CAFB 00

CAFB-00-007

DEPARTMENT OF THE AIR FORCE
27TH CIVIL ENGINEER SQUADRON (ACC)
CANNON AIR FORCE BASE NEW MEXICO

28 JAN 2000

2000
RECEIVED

Lt Colonel Eric J. Wilbur
Commander
506 N DL Ingram Blvd
Cannon AFB NM 88103-5136

Mr. James Bearzi, Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044 Galisteo Street
P O Box 26110
Santa Fe NM 87502

Dear Mr. Bearzi

Enclosed for your information and files is the groundwater monitoring report for sampling at the sewage lagoons and Landfill 5 which took place on 29-31 Aug 99 at Cannon AFB.

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

Sincerely

ERIC J. WILBUR, Lt Col, USAF

cc:
NMED w/o atch (G. VonGotten)
NMED GW Bureau (J. Jacobs)
EPA Region VI (D. Neleigh)
EPA Region VI w/o atch (B. Sturdivant)

CAFB-00-007

LIBRARY COPY

Cannon Air Force Base, New Mexico

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

Analytical Results of Samples Collected August 29-31, 1999

Prepared for

United States Air Force Air Combat Command
Cannon Air Force Base

December 1999

CONTENTS

Page

Executive summary 1

Figure 1. Location of Cannon Air Force Base, New Mexico 3

Figure 2. Cannon Air Force Base and location of sewage lagoons and Landfill 5 4

Figure 3. Location of monitoring wells around the sewage lagoons 5

Figure 4. Location of monitoring wells around Landfill 5 6

Table 1. Summary of concentrations of analytes in ground water from monitoring wells E, F, G, and H for samples collected March 2, 1999, at the sewage lagoons, Cannon Air Force Base, New Mexico 7

Table 2. Summary of concentrations of analytes in ground water from monitoring wells B, C, D, Q, S, T, and U for samples collected March 2-5, 1999, at Landfill 5, Cannon Air Force Base, New Mexico 8

Monitoring well identification reports 9

Monitoring well semi-annual sampling reports 20

APPENDIX I

Analytical Results from Quanterra Environmental Services Laboratory for Ground-Water Samples Collected August 29-31, 1999

Table of Contents I-1

Case Narrative I-9

Detection Highlights I-24

APPENDIX I--Continued

Analytical Results from Quanterra Environmental Services Laboratory for Ground-Water Samples Collected August 29-31, 1999

Methods Summary..... I-5

Volatile organics..... I-8

General chemistry.....I-26

Quality Control Data.....I39

U.S. Geological Survey, Water Resources Division, New Mexico District analytical request / chain of custody..... I-53

APPENDIX II

Field Data

Sample container and preservation requirements..... III-1

Field notes..... III-2

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 6 miles west of Clovis, as shown in figure 1. The ground-water sampling is at the sewage lagoons and at Landfill 5 on the east side and southeast corner of the base, as shown in figure 2. Annual sampling is conducted at the sewage lagoons (fig. 3). Detection sampling is conducted semiannually at Landfill 5 (fig. 4) as part of the July 13, 1990, Compliance Agreement between CAFB and the New Mexico Environment Department (NMED).

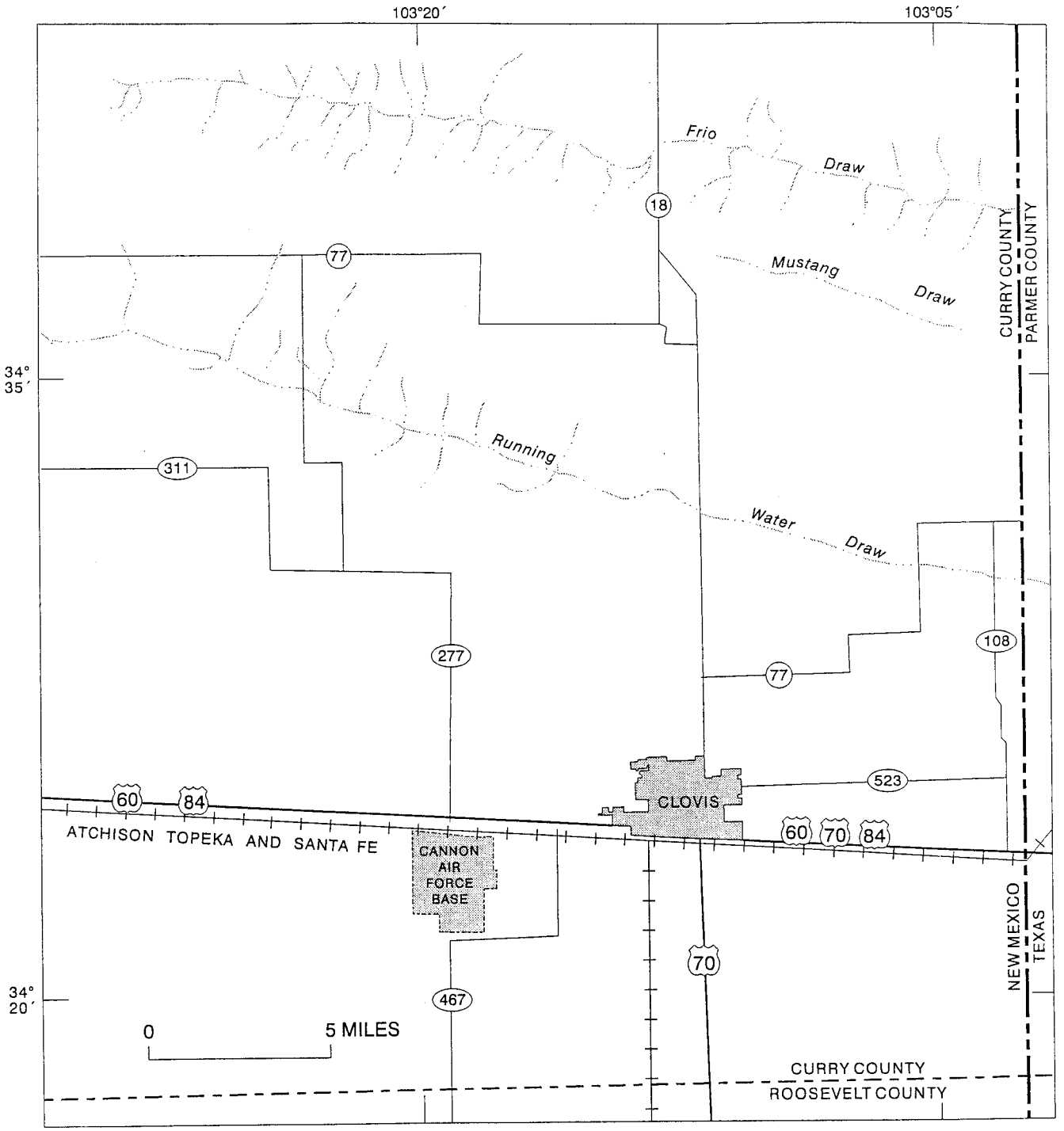
This report presents the water-quality data for samples collected from four wells around the sewage lagoons and seven wells around Landfill 5, CAFB, on August 29-31, 1999. The monitoring wells sampled at the sewage lagoons are well E (upgradient) and downgradient wells F, G, and H as shown on figure 3. . These wells were sampled for the following parameters: volatile organic compounds (VOC's) by method SW8260B at well E. and nitrate/nitrite by method MCAWW353.2/ 354.1 at wells E, F, G, and H.

The monitoring wells sampled at Landfill 5 are downgradient wells B, C, D, S, T, and U, and upgradient well Q, as shown in figure 4. These wells were sampled for the following parameters: VOC's by method SW8260B at wells C and D, TOC by method SW9060, TOX by method SW9020, Cyanide by method SW9012 and Sulfide by method SW9030 at all seven wells.

Concentrations of analytes detected in ground water from wells at the sewage lagoons are presented in table 1. Only those concentrations detected above the reporting limits are discussed in this summary. A volatile organic compound, tetrachloroethene, was detected in a water sample from well E at a concentration of 1.9 μg/L. The U.S. Environmental Protection Agency (USEPA) maximum contaminant level (MCL) drinking-water standard for tetrachloroethene is 5 μg/L Nitrate was detected in all four wells at concentrations ranging from 1.1 mg/L (well H) to 4.4 mg/L (well E). The USEPA MCL standard for nitrate is 10 mg/L.

Concentrations of analytes detected in ground water from wells at Landfill 5 are presented in table 2. Trichloroethene was detected in a water sample from well D at a concentration of 1.9 μg/L. The USEPA MCL drinking-water standard for trichloroethene is 5 μg/L.

As part of the quality assurance and quality control (QA/QC) procedures for the sewage lagoons and Landfill 5 sites, one trip blank, a duplicate (V at well C), matrix spike and spike duplicate, and one equipment blank were collected. No target parameters were detected above reporting limits in the trip blanks. Well C and duplicate V showed similar levels of Trichloroethene below the reporting limit.



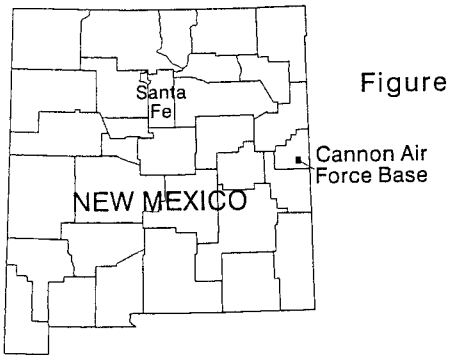


Figure 1.--Location of Cannon Air Force Base, New Mexico.

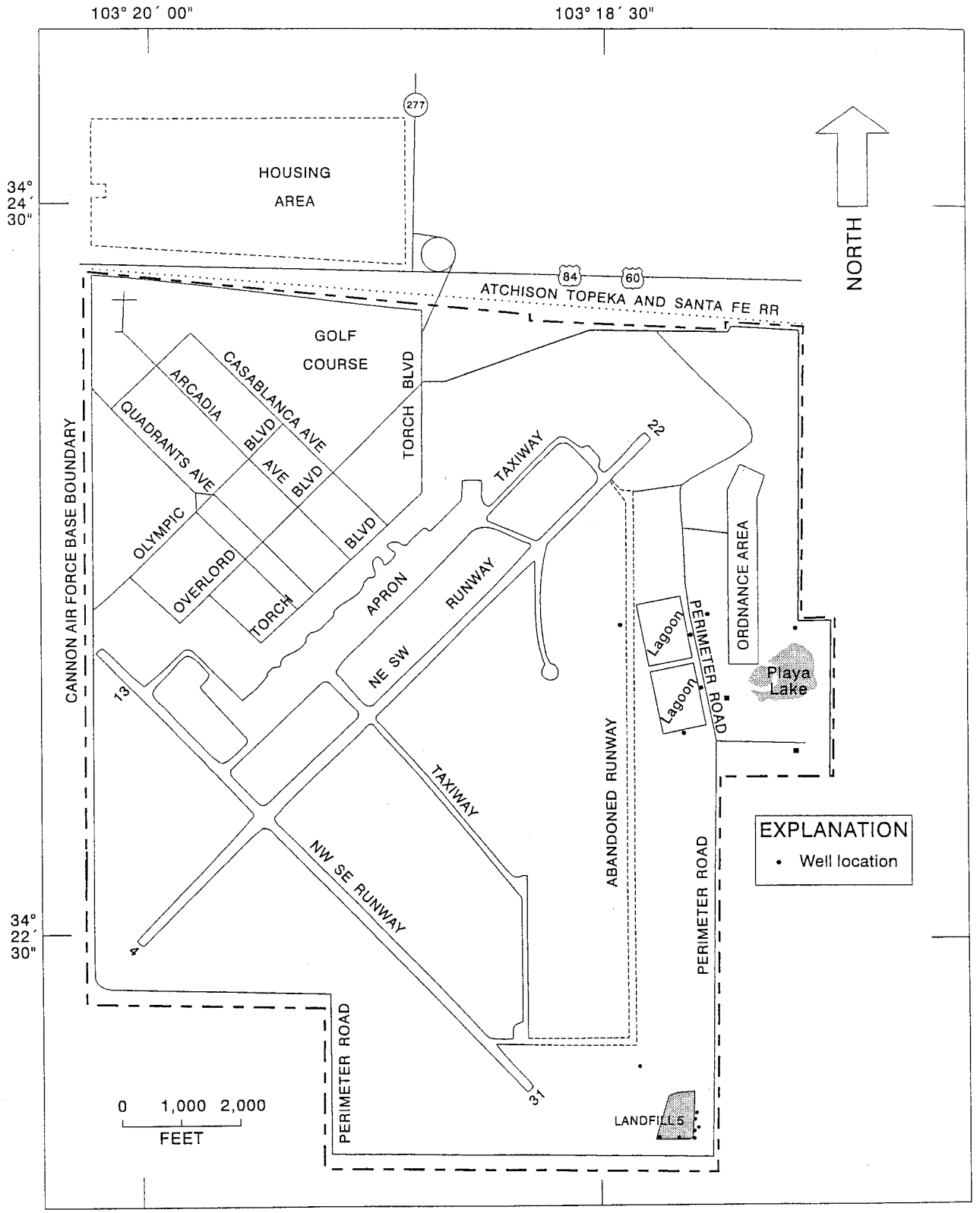


Figure 2.--Cannon Air Force Base and location of sewage lagoons and Landfill 5.

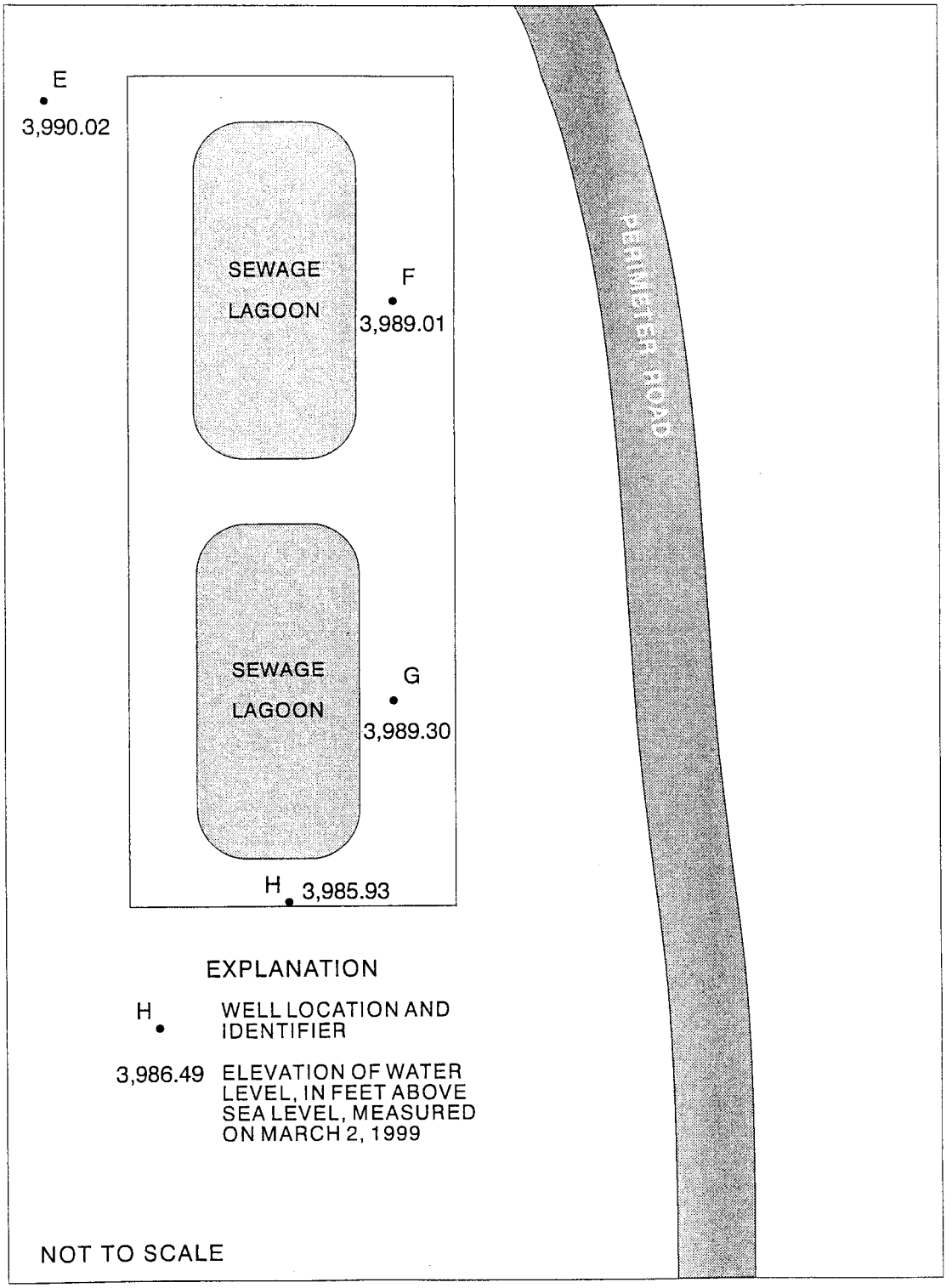


Figure 3.--Location of monitoring wells around the sewage lagoons.

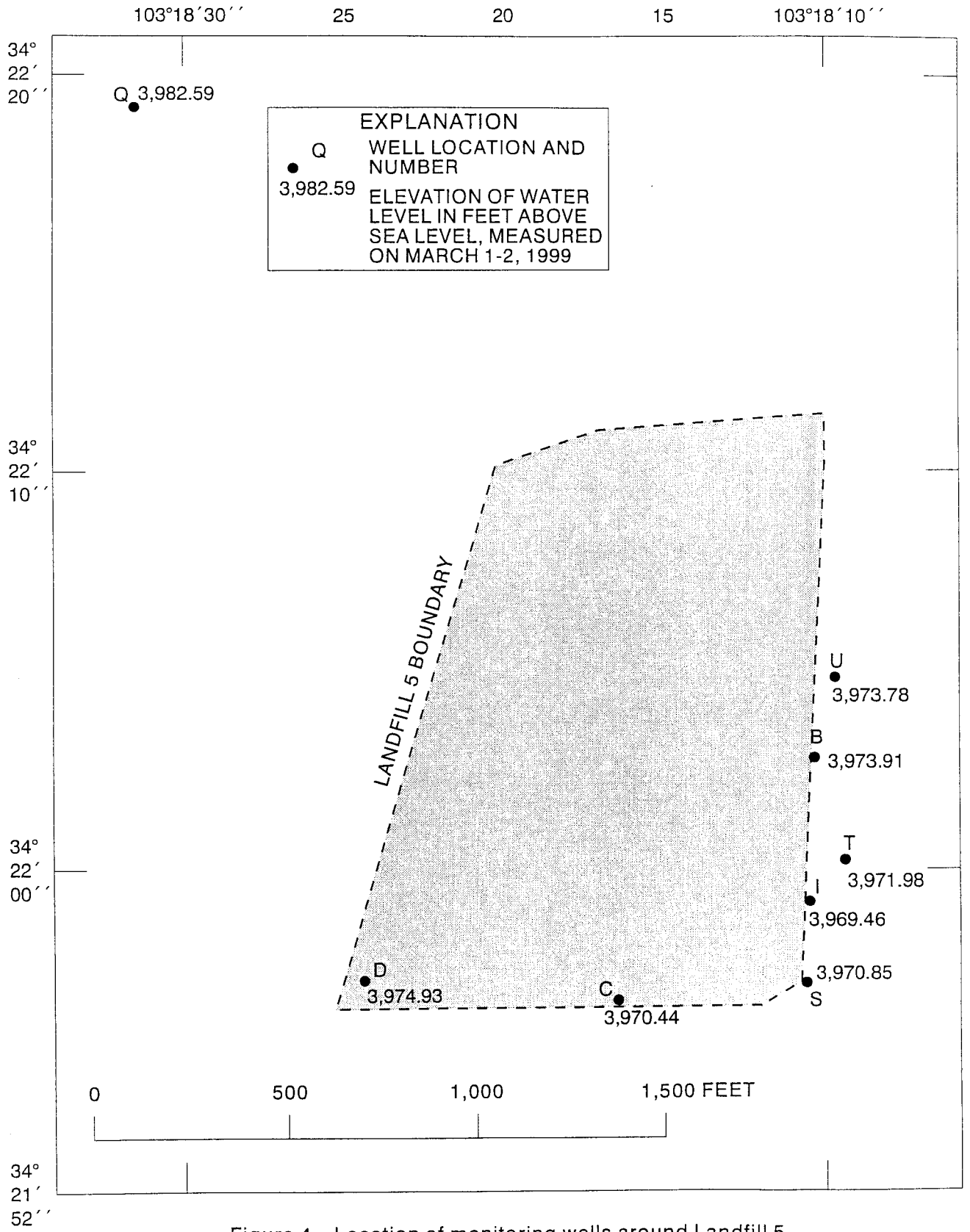


Figure 4.--Location of monitoring wells around Landfill 5.

Table 1.--Summary of concentrations of analytes in ground water from monitoring wells E, F, G, and H for samples collected August 29-31, 1999, at the sewage lagoons, Cannon Air Force Base, New Mexico

[RL, reporting limit; µg/L, micrograms per liter; ND, not detected; J, result is detected below the reporting limit or is an estimated concentration; mg/L, milligrams per liter; MCAWW, methods for chemical analysis of water and wastes; Q, reporting limit is elevated due to high analyte levels]

Well/sample ID: Date sampled: :	E/CAFB-E 3-2-1999		F/CAFB-F 3-2-1999		G/CAFB-G 3-2-1999		H/CAFB-H 3-2-1999	
Analytes and Methods	Result	RL	Result	RL	Result	RL	Result	RL
Appendix-IX Volatile organics, SW8260B, (µg/L) Tetrachloroethene	2.1	1.0	ND	1.0	ND	1.0	ND	1.0
Nitrate MCAWW354.1	4.4	0.10	1.2	0.10	4.0	0.10	1.1	0.10

Table 2.--Summary of concentrations of analytes in ground water from monitoring wells CAFB-B, C, D, Q, S, T, and U for samples collected August 29-31, 1999, at Landfill 5, Cannon Air Force Base, New Mexico

[RL, reporting limit; µg/L, micrograms per liter; ND, not detected; J, result was detected below the reporting limit or is an estimated concentration. All samples were prepared or analyzed after the EPA-recommended temperature had been exceeded]

Well/sample ID: Date sampled:	B/CAFB-B 8-29-1999		C/CAFB-C 8-31-1999		D/CAFB-D 8-31-1999		Q/CAFB-Q 8-30-1999	
Analytes and Methods	Result	RL	Result	RL	Result	RL	Result	RL
Appendix-IX Volatiles, SW8260B (µg/L)								
Trichloroethene	ND	1.0	0.92 J	1.0	1.9	1.0	ND	1.0

Well/sample ID: Date sampled:	S/CAFB-S 8-29-1999		S/CAFB-V 8-31-1999 Duplicate		T/CAFB-T 8-30-1999		U/CAFB-U 8-30-1999	
Analytes and Methods	Result	RL	Result	RL	Result	RL	Result	RL
Appendix-IX Volatiles, SW8260B (µg/L)								
Trichloroethene	ND	1.0	.84J	1.0	ND	1.0	ND	1.0

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 B -- Landfill-5

WELL LOCATION (LONGITUDE) 103 ° 18 ' 10 "

WELL LOCATION (LATITUDE) 34 ° 22 ' 03 "

AQUIFER NAME Ogallala

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 11-30-1984

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4 inches

BOREHOLE DIAMETER 8 inches

CASING MATERIAL PVC

METHOD OF DEVELOPMENT AIRFT

ELEV BOTTOM OF BOREHOLE 3903.11 feet above MSL

ELEV BOTTOM OF WELL CASING 3903.11 feet above MSL

ELEV BOTTOM OF SCREENED INT 3903.11 feet above MSL

ELEV OF TOP OF SCREENED INT 3918.11 feet above MSL

SURVEYED ELEV OF CASING TOP 4265.41 feet above MSL

DATE OF REPORT 12-10-99 SIGNATURE Jerry Larson

for

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 -- Landfill-5

WELL LOCATION (LONGITUDE) 103° 18' 08.3"

WELL LOCATION (LATITUDE) 34° 21' 56.8"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 01-11-1985

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 feet above MSL

ELEV BOTTOM OF WELL CASING 3905.90 feet above MSL

ELEV BOTTOM OF SCREENED INT 3905.90 feet above MSL

ELEV OF TOP OF SCREENED INT 3920.90 feet above MSL

SURVEYED ELEV OF CASING TOP 4267.90 feet above MSL

DATE OF REPORT 12-10-99 SIGNATURE Jerry Larson for

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 D -- Landfill-5

WELL LOCATION (LONGITUDE) 103 ° 18 ' 17 "

WELL LOCATION (LATITUDE) 34 ° 21 ' 57 "

AQUIFER NAME Ogallala

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 12-16-1984

DRILLING METHOD HYDRT

INNER CASING DIAMETER 4 inches

BOREHOLE DIAMETER 8 inches

CASING MATERIAL PVC

METHOD OF DEVELOPMENT AIRFT

ELEV BOTTOM OF BOREHOLE 3909.15 feet above MSL

ELEV BOTTOM OF WELL CASING 3909.15 feet above MSL

ELEV BOTTOM OF SCREENED INT 3909.15 feet above MSL

ELEV OF TOP OF SCREENED INT 3924.15 feet above MSL

SURVEYED ELEV OF CASING TOP 4265.90 feet above MSL

DATE OF REPORT 12-10-99 SIGNATURE Jerry Larson

NAME (TYPED) for 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 E -- Sewage Lagoons

WELL LOCATION (LONGITUDE) 103° 18' 24.5"

WELL LOCATION (LATITUDE) 34° 23' 28.8"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 11-17-1985

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 feet above MSL

ELEV BOTTOM OF WELL CASING 3911.12 feet above MSL

ELEV BOTTOM OF SCREENED INT 3911.12 feet above MSL

ELEV OF TOP OF SCREENED INT 3926.12 feet above MSL

SURVEYED ELEV OF CASING TOP 4281.12 feet above MSL

DATE OF REPORT 12-10-99 SIGNATURE Jerry Larson

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 -- Sewage Lagoons

WELL LOCATION (LONGITUDE) 103° 18' 10.5"

WELL LOCATION (LATITUDE) 34° 23' 21.4"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 11-19-1985

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 feet above MSL

ELEV BOTTOM OF WELL CASING 3907.32 feet above MSL

ELEV BOTTOM OF SCREENED INT 3907.32 feet above MSL

ELEV OF TOP OF SCREENED INT 3922.32 feet above MSL

SURVEYED ELEV OF CASING TOP 4277.32 feet above MSL

DATE OF REPORT 12-10-99 SIGNATURE Jerry Larson

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 -- Sewage Lagoons

WELL LOCATION (LONGITUDE) 103° 18' 08"

WELL LOCATION (LATITUDE) 34° 23' 13.4"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 11-10-1985

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 feet above MSL

ELEV BOTTOM OF WELL CASING 3907.90 feet above MSL

ELEV BOTTOM OF SCREENED INT 3907.99 feet above MSL

ELEV OF TOP OF SCREENED INT 3922.99 feet above MSL

SURVEYED ELEV OF CASING TOP 4279.99 feet above MSL

DATE OF REPORT 12-10-99 SIGNATURE Jerry Larson

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 -- Sewage Lagoons

WELL LOCATION (LONGITUDE) 103° 18' 16.80"

WELL LOCATION (LATITUDE) 34° 23' 07"

AQUIFER NAME Ogalalla

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 11-18-1985

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 feet above MSL

ELEV BOTTOM OF WELL CASING 3901.15 feet above MSL

ELEV BOTTOM OF SCREENED INT 3901.15 feet above MSL

ELEV OF TOP OF SCREENED INT 3921.15 feet above MSL

SURVEYED ELEV OF CASING TOP 4276.15 feet above MSL

DATE OF REPORT 12-10-99 SIGNATURE Jerry Larson

NAME (TYPED) for 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 -- Landfill-5

WELL LOCATION (LONGITUDE) 103° 18' 31"

WELL LOCATION (LATITUDE) 34° 22' 19"

AQUIFER NAME Ogallala

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 02-24-1996

DRILLING METHOD Unknown

INNER CASING DIAMETER 4 inches

BOREHOLE DIAMETER 8 inches

CASING MATERIAL PVC

METHOD OF DEVELOPMENT BAILD

ELEV BOTTOM OF BOREHOLE 3,969.30 feet above MSL

ELEV BOTTOM OF WELL CASING 3,970.30 feet above MSL

ELEV BOTTOM OF SCREENED INT 3,970.30 feet above MSL

ELEV OF TOP OF SCREENED INT 4,000.30 feet above MSL

SURVEYED ELEV OF CASING TOP 4,266.89 feet above MSL

DATE OF REPORT 12-10-99 SIGNATURE Jerry Larson for

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 S -- Landfill-5

WELL LOCATION (LONGITUDE) 103 ° 18 ' 10.58 "

WELL LOCATION (LATITUDE) 34 ° 21 ' 57.02 "

AQUIFER NAME Ogallala

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 12 -02 to 06 -1998

DRILLING METHOD HYDRT (mud rotary)

INNER CASING DIAMETER 4 inches

BOREHOLE DIAMETER 12 inches

CASING MATERIAL PVC (Schedule-80)

METHOD OF DEVELOPMENT BAILD

ELEV BOTTOM OF BOREHOLE 3898.83 feet above MSL

ELEV BOTTOM OF WELL CASING 3898.83 feet above MSL

ELEV BOTTOM OF SCREENED INT 3939.81 feet above MSL

ELEV OF TOP OF SCREENED INT 3979.83 feet above MSL

SURVEYED ELEV OF CASING TOP 4263.83 feet above MSL

DATE OF REPORT 05-26-1999 SIGNATURE Jerry Lowson

NAME (TYPED) for 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 T -- Landfill-5

WELL LOCATION (LONGITUDE) 103 ° 18 ' 09.33 "

WELL LOCATION (LATITUDE) 34 ° 22 ' 00.10 "

AQUIFER NAME Ogallala

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 12 -6 to 10 -1998

DRILLING METHOD HYDRT (mud rotary)

INNER CASING DIAMETER 4 inches

BOREHOLE DIAMETER 12 inches

CASING MATERIAL PVC (Schedule-80)

METHOD OF DEVELOPMENT BAILD

ELEV BOTTOM OF BOREHOLE 3898.69 feet above MSL

ELEV BOTTOM OF WELL CASING 3898.69 feet above MSL

ELEV BOTTOM OF SCREENED INT 3939.69 feet above MSL

ELEV OF TOP OF SCREENED INT 3979.69 feet above MSL

SURVEYED ELEV OF CASING TOP 4263.69 feet above MSL

DATE OF REPORT 05-26-1999 SIGNATURE Jerry Lann

NAME (TYPED) for 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 U -- Landfill-5

WELL LOCATION (LONGITUDE) 103 ° 18 ' 09.84 "

WELL LOCATION (LATITUDE) 34 ° 22 ' 04.88 "

AQUIFER NAME Ogallala

AQUIFER CONFINED _____ UNCONFINED X

WELL INSTALLATION DATE 12 -10 to 13 -1998

DRILLING METHOD HYDRT (mud rotary)

INNER CASING DIAMETER 4 inches

BOREHOLE DIAMETER 12 inches

CASING MATERIAL PVC (Schedule-80)

METHOD OF DEVELOPMENT BAILD

ELEV BOTTOM OF BOREHOLE 3900.26 feet above MSL

ELEV BOTTOM OF WELL CASING 3900.26 feet above MSL

ELEV BOTTOM OF SCREENED INT 3941.26 feet above MSL

ELEV OF TOP OF SCREENED INT 3981.26 feet above MSL

SURVEYED ELEV OF CASING TOP 4265.26 feet above MSL

DATE OF REPORT 05-26-1999 SIGNATURE Jerry Larson

NAME (TYPED) Sanford Hutsell

MONITORING WELL
SEMI-ANNUAL SAMPLING REPORT

SAMPLE COLLECTED BY Jerry Larson

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-B

WELL DEPTH 362.30 feet WELL CASING VOLUME 48.39 gallons

DATE SAMPLED 08-29-1999 LABORATORY SAMPLE I.D.# D9H310148-002

TIME SAMPLED 1600 DATE RECEIVED BY LAB 08-30-1999

PARAMETERS	STORET CODE	UNITS	VALUE	DATE
Elevation of G. Water	71993	ft.	3973.91	08-29-1999
Flow Rate	00059	gal/min	0.9	08-29-1999
Pump Period	72004	min.	107	08-29-1999
Volume Evacuated	73675	gal	64.0	008-29-1999
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	08-29-1999	field electrometer
Specific Conductivity	00095	umhos/cm	796	N/A	08-29-1999	field electrometer
T.O.X.	70354	ug/L	0.43	30.0	09-07-1999	SW9020B
T.O.C.	00680	mg/L	3.5	1.0	09-13-1999	SW9060

SIGNATURE: Jerry Larson

NAME (PRINTED): Jerry D. Larson

MONITORING WELL
SEMI-ANNUAL SAMPLING REPORT

SAMPLE COLLECTED BY Jerry Larson

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-C

WELL DEPTH 362.00 feet WELL CASING VOLUME 42.92 gallons

DATE SAMPLED 08-31-1999 LABORATORY SAMPLE I.D.# D9H310148-013

TIME SAMPLED 0815 DATE RECEIVED BY LAB 09-01-1999

PARAMETERS	STORET CODE	UNITS	VALUE	DATE
Elevation of G. Water	71993	ft.	3970.44	08-29-1999
Flow Rate	00059	gal/min	0.08	08-31-1999
Pump Period	72004	min.	48.0	08-31-1999
Volume Evacuated	73675	gal	40.0	08-31-1999
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.	7.57	N/A	08-31-1999	field electrometer
Specific Conductivity	00095	umhos/cm	589	N/A	08-31-1999	field electrometer
T.O.X.	70354	ug/L	3.0	30.0	09-13-1999	SW9020B
T.O.C.	00680	mg/L	0.56	1.0	09-07-1999	SW9060

SIGNATURE: Jerry Larson

NAME (PRINTED): Jerry D. Larson

MONITORING WELL
SEMI-ANNUAL SAMPLING REPORT

SAMPLE COLLECTED BY Jerry Larson

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-D

WELL DEPTH 354.87 feet WELL CASING VOLUME 42.74 gallons

DATE SAMPLED 08-31-1999 LABORATORY SAMPLE I.D.# D9H310148-009

TIME SAMPLED 1000 DATE RECEIVED BY LAB 09-01-1999

PARAMETERS	STORET CODE	UNITS	VALUE	DATE
Elevation of G. Water	71993	ft.	3974.93	08-31-1999
Flow Rate	00059	gal/min	1.00	08-31-1999
Pump Period	72004	min.	48.0	08-31-1999
Volume Evacuated	73675	gal	50.0	08-31-1999
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.	7.22	N/A	08-31-1999	field electrometer
Specific Conductivity	00095	umhos/cm	563	N/A	08-31-1999	field electrometer
T.O.X.	70354	ug/L	ND	30.0	09-13-1999	SW9020B
T.O.C.	00680	mg/L	ND	1.0	09-07-1999	SW9060

SIGNATURE: Jerry Larson

NAME (PRINTED): Jerry D. Larson

MONITORING WELL
SEMI-ANNUAL SAMPLING REPORT

SAMPLE COLLECTED BY Jerry Larson

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-Q

WELL DEPTH 296.69 feet WELL CASING VOLUME 8.65 gallons

DATE SAMPLED 03-02-1999 LABORATORY SAMPLE I.D.# D9C030208-001

TIME SAMPLED 1030 DATE RECEIVED BY LAB 03-03-1999

PARAMETERS	STORET CODE	UNITS	VALUE	DATE
Elevation of G. Water	71993	ft.	3982.59	08-29-1999
Flow Rate	00059	gal/min	0.7	08-30-1999
Pump Period	72004	min.	64	08-30-1999
Volume Evacuated	73675	gal	25.0	08-30-1999
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.	7.74	N/A	08-30-1999	field electrometer
Specific Conductivity	00095	umhos/cm	742	N/A	08-30-1999	field electrometer
T.O.X.	70354	ug/L	ND	30.0	09-13-1999	SW9020B
T.O.C.	00680	mg/L	ND	1.0	09-07-1999	SW9060

SIGNATURE: Jerry Larson

NAME (PRINTED): Jerry D Larson

MONITORING WELL
SEMI-ANNUAL SAMPLING REPORT

SAMPLE COLLECTED BY Jerry Larson

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-S

WELL DEPTH 362.77 feet WELL CASING VOLUME 46.53 gallons

DATE SAMPLED 08-29-1999 LABORATORY SAMPLE I.D.# D9H310148-001

TIME SAMPLED 1415 DATE RECEIVED BY LAB 08-31-1999

PARAMETERS	STORET CODE	UNITS	VALUE	DATE
Elevation of G. Water	71993	ft.	3970.85	08-29-1999
Flow Rate	00059	gal/min	1.0	08-29-1999
Pump Period	72004	min.	48.0	08-29-1999
Volume Evacuated	73675	gal	54.0	08-29-1999
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.	7.51	N/A	08-29-1999	field electrometer
Specific Conductivity	00095	umhos/cm	771	N/A	08-29-1999	field electrometer
T.O.X.	70354	ug/L	ND	30.0	09-13-1999	SW9020B
T.O.C.	00680	mg/L	ND	1.0	09-07-1999	SW9060

SIGNATURE: Jerry Larson

NAME (PRINTED): Jerry D. Larson

MONITORING WELL
SEMI-ANNUAL SAMPLING REPORT

SAMPLE COLLECTED BY Jerry Larson

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-T

WELL DEPTH 365.00 feet WELL CASING VOLUME 48.38 gallons

DATE SAMPLED 08-30-1999 LABORATORY SAMPLE I.D.# D9H310148-003

TIME SAMPLED 0940 DATE RECEIVED BY LAB 08-31-1999

PARAMETERS	STORET CODE	UNITS	VALUE	DATE
Elevation of G. Water	71993	ft.	3971.98	08-30-1999
Flow Rate	00059	gal/min	0.8	08-30-1999
Pump Period	72004	min.	74.0	08-30-1999
Volume Evacuated	73675	gal	60	08-30-1999
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.	7.54	N/A	08-30-1999	field electrometer
Specific Conductivity	00095	umhos/cm	803	N/A	08-30-1999	field electrometer
T.O.X.	70354	ug/L	ND	30.0	09-13-1999	SW9020B
T.O.C.	00680	mg/L	ND	1.0	09-07-1999	SW9060

SIGNATURE: Jerry Larson

NAME (PRINTED): Jerry D. Larson

MONITORING WELL
SEMI-ANNUAL SAMPLING REPORT

SAMPLE COLLECTED BY Jerry Larson

LABORATORY NAME Quanterra Environmental Services WELL NUMBER CAFB-U

WELL DEPTH 365.00 feet WELL CASING VOLUME 48.36 gallons

DATE SAMPLED 08-30-1999 LABORATORY SAMPLE I.D.# D9H310148-004

TIME SAMPLED 1110 DATE RECEIVED BY LAB 08-30-1999

PARAMETERS	STORET CODE	UNITS	VALUE	DATE
Elevation of G. Water	71993	ft.	3973.78	03-04-1999
Flow Rate	00059	gal/min	1.0	03-04-1999
Pump Period	72004	min.	60.0	03-04-1999
Volume Evacuated	73675	gal	60.0	03-04-1999
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.	7.75	N/A	08-30-1999	field electrometer
Specific Conductivity	00095	umhos/cm	786	N/A	08-30-1999	field electrometer
T.O.X.	70354	ug/L	ND	30.0	09-13-1999	SW9020B
T.O.C.	00680	mg/L	ND	1.0	09-07-1999	SW9060

SIGNATURE: Jerry Larson

NAME (PRINTED): Jerry D. Larson

APPENDIX I

Analytical Results from Quanterra Environmental Services Laboratory
for Ground-Water Samples Collected August 29-31, 1999

Quanterra
4955 Yarrow Street
Arvada, Colorado 80002-4517

303 421-6611 Telephone
303 431-7171 Fax

ANALYTICAL REPORT

CannonAFB

Lot #: D9H310148

Richard Daddow

U.S. Geological Survey

QUANTERRA INCORPORATED

Christina M. Mott
Project Manager

September 21, 1999

Table Of Contents

Standard Deliverables with Supporting Documentation

Report Contents	Number of Pages
Standard Deliverables *(The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.)*	58

- Table of Contents
- Case Narrative
- Executive Summary – Detection Highlights
- Methods Summary
- Method/Analyst Summary
- Lot Sample Summary
- Analytical Results
- QC Data Association Summary
- Chain-of-Custody

Supporting Documentation *(Note: A one-page "Description of Supporting Documentation" is provided at the beginning of this section.).*	Check below when supporting documentation is present.
• Volatile GC/MS	✓
• Semivolatile GC/MS	
• Volatile GC	
• Semivolatile GC	
• LC/MS or HPLC	
• Metals	
• General Chemistry	✓
• Subcontracted Data	

Case Narrative

Lot D9H310148

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits.

EXECUTIVE SUMMARY - Detection Highlights

D9H310148

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
CAFB-S-1 08/29/99 14:15 001				
Total Organic Carbon	0.30 B	1.0	mg/L	SW846 9060
CAFB-B-1 08/29/99 16:00 002				
Total Organic Carbon	0.43 B	1.0	mg/L	SW846 9060
Total Organic Halogens	3.5 B	30.0	ug/L	SW846 9020B
CAFB-T-1 08/30/99 09:40 003				
Total Organic Carbon	0.40 B	1.0	mg/L	SW846 9060
CAFB-U-1 08/30/99 11:10 004				
Total Organic Carbon	0.31 B	1.0	mg/L	SW846 9060
CAFB-H-1 08/31/99 13:40 005				
Nitrate	1.1	0.10	mg/L	MCAWW 353.2
CAFB-G-1 08/31/99 14:45 006				
Nitrate	4.0	0.10	mg/L	MCAWW 353.2
CAFB-F-1 08/31/99 15:00 007				
Nitrate	1.2	0.10	mg/L	MCAWW 353.2
CAFB-E-1 08/31/99 12:45 008				
Methylene chloride	0.28 J,B	1.0	ug/L	SW846 8260B
Tetrachloroethene	1.9	1.0	ug/L	SW846 8260B
Trichloroethene	0.11 J	1.0	ug/L	SW846 8260B
2-Butanone (MEK)	1.0 J	5.0	ug/L	SW846 8260B
Nitrate	4.4	0.20	mg/L	MCAWW 353.2
CAFB-D-1 08/31/99 10:00 009				
Methylene chloride	0.45 J,B	1.0	ug/L	SW846 8260B
Trichloroethene	1.9	1.0	ug/L	SW846 8260B
2-Butanone (MEK)	1.5 J	5.0	ug/L	SW846 8260B
Total Organic Carbon	0.60 B	1.0	mg/L	SW846 9060
Total Organic Halogens	8.2 B	30.0	ug/L	SW846 9020B

(Continued on next page)

EXECUTIVE SUMMARY - Detection Highlights

D9H310148

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
CAFB-D-EB 08/31/99 08:45 010				
Acetone	2.9 J	10	ug/L	SW846 8260B
1,1-Dichloroethene	0.50 J	1.0	ug/L	SW846 8260B
Methylene chloride	1.7 B	1.0	ug/L	SW846 8260B
Toluene	0.11 J	1.0	ug/L	SW846 8260B
Total Organic Carbon	0.37 B	1.0	mg/L	SW846 9060
Total Sulfide	0.37 B	4.0	mg/L	SW846 9030B/9034
CAFB-Q-1 08/30/99 12:30 011				
Total Organic Carbon	0.57 B	1.0	mg/L	SW846 9060
CAFB-V-1 08/31/99 07:30 012				
Acetone	2.4 J	10	ug/L	SW846 8260B
1,1-Dichloroethene	0.48 J	1.0	ug/L	SW846 8260B
Methylene chloride	1.4 B	1.0	ug/L	SW846 8260B
Trichloroethene	0.84 J	1.0	ug/L	SW846 8260B
Total Organic Carbon	0.63 B	1.0	mg/L	SW846 9060
CAFB-C-1 08/31/99 08:15 013				
1,1-Dichloroethene	0.22 J	1.0	ug/L	SW846 8260B
Methylene chloride	1.2 B	1.0	ug/L	SW846 8260B
Trichloroethene	0.92 J	1.0	ug/L	SW846 8260B
Total Organic Carbon	0.56 B	1.0	mg/L	SW846 9060
Total Organic Halogens	3.0 B	30.0	ug/L	SW846 9020B
TB 08/31/99 014				
Methylene chloride	0.67 J,B	1.0	ug/L	SW846 8260B

METHODS SUMMARY

D9H310148

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Cyanide, Total	SW846 9012A	SW846 9012A
Nitrate	MCAWW 353.2	MCAWW 353.2
Nitrite	MCAWW 354.1	
Sulfides, Total 9030B/9034	SW846 9030B/903	
Total Organic Carbon	SW846 9060	SW846 9060
Total Organic Halogens	SW846 9020B	SW846 9020B
Volatile Organics by GC/MS	SW846 8260B	SW846 5030B/826

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

D9H310148

WO #	SAMPLE#	CLIENT SAMPLE ID	DATE	TIME
D1XHG	001	CAFB-S-1	08/29/99	14:15
D1XHL	002	CAFB-B-1	08/29/99	16:00
D1XHN	003	CAFB-T-1	08/30/99	09:40
D1XHQ	004	CAFB-U-1	08/30/99	11:10
D20M6	005	CAFB-H-1	08/31/99	13:40
D20M7	006	CAFB-G-1	08/31/99	14:45
D20M8	007	CAFB-F-1	08/31/99	15:00
D20M9	008	CAFB-E-1	08/31/99	12:45
D20MA	009	CAFB-D-1	08/31/99	10:00
D20MD	010	CAFB-D-EB	08/31/99	08:45
D20ME	011	CAFB-Q-1	08/30/99	12:30
D20MG	012	CAFB-V-1	08/31/99	07:30
D20MH	013	CAFB-C-1	08/31/99	08:15
D20MQ	014	TB	08/31/99	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-E-1

GC/MS Volatiles

Lot-Sample #...: D9H310148-008 **Work Order #...:** D20M9101 **Matrix.....:** WG
Date Sampled...: 08/31/99 12:45 **Date Received..:** 09/01/99
Prep Date.....: 09/09/99 **Analysis Date..:** 09/09/99
Prep Batch #...: 9253205 **Analysis Time..:** 12:05
Dilution Factor: 1

Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acetone	ND	10	ug/L
Acetonitrile	ND	20	ug/L
Acrylonitrile	ND	20	ug/L
Benzene	ND	1.0	ug/L
Bromodichloromethane	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon disulfide	ND	1.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chloroprene	ND	1.0	ug/L
Dibromochloromethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Allyl chloride	ND	2.0	ug/L
Dibromomethane	ND	1.0	ug/L
trans-1,4-Dichloro-2-butene	ND	1.0	ug/L
Dichlorodifluoromethane	ND	2.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
cis-1,2-Dichloroethene	ND	1.0	ug/L
trans-1,2-Dichloroethene	ND	0.50	ug/L
1,2-Dichloroethene (total)	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
1,4-Dioxane	ND	200	ug/L
Ethylbenzene	ND	1.0	ug/L
Trichlorofluoromethane	ND	2.0	ug/L
2-Hexanone	ND	5.0	ug/L
Iodomethane	ND	1.0	ug/L
Isobutyl alcohol	ND	50	ug/L
Methacrylonitrile	ND	10	ug/L
Methylene chloride	**0.28 J,B**	**1.0**	**ug/L**

(Continued on next page)

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-E-1

GC/MS Volatiles

Lot-Sample #...: D9H310148-008 **Work Order #...:** D20M9101 **Matrix.....:** WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Methyl methacrylate	ND	1.0	ug/L
4-Methyl-2-pentanone	ND	5.0	ug/L
Propionitrile	ND	4.0	ug/L
Styrene	ND	1.0	ug/L
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	**1.9**	**1.0**	**ug/L**
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	**0.11 J**	**1.0**	**ug/L**
1,2,3-Trichloropropane	ND	1.0	ug/L
Vinyl acetate	ND	2.0	ug/L
Vinyl chloride	ND	2.0	ug/L
Xylenes (total)	ND	1.0	ug/L
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.0	ug/L
1,2-Dibromoethane (EDB)	ND	1.0	ug/L
2-Butanone (MEK)	**1.0 J**	**5.0**	**ug/L**
Acrolein	ND	20	ug/L
Ethyl methacrylate	ND	1.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	92	(86 - 118)
1,2-Dichloroethane-d4	86	(76 - 115)
4-Bromofluorobenzene	99	(85 - 115)
Toluene-d8	102	(85 - 115)

NOTE(S):

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US GEOLOGICAL SURVEY

CAFB-E-1

GC/MS Volatiles

Lot-Sample #: D9H310148-008 **Work Order #:** D20M9101 **Matrix:** WG

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

PARAMETER	CAS #	ESTIMATED RESULT	RETENTION TIME	UNITS
None				ug/L

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-D-1

GC/MS Volatiles

Lot-Sample #...: D9H310148-009 Work Order #...: D20MA101 Matrix.....: WG
Date Sampled...: 08/31/99 10:00 Date Received..: 09/01/99
Prep Date.....: 09/09/99 Analysis Date..: 09/09/99
Prep Batch #...: 9253205 Analysis Time..: 13:55
Dilution Factor: 1

Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acetone	ND	10	ug/L
Acetonitrile	ND	20	ug/L
Acrylonitrile	ND	20	ug/L
Benzene	ND	1.0	ug/L
Bromodichloromethane	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon disulfide	ND	1.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chloroprene	ND	1.0	ug/L
Dibromochloromethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Allyl chloride	ND	2.0	ug/L
Dibromomethane	ND	1.0	ug/L
trans-1,4-Dichloro-2-butene	ND	1.0	ug/L
Dichlorodifluoromethane	ND	2.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
cis-1,2-Dichloroethene	ND	1.0	ug/L
trans-1,2-Dichloroethene	ND	0.50	ug/L
1,2-Dichloroethene (total)	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
1,4-Dioxane	ND	200	ug/L
Ethylbenzene	ND	1.0	ug/L
Trichlorofluoromethane	ND	2.0	ug/L
2-Hexanone	ND	5.0	ug/L
Iodomethane	ND	1.0	ug/L
Isobutyl alcohol	ND	50	ug/L
Methacrylonitrile	ND	10	ug/L
Methylene chloride	**0.45 J,B**	**1.0**	**ug/L**

(Continued on next page)

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-D-1

GC/MS Volatiles

Lot-Sample #...: D9H310148-009 **Work Order #...:** D20MA101 **Matrix.....:** WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Methyl methacrylate	ND	1.0	ug/L
4-Methyl-2-pentanone	ND	5.0	ug/L
Propionitrile	ND	4.0	ug/L
Styrene	ND	1.0	ug/L
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	**1.9**	**1.0**	**ug/L**
1,2,3-Trichloropropane	ND	1.0	ug/L
Vinyl acetate	ND	2.0	ug/L
Vinyl chloride	ND	2.0	ug/L
Xylenes (total)	ND	1.0	ug/L
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.0	ug/L
1,2-Dibromoethane (EDB)	ND	1.0	ug/L
2-Butanone (MEK)	**1.5 J**	**5.0**	**ug/L**
Acrolein	ND	20	ug/L
Ethyl methacrylate	ND	1.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	97	(86 - 118)
1,2-Dichloroethane-d4	90	(76 - 115)
4-Bromofluorobenzene	98	(85 - 115)
Toluene-d8	99	(85 - 115)

NOTE(S):

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US GEOLOGICAL SURVEY

CAFB-D-1

GC/MS Volatiles

Lot-Sample #: D9H310148-009 **Work Order #:** D20MA101 **Matrix:** WG

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

PARAMETER	CAS #	ESTIMATED RESULT	RETENTION TIME	UNITS
None				ug/L

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-D-EB

GC/MS Volatiles

Lot-Sample #...: D9H310148-010 **Work Order #...:** D20MD101 **Matrix.....:** WG
Date Sampled...: 08/31/99 08:45 **Date Received..:** 09/01/99
Prep Date.....: 09/09/99 **Analysis Date..:** 09/09/99
Prep Batch #...: 9253205 **Analysis Time..:** 12:27
Dilution Factor: 1

Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acetone	**2.9 J**	**10**	**ug/L**
Acetonitrile	ND	20	ug/L
Acrylonitrile	ND	20	ug/L
Benzene	ND	1.0	ug/L
Bromodichloromethane	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon disulfide	ND	1.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chloroprene	ND	1.0	ug/L
Dibromochloromethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Allyl chloride	ND	2.0	ug/L
Dibromomethane	ND	1.0	ug/L
trans-1,4-Dichloro-2-butene	ND	1.0	ug/L
Dichlorodifluoromethane	ND	2.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	**0.50 J**	**1.0**	**ug/L**
cis-1,2-Dichloroethene	ND	1.0	ug/L
trans-1,2-Dichloroethene	ND	0.50	ug/L
1,2-Dichloroethene (total)	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
1,4-Dioxane	ND	200	ug/L
Ethylbenzene	ND	1.0	ug/L
Trichlorofluoromethane	ND	2.0	ug/L
2-Hexanone	ND	5.0	ug/L
Iodomethane	ND	1.0	ug/L
Isobutyl alcohol	ND	50	ug/L
Methacrylonitrile	ND	10	ug/L
Methylene chloride	**1.7 B**	**1.0**	**ug/L**

(Continued on next page)

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-D-EB

GC/MS Volatiles

Lot-Sample #...: D9H310148-010 Work Order #...: D20MD101 Matrix.....: WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Methyl methacrylate	ND	1.0	ug/L
4-Methyl-2-pentanone	ND	5.0	ug/L
Propionitrile	ND	4.0	ug/L
Styrene	ND	1.0	ug/L
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	**0.11 J**	**1.0**	**ug/L**
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
1,2,3-Trichloropropane	ND	1.0	ug/L
Vinyl acetate	ND	2.0	ug/L
Vinyl chloride	ND	2.0	ug/L
Xylenes (total)	ND	1.0	ug/L
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.0	ug/L
1,2-Dibromoethane (EDB)	ND	1.0	ug/L
2-Butanone (MEK)	ND	5.0	ug/L
Acrolein	ND	20	ug/L
Ethyl methacrylate	ND	1.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	95	(86 - 118)
1,2-Dichloroethane-d4	90	(76 - 115)
4-Bromofluorobenzene	98	(85 - 115)
Toluene-d8	100	(85 - 115)

NOTE(S):

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

T2 - Confident identification - major ions and ratios largely agree.

US GEOLOGICAL SURVEY

CAFB-D-EB

GC/MS Volatiles

Lot-Sample #: D9H310148-010 **Work Order #:** D20MD101 **Matrix:** WG

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

PARAMETER	CAS #	ESTIMATED RESULT		RETENTION TIME	UNITS
Cyclotetrasiloxane, octamethyl	556-67-2	2.3 T2	M	12.443	ug/L
tert-Butyl alcohol		28 J	Q	4.43	ug/L

NOTE(S):

Q: Result was quantitated against the response factor of a calibration standard.

M: Result was measured against nearest internal standard assuming a response factor of 1.

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-V-1

GC/MS Volatiles

Lot-Sample #...: D9H310148-012 Work Order #...: D20MG105 Matrix.....: WG
Date Sampled...: 08/31/99 07:30 Date Received..: 09/01/99
Prep Date.....: 09/09/99 Analysis Date..: 09/09/99
Prep Batch #...: 9253205 Analysis Time..: 12:49
Dilution Factor: 1

Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acetone	**2.4 J**	**10**	**ug/L**
Acetonitrile	ND	20	ug/L
Acrylonitrile	ND	20	ug/L
Benzene	ND	1.0	ug/L
Bromodichloromethane	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon disulfide	ND	1.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chloroprene	ND	1.0	ug/L
Dibromochloromethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Allyl chloride	ND	2.0	ug/L
Dibromomethane	ND	1.0	ug/L
trans-1,4-Dichloro-2-butene	ND	1.0	ug/L
Dichlorodifluoromethane	ND	2.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	**0.48 J**	**1.0**	**ug/L**
cis-1,2-Dichloroethene	ND	1.0	ug/L
trans-1,2-Dichloroethene	ND	0.50	ug/L
1,2-Dichloroethene (total)	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
1,4-Dioxane	ND	200	ug/L
Ethylbenzene	ND	1.0	ug/L
Trichlorofluoromethane	ND	2.0	ug/L
2-Hexanone	ND	5.0	ug/L
Iodomethane	ND	1.0	ug/L
Isobutyl alcohol	ND	50	ug/L
Methacrylonitrile	ND	10	ug/L
Methylene chloride	**1.4 B**	**1.0**	**ug/L**

(Continued on next page)

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-V-1

GC/MS Volatiles

Lot-Sample #...: D9H310148-012 Work Order #...: D20MG105 Matrix.....: WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Methyl methacrylate	ND	1.0	ug/L
4-Methyl-2-pentanone	ND	5.0	ug/L
Propionitrile	ND	4.0	ug/L
Styrene	ND	1.0	ug/L
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	**0.84 J**	**1.0**	**ug/L**
1,2,3-Trichloropropane	ND	1.0	ug/L
Vinyl acetate	ND	2.0	ug/L
Vinyl chloride	ND	2.0	ug/L
Xylenes (total)	ND	1.0	ug/L
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.0	ug/L
1,2-Dibromoethane (EDB)	ND	1.0	ug/L
2-Butanone (MEK)	ND	5.0	ug/L
Acrolein	ND	20	ug/L
Ethyl methacrylate	ND	1.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	95	(86 - 118)
1,2-Dichloroethane-d4	89	(76 - 115)
4-Bromofluorobenzene	97	(85 - 115)
Toluene-d8	100	(85 - 115)

NOTE(S):

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US GEOLOGICAL SURVEY

CAFB-V-1

GC/MS Volatiles

Lot-Sample #: D9H310148-012 **Work Order #:** D20MG105 **Matrix:** WG

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

PARAMETER	CAS #	ESTIMATED RESULT	RETENTION TIME	UNITS
None				ug/L

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-C-1

GC/MS Volatiles

Lot-Sample #...: D9H310148-013 **Work Order #...:** D20MH105 **Matrix.....:** WG
Date Sampled...: 08/31/99 08:15 **Date Received..:** 09/01/99
Prep Date.....: 09/09/99 **Analysis Date..:** 09/09/99
Prep Batch #...: 9253205 **Analysis Time..:** 13:11
Dilution Factor: 1

Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acetone	ND	10	ug/L
Acetonitrile	ND	20	ug/L
Acrylonitrile	ND	20	ug/L
Benzene	ND	1.0	ug/L
Bromodichloromethane	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon disulfide	ND	1.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chloroprene	ND	1.0	ug/L
Dibromochloromethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Allyl chloride	ND	2.0	ug/L
Dibromomethane	ND	1.0	ug/L
trans-1,4-Dichloro-2-butene	ND	1.0	ug/L
Dichlorodifluoromethane	ND	2.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	**0.22 J**	**1.0**	**ug/L**
cis-1,2-Dichloroethene	ND	1.0	ug/L
trans-1,2-Dichloroethene	ND	0.50	ug/L
1,2-Dichloroethene (total)	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
1,4-Dioxane	ND	200	ug/L
Ethylbenzene	ND	1.0	ug/L
Trichlorofluoromethane	ND	2.0	ug/L
2-Hexanone	ND	5.0	ug/L
Iodomethane	ND	1.0	ug/L
Isobutyl alcohol	ND	50	ug/L
Methacrylonitrile	ND	10	ug/L
Methylene chloride	**1.2 B**	**1.0**	**ug/L**

(Continued on next page)

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-C-1

GC/MS Volatiles

Lot-Sample #...: D9H310148-013 **Work Order #...:** D20MH105 **Matrix.....:** WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Methyl methacrylate	ND	1.0	ug/L
4-Methyl-2-pentanone	ND	5.0	ug/L
Propionitrile	ND	4.0	ug/L
Styrene	ND	1.0	ug/L
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	**0.92 J**	**1.0**	**ug/L**
1,2,3-Trichloropropane	ND	1.0	ug/L
Vinyl acetate	ND	2.0	ug/L
Vinyl chloride	ND	2.0	ug/L
Xylenes (total)	ND	1.0	ug/L
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.0	ug/L
1,2-Dibromoethane (EDB)	ND	1.0	ug/L
2-Butanone (MEK)	ND	5.0	ug/L
Acrolein	ND	20	ug/L
Ethyl methacrylate	ND	1.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	96	(86 - 118)
1,2-Dichloroethane-d4	91	(76 - 115)
4-Bromofluorobenzene	99	(85 - 115)
Toluene-d8	100	(85 - 115)

NOTE(S):

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US GEOLOGICAL SURVEY

CAFB-C-1

GC/MS Volatiles

Lot-Sample #: D9H310148-013 **Work Order #:** D20MH105 **Matrix:** WG

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

PARAMETER	CAS #	ESTIMATED RESULT	RETENTION TIME	UNITS
None				ug/L

US GEOLOGICAL SURVEY

Client Sample ID: TB

GC/MS Volatiles

Lot-Sample #...: D9H310148-014 **Work Order #...:** D20MQ101 **Matrix.....:** WG
Date Sampled...: 08/31/99 **Date Received..:** 09/01/99
Prep Date.....: 09/09/99 **Analysis Date..:** 09/09/99
Prep Batch #...: 9253205 **Analysis Time..:** 13:33
Dilution Factor: 1

Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acetone	ND	10	ug/L
Acetonitrile	ND	20	ug/L
Acrylonitrile	ND	20	ug/L
Benzene	ND	1.0	ug/L
Bromodichloromethane	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon disulfide	ND	1.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chloroprene	ND	1.0	ug/L
Dibromochloromethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Allyl chloride	ND	2.0	ug/L
Dibromomethane	ND	1.0	ug/L
trans-1,4-Dichloro-2-butene	ND	1.0	ug/L
Dichlorodifluoromethane	ND	2.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
cis-1,2-Dichloroethene	ND	1.0	ug/L
trans-1,2-Dichloroethene	ND	0.50	ug/L
1,2-Dichloroethene (total)	ND	1.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
1,4-Dioxane	ND	200	ug/L
Ethylbenzene	ND	1.0	ug/L
Trichlorofluoromethane	ND	2.0	ug/L
2-Hexanone	ND	5.0	ug/L
Iodomethane	ND	1.0	ug/L
Isobutyl alcohol	ND	50	ug/L
Methacrylonitrile	ND	10	ug/L
Methylene chloride	**0.67 J,B**	**1.0**	**ug/L**

(Continued on next page)

US GEOLOGICAL SURVEY

Client Sample ID: TB

GC/MS Volatiles

Lot-Sample #...: D9H310148-014 **Work Order #...:** D20MQ101 **Matrix.....:** WG

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Methyl methacrylate	ND	1.0	ug/L
4-Methyl-2-pentanone	ND	5.0	ug/L
Propionitrile	ND	4.0	ug/L
Styrene	ND	1.0	ug/L
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
1,2,3-Trichloropropane	ND	1.0	ug/L
Vinyl acetate	ND	2.0	ug/L
Vinyl chloride	ND	2.0	ug/L
Xylenes (total)	ND	1.0	ug/L
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.0	ug/L
1,2-Dibromoethane (EDB)	ND	1.0	ug/L
2-Butanone (MEK)	ND	5.0	ug/L
Acrolein	ND	20	ug/L
Ethyl methacrylate	ND	1.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	97	(86 - 118)
1,2-Dichloroethane-d4	92	(76 - 115)
4-Bromofluorobenzene	100	(85 - 115)
Toluene-d8	101	(85 - 115)

NOTE(S):

J Estimated result. Result is less than RL.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

US GEOLOGICAL SURVEY

TB

GC/MS Volatiles

Lot-Sample #: D9H310148-014 **Work Order #:** D20MQ101 **Matrix:** WG

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

PARAMETER	CAS #	ESTIMATED RESULT	RETENTION TIME	UNITS
None				ug/L

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-S-1

General Chemistry

Lot-Sample #...: D9H310148-001 **Work Order #...:** D1XHG **Matrix.....:** WG
Date Sampled...: 08/29/99 14:15 **Date Received..:** 08/31/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total	ND	0.010	mg/L	SW846 9012A	09/03/99	9251399
		Dilution Factor: 1		Analysis Time..: 12:42		
Total Organic Carbon	**0.30 B**	**1.0**	**mg/L**	**SW846 9060**	**09/07-09/08/99**	**9251279**
		Dilution Factor: 1		Analysis Time..: 20:01		
Total Organic Halogens	ND	30.0	ug/L	SW846 9020B	09/13-09/14/99	9258212
		Dilution Factor: 1		Analysis Time..: 14:40		
Total Sulfide	ND	4.0	mg/L	SW846 9030B/9034	09/03-09/04/99	9247121
		Dilution Factor: 1		Analysis Time..: 17:48		

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-B-1

General Chemistry

Lot-Sample #...: D9H310148-002 Work Order #...: D1XHL Matrix.....: WG
Date Sampled...: 08/29/99 16:00 Date Received..: 08/31/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total	ND	0.010	mg/L	SW846 9012A	09/03/99	9251399
		Dilution Factor: 1		Analysis Time..: 12:44		
Total Organic Carbon	0.43 B	1.0	mg/L	SW846 9060	09/07-09/08/99	9251279
		Dilution Factor: 1		Analysis Time..: 20:14		
Total Organic Halogens	3.5 B	30.0	ug/L	SW846 9020B	09/13-09/14/99	9258212
		Dilution Factor: 1		Analysis Time..: 14:50		
Total Sulfide	ND	4.0	mg/L	SW846 9030B/9034	09/03-09/04/99	9247121
		Dilution Factor: 1		Analysis Time..: 17:51		

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-T-1

General Chemistry

Lot-Sample #...: D9H310148-003 Work Order #...: D1XHN Matrix.....: WG
Date Sampled...: 08/30/99 09:40 Date Received..: 08/31/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total	ND	0.010	mg/L	SW846 9012A	09/03/99	9251399
		Dilution Factor: 1		Analysis Time..: 12:45		
Total Organic Carbon	**0.40 B**	**1.0**	**mg/L**	**SW846 9060**	**09/07-09/08/99**	**9251279**
		Dilution Factor: 1		Analysis Time..: 20:45		
Total Organic Halogens	ND	30.0	ug/L	SW846 9020B	09/13-09/14/99	9258212
		Dilution Factor: 1		Analysis Time..: 14:55		
Total Sulfide	ND	4.0	mg/L	SW846 9030B/9034	09/03-09/04/99	9247121
		Dilution Factor: 1		Analysis Time..: 17:54		

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-U-1

General Chemistry

Lot-Sample #...: D9H310148-004 Work Order #...: D1XHQ Matrix.....: WG
Date Sampled...: 08/30/99 11:10 Date Received..: 08/31/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total	ND	0.010	mg/L	SW846 9012A	09/03/99	9251399
		Dilution Factor: 1		Analysis Time..: 12:47		
Total Organic Carbon	**0.31 B**	**1.0**	**mg/L**	**SW846 9060**	**09/07-09/08/99**	**9251279**
		Dilution Factor: 1		Analysis Time..: 20:55		
Total Organic Halogens	ND	30.0	ug/L	SW846 9020B	09/13-09/14/99	9258212
		Dilution Factor: 1		Analysis Time..: 14:59		
Total Sulfide	ND	4.0	mg/L	SW846 9030B/9034	09/03-09/04/99	9247121
		Dilution Factor: 1		Analysis Time..: 17:57		

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-H-1

General Chemistry

Lot-Sample #...: D9H310148-005 **Work Order #...:** D20M6 **Matrix.....:** WG
Date Sampled...: 08/31/99 13:40 **Date Received..:** 09/01/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nitrate	**1.1**	**0.10**	**mg/L**	**MCAWW 353.2**	**09/01/99**	**9251293**
		Dilution Factor: 1		Analysis Time..: 14:00		
Nitrite	ND	0.010	mg/L	MCAWW 354.1	09/01/99	9245424
		Dilution Factor: 1		Analysis Time..: 18:28		

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-G-1

General Chemistry

Lot-Sample #...: D9H310148-006 **Work Order #...:** D20M7 **Matrix.....:** WG
Date Sampled...: 08/31/99 14:45 **Date Received..:** 09/01/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nitrate	**4.0**	**0.10**	**mg/L**	**MCAWW 353.2**	**09/01/99**	**9251293**
		Dilution Factor: 1		Analysis Time..: 00:00		
Nitrite	ND	0.010	mg/L	MCAWW 354.1	09/01/99	9245424
		Dilution Factor: 1		Analysis Time..: 18:29		

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-F-1

General Chemistry

Lot-Sample #...: D9H310148-007 Work Order #...: D20M8 Matrix.....: WG
Date Sampled...: 08/31/99 15:00 Date Received..: 09/01/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nitrate	**1.2**	**0.10**	**mg/L**	**MCAWW 353.2**	**09/01/99**	**9251293**
		Dilution Factor: 1		Analysis Time..: 00:00		
Nitrite	ND	0.010	mg/L	MCAWW 354.1	09/01/99	9245424
		Dilution Factor: 1		Analysis Time..: 18:30		

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-E-1

General Chemistry

Lot-Sample #...: D9H310148-008 Work Order #...: D20M9 Matrix.....: WG
Date Sampled...: 08/31/99 12:45 Date Received..: 09/01/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nitrate	**4.4**	**0.20**	**mg/L**	**MCAWW 353.2**	**09/01/99**	**9251293**
		Dilution Factor: 1		Analysis Time..: 14:00		
Nitrite	ND	0.010	mg/L	MCAWW 354.1	09/01/99	9245424
		Dilution Factor: 1		Analysis Time..: 18:30		

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-D-1

General Chemistry

Lot-Sample #...: D9H310148-009 Work Order #...: D20MA Matrix.....: WG
Date Sampled...: 08/31/99 10:00 Date Received..: 09/01/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total	ND	0.010	mg/L	SW846 9012A	09/03/99	9251399
		Dilution Factor: 1		Analysis Time..: 12:54		
Total Organic Carbon	0.60 B	1.0	mg/L	SW846 9060	09/07-09/08/99	9251279
		Dilution Factor: 1		Analysis Time..: 19:40		
Total Organic Halogens	8.2 B	30.0	ug/L	SW846 9020B	09/13-09/14/99	9258212
		Dilution Factor: 1		Analysis Time..: 15:00		
Total Sulfide	ND	4.0	mg/L	SW846 9030B/9034	09/03-09/04/99	9247121
		Dilution Factor: 1		Analysis Time..: 20:50		

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-D-EB

General Chemistry

Lot-Sample #...: D9H310148-010 Work Order #...: D20MD Matrix.....: WG
Date Sampled...: 08/31/99 08:45 Date Received..: 09/01/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total	ND	0.010	mg/L	SW846 9012A	09/03/99	9251399
		Dilution Factor: 1		Analysis Time..: 13:00		
Total Organic Carbon	0.37 B	1.0	mg/L	SW846 9060	09/07-09/08/99	9251279
		Dilution Factor: 1		Analysis Time..: 21:41		
Total Organic Halogens	ND	30.0	ug/L	SW846 9020B	09/13-09/14/99	9258212
		Dilution Factor: 1		Analysis Time..: 16:00		
Total Sulfide	0.37 B	4.0	mg/L	SW846 9030B/9034	09/03-09/04/99	9247121
		Dilution Factor: 1		Analysis Time..: 20:59		

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-Q-1

General Chemistry

Lot-Sample #...: D9H310148-011 Work Order #...: D20ME Matrix.....: WG
Date Sampled...: 08/30/99 12:30 Date Received..: 09/01/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total	ND	0.010	mg/L	SW846 9012A	09/03/99	9251399
		Dilution Factor: 1		Analysis Time..: 13:00		
Total Organic Carbon	0.57 B	1.0	mg/L	SW846 9060	09/07-09/08/99	9251279
		Dilution Factor: 1		Analysis Time..: 21:50		
Total Organic Halogens	ND	30.0	ug/L	SW846 9020B	09/13-09/14/99	9258212
		Dilution Factor: 1		Analysis Time..: 16:15		
Total Sulfide	ND	4.0	mg/L	SW846 9030B/9034	09/03-09/04/99	9247121
		Dilution Factor: 1		Analysis Time..: 21:02		

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-V-1

General Chemistry

Lot-Sample #...: D9H310148-012 **Work Order #...:** D20MG **Matrix.....:** WG
Date Sampled...: 08/31/99 07:30 **Date Received..:** 09/01/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total	ND	0.010	mg/L	SW846 9012A	09/03/99	9251399
		Dilution Factor: 1		Analysis Time..: 13:04		
Total Organic Carbon	**0.63 B**	**1.0**	**mg/L**	**SW846 9060**	**09/07-09/08/99**	**9251279**
		Dilution Factor: 1		Analysis Time..: 22:00		
Total Organic Halogens	ND	30.0	ug/L	SW846 9020B	09/13-09/14/99	9258212
		Dilution Factor: 1		Analysis Time..: 16:45		
Total Sulfide	ND	4.0	mg/L	SW846 9030B/9034	09/03-09/04/99	9247121
		Dilution Factor: 1		Analysis Time..: 21:05		

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

US GEOLOGICAL SURVEY

Client Sample ID: CAFB-C-1

General Chemistry

Lot-Sample #...: D9H310148-013 Work Order #...: D20MH Matrix.....: WG
Date Sampled...: 08/31/99 08:15 Date Received..: 09/01/99

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total	ND	0.010	mg/L	SW846 9012A	09/03/99	9251399
		Dilution Factor: 1		Analysis Time..: 13:06		
Total Organic Carbon	0.56 B	1.0	mg/L	SW846 9060	09/07-09/08/99	9251279
		Dilution Factor: 1		Analysis Time..: 22:10		
Total Organic Halogens	3.0 B	30.0	ug/L	SW846 9020B	09/13-09/14/99	9258212
		Dilution Factor: 1		Analysis Time..: 17:00		
Total Sulfide	ND	4.0	mg/L	SW846 9030B/9034	09/03-09/04/99	9247121
		Dilution Factor: 1		Analysis Time..: 21:08		

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

D9H310148

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 9060		9251279	9251124
	WG	SW846 9020B		9258212	9258076
	WG	SW846 9012A		9251399	9251180
	WG	SW846 9030B/9034		9247121	9247010
002	WG	SW846 9060		9251279	9251124
	WG	SW846 9020B		9258212	9258076
	WG	SW846 9012A		9251399	9251180
	WG	SW846 9030B/9034		9247121	9247010
003	WG	SW846 9060		9251279	9251124
	WG	SW846 9020B		9258212	9258076
	WG	SW846 9012A		9251399	9251180
	WG	SW846 9030B/9034		9247121	9247010
004	WG	SW846 9060		9251279	9251124
	WG	SW846 9020B		9258212	9258076
	WG	SW846 9012A		9251399	9251180
	WG	SW846 9030B/9034		9247121	9247010
005	WG	MCAWW 353.2		9251293	
	WG	MCAWW 354.1		9245424	9245206
006	WG	MCAWW 353.2		9251293	
	WG	MCAWW 354.1		9245424	9245206
007	WG	MCAWW 353.2		9251293	
	WG	MCAWW 354.1		9245424	9245206
008	WG	MCAWW 353.2		9251293	
	WG	MCAWW 354.1		9245424	9245206
	WG	SW846 8260B		9253205	9253064
009	WG	SW846 9060		9251279	9251124
	WG	SW846 9020B		9258212	9258076
	WG	SW846 8260B		9253205	9253064
	WG	SW846 9012A		9251399	9251180
	WG	SW846 9030B/9034		9247121	9247010
010	WG	SW846 9060		9251279	9251124
	WG	SW846 9020B		9258212	9258076
	WG	SW846 8260B		9253205	9253064
	WG	SW846 9012A		9251399	9251180
	WG	SW846 9030B/9034		9247121	9247010

QC DATA ASSOCIATION SUMMARY

D9H310148

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
011	WG	SW846 9060		9251279	9251124
	WG	SW846 9020B		9258212	9258076
	WG	SW846 9012A		9251399	9251180
	WG	SW846 9030B/9034		9247121	9247010
012	WG	SW846 9060		9251279	9251124
	WG	SW846 9020B		9258212	9258076
	WG	SW846 8260B		9253205	9253064
	WG	SW846 9012A		9251399	9251180
	WG	SW846 9030B/9034		9247121	9247010
013	WG	SW846 9060		9251279	9251124
	WG	SW846 9020B		9258212	9258076
	WG	SW846 8260B		9253205	9253064
	WG	SW846 9012A		9251399	9251180
	WG	SW846 9030B/9034		9247121	9247010
014	WG	SW846 8260B		9253205	9253064

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: D9H310148 Work Order #...: D29XD102-LCS Matrix.....: WATER
LCS Lot-Sample#: D9I100000-205 D29XD103-LCSD
Prep Date.....: 09/09/99 Analysis Date..: 09/09/99
Prep Batch #...: 9253205 Analysis Time..: 09:23
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
1,1-Dichloroethene	96	(75 - 124)			SW846 8260B
	99	(75 - 124)	3.5	(0-20)	SW846 8260B
Benzene	91	(82 - 114)			SW846 8260B
	95	(82 - 114)	4.1	(0-20)	SW846 8260B
Chlorobenzene	96	(86 - 120)			SW846 8260B
	98	(86 - 120)	2.0	(0-20)	SW846 8260B
Toluene	101	(85 - 115)			SW846 8260B
	102	(85 - 115)	1.8	(0-20)	SW846 8260B
Trichloroethene	89	(85 - 115)			SW846 8260B
	93	(85 - 115)	3.8	(0-20)	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	95	(86 - 118)
	98	(86 - 118)
1,2-Dichloroethane-d4	91	(76 - 115)
	92	(76 - 115)
4-Bromofluorobenzene	100	(85 - 115)
	98	(85 - 115)
Toluene-d8	98	(85 - 115)
	97	(85 - 115)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: D9H310148 Work Order #...: D29XD102-LCS Matrix.....: WATER
LCS Lot-Sample#: D9I100000-205 D29XD103-LCSD
Prep Date.....: 09/09/99 Analysis Date..: 09/09/99
Prep Batch #...: 9253205 Analysis Time..: 09:23
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
1,1-Dichloroethene	10.0	9.58	ug/L	96		SW846 8260B
	10.0	9.91	ug/L	99	3.5	SW846 8260B
Benzene	10.0	9.07	ug/L	91		SW846 8260B
	10.0	9.46	ug/L	95	4.1	SW846 8260B
Chlorobenzene	10.0	9.62	ug/L	96		SW846 8260B
	10.0	9.81	ug/L	98	2.0	SW846 8260B
Toluene	10.0	10.1	ug/L	101		SW846 8260B
	10.0	10.2	ug/L	102	1.8	SW846 8260B
Trichloroethene	10.0	8.94	ug/L	89		SW846 8260B
	10.0	9.29	ug/L	93	3.8	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	95	(86 - 118)
	98	(86 - 118)
1,2-Dichloroethane-d4	91	(76 - 115)
	92	(76 - 115)
4-Bromofluorobenzene	100	(85 - 115)
	98	(85 - 115)
Toluene-d8	98	(85 - 115)
	97	(85 - 115)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: D9H310148
MB Lot-Sample #: D9I100000-205
Work Order #...: D29XD101
Matrix.....: WATER
Prep Date.....: 09/09/99
Analysis Time..: 10:08
Analysis Date..: 09/09/99
Prep Batch #...: 9253205
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acetone	ND	10	ug/L	SW846 8260B
Acetonitrile	ND	20	ug/L	SW846 8260B
Acrylonitrile	ND	20	ug/L	SW846 8260B
Benzene	ND	1.0	ug/L	SW846 8260B
Bromodichloromethane	ND	1.0	ug/L	SW846 8260B
Bromoform	ND	1.0	ug/L	SW846 8260B
Bromomethane	ND	2.0	ug/L	SW846 8260B
Carbon disulfide	ND	1.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Chlorobenzene	ND	1.0	ug/L	SW846 8260B
Chloroprene	ND	1.0	ug/L	SW846 8260B
Dibromochloromethane	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	2.0	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
Chloromethane	ND	2.0	ug/L	SW846 8260B
Allyl chloride	ND	2.0	ug/L	SW846 8260B
Dibromomethane	ND	1.0	ug/L	SW846 8260B
trans-1,4-Dichloro-2-butene	ND	1.0	ug/L	SW846 8260B
Dichlorodifluoromethane	ND	2.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	0.50	ug/L	SW846 8260B
1,2-Dichloroethene (total)	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
cis-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
trans-1,3-Dichloropropene	ND	1.0	ug/L	SW846 8260B
1,4-Dioxane	ND	200	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Trichlorofluoromethane	ND	2.0	ug/L	SW846 8260B
2-Hexanone	ND	5.0	ug/L	SW846 8260B
Iodomethane	ND	1.0	ug/L	SW846 8260B
Isobutyl alcohol	ND	50	ug/L	SW846 8260B
Methacrylonitrile	ND	10	ug/L	SW846 8260B
Methylene chloride	**0.37 J**	**1.0**	**ug/L**	**SW846 8260B**
Methyl methacrylate	ND	1.0	ug/L	SW846 8260B
4-Methyl-2-pentanone	ND	5.0	ug/L	SW846 8260B
Propionitrile	ND	4.0	ug/L	SW846 8260B

(Continued on next page)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: D9H310148 Work Order #...: D29XD101 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Styrene	ND	1.0	ug/L	SW846 8260B
1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	SW846 8260B
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
1,2,3-Trichloropropane	ND	1.0	ug/L	SW846 8260B
Vinyl acetate	ND	2.0	ug/L	SW846 8260B
Vinyl chloride	ND	2.0	ug/L	SW846 8260B
Xylenes (total)	ND	1.0	ug/L	SW846 8260B
1,2-Dibromo-3-chloropropane (DBCP)	ND	2.0	ug/L	SW846 8260B
1,2-Dibromoethane (EDB)	ND	1.0	ug/L	SW846 8260B
2-Butanone (MEK)	ND	5.0	ug/L	SW846 8260B
Acrolein	ND	20	ug/L	SW846 8260B
Ethyl methacrylate	ND	1.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	99	(86 - 118)
1,2-Dichloroethane-d4	94	(76 - 115)
4-Bromofluorobenzene	102	(85 - 115)
Toluene-d8	97	(85 - 115)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

J Estimated result. Result is less than RL.

US GEOLOGICAL SURVEY

Method Blank Report

GC/MS Volatiles

Lot-Sample #: D9I100000-205 B **Work Order #:** D29XD101 **Matrix:** WATER

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

PARAMETER	CAS #	ESTIMATED RESULT	RETENTION TIME	UNITS
None				ug/L

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: D9H310148 Work Order #...: D20MA106-MS Matrix.....: WG
MS Lot-Sample #: D9H310148-009 D20MA107-MSD
Date Sampled...: 08/31/99 10:00 Date Received..: 09/01/99
Prep Date.....: 09/09/99 Analysis Date..: 09/09/99
Prep Batch #...: 9253205 Analysis Time..: 14:18
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzene	90	(82 - 114)			SW846 8260B
	90	(82 - 114)	0.37	(0-20)	SW846 8260B
Chlorobenzene	96	(86 - 120)			SW846 8260B
	93	(86 - 120)	3.2	(0-20)	SW846 8260B
1,1-Dichloroethene	96	(75 - 124)			SW846 8260B
	93	(75 - 124)	3.1	(0-20)	SW846 8260B
Toluene	99	(85 - 115)			SW846 8260B
	98	(85 - 115)	0.91	(0-20)	SW846 8260B
Trichloroethene	89	(85 - 115)			SW846 8260B
	89	(85 - 115)	0.11	(0-20)	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	99	(86 - 118)
	99	(86 - 118)
1,2-Dichloroethane-d4	93	(76 - 115)
	93	(76 - 115)
4-Bromofluorobenzene	101	(85 - 115)
	99	(85 - 115)
Toluene-d8	99	(85 - 115)
	98	(85 - 115)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: D9H310148 Work Order #...: D20MA106-MS Matrix.....: WG
MS Lot-Sample #: D9H310148-009 D20MA107-MSD
Date Sampled...: 08/31/99 10:00 Date Received..: 09/01/99
Prep Date.....: 09/09/99 Analysis Date..: 09/09/99
Prep Batch #...: 9253205 Analysis Time..: 14:18
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Benzene	ND	10.0	8.98	ug/L	90		SW846 8260B
	ND	10.0	9.01	ug/L	90	0.37	SW846 8260B
Chlorobenzene	ND	10.0	9.65	ug/L	96		SW846 8260B
	ND	10.0	9.35	ug/L	93	3.2	SW846 8260B
1,1-Dichloroethene	ND	10.0	9.58	ug/L	96		SW846 8260B
	ND	10.0	9.29	ug/L	93	3.1	SW846 8260B
Toluene	ND	10.0	9.91	ug/L	99		SW846 8260B
	ND	10.0	9.82	ug/L	98	0.91	SW846 8260B
Trichloroethene	1.9	10.0	10.8	ug/L	89		SW846 8260B
	1.9	10.0	10.8	ug/L	89	0.11	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	99	(86 - 118)
	99	(86 - 118)
1,2-Dichloroethane-d4	93	(76 - 115)
	93	(76 - 115)
4-Bromofluorobenzene	101	(85 - 115)
	99	(85 - 115)
Toluene-d8	99	(85 - 115)
	98	(85 - 115)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Lot-Sample #...: D9H310148 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total		WO#:D27VG102-LCS/D27VG103-LCSD				LCS Lot-Sample#: D9I080000-399	
	100	(72 - 118)			SW846 9012A	09/03/99	9251399
	100	(72 - 118)	0.25	(0-18)	SW846 9012A	09/03/99	9251399
		Dilution Factor: 1					
Nitrate		WO#:D27DK102-LCS/D27DK103-LCSD				LCS Lot-Sample#: D9I080000-293	
	97	(94 - 114)			MCAWW 353.2	08/27/99	9251293
	100	(94 - 114)	3.1	(0-10)	MCAWW 353.2	08/27/99	9251293
		Dilution Factor: 1					
Nitrite		WO#:D23GM102-LCS/D23GM103-LCSD				LCS Lot-Sample#: D9I020000-424	
	96	(90 - 110)			MCAWW 354.1	09/01/99	9245424
	97	(90 - 110)	0.77	(0-10)	MCAWW 354.1	09/01/99	9245424
		Dilution Factor: 1					
Total Organic Halogens		WO#:D2FWH102-LCS/D2FWH103-LCSD				LCS Lot-Sample#: D9I150000-212	
	104	(79 - 115)			SW846 9020B	09/13-09/14/99	9258212
	105	(79 - 115)	0.95	(0-18)	SW846 9020B	09/13-09/14/99	9258212
		Dilution Factor: 1					
Total Organic Carbon		WO#:D2797102-LCS/D2797103-LCSD				LCS Lot-Sample#: D9I080000-279	
	98	(90 - 110)			SW846 9060	09/07-09/08/99	9251279
	98	(90 - 110)	0.20	(0-10)	SW846 9060	09/07-09/08/99	9251279
		Dilution Factor: 1					
Total Sulfide		WO#:D258K102-LCS/D258K103-LCSD				LCS Lot-Sample#: D9I040000-121	
	88	(70 - 130)			SW846 9030B/9034	09/03-09/04/99	9247121
	87	(70 - 130)	0.96	(0-20)	SW846 9030B/9034	09/03-09/04/99	9247121
		Dilution Factor: 1					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Lot-Sample #...: D9H310148 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD		PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total			WO#:D27VG102-LCS/D27VG103-LCSD				LCS Lot-Sample#: D9I080000-399		
	0.200	0.200	mg/L	100		SW846	9012A	09/03/99	9251399
	0.200	0.200	mg/L	100	0.25	SW846	9012A	09/03/99	9251399
			Dilution Factor: 1						
Nitrate			WO#:D27DK102-LCS/D27DK103-LCSD				LCS Lot-Sample#: D9I080000-293		
	5.00	4.86	mg/L	97		MCAWW	353.2	08/27/99	9251293
	5.00	5.01	mg/L	100	3.1	MCAWW	353.2	08/27/99	9251293
			Dilution Factor: 1						
Nitrite			WO#:D23GM102-LCS/D23GM103-LCSD				LCS Lot-Sample#: D9I020000-424		
	0.0400	0.0384	mg/L	96		MCAWW	354.1	09/01/99	9245424
	0.0400	0.0387	mg/L	97	0.77	MCAWW	354.1	09/01/99	9245424
			Dilution Factor: 1						
Total Organic Halogens			WO#:D2FWH102-LCS/D2FWH103-LCSD				LCS Lot-Sample#: D9I150000-212		
	100	104	ug/L	104		SW846	9020B	09/13-09/14/99	9258212
	100	105	ug/L	105	0.95	SW846	9020B	09/13-09/14/99	9258212
			Dilution Factor: 1						
Total Organic Carbon			WO#:D2797102-LCS/D2797103-LCSD				LCS Lot-Sample#: D9I080000-279		
	25.0	24.4	mg/L	98		SW846	9060	09/07-09/08/99	9251279
	25.0	24.4	mg/L	98	0.20	SW846	9060	09/07-09/08/99	9251279
			Dilution Factor: 1						
Total Sulfide			WO#:D258K102-LCS/D258K103-LCSD				LCS Lot-Sample#: D9I040000-121		
	22.4	19.7	mg/L	88		SW846	9030B/9034	09/03-09/04/99	9247121
	22.4	19.5	mg/L	87	0.96	SW846	9030B/9034	09/03-09/04/99	9247121
			Dilution Factor: 1						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: D9H310148 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total		Work Order #: D27VG101		MB Lot-Sample #:	D9I080000-399	
	ND	0.010	mg/L	SW846 9012A	09/03/99	9251399
		Dilution Factor: 1				
		Analysis Time..: 12:30				
Nitrate		Work Order #: D27DK101		MB Lot-Sample #:	D9I080000-293	
	ND	0.10	mg/L	MCAWW 353.2	09/08-09/09/99	9251293
		Dilution Factor: 1				
		Analysis Time..: 07:00				
Nitrite		Work Order #: D23GM101		MB Lot-Sample #:	D9I020000-424	
	ND	0.010	mg/L	MCAWW 354.1	09/01/99	9245424
		Dilution Factor: 1				
		Analysis Time..: 18:26				
Total Organic Halogens		Work Order #: D2FWH101		MB Lot-Sample #:	D9I150000-212	
	3.6 B	**30.0**	**ug/L**	**SW846 9020B**	**09/13-09/14/99**	**9258212**
		Dilution Factor: 1				
		Analysis Time..: 14:00				
Total Organic Carbon		Work Order #: D2797101		MB Lot-Sample #:	D9I080000-279	
	0.44 B	**1.0**	**mg/L**	**SW846 9060**	**09/07-09/08/99**	**9251279**
		Dilution Factor: 1				
		Analysis Time..: 18:26				
Total Sulfide		Work Order #: D258K101		MB Lot-Sample #:	D9I040000-121	
	ND	4.0	mg/L	SW846 9030B/9034	09/03-09/04/99	9247121
		Dilution Factor: 1				
		Analysis Time..: 17:36				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: D9H310148 **Matrix.....:** WG
Date Sampled...: 08/31/99 10:00 **Date Received..:** 09/01/99

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total			WO#: D20MA108-MS/D20MA109-MSD			MS Lot-Sample #: D9H310148-009	
	98	(72 - 118)			SW846 9012A	09/03/99	9251399
	98	(72 - 118)	0.0	(0-18)	SW846 9012A	09/03/99	9251399
		Dilution Factor: 1					
		Analysis Time..: 12:56					
Nitrite			WO#: D20M6103-MS/D20M6104-MSD			MS Lot-Sample #: D9H310148-005	
	107	(90 - 110)			MCAWW 354.1	09/01/99	9245424
	105	(90 - 110)	1.6	(0-10)	MCAWW 354.1	09/01/99	9245424
		Dilution Factor: 1					
		Analysis Time..: 18:28					
Total Organic Halogens			WO#: D20MA10A-MS/D20MA10C-MSD			MS Lot-Sample #: D9H310148-009	
	88	(79 - 115)			SW846 9020B	09/13-09/14/99	9258212
	93	(79 - 115)	4.8	(0-18)	SW846 9020B	09/13-09/14/99	9258212
		Dilution Factor: 1					
		Analysis Time..: 15:10					
Total Organic Carbon			WO#: D20MA10F-MS/D20MA10G-MSD			MS Lot-Sample #: D9H310148-009	
	92	(90 - 110)			SW846 9060	09/07-09/08/99	9251279
	90	(90 - 110)	2.4	(0-10)	SW846 9060	09/07-09/08/99	9251279
		Dilution Factor: 1					
		Analysis Time..: 21:05					
Total Sulfide			WO#: D20MA10D-MS/D20MA10E-MSD			MS Lot-Sample #: D9H310148-009	
	87	(70 - 130)			SW846 9030B/9034	09/03-09/04/99	9247121
	86	(70 - 130)	1.5	(0-20)	SW846 9030B/9034	09/03-09/04/99	9247121
		Dilution Factor: 1					
		Analysis Time..: 17:53					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: D9H310148 **Matrix.....:** WG
Date Sampled...: 08/31/99 10:00 **Date Received..:** 09/01/99

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cyanide, Total			WO#: D20MA108-MS/D20MA109-MSD				MS Lot-Sample #: D9H310148-009		
	ND	0.100	0.0975	mg/L	98		SW846 9012A	09/03/99	9251399
	ND	0.100	0.0975	mg/L	98	0.0	SW846 9012A	09/03/99	9251399
			Dilution Factor: 1						
			Analysis Time..: 12:56						
Nitrite			WO#: D20M6103-MS/D20M6104-MSD				MS Lot-Sample #: D9H310148-005		
	ND	0.100	0.109	mg/L	107		MCAWW 354.1	09/01/99	9245424
	ND	0.100	0.108	mg/L	105	1.6	MCAWW 354.1	09/01/99	9245424
			Dilution Factor: 1						
			Analysis Time..: 18:28						
Total Organic Halogens			WO#: D20MA10A-MS/D20MA10C-MSD				MS Lot-Sample #: D9H310148-009		
	8.2	100	96.3	ug/L	88		SW846 9020B	09/13-09/14/99	9258212
	8.2	100	101	ug/L	93	4.8	SW846 9020B	09/13-09/14/99	9258212
			Dilution Factor: 1						
			Analysis Time..: 15:10						
Total Organic Carbon			WO#: D20MA10F-MS/D20MA10G-MSD				MS Lot-Sample #: D9H310148-009		
	0.60	25.0	23.6	mg/L	92		SW846 9060	09/07-09/08/99	9251279
	0.60	25.0	23.1	mg/L	90	2.4	SW846 9060	09/07-09/08/99	9251279
			Dilution Factor: 1						
			Analysis Time..: 21:05						
Total Sulfide			WO#: D20MA10D-MS/D20MA10E-MSD				MS Lot-Sample #: D9H310148-009		
	ND	22.4	19.4	mg/L	87		SW846 9030B/9	09/03-09/04/99	9247121
	ND	22.4	19.2	mg/L	86	1.5	SW846 9030B/9	09/03-09/04/99	9247121
			Dilution Factor: 1						
			Analysis Time..: 17:53						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

5DOA
250A
2X250P

1.2

25228

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: 061128
Sampling Location: Landfill-5 (wells Q, B, C, D, I, S, T, and U), Cannon Air Force Base, NM	Delivered to Shipper by: Fred Gebhardt — Airbill Number: 8027486599 93
Team Leader: Jerry Larson	Sampling Status: ☐ Done ☒ Continuing

Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
Aug 29 1999	1415	CAFB-S-1	Ground water	4	All Appx-IX: TOC-SW9060, TOX-SW9020, CYANIDE-SW9012, SULFIDE-SW9030	Environmental Sample
Aug 29 1999	1600	CAFB-B-1	"	"	"	"
Aug 30 1999	0940	CAFB-T-1	"	"	"	"
Aug 30 1999	1110	CAFB-U-1	"	"	"	"

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 [illegible]	9-30-99	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Christina Mott	Condition of Contents
	[illegible]	8/31/99	0830		Contents Temperature
					Laboratory Project Number: D9H 310148

I-53

U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUEST/CHAIN OF CUSTODY

10

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: 139750
Sampling Location: Sewage Lagoons, (wells E, F, G, H) Cannon Air Force Base, New Mexico	Delivered to Shipper by: Fred Gebhardt — Airbill Number: 9121 5758 0421
Team Leader: Jerry Larson / Project chief - (Miko) Eileen Roybal	Sampling Status: [X] Done [ ] Continuing

	Sample Date	Sample Time	Field Sample Number	Sample Type	No. of Containers	Analytical Methods (Parameters)	Remarks
5	8-31 1999	1340	CAFB- H -1	GROUND-WATER	2	NITRATE-E353.2 / E354.1	ENVIRONMENTAL SAMPLE
6	"	1445	CAFB-G -1	"	"	"	"
7	"	1500	CAFB-F-1	"	"	"	"
8	"	1245	CAFB-E-1	"	5	" 8240 + VOCS	"

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
Fred Gebhardt	Fed ex	9-1	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Christina Mott	Condition of Contents
	Jeff Mott	9-1-99	8:30		Contents Temperature
					Laboratory Project Number: D9H310148

U.S. GEOLOGICAL SURVEY, WATER RESOURCES DIVISION, NEW MEXICO DISTRICT
ANALYTICAL REQUEST/CHAIN OF CUSTODY

9

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: 139720
Sampling Location: Landfill-5 (wells Q, B, C, D, I, S, T, and U), Cannon Air Force Base, NM	Delivered to Shipper by: Fred Gebhardt	Airbill Number: 8121 5758 0400
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
11	8-30 1999	1230 ~~1230~~	CAFB- Q-1	Ground water	4	All Appx-IX: TOC-SW9060, TOX-SW9020, CYANIDE-SW9012, SULFIDE-SW9030	Environmental Sample
12	8-31	0730	CAFB-V-1	"	7	" " " + 8260 VOC	"
13	8-31	0815	CAFB-C-1	"	7	" "	

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
Fred Gebhardt	Fed ex	8-31	1600	Quanterra Environmental 4955 Yarrow Street Arvada, CO 80002 ph: (303) 421-6611 Attention: Christina Mott	Condition of Contents
	Jeff Mott	9-1-99	8:30		Contents Temperature
					Laboratory Project Number: D9H310148

Sample Receiving Checklist

Lot #: D9H310148 Date/Time Received: 0830 8/31

Company Name & Sampling Site: USGS

*Cooler #(s):

Temperatures: 1.2

Unpacking & Labeling Check Points:

N/A	Yes	No		Initials
	☑	☐	1. Cooler seals intact.	WD
	☑	☐	2. Chain of custody present.	
	☐	☑	3. Bottles broken and/or are leaking, comment if yes.	
			PHOTOGRAPH BROKEN BOTTLES	
	☑	☐	4. Containers labeled, comment if no.	
	☑	☐	5. pH of all samples checked and meet requirements, note exceptions.	
	☑	☐	6. Chain of custody includes "received by" and "relinquished" by signatures, dates, and times.	
	☐	☑	7. Receipt date(s) > 48 hours past the collection date(s)? If yes, notify PA/PM.	
	☑	☐	8. Chain of custody agrees with bottle count, comment if no.	
	☑	☐	9. Chain of custody agrees with labels, comment if no.	
☑	☐	☐	10. VOA samples filled completely, comment if no.	
☑	☐	☐	11. VOA bottles preserved, check for labels.	
	☐	☑	12. Did samples require preservation with sodium thiosulfate?	
☐	☐	☑	13. If yes to #12, did the samples contain residual chlorine?	
☐	☐	☑	14. Sediment present in "D," dissolved, bottles.	
	☐	☑	15. Are analyses with short holding times requested?	
☐	☐	☑	16. Is extra sample volume provided for MS, MSD or matrix duplicates?	
	☐	☑	17. Multiphase samples present? If yes, comment below.	
	☐	☑	18. Any subsampling for volatiles? If yes, list samples.	
			PHOTOGRAPH MULTIPHASE SAMPLES	
☑	☐	☐	19. Clear picture taken, labeled, and stapled to project folder.	
☑	☐	☐	20. Subcontract COC signed and sent with samples to bottle prep?	
	☑	☐	21. Was sample labeling double checked by a second person?	

Document any problems or discrepancies and the actions taken to resolve them on a Condition Upon Receipt Anomaly Report (CUR)

Sample Receiving Checklist

Lot #: D9H310148 Date/Time Received: 0 830 9/1/99

Company Name & Sampling Site: USGS

*Cooler #(s):

Temperatures: 5.2 .6 .9

Unpacking & Labeling Check Points:

N/A	Yes	No		Initials
	☑	☐	1. Cooler seals intact.	MD
	☑	☐	2. Chain of custody present.	
☐		☑	3. Bottles broken and/or are leaking, comment if yes.	
			PHOTOGRAPH BROKEN BOTTLES	
	☑	☐	4. Containers labeled, comment if no.	
	☑	☐	5. pH of all samples checked and meet requirements, note exceptions.	
	☑	☐	6. Chain of custody includes "received by" and "relinquished" by signatures, dates, and times.	
☐		☑	7. Receipt date(s) > 48 hours past the collection date(s)? If yes, notify PA/PM.	
	☑	☐	8. Chain of custody agrees with bottle count, comment if no.	
	☑	☐	9. Chain of custody agrees with labels, comment if no.	
☐	☑	☐	10. VOA samples filled completely, comment if no.	
☐	☑	☐	11. VOA bottles preserved, check for labels.	
☐	☐	☑	12. Did samples require preservation with sodium thiosulfate?	
☐	☐	☑	13. If yes to #12, did the samples contain residual chlorine?	
☐	☐	☑	14. Sediment present in "D," dissolved, bottles.	
	☑	☐	15. Are analyses with short holding times requested?	
☐	☑	☐	16. Is extra sample volume provided for MS, MSD or matrix duplicates?	
☐	☑	☐	17. Multiphase samples present? If yes, comment below.	
☐	☑	☐	18. Any subsampling for volatiles? If yes, list samples.	
			PHOTOGRAPH MULTIPHASE SAMPLES	
☑	☐	☐	19. Clear picture taken, labeled, and stapled to project folder.	
☑	☐	☐	20. Subcontract COC signed and sent with samples to bottle prep?	
	☑	☐	21. Was sample labeling double checked by a second person?	

Document any problems or discrepancies and the actions taken to resolve them on a Condition Upon Receipt Anomaly Report (CUR)

Sample container and preservation requirements
Landfill 5

Parameters and methods	Bottle Size and Type	Preservatives
Appendix-IX, Volatile Organic Compounds SW8260B	Three 40 ml glass vials	200 uL 50 % Hydrochloric Acid, Chilled to maintain 4 degrees Celsius
Cyanide, SW9012A	8 oz. polyethylene	2 mL 50% Sodium Hydroxide, pH>12, Chilled to maintain 4 degrees Celsius
Sulfide, SW9030B/9030	8 oz. polyethylene	1 mL 1N Zinc Acetate, plus 1 mL 50% Sodium Hydroxide, pH>9, Chilled to maintain 4 degrees Celsius
Total Organic Carbon (TOC) SW9060	16 oz. glass	2 mL 50% Sulfuric Acid, pH<2, Chilled to maintain 4 degrees Celsius
Total Organic Halogen, (TOX), SW9020B	8 oz. glass (amber)	1 mL 50% Sulfuric Acid, pH<2, Chilled to maintain 4 degrees Celsius

Sample container and preservation requirements
Sewage Lagoon

Parameters and methods	Bottle Size and Type	Preservatives
Appendix-IX, Volatile Organic Compounds SW8260b	Three 40 ml glass vials	200 uL 50 % Hydrochloric Acid, Chilled to maintain 4 degrees Celsius
Nitrate,MCAWW353.2 Nitrite , MCAWW354.1	16 oz. glass	2 mL 50% Sulfuric Acid, pH<2, Chilled to maintain 4 degrees Celsius

APPENDIX II

Field Data

8-29-99 Larson + Gebhardt arrive at Cannon AFB at 10:00 AM
Go to well B. to service transducer
Larson Goes to other wells to measure WL and PID

			WL	PID
Well	G	1030	284.30 AW TOPK	0.0
	D	1055	290.97 " " "	0.0
	C	1115	297.46 " " "	0.0
	J	1125		0.0
	S	1135	292.98 " " "	0.0
	I	1145	292.90 " "	0.0
	M	1153		0.0
	T	1200	291.71 " "	0.0
	L	1203		0.0
	U	1220	291.48 " "	0.0
	B	1015	291.50 " "	0.0

1300 Larson arrives at well S to begin purging — calibrate instruments

Time	Vol	pH	Cond	Temp
1317	0	6.85	1236	19.4
1330	10	7.14	784	20.3
1341	20	7.31	778	19.6
1350	30	7.40	774	19.6
1400	40	7.45	778	19.2
1411	50	7.51	771	19.6

Collected Sample CAFB-S-1 at 1415

8-29-99 Larson arrives at well I at 1430

Time	Vol	pH	Cond	Temp

Will Not Pump

Moved to Well B @ 1450
Bennett Pump SN 1808-408

Time	Vol	pH	Cond	Temp
1453	0	7.42	804	20.8
1504	10	7.41	803	19.3
1517	20	7.42	806	19.2
1527	30	7.45	793	19.4
1536	40	7.53	796	19.2
1546	50	7.59	793	19.0
1556	60	7.60	796	19.0

1600 Sampled CAFB-B-1

8-30-99 0745 Larson & Gebhardt arrive at Landfill 5. Larson calibrates instruments - Gebhardt drops off pumps + hoses at C+D and Larson at Well T

0820 Gebhardt goes for NO_3 in Clovis

Time	Vol	pH	Cond	Temp
0826	0	7.21	802	20.1
0838	10	7.32	842	19.3
0854	20	7.50	805	19.0
0906	30	7.54	802	19.0
0917	40	7.52	803	19.0
0928	50	7.57	803	19.0
0939	60	7.54	803	19.0

0940 sampled CAFB-T-1

Moved to CAFB-U at 1000

Time	vol	pH	cond	Temp
1004	0	7.93	7.82	19.3
1014	10	8.66	766	20.1
1025	20	8.36	781	19.4
1035	30	8.09	782	19.7
1045	40	7.89	780	19.3
1055	50	7.80	786	20.9
1105	60	7.75	786	19.6

1110 collect sample CAFB-U-1

8-30-99 Arrive at Well Q at 1130

Time	Vol	pH	cond	Temp
1134	0	8.23	721	25.6
1141	5	7.83	744	20.2
1148	10	7.78	742	19.9
Ran out of Nitrogen				
1211	15	7.69	741	19.6
1218	20	7.69	739	19.5
1225	25	7.74	742	19.4
1230	collect sample CAFB-Q-1			

1250 arrive at well I

Time Vol pH cond Temp

unable to pump

8-31-99 Larson + Gebhardt arrive at well C at 0710. Larson sets up for calibration Gebhardt goes to well D to prepare.

Time	Vol	pH	cond	temp
0727	0	7.47	640	20.7
0739	10	7.58	6.44	19.6
0749	20	7.65	6.42	19.1
0759	30	7.66	6.42	18.5
0809	40	7.68	640	18.6
0815	collect	Sample	CAFB-C-1	
0730	"	duplicate	CAFB-U-1	
0730	"	"	CAFB-V-TB	

0830 moved to well D
0849 collected ~~E~~ CAFB-D-EB
Barrett N 1808-409

Time	Vol	pH	Cond	Temp
0902	0	7.53	579	21.3
0913	10	7.55	590	19.0
0923	20	7.55	590	18.7
0933	30	7.55	589	19.1
0941	40	7.59	590	18.8
0950	50	7.57	589	19.2
1000	Samples	CAFB-D-1		
		CAFB-D-MS		
		CAFB-D-SD		

August 31-99 Moved to well E at 1015 PID=0

283 feet line + pump WL= 291.10 ft b/w top of pump base.

208+75-

E Bennett SN 1808-124

Time	Vol	pH	Cond	Temp
1129	0	7.62	745	31.9

1134 Pumped 6 gallons + stopped pumping
Turned off and wait till 1145 Started at 1200

1203	10	7.58	737	20.5
1210	20	7.49	741	19.1
1217	30	7.54	800	19.3
1225	40	7.58	794	19.1
1233	50	7.56	779	19.3
1241	60	7.60	756	19.9
1245	Sampled CAFB-E-1			

1255 arrive at well H
PID=0 WL= 290.22

Time	Vol	pH	Cond	Temp
1303	0	8.19	758	23.4
1312	10	7.63	749	19.2
1320	20	7.52	755	18.5
1328	30	7.54	756	19.9
1336	40	7.56	758	18.7
1340	collected sample CAFB-H-1			

8-31-99 well F PID=0 WL = 298.31
well G PID=0 WL = 290.69
1345 arrive at well G

Time	Vol	pH	Cond	Temp
1350	0	7.47	1209	25.3
1358	10	7.53	1077	19.3
Running out of water - Reduced pressure				
1410	20	7.44	1084	18.5
1420	30	7.45	1081	19.7
1430	40	7.48	1083	19.0
1440	50	7.48	1104	19.8
1445	Collect Sample CAFB-G-1			

WELL F

TIME	VOL (GAL)	TEMP	pH	COND
1415	<0.5	20.1	8.05	769
1420	5.0	19.5	7.88	752
1425	10.0	19.1	7.67	760
1435	20.0	19.3	7.67	759
1445	30.0	19.2	7.6[illegible]	761
1455	40.0	19.1	7.67	762

~~COLLECTED~~

1500 COLLECTED SAMPLE