110	3.6	20
4-Nitrophenol	ND	92.5	92.5	143	146	65	64	22-133	1.8	32
2,4-Dinitrotoluene	ND	69.3	67.1	95.2	97.1	73	69	69-124	5.2	21
Pentachlorophenol	ND	89.5	85.1	143	146	63	58	49-112	7.0	30
Pyrene	ND	75.2	77.2	95.2	97.1	79	80	52-140	0.8	20

Surrogates	%Recovery			Rec. Accept. Limits
Nitrobenzene-d5	65.3	54.8	59.5	54-116
2-Fluorobiphenyl	51.1	49.2	53.5	49-102
Terphenyl-d14	84.7	78.0	81.5	57-117
2-Fluorophenol	58.6	49.2	47.8	54-110
Phenol-d5	65.2	55.3	57.1	49-131
2,4,6-Tribromophenol	58.2	56.5	56.2	46-127

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

QC LOT ASSIGNMENT REPORT
Semivolatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
059791-0001-SA	AQUEOUS	8080-A	14 APR 98-01	14 APR 98-01
059791-0002-EB	AQUEOUS	8080-A	14 APR 98-01	14 APR 98-01
059791-0003-SA	AQUEOUS	8080-A	14 APR 98-01	14 APR 98-01
059791-0004-SA	AQUEOUS	8080-A	14 APR 98-01	14 APR 98-01
059791-0005-SA	AQUEOUS	8080-A	14 APR 98-01	14 APR 98-01
059791-0005-MS	AQUEOUS	8080-A	14 APR 98-01	14 APR 98-01
059791-0005-SD	AQUEOUS	8080-A	14 APR 98-01	14 APR 98-01
059791-0006-SA	AQUEOUS	8080-A	14 APR 98-01	14 APR 98-01
059791-0008-SA	AQUEOUS	8080-A	15 APR 98-01	15 APR 98-01
059791-0008-RE	AQUEOUS	8080-A	01 MAY 98-01	01 MAY 98-01
059791-0009-SA	AQUEOUS	8080-A	15 APR 98-01	15 APR 98-01
059791-0009-RE	AQUEOUS	8080-A	01 MAY 98-01	01 MAY 98-01
059791-0010-SA	AQUEOUS	8080-A	15 APR 98-01	15 APR 98-01
059791-0010-RE	AQUEOUS	8080-A	01 MAY 98-01	01 MAY 98-01
059791-0011-SA	AQUEOUS	8080-A	15 APR 98-01	15 APR 98-01
059791-0011-RE	AQUEOUS	8080-A	01 MAY 98-01	01 MAY 98-01

Quanterra Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC
Project: 059791

Category: 8080-A Organochlorine Pesticides
Matrix: AQUEOUS
QC Lot: 14 APR 98-01 Date Analyzed: 24 APR 98
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
gamma-BHC (Lindane)	0.200	0.171		0.166		0.168	84	76-122	3.0	15
Heptachlor	0.200	0.150		0.161		0.156	78	69-125	7.1	15
Aldrin	0.200	0.131		0.148		0.140	70	64-116	12	17
Dieldrin	0.500	0.392		0.382		0.387	77	74-107	2.6	15
Endrin	0.500	0.418		0.404		0.411	82	72-118	3.4	15
4,4'-DDT	0.500	0.431		0.419		0.425	85	74-117	2.8	15

Category: 8080-A Organochlorine Pesticides
Matrix: AQUEOUS
QC Lot: 15 APR 98-01 Date Analyzed: 27 APR 98
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
gamma-BHC (Lindane)	0.200	0.180		0.122	#	0.151	76	76-122	38 #	15
Heptachlor	0.200	0.174		0.122	#	0.148	74	69-125	35 #	15
Aldrin	0.200	0.161		0.112	#	0.136	68	64-116	36 #	17
Dieldrin	0.500	0.391		0.271	#	0.331	66	74-107	36 #	15
Endrin	0.500	0.443		0.303	#	0.373	75	72-118	38 #	15
4,4'-DDT	0.500	0.389		0.271	#	0.330	66	74-117	36 #	15

= Value outside control limits

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC
Project: 059791

Category: 8080-A Organochlorine Pesticides
Matrix: AQUEOUS
QC Lot: 01 MAY 98-01 Date Analyzed: 07 MAY 98
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
gamma-BHC (Lindane)	0.200	0.206		0.193		0.200	100	65-122	6.5	19
Heptachlor	0.200	0.194		0.190		0.192	96	60-124	2.1	19
Aldrin	0.200	0.172		0.171		0.172	86	52-114	0.58	21
Dieldrin	0.500	0.471		0.454		0.462	93	62-111	3.7	18
Endrin	0.500	0.496		0.485		0.490	98	69-125	2.2	19
4,4'-DDT	0.500	0.524		0.524		0.524	105	68-125	0.0	15

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra
Environmental Services

SINGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: 8080-A				
Matrix: AQUEOUS				
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01				
Concentration Units: ug/L				
Tetrachloro-m-xylene	1.00	0.760	76	51-103
Dibutyl chlorendate	1.00	0.866	87	71-109
Decachlorobiphenyl	0.200	0.180	90	50-138
Category: 8080-A				
Matrix: AQUEOUS				
QC Lot: 15 APR 98-01 QC Run: 15 APR 98-01				
Concentration Units: ug/L				
Tetrachloro-m-xylene	1.00	0.678	68	51-103
Dibutyl chlorendate	1.00	0.742	74	71-109
Decachlorobiphenyl	0.200	0.156	78	50-138
Category: 8080-A				
Matrix: AQUEOUS				
QC Lot: 01 MAY 98-01 QC Run: 01 MAY 98-01				
Concentration Units: ug/L				
Tetrachloro-m-xylene	1.00	0.775	78	56-107
Dibutyl chlorendate	1.00	0.826	83	71-109
Decachlorobiphenyl	0.200	0.179	90	51-132

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC

Test: 8080-AP9-A
Matrix: AQUEOUS
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01

Analyte	Result	Units	Reporting Limit
Aldrin	ND	ug/L	0.050
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0
alpha-BHC	ND	ug/L	0.050
beta-BHC	ND	ug/L	0.050
delta-BHC	ND	ug/L	0.050
gamma-BHC (Lindane)	ND	ug/L	0.050
alpha-Chlordane	ND	ug/L	0.050
gamma-Chlordane	ND	ug/L	0.050
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.050
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.050
Heptachlor epoxide	ND	ug/L	0.050
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	2.5
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0

Test: 8080-AP9-A
Matrix: AQUEOUS
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01

Aldrin	ND	ug/L	0.050
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0

Quanterra
Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC (cont.)

Test: 8080-AP9-A
Matrix: AQUEOUS
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01

Analyte	Result	Units	Reporting Limit
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0
alpha-BHC	ND	ug/L	0.050
beta-BHC	ND	ug/L	0.050
delta-BHC	ND	ug/L	0.050
gamma-BHC (Lindane)	ND	ug/L	0.050
alpha-Chlordane	ND	ug/L	0.050
gamma-Chlordane	ND	ug/L	0.050
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.050
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.050
Heptachlor epoxide	ND	ug/L	0.050
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	2.5
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0

Test: 8080-AP9-A
Matrix: AQUEOUS
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01

Aldrin	ND	ug/L	0.050
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0

Quanterra Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8080-AP9-A			
Matrix: AQUEOUS			
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01			
alpha-BHC	ND	ug/L	0.050
beta-BHC	ND	ug/L	0.050
delta-BHC	ND	ug/L	0.050
gamma-BHC (Lindane)	ND	ug/L	0.050
alpha-Chlordane	ND	ug/L	0.050
gamma-Chlordane	ND	ug/L	0.050
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.050
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.050
Heptachlor epoxide	ND	ug/L	0.050
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	2.5
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0
Test: 8080-AP9-A			
Matrix: AQUEOUS			
QC Lot: 15 APR 98-01 QC Run: 15 APR 98-01			
Aldrin	ND	ug/L	0.050
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0
alpha-BHC	ND	ug/L	0.050
beta-BHC	ND	ug/L	0.050
delta-BHC	ND	ug/L	0.050
gamma-BHC (Lindane)	ND	ug/L	0.050

Quanterra Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC (cont.)

Test: 8080-AP9-A
Matrix: AQUEOUS
QC Lot: 15 APR 98-01 QC Run: 15 APR 98-01

Analyte	Result	Units	Reporting Limit
alpha-Chlordane	ND	ug/L	0.050
gamma-Chlordane	ND	ug/L	0.050
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.050
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.050
Heptachlor epoxide	ND	ug/L	0.050
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	2.5
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0

Test: 8080-AP9-A
Matrix: AQUEOUS
QC Lot: 01 MAY 98-01 QC Run: 01 MAY 98-01

Aldrin	ND	ug/L	0.050
Aroclor 1016	ND	ug/L	1.0
Aroclor 1221	ND	ug/L	1.0
Aroclor 1232	ND	ug/L	1.0
Aroclor 1242	ND	ug/L	1.0
Aroclor 1248	ND	ug/L	1.0
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0
alpha-BHC	ND	ug/L	0.050
beta-BHC	ND	ug/L	0.050
delta-BHC	ND	ug/L	0.050
gamma-BHC (Lindane)	ND	ug/L	0.050
alpha-Chlordane	ND	ug/L	0.050
gamma-Chlordane	ND	ug/L	0.050
Chlorobenzilate	ND	ug/L	1.0
4,4'-DDD	ND	ug/L	0.10

Quanterra Environmental Services

METHOD BLANK REPORT
Semivolatile Organics by GC (cont.)

Test: 8080-AP9-A
Matrix: AQUEOUS
QC Lot: 01 MAY 98-01 QC Run: 01 MAY 98-01

Analyte	Result	Units	Reporting Limit
4,4'-DDE	ND	ug/L	0.10
4,4'-DDT	ND	ug/L	0.10
Diallate	ND	ug/L	1.0
Dieldrin	ND	ug/L	0.10
Endosulfan I	ND	ug/L	0.050
Endosulfan II	ND	ug/L	0.10
Endosulfan sulfate	ND	ug/L	0.10
Endrin	ND	ug/L	0.10
Endrin aldehyde	ND	ug/L	0.10
Heptachlor	ND	ug/L	0.050
Heptachlor epoxide	ND	ug/L	0.050
Isodrin	ND	ug/L	0.10
Kepone	ND	ug/L	2.5
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0

Quanterra Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Semivolatile Organics by GC
Project: 059791

Category: 8080-A Organochlorine Pesticides
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 14 APR 98-01
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
gamma-BHC (Lindane)	ND	0.162	0.163	0.192	0.192	84	85	76-122	0.6	15
Heptachlor	ND	0.148	0.154	0.192	0.192	77	80	69-125	4.0	15
Aldrin	ND	0.134	0.143	0.192	0.192	70	74	64-116	6.5	17
Dieldrin	ND	0.369	0.374	0.481	0.481	77	78	74-107	1.3	15
Endrin	ND	0.389	0.393	0.481	0.481	81	82	72-118	1.0	15
4,4'-DDT	ND	0.406	0.403	0.481	0.481	84	84	74-117	0.7	15

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

QC LOT ASSIGNMENT REPORT
High Performance Liquid Chromatography

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
059791-0002-EB	AQUEOUS	8310-A	14 APR 98-01	14 APR 98-01
059791-0003-SA	AQUEOUS	8310-A	14 APR 98-01	14 APR 98-01
059791-0004-SA	AQUEOUS	8310-A	14 APR 98-01	14 APR 98-01
059791-0005-SA	AQUEOUS	8310-A	14 APR 98-01	14 APR 98-01
059791-0005-MS	AQUEOUS	8310-A	14 APR 98-01	14 APR 98-01
059791-0005-SD	AQUEOUS	8310-A	14 APR 98-01	14 APR 98-01
059791-0006-SA	AQUEOUS	8310-A	14 APR 98-01	14 APR 98-01

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
High Performance Liquid Chromatography
Project: 059791

Category: 8310-A Polynuclear Aromatic Hydrocarbons by HPLC
Matrix: AQUEOUS
QC Lot: 14 APR 98-01 Date Analyzed: 08 MAY 98
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Naphthalene	10.0	7.95		8.00		7.98	80	53-111	0.63	33
Fluorene	2.00	1.83		1.80		1.82	91	59-123	1.7	26
Pyrene	2.00	1.45		1.49		1.47	74	62-122	2.7	28
Benzo(a)pyrene	1.00	0.650		0.652		0.651	65	65-117	0.31	22
Indeno(1,2,3-cd)pyrene	1.00	0.962		0.978		0.970	97	53-153	1.6	22

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra
Environmental Services

SINGLE CONTROL SAMPLE REPORT
High Performance Liquid Chromatography

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) SCS	Accuracy(%) Limits
Category: 8310-A				
Matrix: AQUEOUS				
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01				
Concentration Units: ug/L				
Terphenyl-d14	20.0	19.7	98	37-123

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra
Environmental Services

METHOD BLANK REPORT
High Performance Liquid Chromatography

Analyte	Result	Units	Reporting Limit
Test: 8310-HPLC-A			
Matrix: AQUEOUS			
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01			
Naphthalene	ND	ug/L	1.0
Acenaphthylene	ND	ug/L	1.0
Acenaphthene	ND	ug/L	1.0
Fluorene	ND	ug/L	0.20
Phenanthrene	ND	ug/L	0.20
Anthracene	ND	ug/L	0.10
Fluoranthene	ND	ug/L	0.20
Pyrene	ND	ug/L	0.20
Benzo(a)anthracene	ND	ug/L	0.10
Chrysene	ND	ug/L	0.20
Benzo(b)fluoranthene	ND	ug/L	0.10
Benzo(k)fluoranthene	ND	ug/L	0.10
Benzo(a)pyrene	ND	ug/L	0.10
Dibenz(a,h)anthracene	ND	ug/L	0.20
Benzo(g,h,i)perylene	ND	ug/L	0.20
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.20
Test: 8310-HPLC-A			
Matrix: AQUEOUS			
QC Lot: 14 APR 98-01 QC Run: 14 APR 98-01			
Naphthalene	ND	ug/L	1.0
Acenaphthylene	ND	ug/L	1.0
Acenaphthene	ND	ug/L	1.0
Fluorene	ND	ug/L	0.20
Phenanthrene	ND	ug/L	0.20
Anthracene	ND	ug/L	0.10
Fluoranthene	ND	ug/L	0.20
Pyrene	ND	ug/L	0.20
Benzo(a)anthracene	ND	ug/L	0.10
Chrysene	ND	ug/L	0.20
Benzo(b)fluoranthene	ND	ug/L	0.10
Benzo(k)fluoranthene	ND	ug/L	0.10
Benzo(a)pyrene	ND	ug/L	0.10
Dibenz(a,h)anthracene	ND	ug/L	0.20
Benzo(g,h,i)perylene	ND	ug/L	0.20
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.20

Quanterra Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
High Performance Liquid Chromatography
Project: 059791

Category: 8310-A Polynuclear Aromatic Hydrocarbons by HPLC
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 14 APR 98-01
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS	Amount Spiked MSD	% Recovery MS	% Recovery MSD	Recov. Accep. Limits	RPD MS-MSD	RPD Accept Limits
Naphthalene	ND	7.42	7.11	9.62	9.52	77	75	53-111	3.2	33
Fluorene	ND	1.65	1.57	1.92	1.90	86	83	59-123	3.9	26
Pyrene	ND	1.34	1.29	1.92	1.90	70	68	62-122	2.8	28
Benzo(a)pyrene	ND	0.636	0.593	0.962	0.952	66	62	65-117	6.0	22
Indeno(1,2,3-cd) pyrene	ND	0.879	0.779	0.962	0.952	91	82	53-153	11	22

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra
Environmental Services

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
059791-0001-SA	AQUEOUS	SE-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0001-SA	AQUEOUS	CR-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0001-SA	AQUEOUS	SB-FAA-AT	10 APR 98-L2	10 APR 98-L2
059791-0001-SA	AQUEOUS	ICP-AT	10 APR 98-L2	10 APR 98-L2
059791-0001-SA	AQUEOUS	AS-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0001-SA	AQUEOUS	CD-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0001-SA	AQUEOUS	PB-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0001-SA	AQUEOUS	AG-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0001-SA	AQUEOUS	TL-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0002-EB	AQUEOUS	SE-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0002-EB	AQUEOUS	HG-CVAA-AT	14 APR 98-W1	14 APR 98-W1
059791-0002-EB	AQUEOUS	CR-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0002-EB	AQUEOUS	SB-FAA-AT	10 APR 98-L2	10 APR 98-L2
059791-0002-EB	AQUEOUS	ICP-AT	10 APR 98-L2	10 APR 98-L2
059791-0002-EB	AQUEOUS	AS-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0002-EB	AQUEOUS	CD-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0002-EB	AQUEOUS	PB-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0002-EB	AQUEOUS	AG-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0002-EB	AQUEOUS	TL-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0003-SA	AQUEOUS	SE-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0003-SA	AQUEOUS	HG-CVAA-AT	14 APR 98-W1	14 APR 98-W1
059791-0003-SA	AQUEOUS	CR-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0003-SA	AQUEOUS	SB-FAA-AT	10 APR 98-L2	10 APR 98-L2
059791-0003-SA	AQUEOUS	ICP-AT	10 APR 98-L2	10 APR 98-L2
059791-0003-SA	AQUEOUS	AS-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0003-SA	AQUEOUS	CD-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0003-SA	AQUEOUS	PB-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0003-SA	AQUEOUS	AG-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0003-SA	AQUEOUS	TL-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0004-SA	AQUEOUS	SE-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0004-SA	AQUEOUS	HG-CVAA-AT	14 APR 98-W1	14 APR 98-W1
059791-0004-SA	AQUEOUS	CR-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0004-SA	AQUEOUS	SB-FAA-AT	10 APR 98-L2	10 APR 98-L2
059791-0004-SA	AQUEOUS	ICP-AT	10 APR 98-L2	10 APR 98-L2
059791-0004-SA	AQUEOUS	AS-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0004-SA	AQUEOUS	CD-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0004-SA	AQUEOUS	PB-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0004-SA	AQUEOUS	AG-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0004-SA	AQUEOUS	TL-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-SA	AQUEOUS	SE-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0005-SA	AQUEOUS	HG-CVAA-AT	14 APR 98-W1	14 APR 98-W1
059791-0005-SA	AQUEOUS	CR-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-SA	AQUEOUS	SB-FAA-AT	10 APR 98-L2	10 APR 98-L2
059791-0005-SA	AQUEOUS	ICP-AT	10 APR 98-L2	10 APR 98-L2
059791-0005-SA	AQUEOUS	AS-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0005-SA	AQUEOUS	CD-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-SA	AQUEOUS	PB-FAA-AT	13 APR 98-D1	13 APR 98-D1

Quanterra Environmental Services

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation (cont.)

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
059791-0005-SA	AQUEOUS	AG-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-SA	AQUEOUS	TL-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-MS	AQUEOUS	SE-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0005-MS	AQUEOUS	HG-CVAA-AT	14 APR 98-W1	14 APR 98-W1
059791-0005-MS	AQUEOUS	CR-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-MS	AQUEOUS	SB-FAA-AT	10 APR 98-L2	10 APR 98-L2
059791-0005-MS	AQUEOUS	ICP-AT	10 APR 98-L2	10 APR 98-L2
059791-0005-MS	AQUEOUS	AS-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0005-MS	AQUEOUS	CD-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-MS	AQUEOUS	PB-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-MS	AQUEOUS	AG-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-MS	AQUEOUS	TL-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-SD	AQUEOUS	SE-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0005-SD	AQUEOUS	HG-CVAA-AT	14 APR 98-W1	14 APR 98-W1
059791-0005-SD	AQUEOUS	CR-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-SD	AQUEOUS	SB-FAA-AT	10 APR 98-L2	10 APR 98-L2
059791-0005-SD	AQUEOUS	ICP-AT	10 APR 98-L2	10 APR 98-L2
059791-0005-SD	AQUEOUS	AS-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0005-SD	AQUEOUS	CD-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-SD	AQUEOUS	PB-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-SD	AQUEOUS	AG-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0005-SD	AQUEOUS	TL-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0006-SA	AQUEOUS	SE-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0006-SA	AQUEOUS	HG-CVAA-AT	14 APR 98-W1	14 APR 98-W1
059791-0006-SA	AQUEOUS	CR-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0006-SA	AQUEOUS	SB-FAA-AT	10 APR 98-L2	10 APR 98-L2
059791-0006-SA	AQUEOUS	ICP-AT	10 APR 98-L2	10 APR 98-L2
059791-0006-SA	AQUEOUS	AS-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0006-SA	AQUEOUS	CD-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0006-SA	AQUEOUS	PB-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0006-SA	AQUEOUS	AG-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0006-SA	AQUEOUS	TL-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0008-SA	AQUEOUS	SE-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0008-SA	AQUEOUS	CR-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0008-SA	AQUEOUS	SB-FAA-AT	10 APR 98-L2	10 APR 98-L2
059791-0008-SA	AQUEOUS	ICP-AT	10 APR 98-L2	10 APR 98-L2
059791-0008-SA	AQUEOUS	AS-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0008-SA	AQUEOUS	CD-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0008-SA	AQUEOUS	PB-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0008-SA	AQUEOUS	AG-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0008-SA	AQUEOUS	TL-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0009-SA	AQUEOUS	SE-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0009-SA	AQUEOUS	CR-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0009-SA	AQUEOUS	SB-FAA-AT	10 APR 98-L2	10 APR 98-L2
059791-0009-SA	AQUEOUS	ICP-AT	10 APR 98-L2	10 APR 98-L2
059791-0009-SA	AQUEOUS	AS-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0009-SA	AQUEOUS	CD-FAA-AT	13 APR 98-D1	13 APR 98-D1

Quanterra
Environmental Services

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation (cont.)

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
059791-0009-SA	AQUEOUS	PB-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0009-SA	AQUEOUS	AG-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0009-SA	AQUEOUS	TL-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0010-SA	AQUEOUS	SE-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0010-SA	AQUEOUS	CR-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0010-SA	AQUEOUS	SB-FAA-AT	10 APR 98-L2	10 APR 98-L2
059791-0010-SA	AQUEOUS	ICP-AT	10 APR 98-L2	10 APR 98-L2
059791-0010-SA	AQUEOUS	AS-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0010-SA	AQUEOUS	CD-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0010-SA	AQUEOUS	PB-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0010-SA	AQUEOUS	AG-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0010-SA	AQUEOUS	TL-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0011-SA	AQUEOUS	SE-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0011-SA	AQUEOUS	CR-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0011-SA	AQUEOUS	SB-FAA-AT	10 APR 98-L2	10 APR 98-L2
059791-0011-SA	AQUEOUS	ICP-AT	10 APR 98-L2	10 APR 98-L2
059791-0011-SA	AQUEOUS	AS-FAA-AT	10 APR 98-D2	10 APR 98-D2
059791-0011-SA	AQUEOUS	CD-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0011-SA	AQUEOUS	PB-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0011-SA	AQUEOUS	AG-FAA-AT	13 APR 98-D1	13 APR 98-D1
059791-0011-SA	AQUEOUS	TL-FAA-AT	13 APR 98-D1	13 APR 98-D1

Quanterra Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation
Project: 059791

Category: SE-FAA-AT Selenium, Furnace AA / Total Metals
Matrix: AQUEOUS
QC Lot: 10 APR 98-D2 Date Analyzed: 14 APR 98
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Selenium	0.0400	0.0403		0.0410		0.0406	102	80-118	1.7	10

Category: CR-FAA-AT Chromium, Furnace AA, Total
Matrix: AQUEOUS
QC Lot: 13 APR 98-D1 Date Analyzed: 14 APR 98
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Chromium	0.0100	0.00950		0.00960		0.00955	96	81-121	1.0	14

Category: SB-FAA-AT Antimony by Furnace
Matrix: AQUEOUS
QC Lot: 10 APR 98-L2 Date Analyzed: 14 APR 98
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Antimony	0.500	0.433		0.466		0.450	90	83-123	7.3	14

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation
Project: 059791

Category: ICP-AT ICP Metals / Total
Matrix: AQUEOUS
QC Lot: 10 APR 98-L2 Date Analyzed:
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Aluminum	2.00	2.03		2.05		2.04	102	86-117	1.0	10
Antimony	0.500	0.478		0.485		0.482	96	81-119	1.6	10
Arsenic	2.00	1.93		1.87		1.90	95	81-110	3.2	10
Barium	2.00	2.04		2.06		2.05	103	86-114	0.82	10
Beryllium	0.0500	0.0529		0.0523		0.0526	105	83-117	1.2	10
Boron	1.00	1.06		1.06		1.06	106	82-122	0.54	10
Cadmium	0.0500	0.0560		0.0551		0.0555	111	80-120	1.7	17
Calcium	50.0	48.8		49.2		49.0	98	88-112	0.87	10
Chromium	0.200	0.189		0.192		0.191	95	83-112	1.4	10
Cobalt	0.500	0.487		0.488		0.488	98	80-120	0.25	10
Copper	0.250	0.242		0.243		0.242	97	84-115	0.26	10
Iron	1.00	0.927		0.928		0.928	93	87-117	0.14	10
Lead	0.500	0.493		0.506		0.500	100	83-114	2.7	15
Lithium	1.00	1.06		1.08		1.07	107	80-120	1.8	10
Magnesium	50.0	52.2		52.6		52.4	105	84-114	0.72	10
Manganese	0.500	0.489		0.493		0.491	98	84-113	0.83	10
Molybdenum	1.00	0.971		0.980		0.976	98	80-120	0.95	10
Nickel	0.500	0.490		0.496		0.493	99	85-112	1.1	10
Potassium	50.0	50.6		52.1		51.3	103	82-111	2.9	10
Selenium	2.00	1.96		1.92		1.94	97	86-111	2.2	10
Silica as SiO2	21.4	23.5		23.6		23.6	110	80-120	0.29	20
Silver	0.0500	0.0443		0.0441		0.0442	88	83-115	0.38	10
Sodium	50.0	50.3		50.8		50.5	101	86-115	0.99	10
Strontium	1.00	1.02		1.03		1.03	103	80-120	0.43	20
Tin	2.00	1.73		1.74		1.73	87	86-114	0.82	10
Titanium	1.00	0.983		0.985		0.984	98	87-112	0.24	10
Vanadium	0.500	0.490		0.495		0.493	99	85-114	1.0	10
Zinc	0.500	0.475		0.476		0.475	95	82-113	0.28	10

Category: AS-FAA-AT Arsenic, Furnace AA / Total Metals
Matrix: AQUEOUS
QC Lot: 10 APR 98-D2 Date Analyzed: 14 APR 98
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Arsenic	0.0400	0.0413		0.0408		0.0410	103	85-114	1.2	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation
Project: 059791

Category: CD-FAA-AT Cadmium,Furnace AA/ Total Metals
Matrix: AQUEOUS
QC Lot: 13 APR 98-D1 Date Analyzed: 15 APR 98
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Cadmium	0.00400	0.00399		0.00393		0.00396	99	83-123	1.5	10

Category: PB-FAA-AT Lead, Furnace AA / Total Metals
Matrix: AQUEOUS
QC Lot: 13 APR 98-D1 Date Analyzed: 14 APR 98
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Lead	0.0400	0.0393		0.0397		0.0395	99	84-124	1.0	10

Category: AG-FAA-AT Silver,Furnace AA/Total Metals
Matrix: AQUEOUS
QC Lot: 13 APR 98-D1 Date Analyzed: 15 APR 98
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Silver	0.00500	0.00528		0.00527		0.00528	106	81-121	0.19	15

Category: TL-FAA-AT Thallium, Furnace AA / Total Metals
Matrix: AQUEOUS
QC Lot: 13 APR 98-D1 Date Analyzed: 15 APR 98
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Thallium	0.0400	0.0391		0.0394		0.0392	98	84-124	0.76	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation
Project: 059791

Category: HG-CVAA-AT Mercury by CVAA / Total Mercury
Matrix: AQUEOUS
QC Lot: 14 APR 98-W1 Date Analyzed: 15 APR 98
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Mercury	0.00500	0.00542		0.00535		0.00538	108	77-117	1.3	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: SE-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 10 APR 98-D2 QC Run: 10 APR 98-D2			
Selenium	ND	mg/L	0.0050
Test: CR-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 13 APR 98-D1 QC Run: 13 APR 98-D1			
Chromium	ND	mg/L	0.0050
Test: SB-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 10 APR 98-L2 QC Run: 10 APR 98-L2			
Antimony	ND	mg/L	0.010
Test: ICP-AT			
Matrix: AQUEOUS			
QC Lot: 10 APR 98-L2 QC Run: 10 APR 98-L2			
Aluminum	ND	mg/L	0.10
Barium	ND	mg/L	0.010
Beryllium	ND	mg/L	0.0020
Calcium	ND	mg/L	0.20
Cobalt	ND	mg/L	0.010
Copper	ND	mg/L	0.020
Iron	ND	mg/L	0.10
Magnesium	ND	mg/L	0.20
Manganese	ND	mg/L	0.010
Molybdenum	ND	mg/L	0.020
Nickel	ND	mg/L	0.040
Potassium	ND	mg/L	5.0
Sodium	ND	mg/L	5.0
Vanadium	ND	mg/L	0.010
Zinc	ND	mg/L	0.020

Quanterra Environmental Services

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: AS-FAA-AT Matrix: AQUEOUS QC Lot: 10 APR 98-D2 QC Run: 10 APR 98-D2			
Arsenic	ND	mg/L	0.010
Test: CD-FAA-AT Matrix: AQUEOUS QC Lot: 13 APR 98-D1 QC Run: 13 APR 98-D1			
Cadmium	ND	mg/L	0.0010
Test: PB-FAA-AT Matrix: AQUEOUS QC Lot: 13 APR 98-D1 QC Run: 13 APR 98-D1			
Lead	ND	mg/L	0.0030
Test: AG-FAA-AT Matrix: AQUEOUS QC Lot: 13 APR 98-D1 QC Run: 13 APR 98-D1			
Silver	ND	mg/L	0.0010
Test: TL-FAA-AT Matrix: AQUEOUS QC Lot: 13 APR 98-D1 QC Run: 13 APR 98-D1			
Thallium	ND	mg/L	0.010
Test: SE-FAA-AT Matrix: AQUEOUS QC Lot: 10 APR 98-D2 QC Run: 10 APR 98-D2			
Selenium	ND	mg/L	0.0050

Quanterra Environmental Services

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: HG-CVAA-7470-AT			
Matrix: AQUEOUS			
QC Lot: 14 APR 98-W1 QC Run: 14 APR 98-W1			
Mercury	ND	mg/L	0.00020
Test: CR-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 13 APR 98-D1 QC Run: 13 APR 98-D1			
Chromium	ND	mg/L	0.0050
Test: SB-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 10 APR 98-L2 QC Run: 10 APR 98-L2			
Antimony	ND	mg/L	0.010
Test: ICP-AT			
Matrix: AQUEOUS			
QC Lot: 10 APR 98-L2 QC Run: 10 APR 98-L2			
Barium	ND	mg/L	0.010
Beryllium	ND	mg/L	0.0020
Calcium	ND	mg/L	0.20
Cobalt	ND	mg/L	0.010
Copper	ND	mg/L	0.020
Iron	ND	mg/L	0.10
Magnesium	ND	mg/L	0.20
Manganese	ND	mg/L	0.010
Molybdenum	ND	mg/L	0.020
Nickel	ND	mg/L	0.040
Sodium	ND	mg/L	5.0
Tin	ND	mg/L	0.10
Vanadium	ND	mg/L	0.010
Zinc	ND	mg/L	0.020

Quanterra Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 059791

Category: SE-FAA-AT Selenium, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 10 APR 98-D2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Selenium	0.0061 q	0.0335	0.0348	0.0400	68	72	3.8	80-118	10

Category: CR-FAA-AT Chromium, Furnace AA, Total
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 13 APR 98-D1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Chromium	0.0072 q	0.0209	0.0206	0.0100	137	134	1.4	81-121	14

Category: SB-FAA-AT Antimony by Furnace
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 10 APR 98-L2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Antimony	ND q	0.438	0.448	0.500	88	90	2.3	83-123	14

q = Post-digestion spike recovery fell between 40% and 85% due to matrix interference.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 059791 (cont.)

Category: ICP-AT ICP Metals / Total
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 10 APR 98-L2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Aluminum	0.033	2.06	2.07	2.00	101	102	0.3	86-117	10
Antimony	0.025	0.478	0.468	0.500	91	89	2.1	81-119	10
Arsenic	ND	1.84	1.80	2.00	92	90	2.0	81-110	10
Barium	0.033	2.02	2.04	2.00	100	100	0.8	86-114	10
Beryllium	ND	0.0505	0.0507	0.0500	101	101	0.3	83-117	10
Boron	0.15	1.19	1.19	1.00	103	103	0.1	82-122	10
Cadmium	0.00082	0.0524	0.0557	0.0500	103	110	6.3	80-120	17
Calcium	56.5	102	102	50.0	91	92	0.5	88-112	10
Chromium	0.0022	0.191	0.191	0.200	94	94	0.0	83-112	10
Cobalt	ND	0.473	0.475	0.500	95	95	0.3	80-120	10
Copper	ND	0.236	0.237	0.250	94	95	0.5	84-115	10
Iron	0.11	1.01	1.23	1.00	89	111	22.	87-117	10
Lead	0.010	0.483	0.458	0.500	94	90	5.3	83-114	15
Lithium	0.10	1.12	1.13	1.00	102	103	0.9	80-120	10
Magnesium	48.4	98.4	98.9	50.0	100	101	0.9	84-114	10
Manganese	0.0063 J	0.482	0.484	0.500	95	96	0.3	84-113	10
Molybdenum	ND	0.937	0.950	1.00	94	95	1.3	80-120	10
Nickel	ND	0.482	0.488	0.500	96	98	1.2	85-112	10
Potassium	6.4	54.7	55.1	50.0	97	97	0.8	82-111	10
Selenium	ND	1.89	1.93	2.00	94	97	2.3	86-111	10
Silica as SiO2	44.2	65.6	65.8	21.4	100	101	0.8	80-120	20
Silver	ND	0.0418	0.0420	0.0500	84	84	0.6	83-115	10
Sodium	42.2	89.6	90.4	50.0	95	96	1.7	86-115	10
Strontium	2.2	3.15	3.19	1.00	94	98	3.8	80-120	20
Thallium	0.037	1.80	1.82	2.00	88	89	1.1	80-120	20
Tin	ND	1.68	1.67	2.00	84	83	0.7	86-114	10
Titanium	ND	0.965	0.974	1.00	97	97	0.9	87-112	10
Vanadium	0.025	0.508	0.510	0.500	97	97	0.4	85-114	10
Zinc	ND	0.463	0.462	0.500	93	92	0.3	82-113	10

J = Result is detected below the reporting limit or is an estimated concentration.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 059791 (cont.)

Category: AS-FAA-AT Arsenic, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 10 APR 98-D2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Arsenic	0.0038 J	0.0400	0.0391	0.0400	90	88	2.3	85-114	10

Category: CD-FAA-AT Cadmium,Furnace AA/ Total Metals
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 13 APR 98-D1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Cadmium	ND	0.00397	0.00398	0.00400	99	100	0.2	83-123	10

Category: PB-FAA-AT Lead, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 13 APR 98-D1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Lead	ND q	0.0331	0.0315	0.0400	83	79	5.0	84-124	10

J = Result is detected below the reporting limit or is an estimated concentration.
q = Post-digestion spike recovery fell between 40% and 85% due to matrix interference.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 059791 (cont.)

Category: AG-FAA-AT Silver,Furnace AA/Total Metals
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 13 APR 98-D1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Silver	ND q	0.00429	0.00428	0.00500	86	86	0.2	81-121	15

Category: TL-FAA-AT Thallium, Furnace AA / Total Metals
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 13 APR 98-D1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Thallium	ND	0.0401	0.0396	0.0400	100	99	1.3	84-124	10

Category: HG-CVAA-AT Mercury by CVAA / Total Mercury
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 14 APR 98-W1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Mercury	ND	0.00530	0.00530	0.00500	106	106	0.0	77-117	10

q = Post-digestion spike recovery fell between 40% and 85% due to matrix interference.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra
Environmental Services

QC LOT ASSIGNMENT REPORT
Wet Chemistry Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
059791-0001-SA	AQUEOUS	S-A	10 APR 98-S2	10 APR 98-S2
059791-0001-SA	AQUEOUS	SO4-IC-A	27 APR 98-S2	27 APR 98-S2
059791-0001-SA	AQUEOUS	TDS-A	14 APR 98-S4	14 APR 98-S4
059791-0001-SA	AQUEOUS	NO3+NO2-A	30 APR 98-N1	30 APR 98-N1
059791-0001-SA	AQUEOUS	NO2-A	08 APR 98-N1	08 APR 98-N1
059791-0002-EB	AQUEOUS	TOX-A	15 APR 98-N1	15 APR 98-N1
059791-0002-EB	AQUEOUS	CN-A	14 APR 98-N1	14 APR 98-N1
059791-0002-EB	AQUEOUS	S-A	10 APR 98-S2	10 APR 98-S2
059791-0002-EB	AQUEOUS	TOC-9060-A	15 APR 98-N2	15 APR 98-N2
059791-0003-SA	AQUEOUS	TOX-A	15 APR 98-N1	15 APR 98-N1
059791-0003-SA	AQUEOUS	CN-A	14 APR 98-N1	14 APR 98-N1
059791-0003-SA	AQUEOUS	S-A	10 APR 98-S2	10 APR 98-S2
059791-0003-SA	AQUEOUS	TOC-9060-A	15 APR 98-N2	15 APR 98-N2
059791-0004-SA	AQUEOUS	TOX-A	15 APR 98-N1	15 APR 98-N1
059791-0004-SA	AQUEOUS	CN-A	14 APR 98-N1	14 APR 98-N1
059791-0004-SA	AQUEOUS	S-A	10 APR 98-S2	10 APR 98-S2
059791-0004-SA	AQUEOUS	TOC-9060-A	15 APR 98-N2	15 APR 98-N2
059791-0005-SA	AQUEOUS	TOX-A	15 APR 98-N1	15 APR 98-N1
059791-0005-SA	AQUEOUS	CN-A	14 APR 98-N1	14 APR 98-N1
059791-0005-SA	AQUEOUS	S-A	10 APR 98-S2	10 APR 98-S2
059791-0005-SA	AQUEOUS	TOC-9060-A	15 APR 98-N2	15 APR 98-N2
059791-0005-MS	AQUEOUS	TOX-A	15 APR 98-N1	15 APR 98-N1
059791-0005-MS	AQUEOUS	CN-A	14 APR 98-N1	14 APR 98-N1
059791-0005-MS	AQUEOUS	S-A	10 APR 98-S2	10 APR 98-S2
059791-0005-MS	AQUEOUS	TOC-9060-A	15 APR 98-N2	15 APR 98-N2
059791-0005-SD	AQUEOUS	TOX-A	15 APR 98-N1	15 APR 98-N1
059791-0005-SD	AQUEOUS	CN-A	14 APR 98-N1	14 APR 98-N1
059791-0005-SD	AQUEOUS	S-A	10 APR 98-S2	10 APR 98-S2
059791-0005-SD	AQUEOUS	TOC-9060-A	15 APR 98-N2	15 APR 98-N2
059791-0006-SA	AQUEOUS	TOX-A	15 APR 98-N1	15 APR 98-N1
059791-0006-SA	AQUEOUS	CN-A	14 APR 98-N1	14 APR 98-N1
059791-0006-SA	AQUEOUS	S-A	10 APR 98-S2	10 APR 98-S2
059791-0006-SA	AQUEOUS	TOC-9060-A	15 APR 98-N2	15 APR 98-N2
059791-0008-SA	AQUEOUS	S-A	10 APR 98-S2	10 APR 98-S2
059791-0008-SA	AQUEOUS	SO4-IC-A	27 APR 98-S2	27 APR 98-S2
059791-0008-SA	AQUEOUS	TDS-A	14 APR 98-S4	14 APR 98-S4
059791-0008-SA	AQUEOUS	NO3+NO2-A	30 APR 98-N1	30 APR 98-N1
059791-0008-SA	AQUEOUS	NO2-A	09 APR 98-N1	09 APR 98-N1
059791-0009-SA	AQUEOUS	S-A	10 APR 98-S2	10 APR 98-S2
059791-0009-SA	AQUEOUS	SO4-IC-A	27 APR 98-S2	27 APR 98-S2
059791-0009-SA	AQUEOUS	TDS-A	14 APR 98-S4	14 APR 98-S4
059791-0009-SA	AQUEOUS	NO3+NO2-A	30 APR 98-N1	30 APR 98-N1
059791-0009-SA	AQUEOUS	NO2-A	09 APR 98-N1	09 APR 98-N1
059791-0010-SA	AQUEOUS	S-A	10 APR 98-S2	10 APR 98-S2
059791-0010-SA	AQUEOUS	SO4-IC-A	27 APR 98-S2	27 APR 98-S2
059791-0010-SA	AQUEOUS	TDS-A	14 APR 98-S4	14 APR 98-S4
059791-0010-SA	AQUEOUS	NO3+NO2-A	30 APR 98-N1	30 APR 98-N1

Quanterra Environmental Services

QC LOT ASSIGNMENT REPORT
Wet Chemistry Analysis and Preparation (cont.)

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
059791-0010-SA	AQUEOUS	NO2-A	09 APR 98-N1	09 APR 98-N1
059791-0011-SA	AQUEOUS	S-A	10 APR 98-S2	10 APR 98-S2
059791-0011-SA	AQUEOUS	SO4-IC-A	27 APR 98-S2	27 APR 98-S2
059791-0011-SA	AQUEOUS	TDS-A	14 APR 98-S4	14 APR 98-S4
059791-0011-SA	AQUEOUS	NO3+NO2-A	30 APR 98-N1	30 APR 98-N1
059791-0011-SA	AQUEOUS	NO2-A	09 APR 98-N1	09 APR 98-N1

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation
Project: 059791

Category: S-A Sulfide
Matrix: AQUEOUS
QC Lot: 10 APR 98-S2
Concentration Units: mg/L

Date Analyzed: 10 APR 98

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Sulfide, Total	0.437	0.476		0.448		0.462	106	79-131	6.1	10

Category: SO4-IC-A Sulfate by Ion Chromatography
Matrix: AQUEOUS
QC Lot: 27 APR 98-S2
Concentration Units: mg/L

Date Analyzed: 28 APR 98

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Sulfate	50.0	50.2		50.1		50.1	100	92-112	0.22	10

Category: TDS-A Total Dissolved Solids
Matrix: AQUEOUS
QC Lot: 14 APR 98-S4
Concentration Units: mg/L

Date Analyzed: 14 APR 98

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Total Dissolved Solids	750	720		722		721	96	86-106	0.28	10

Category: NO3+NO2-A Nitrate + Nitrite (Aqueous)
Matrix: AQUEOUS
QC Lot: 30 APR 98-N1
Concentration Units: mg/L

Date Analyzed: 20 APR 98

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Nitrate plus Nitrite as N	9.33	10.1		10.2		10.1	109	95-115	1.8	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation
Project: 059791

Category: NO2-A Nitrite
Matrix: AQUEOUS
QC Lot: 08 APR 98-N1 Date Analyzed: 08 APR 98
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Nitrite as N	0.100	0.107		0.108		0.107	107	90-110	0.46	10

Category: NO2-A Nitrite
Matrix: AQUEOUS
QC Lot: 09 APR 98-N1 Date Analyzed: 09 APR 98
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Nitrite as N	0.100	0.104		0.0988		0.101	101	90-110	5.1	10

Category: TOX-A Total Organic Halogen
Matrix: AQUEOUS
QC Lot: 15 APR 98-N1 Date Analyzed: 15 APR 98
Concentration Units: ug/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Total Organic Halogen as Cl	100	101		102		101	101	84-110	0.26	13

Category: CN-A Cyanide
Matrix: AQUEOUS
QC Lot: 14 APR 98-N1 Date Analyzed: 14 APR 98
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Cyanide	0.191	0.182		0.179		0.181	95	72-118	1.3	18

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation
Project: 059791

Category: TOC-9060-A Total Organic Carbon
Matrix: AQUEOUS
QC Lot: 15 APR 98-N2 Date Analyzed: 16 APR 98
Concentration Units: mg/L

Analyte	Concentration Spiked	Measured DCS1	Qual	DCS2	Qual	AVG	Accuracy Average(%) DCS	Limits	Precision (RPD) DCS	Limit
Total Organic Carbon	30.0	30.4		31.0		30.7	102	90-110	2.1	10

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: S-SPEC-AT Matrix: AQUEOUS QC Lot: 10 APR 98-S2 QC Run: 10 APR 98-S2			
Sulfide, Total	ND	mg/L	0.050
Test: SO4-IC-A Matrix: AQUEOUS QC Lot: 27 APR 98-S2 QC Run: 27 APR 98-S2			
Sulfate	ND	mg/L	5.0
Test: TDS-BAL-A Matrix: AQUEOUS QC Lot: 14 APR 98-S4 QC Run: 14 APR 98-S4			
Total Dissolved Solids	ND	mg/L	10.0
Test: NO3+NO2-TEC-A Matrix: AQUEOUS QC Lot: 30 APR 98-N1 QC Run: 30 APR 98-N1			
Nitrate plus Nitrite as N	ND	mg/L	0.10
Test: NO2-SPEC-A Matrix: AQUEOUS QC Lot: 08 APR 98-N1 QC Run: 08 APR 98-N1			
Nitrite as N	ND	mg/L	0.010
Test: TOX-TOX-A Matrix: AQUEOUS QC Lot: 15 APR 98-N1 QC Run: 15 APR 98-N1			
Total Organic Halogen as Cl	ND	ug/L	30.0

Quanterra Environmental Services

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: CNTOT-TEC-A Matrix: AQUEOUS QC Lot: 14 APR 98-N1 QC Run: 14 APR 98-N1			
Cyanide	ND	mg/L	0.010
Test: S-SPEC-AT Matrix: AQUEOUS QC Lot: 10 APR 98-S2 QC Run: 10 APR 98-S2			
Sulfide, Total	ND	mg/L	0.050
Test: TOC-TOC-A Matrix: AQUEOUS QC Lot: 15 APR 98-N2 QC Run: 15 APR 98-N2			
Total Organic Carbon	ND	mg/L	1.0
Test: TOX-TOX-A Matrix: AQUEOUS QC Lot: 15 APR 98-N1 QC Run: 15 APR 98-N1			
Total Organic Halogen as Cl	ND	ug/L	30.0
Test: CNTOT-TEC-A Matrix: AQUEOUS QC Lot: 14 APR 98-N1 QC Run: 14 APR 98-N1			
Cyanide	ND	mg/L	0.010
Test: S-SPEC-AT Matrix: AQUEOUS QC Lot: 10 APR 98-S2 QC Run: 10 APR 98-S2			
Sulfide, Total	ND	mg/L	0.050

Quanterra Environmental Services

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: TOC-TOC-A Matrix: AQUEOUS QC Lot: 15 APR 98-N2 QC Run: 15 APR 98-N2			
Total Organic Carbon	ND	mg/L	1.0
Test: NO2-SPEC-A Matrix: AQUEOUS QC Lot: 09 APR 98-N1 QC Run: 09 APR 98-N1			
Nitrite as N	ND	mg/L	0.010

Quanterra Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Wet Chemistry Analysis and Preparation
Project: 059791

Category: S-A Sulfide
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 10 APR 98-S2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Sulfide, Total	ND	0.422	0.422	0.403	105	105	0.0	79-131	10

Category: SO4-IC-A Sulfate by Ion Chromatography
Matrix: AQUEOUS
Sample: 059792-0002
MS Run: 27 APR 98-S2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Sulfate	105 s	565	559	500	92	91	1.1	92-112	10

Category: TDS-A Total Dissolved Solids
Matrix: AQUEOUS
Sample: 059791-0008
MS Run: 14 APR 98-S4
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Total Dissolved Solids	459	1170	1160	750	95	94	0.8	86-106	10

s = Sample diluted due to the concentration of target analytes.
ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Wet Chemistry Analysis and Preparation
Project: 059791 (cont.)

Category: NO3+NO2-A Nitrate + Nitrite (Aqueous)
Matrix: AQUEOUS
Sample: 059792-0002
MS Run: 30 APR 98-N1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Nitrate plus Nitrite as N	2.4	5.36	5.32	3.00	99	98	0.6	95-115	10

Category: NO2-A Nitrite
Matrix: AQUEOUS
Sample: 059791-0001
MS Run: 08 APR 98-N2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Nitrite as N	ND	0.106	0.106	0.100	106	106	0.0	90-110	10

Category: NO2-A Nitrite
Matrix: AQUEOUS
Sample: 059791-0008
MS Run: 09 APR 98-N1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Nitrite as N	ND	0.104	0.0988	0.100	104	99	5.1	90-110	10

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Wet Chemistry Analysis and Preparation
Project: 059791 (cont.)

Category: TOX-A Total Organic Halogen
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 15 APR 98-N1
Units: ug/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Total Organic Halogen as Cl	ND	112	100	100	112	100	11	84-110	13

Category: CN-A Cyanide
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 14 APR 98-N1
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Cyanide	ND	0.0912	0.0924	0.0935	98	99	1.3	72-118	18

Category: TOC-9060-A Total Organic Carbon
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 15 APR 98-N2
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Total Organic Carbon	ND	26.6	27.2	25.0	106	109	2.5	90-110	10

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra Environmental Services

QC LOT ASSIGNMENT REPORT
Special Services - Low Resolution Mass Spectrometry

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
059791-0002-EB	AQUEOUS	DXNFUR2-A	13 APR 98-A	16 APR 98-A
059791-0002-MB	AQUEOUS	DXNFUR2-A	13 APR 98-A	16 APR 98-A
059791-0003-SA	AQUEOUS	DXNFUR2-A	13 APR 98-A	16 APR 98-A
059791-0004-SA	AQUEOUS	DXNFUR2-A	13 APR 98-A	16 APR 98-A
059791-0005-SA	AQUEOUS	DXNFUR2-A	13 APR 98-A	16 APR 98-A
059791-0005-MS	AQUEOUS	DXNFUR2-A	13 APR 98-A	16 APR 98-A
059791-0005-SD	AQUEOUS	DXNFUR2-A	13 APR 98-A	16 APR 98-A
059791-0006-SA	AQUEOUS	DXNFUR2-A	13 APR 98-A	16 APR 98-A

Quanterra
Environmental Services

DUPLICATE CONTROL SAMPLE REPORT
Special Services - Low Resolution Mass Spectrometry
Project: 059791

Category: DXNFUR2- C14-C18 Dioxin and Furans by Low Resolution MS
Testcode: DXNFUR-AP9-A Method: 8280
Matrix: AQUEOUS Concentration Units: ng/L
QC Lot: 13 APR 98-A Analyzed Date: 16 APR 98 Time: 11:18

Analyte	Concentration Spiked	Measured DCS1	Measured DCS2	Measured AVG	Accuracy Average(%) DCS	Accuracy Limits	Precision (RPD) DCS	Precision Limit
2,3,7,8-TCDF	25.0	24.6	24.7	24.7	99	83-142	0.2	20
1,2,3,7,8-PeCDF	62.5	73.3	75.6	74.4	119	61-191	3.1	20
1,2,3,6,7,8-HxCDF	62.5	66.7	69.6	68.2	109	76-140	4.3	20
1,2,3,4,6,7,8-HpCDF	62.5	64.6	65.7	65.1	104	83-140	1.7	20
OCDF	125	123	126	124	99	77-168	2.3	20
2,3,7,8-TCDD	25.0	26.3	26.8	26.5	106	80-143	2.1	20
1,2,3,7,8-PeCDD	62.5	74.7	78.1	76.4	122	74-170	4.4	20
1,2,3,6,7,8-HxCDD	62.5	61.3	63.8	62.6	100	73-157	4.1	20
1,2,3,4,6,7,8-HpCDD	62.5	58.4	58.4	58.4	93	67-177	0.0	20
OCDD	125	122	125	124	99	79-137	2.9	20
13C-2,3,7,8-TCDF	25.0	18.7	18.0	18.4	73	40-120	4.1	20
13C-2,3,7,8-TCDD	25.0	19.6	18.6	19.1	76	40-120	5.3	20
13C-1,2,3,6,7,8-HxCDD	25.0	19.1	18.2	18.7	75	40-120	5.1	20
13C-1,2,3,4,6,7,8-HpCDF	50.0	35.7	33.8	34.8	70	40-120	5.5	20
13C-OCDD	50.0	33.0	30.1	31.5	63	40-120	9.1	20

Calculations are performed before rounding to avoid round-off errors in calculated results.

Quanterra
Environmental Services

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Special Services - Low Resolution Mass Spectrometry
Project: 059791

Category: DXNFUR2-A C14-C18 Dioxin and Furans by Low Resolution MS
Matrix: AQUEOUS
Sample: 059791-0005
MS Run: 16 APR 98-B
Units: ng/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
2,3,7,8-TCDF	ND	23.4	23.0	24.3	96	94	2.8	83-142	20
1,2,3,7,8-PeCDF	ND	70.6	68.3	60.7	116	111	4.4	61-191	20
1,2,3,6,7,8-HxCDF	ND	57.9	59.5	60.7	95	97	1.7	76-140	20
2,3,7,8-TCDD	ND	25.7	25.2	24.3	106	103	3.3	80-143	20
1,2,3,7,8-PeCDD	ND	75.0	70.2	60.7	124	115	7.6	74-170	20
1,2,3,6,7,8-HxCDD	ND	51.9	52.7	60.7	86	86	0.6	73-157	20

Surrogates	Sample %Recovery	%Recovery MS	%Recovery MSD	Acceptance Limit Recovery
13C-2,3,7,8-TCDF	81	ND	ND	40-120
13C-2,3,7,8-TCDD	80	ND	ND	40-120
13C-1,2,3,6,7,8-HxCDD	86	ND	ND	40-120
13C-1,2,3,4,6,7,8-HpCDF	82	ND	ND	40-120
13C-OCDD	ND	ND	ND	40-120

ND = Not Detected

Calculations are performed before rounding to avoid round-off errors in calculated results.

59791

U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUEST/CHAIN OF CUSTODY

Project Name & Number: Cannon Air Force Base, Ground Water Sampling 463536004	PACKING AND SHIPPING DETAILS
	Packed and Sealed for Shipping by: Fred Gebhardt — Seal Number: 048566
Sampling Location: Sewage Lagoons, (wells E, F, G, H) Cannon Air Force Base, New Mexico	Delivered to Shipper by: Fred Gebhardt — Airbill Number: 2093676532
Team Leader: Jerry Larson	Sampling Status: ☐ Done ☒ Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
7 APR 1998	1530	CAFB-E-0498-1	GROUND-WATER	9	All Apx-IX: SW8260, SW8080, SW6010 -Total (Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Tl,V,Zn), plus SW7041,SW7060,SW7131,SW7191,SW7421,SW7740,SW7761,SW7841; NITRATE-E353.2/E354.1; SULFATE-E300; TDS-E160.1, SULFIDE-SW9030.	ENVIRONMENTAL SAMPLE
			Cooler		7	

Additional Comments: All VOC's in this cooler

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER	
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt ☑ Yes ☐ No
Jerry D Larson	Fed Ex	4-7-98	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: Good
	Lynn Fiesling	4-8-98	1830		Contents Temperature: 59791 0.4°C
					Laboratory Project Number: 59791

01

II-129

U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUEST/CHAIN OF CUSTODY

59791

Project Name & Number: Cannon Air Force Base, Ground Water Sampling 463536004	PACKING AND SHIPPING DETAILS
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Packed and Sealed for Shipping by: Fred Gebhardt; Seal Number: G81551
Team Leader: F. Eileen Roybal	Delivered to Shipper by: Fred Gebhardt; Airbill Number: 2093636532
	Sampling Status: ☐ Done ☒ Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
2 7 April 98	1045	CAFB-C-0498EB	~~Ground water~~ DI	16	All Apx-IX: SW8260,SW8270,SW8280,SW8310,SW8080,SW8150, Total-METALS: SW6010 (Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu, Fe,Pb,Mg,Mn,Mo,Hg,Ni,Ag,Se,Na,Tl,Sn,V,Zn), plus SW7041,SW7060, SW7131,SW7191,SW7421,SW7740,SW7761,SW7841, SW9012, SW9030,SW9060,SW9020	~~Environmental Sample~~ Equipment Blank
					Cooler 5	

Additional Comments: VOC's in cooler 7

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER	
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt: ☒ Yes ☐ No
Jerry Larson	Fed ex	4-7-98	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: Good
	Lynn Buckingham	4/8/98	0830		Contents Temperature: 2.2°C
					Laboratory Project Number: 59791

II-130

4-18-4

U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUEST/CHAIN OF CUSTODY

59791

Project Name & Number	PACKING AND SHIPPING DETAILS	
Cannon Air Force Base, Ground Water Sampling 463536004	Packed and Sealed for Shipping by: Fred Gebhardt	Seal Number: 117511
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: Fred Gebhardt	Airbill Number:
Team Leader: Jerry Larson / F. Eileen Roybal	Sampling Status: ☐ Done ☒ Continuing	

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
7 APR 1998	0900	CAFB-X-0498	Ground-water	16	All Apx-IX: SW8260,SW8270,SW8280,SW8310,SW8080,SW8150, Total-METALS: SW6010 (Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu, Fe,Pb,Mg,Mn,Mo,Hg,Ni,Ag,Se,Na,Tl,Sn,V,Zn), plus SW7041,SW7060, SW7131,SW7191,SW7421,SW7740,SW7761,SW7841; SW9012, SW9030,SW9060,SW9020	Environmental Sample

13

Additional Comments

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER	
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt: ☒ Yes ☐ No
Jerry D Larson	Fred X	4-7-98	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	Lynn Bierling	4-8-98	0830		Contents Temperature: 1.4°C
					Laboratory Project Number: 59791

59791

U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUEST/CHAIN OF CUSTODY

Project Name & Number: Cannon Air Force Base, Ground Water Sampling 463536004	PACKING AND SHIPPING DETAILS
	Packed and Sealed for Shipping by: Fred Gebhardt — Seal Number: 117505
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: Fred Gebhardt — Airbill Number: 209363553
Team Leader: Jerry Larson / F. Eileen Roybal	Sampling Status: ☐ Done ☒ Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
7 APR 1998	1000	CAFB-I-0498	Ground-water	16	All Apx-IX: SW8260,SW8270,SW8280,SW8310,SW8080,SW8150, Total-METALS: SW6010 (Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu, Fe,Pb,Mg,Mn,Mo,Hg,Ni,Ag,Se,Na,Tl,Sn,V,Zn), plus SW7041,SW7060, SW7131,SW7191,SW7421,SW7740,SW7761,SW7841; SW9012, SW9030,SW9060,SW9020	Environmental Sample
5	"	" " -0498MS	"	"	"	-MS
5		CAFB-I-0498 SD	"	"	"	SD
		Samples split between coolers 3 and 4				

Additional Comments: VOC's in separate cooler

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER	
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt ☑ Yes ☐ No
Jerry D Larson	Fed ex	4-7-98	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: Good
	Lynn Burling	4-8-98	0830		Contents Temperature: 2.4°C
					Laboratory Project Number: 59791

II-132

U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUEST/CHAIN OF CUSTODY

59791

Project Name & Number	PACKING AND SHIPPING DETAILS	
Cannon Air Force Base, Ground Water Sampling 463536004	Packed and Sealed for Shipping by: Fred Gebhardt	Seal Number: 117506
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: Fred Gebhardt	Airbill Number: 209363653
Team Leader: Jerry Larson / F. Eileen Roybal	Sampling Status: ☐ Done ☒ Continuing	

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
7 APR 1998	1000	CAFB-I-0498	Ground-water	16	All Apx-IX: SW8260,SW8270,SW8280,SW8310,SW8080,SW8150, Total-METALS: SW6010 (Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu, Fe,Pb,Mg,Mn,Mo,Hg,Ni,Ag,Se,Na,Tl,Sn,V,Zn), plus SW7041,SW7060, SW7131,SW7191,SW7421,SW7740,SW7761,SW7841, SW9012, SW9030,SW9060,SW9020	Environmental Sample
"	"	CAFB-I-0498MS	"	"	"	MS
"	"	CAFB-I-0498MS	"	"	"	SD
		Samples split Between coolers 3 and 4				

Additional Comments: VOCs in separate cooler

CHAIN OF CUSTODY RECORD				LABORATORY LOG IN OF SAMPLE SHIPPING CONTAINER	
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt: ☒ Yes ☐ No
Jerry Larson	Fed ex	4-7-98	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	Lynn Berling				Contents Temperature: 2.9°C
					Laboratory Project Number: 59791

II-133

4 of 90

59741

U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUEST/CHAIN OF CUSTODY

Project Name & Number: Cannon Air Force Base, Ground Water Sampling 463536004	PACKING AND SHIPPING DETAILS
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Packed and Sealed for Shipping by: Fred Gebhardt; Seal Number: 117510
Team Leader: Jerry Larson / F. Eileen Roybal	Delivered to Shipper by: Fred Gebhardt; Airbill Number: 2097363653
	Sampling Status: ☐ Done ☒ Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
7 APR 1998	0845	CAFB-Q-0498	Ground-water	16	All Apx-IX: SW8260,SW8270,SW8280,SW8310,SW8080,SW8150, Total-METALS: SW6010 (Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu, Fe,Pb,Mg,Mn,Mo,Hg,Ni,Ag,Se,Na,Tl,Sn,V,Zn), plus SW7041,SW7060, SW7131,SW7191,SW7421,SW7740,SW7761,SW7841; SW9012, SW9030,SW9060,SW9020	Environmental Sample
		TRIP BLANK				

Additional Comments: VOC's in Separate cooler

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER	
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt ☒ Yes ☐ No
J D Larson		4-7-98	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	Lynn Berling	4-8-98	0830		Contents Temperature: 5.2°C
					Laboratory Project Number: 59791

U.S. GEOLOGICAL SURVEY, WATER R URCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUEST/CHAIN OF CUSTODY

59791

Project Name & Number: Cannon Air Force Base, Ground Water Sampling 463536004	PACKING AND SHIPPING DETAILS
Sampling Location: Sewage Lagoons, (wells E, F, G, H) Cannon Air Force Base, New Mexico	Packed and Sealed for Shipping by: Fred Gebhardt; Seal Number: 031957
Team Leader: Jerry Larson	Delivered to Shipper by: Fred Gebhardt; Airbill Number: 2093636565
	Sampling Status: ☐ Done ☒ Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
8 APR 1998	0900	CAFB-H-0498-1	GROUND-WATER	9	All Apx-IX: SW8260, SW8080, SW6010 -Total (Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Tl,V,Zn), plus SW7041,SW7060,SW7131,SW7191,SW7421,SW7740,SW7761,SW7841; NITRATE-E353.2/E354.1; SULFATE-E300; TDS-E160.1; SULFIDE-SW9030.	ENVIRONMENTAL SAMPLE
"	1100	CAFB-G-0498	"	"	"	" "
			Cooler 1			

Additional Comments: Volatiles in cooler 2

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER	
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt: ☑ Yes ☐ No
Jerry D Larson	Fed ep	4-8-98	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	Lynn Berling	4-9-98	0845		Contents Temperature: 20°C
					Laboratory Project Number: 59791

4-192

U.S. GEOLOGICAL SURVEY, WATER F URCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUEST/CHAIN OF CUSTODY

5979/

Project Name & Number	PACKING AND SHIPPING DETAILS	
Cannon Air Force Base, Ground Water Sampling 463536004	Packed and Sealed for Shipping by: Fred Gebhardt	Seal Number: 031952
Sampling Location: Sewage Lagoons, (wells E, F, G, H) Cannon Air Force Base, New Mexico	Delivered to Shipper by: Fred Gebhardt	Airbill Number: 2093636565
Team Leader: Jerry Larson	Sampling Status: [X] Done [ ] Continuing	

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
8 APR 1998	1245	CAFB-F-0498-1	GROUND-WATER	9	All Apx-IX: SW8260, SW8080, SW6010 -Total (Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Tl,V,Zn), plus SW7041,SW7060,SW7131,SW7191,SW7421,SW7740,SW7761,SW7841; NITRATE-E353.2/E354.1; SULFATE-E300; TDS-E160.1, SULFIDE-SW9030.	ENVIRONMENTAL SAMPLE
	1300	CAFB-T-0498	"	"	"	"
		Trip Blank		Cooler 2		

Additional Comments: All VOC's from cooler 1 & 2 in this cooler.

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER	
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt: [✓] Yes [ ] No
Jerry Larson	Fed ex	4-8-98	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	Lynn Bierling	4-9-98	08-15		Contents Temperature: 1.0°C
					Laboratory Project Number: 5979/

II-136

143

U.S. GEOLOGICAL SURVEY, WATER R JRCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUEST/CHAIN OF CUSTODY

59791

Project Name & Number	PACKING AND SHIPPING DETAILS	
Cannon Air Force Base, Ground Water Sampling 463536004	Packed and Sealed for Shipping by: Fred Gebhardt	Seal Number: 081552
Sampling Location: Landfill-5, Cannon Air Force Base, NM	Delivered to Shipper by: Fred Gebhardt	Airbill Number: 20936532
Team Leader: F. Eileen Roybal	Sampling Status: ☐ Done ☐ Continuing	

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
7 April 98	1300	CAFB-C-0498	Ground-water	16	All Apx-IX: SW8260,SW8270,SW8280,SW8310,SW8080,SW8150, Total-METALS: SW6010 (Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu, Fe,Pb,Mg,Mn,Mo,Hg,Ni,Ag,Se,Na,Tl,Sn,V,Zn), plus SW7041,SW7060, SW7131,SW7191,SW7421,SW7740,SW7761,SW7841; SW9012, SW9030,SW9060,SW9020	Environmental Sample
			cooler 6			

Additional Comments: VOC's in cooler 7

CHAIN OF CUSTODY RECORD				LABORATORY LOG-IN OF SAMPLE SHIPPING CONTAINER	
Relinquished by (signed)	Received by (signed)	Date	Time	Analytical Laboratory	Seal Intact upon Receipt: ☑ Yes ☐ No
Jerry Larson	Fed ex	4/7/98	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Lindsay Breyer	Condition of Contents: good
	Lynn Burling	4/8/98	0830		Contents Temperature: 1.0 °C
					Laboratory Project Number: 59791

II-137

Quanterra

SAMPLE CHECKLIST

Project #: 5979/ Date/Time Received: 4-8-98 0830

Company Name & Sampling Site: USGS / NM Cannon Air Force Base

*Cooler #(s): 1 2 3 4 5 6 7

Temperatures: 0.4°C 5.2°C 1.4°C 1.0°C 2.4°C 2.9°C 5.2°C

Unpacking & Labeling Check Points:

N/A	Yes	No		Initials
	☑	☐	1. Radiation checked, record if reading > 0.5 mR/hr. (_____mR/hr)	
	☑	☐	2. Cooler seals intact.	
	☑	☐	3. Chain of custody present.	
	☐	☑	4. Bottles broken and/or are leaking, comment if yes.	
			PHOTOGRAPH BROKEN BOTTLES	
	☑	☐	5. Containers labeled, comment if no.	
	☑	☐	6. pH of all samples checked and meet requirements, note exceptions.	
	☑	☐	7. Chain of custody includes "received by" and "relinquished" by signatures, dates, and times.	
	☐	☑	8. Receipt date(s) > 48 hours past the collection date(s)? If yes, notify PA/PM.	
**	~~☐~~	☑	9. Chain of custody agrees with bottle count, comment if no. **	
**	~~☐~~	☑	10. Chain of custody agrees with labels, comment if no. **	
** ☐	~~☐~~	☑	11. VOA samples filled completely, comment if no. **	
☐	☑	☐	12. VOA bottles preserved, check for labels.	
	☐	☑	13. Did samples require preservation with sodium thiosulfate?	
☑	☐	☐	14. If yes to #12, did the samples contain residual chlorine?	
☑	☐	☐	15. Sediment present in "D." dissolved, bottles.	
	☑	☐	16. Are analyses with short holding times requested?	
☐	☐	☑	17. Is extra sample volume provided for MS, MSD or matrix duplicates?	
	☐	☑	18. Multiphase samples present? If yes, comment below.	
	☐	☑	19. Any subsampling for volatiles? If yes, list samples.	
			PHOTOGRAPH MULTIPHASE SAMPLES	
	☑	☑	20. Clear picture taken, labeled, and stapled to project folder.	
	☑	☐	21. Subout COC signed and sent with samples to bottle prep? Doing Subout	
	☑	☐	22. Was sample labeling double checked?	

Comments: Include action taken to resolve discrepancies/problems. Include a hard copy of e-mail or use extra paper if more space is needed. We recieved 2 samples CAFB-I-0498 for SW9012 One should have been labeled CAFB-I-0498 SD for the spike Dup - the sample has been put with the SD group Initials:

**Not enough space in 2 vials of Trip Blank (07)

QARVCOT PUBLIC QA FORMS SAMPCHCK.DOC

Revision 3.5 - November 21, 1997

Quanterra

SAMPLE CHECKLIST

Project #: 59791 Date/Time Received: 4-9-98 0845

Company Name & Sampling Site: U.S.G.S / NM Cannon Air Force Base

*Cooler #(s): 1 2

Temperatures: 2.0 °C 1.0 °C

Unpacking & Labeling Check Points:

N/A	Yes	No		Initials
	☑	☐	1. Radiation checked, record if reading > 0.5 mR/hr. (_____mR/hr)	LB
	☑	☐	2. Cooler seals intact.	
	☑	☐	3. Chain of custody present.	
	☐	☑	4. Bottles broken and/or are leaking, comment if yes.	
			PHOTOGRAPH BROKEN BOTTLES	
	☑	☐	5. Containers labeled, comment if no.	
	☑	☐	6. pH of all samples checked and meet requirements, note exceptions.	
	☑	☐	7. Chain of custody includes "received by" and "relinquished" by signatures, dates, and times.	
	☐	☑	8. Receipt date(s) > 48 hours past the collection date(s)? If yes, notify PA/PM.	
	☑	☐	9. Chain of custody agrees with bottle count, comment if no.	
	☑	☐	10. Chain of custody agrees with labels, comment if no.	
☐	☐	☑	11. VOA samples filled completely, comment if no.	
☐	☑	☐	12. VOA bottles preserved, check for labels.	
	☐	☑	13. Did samples require preservation with sodium thiosulfate?	
☑	☐	☐	14. If yes to #12, did the samples contain residual chlorine?	
☑	☐	☐	15. Sediment present in "D." dissolved, bottles.	
	☑	☐	16. Are analyses with short holding times requested?	
☐	☐	☑	17. Is extra sample volume provided for MS, MSD or matrix duplicates?	
	☐	☑	18. Multiphase samples present? If yes, comment below.	
	☐	☑	19. Any subsampling for volatiles? If yes, list samples.	
			PHOTOGRAPH MULTIPHASE SAMPLES	
	☑	☐	20. Clear picture taken, labeled, and stapled to project folder.	
☑	☐	☐	21. Subout COC signed and sent with samples to bottle prep?	LB
	☑	☐	22. Was sample labeling double checked?	LB

Comments: Include action taken to resolve discrepancies/problems. Include a hard copy of e-mail or use extra paper if more space is needed. 2 of 3 Trip blank vials have headspace

Initials: LB

APPENDIX III

Field Data

Sample container and preservation requirements
Sewage Lagoon

Parameters and methods	Bottle Size and Type	Preservatives
Appendix-IX, Volatile Organic Compounds SW8260A	Three 40 ml glass vials	200 uL 50 % Hydrochloric Acid, Chilled to maintain 4 degrees Cesius
Appendix-IX, Pesticides and PCB's SW8080A	Two 32 oz. glass	None, Chilled to maintain 4 degrees Cesius
Appendix-IX, Total Metals: 15 metals by SW6010, SW7041,SW7060A, SW7131A, SW7191, SW7421,, SW7740, SW7761, SW7841	16 oz. polyethylene	10 mL 20% Nitric Acid, pH<2
Nitrate, E353.2	16 oz. glass	2 mL 50% Sulfuric Acid, pH<2, Chilled to maintain 4 degrees Cesius
Nitrite , E354.1 Sulfate, E300.0 Total dissolved solids (TDS), E160.1	32 oz. polyethylene	None, Chilled to maintain 4 degrees Cesius
Sulfide, SW9030 or E376.2	8 oz. polyethylene	1 mL 1N Zinc Acetate, plus 1 mL 50% Sodium Hydroxide, pH>9, Chilled to maintain 4 degrees Cesius

Sample container and preservation requirements
Landfill 5

Parameters and methods	Bottle Size and Type	Preservatives
Appendix-IX, Volatile Organic Compounds SW8260A	Three 40 ml glass vials	200 uL 50 % Hydrochloric Acid, Chilled to maintain 4 degrees Celsius
Appendix-IX, Semivolatile Organic Compounds SW8270B	Two 32 oz. glass (amber)	None, Chilled to maintain 4 degrees Celsius
Appendix-IX, Pesticides and PCB's SW8080A	Two 32 oz. glass	None, Chilled to maintain 4 degrees Cesius
Appendix-IX, Dioxins and Furans SW8280	Two 32 oz. glass (amber)	None, Chilled to maintain 4 degrees Cesius
Polynuclear Aromatic Hydrocarbons SW8310	Two 32 oz. glass (amber)	None, Chilled to maintain 4 degrees Cesius
Appendix-IX, Herbicides SW8150	32 oz. glass	None, Chilled to maintain 4 degrees Cesius
Appendix-IX, Total Metals: 14 metals by SW6010, SW7041,SW7060,SW7131, SW7191, SW7421, SW7470, SW7740, SW7761, SW7841	16 oz. polyethylene	10 mL 20% Nitric Acid, pH<2
Cyanide, SW9012	8 oz. polyethylene	2 mL 50% Sodium Hydroxide, pH>12, Chilled to maintain 4 degrees Cesius
Sulfide, SW9030 or E376.2	8 oz. polyethylene	1 mL 1N Zinc Acetate, plus 1 mL 50% Sodium Hydroxide, pH>9, Chilled to maintain 4 degrees Cesius
Total Organic Carbon (TOC) SW9060	16 oz. glass	2 mL 50% Sulfuric Acid, pH<2, Chilled to maintain 4 degrees Cesius
Total Organic Halogen, (TOX), SW9020	8 oz. glass (amber)	1 mL 50% Sulfuric Acid, pH<2, Chilled to maintain 4 degrees Cesius

4-6-98

	WL	HNU	WELL	
1430	285.78	0	F	
1436	287.92	0	G	
1440	287.31	0	H	
1450	288.68	0	E	
1458	279.12	0	Q	
1506	287.05	0	B	
1513	284.90	0	M	*
1518	286 70	0	I	
1523		0	J	DRY
1535	291.30	0	C	

4-7-98 1

0730 Arrive at well Q Landfill 5
field team Fred Gebhardt, R.K. DeWees, Jerry Larson

0740 calibrate instruments - pH W597214
Cond. 51449009

0857 begin purging

Time	Vol	pH	Cond	temp
0758	0	8.12	704	15.0
0803	5	7.64	670	17.5
0808	10	7.53	667	18.0
0813	15	7.52	665	18.0
0818	20	7.55	668	17.5
0823	25	7.56	668	18.0
0826	30	7.59	665	18.0
0832	35	7.60	667	18.0

0845 collect sample CAFB-Q-0498
0900 Dup CAFB-X-0498

Larson
Doweas
Cobhardt

2

4-7-98 continued

0900 Arrive at well I Landfills

Time	Vol	pH	Cond	Temp.
0907	0	7.67	763	16.0
0913	5	7.49	801	17.5
0918	10	7.48	791	18.0
0922	15	7.51	786	17.5
0926	20	7.52	769	18.0
0936	30	7.52	770	18.0
0941	35	7.52	769	18.0
0946	40	7.52	766	18.0

Begin Sampling

1000 Environmental sample CAFB-I-0498
CAFB-I-0498 MS
CAFB-I-0498 SD

~~1045 Collected Equipment Blank CAFB-C-0498EB~~
~~moved to CAFB-E sewage lagoons~~

Time	Vol	pH	Cond	Temp
1357	0	8.25	609	18.0
1417	10	7.60	630	18.5
1425	15	7.48	632	18.5
1433	20	7.47	636	18.5
1441	25	7.51	647	18.5
1449	30	7.53	655	18.5

4-7-98 continued moved to well C landfill

1145 Began Pumping

Time	Vol	pH	cond	Temp
1146	0	7.71	609	17.0
1154	10	7.67	616	18.0
1202	20	7.66	615	18.0
1210	30	7.65	612	18.0
1217	40	7.63	611	18.0
1224	50	7.61	610	18.0
1231	60	7.62	609	18.0
1241	70	7.59	607	18.0
1249	80	7.58	608	18.0

collected environmental Sample CAFB-C-0498 @ 1300
~~1015~~ moved to well E Sewage Lagoons

Time	Vol	pH	Cond	Temp
1357	0	8.29	609	18.0
1417	10	7.60	630	18.5
1425	15	7.48	632	18.5
1433	20	7.47	636	18.5
1441	25	7.51	647	18.5
1449	30	7.53	655	18.5
1456	35	7.53	657	18.5
1503	40	7.53	644	18.5
1511	45	7.58	637	18.5
1519	50	7.55	635	18.5

collect enviro. sample CAFB-E-0498 at 1530

4-8-98 4

0730 Arrive at well H sewage Lagoons
Begin calibrating instruments

0745 Begin purging

Time	Vol	pH	cond.	Temp.
0790	0	8.36	7.51	8.3
0800	10	7.54	7.15	15.0
0808	20	7.46	7.05	16.0
0818	30	7.40	700.	16.2
0827	40	7.52	699	16.4
0835	50	7.63	692	16.4
0844	60	7.60	687	16.8
0852	70	7.63	683	16.5
0900	80	7.69	682	16.3

collected environmental sample CAFB-H-0498 @ 0900

Moved to Well 6 and Begin purging

Time	Vol	pH	Cond	temp
0918	0	7.640	1339	12.0
0928	10	7.33	1154	16.3
0939	20	7.37	1147	16.6
0949	30	7.40	1137	16.8
0958	40	7.42	1123	16.8
1007	50	7.49	1143	16.9
1018	60	7.49	1158	16.9
1036	80	7.53	1187	17.1
1045	90	7.51	1196	17.1

4-8-98 continued purging well G 5

Time	Vol	pH	Cond	Temp.
1055	100	7.42	1203	17.3

collected environmental sample CAFB-G-0498 @ 1100

Moved to well F. begin purging

Time	Vol	pH	Cond	Temp	
1127	0	8.23	808	15.1	
1135	10	7.74	750	17.4	
1144	20	7.59	763	17.4	
1153	30	7.69	744	17.7	
1201	40	7.57	747	17.3	
1209	50	7.63	756	17.3	1250
1216	60	7.61	758	17.4	
1223	70	7.53	758	17.3	800
1230	80	7.54	762	17.5	

collected sample CAFB-F-0498 @ 1245
Duplicate CAFB-T-0498 @ 1300