

Enseco Incorporated

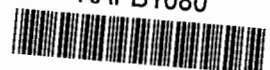
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ANALYTICAL RESULTS
FOR
U.S. GEOLOGICAL SURVEY
ENSECO-RMAL NO. 012685

JANUARY 28, 1991



KAFB1080





I. OVERVIEW

On December 4, 1990, Enseco-Rocky Mountain Analytical Laboratory received two aqueous samples from 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 and is arranged in the following order:

- I. Overview
- II. Sample Description Information/Analytical Test Requests
- III. Analytical Results
- IV. Quality Control Report
 - A. Standard Enseco QC
 - B. Project-Specific QC

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.



II. 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 Enseco - RMAL 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.

SAMPLE DESCRIPTION INFORMATION
for
U.S. Geological Survey

Lab ID	Client ID	Matrix	Sampled		Received
			Date	Time	Date
012685-0001-SA	KAFB021303-2	AQUEOUS	03 DEC 90	13:30	04 DEC 90
012685-0001-MS	KAFB021304-2	AQUEOUS	03 DEC 90	13:30	04 DEC 90
012685-0001-SD	KAFB021305-2	AQUEOUS	03 DEC 90	13:30	04 DEC 90
012685-0001-MB	METHOD BLANK				03 JAN 91
012685-0002-SA	KAFB021306-2	AQUEOUS	03 DEC 90	13:30	04 DEC 90

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 012685	Group Code	Analysis Description	Custom Test?		
0001	A	Total Organic Carbon (TOC)	N		
		Total Organic Halogen (TOX)	N		
		Chromium, Furnace AA	N		
		Chromium, Furnace AA (Total)	N		
		Prep - Total Metals, ICP	N		
		Volatile Organics	N		
		Appendix IX List	N		
		Screen - Volatile Organics	N		
		Semivolatile Organics	N		
		Appendix IX List	N		
		Prep - Semivolatile Organics by GC/MS	N		
		Chlorinated Pesticides and PCB's	N		
		Appendix IX List	N		
		Prep - Organochlorine Pesticides/PCBs by GC	N		
		Appendix IX Herbicides	N		
		Prep - Herbicides by GC	N		
		Appendix IX Metals (Total) done by ICP	N		
		Arsenic, Furnace AA (Total)	N		
		Prep - Total Metals, Furnace AA	N		
		Thallium, Furnace AA (Total)	N		
		Selenium, Furnace AA (Total)	N		
		Lead, Furnace AA (Total)	N		
		Appendix IX Metals done by ICP	N		
		Arsenic, Furnace AA (Dissolved)	N		
		Thallium, Furnace AA (Dissolved)	N		
		Selenium, Furnace AA (Dissolved)	N		
		Lead, Furnace AA (Dissolved)	N		
		Mercury, Cold Vapor AA (Dissolved)	N		
		Prep - Mercury, Cold Vapor AA, (Dissolved)	N		
		Mercury, Cold Vapor AA (Total)	N		
		Prep - Mercury, Cold Vapor AA (Total)	N		
		Cyanide, Total	N		
		Sulfide, Total	N		
		Nitrate Plus Nitrite	N		
		Appendix IX Cl4-Cl6 Dioxins and Furans	N		
		Prep- Low Res. Method 8280 Extraction for Dioxins/Furans	N		
		Volatiles Library Search (10 Compound TID)	N		
		Semivolatiles Library Search (20 Compound ID)	N		
		0002	B	Volatile Organics	N
				Appendix IX List	N
Screen - Volatile Organics	N				



III. ANALYTICAL RESULTS

The analytical results for this project are presented in the following data tables. The results are presented by sample, by test, with tests reported in the following order: GC/MS, Chromatography, Metals and Inorganics.

Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization data 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 Enseco 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.

Enseco-RMAL is no longer routinely blank-correcting 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. This policy is described in detail in the Enseco Incorporated Quality Assurance Program Plan for Environmental Chemical Monitoring, Revision 3.3, May, 1989.

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. The results from the Standard Enseco QA/QC Program, which generates data which are independent of matrix effects, is given in Section IV.

Volatile Organics
Appendix IX List
Method 8240

Client Name: U.S. Geological Survey
Client ID: KAFB021303-2
Lab ID: 012685-0001-SA
Matrix: AQUEOUS
Authorized: 04 DEC 90

Sampled: 03 DEC 90
Prepared: 05 DEC 90

Received: 04 DEC 90
Analyzed: 10 DEC 90

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro- 2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0

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ND = Not detected
NA = Not applicable

Reported By: Shawn Kassner

Approved By: Jeff Lowry

Volatile Organics
Appendix IX List
Method 8240

Client Name: U.S. Geological Survey

Client ID: KAFB021306-2

Lab ID: 012685-0002-SA

Matrix: AQUEOUS

Authorized: 04 DEC 90

Sampled: 03 DEC 90

Prepared: 05 DEC 90

Received: 04 DEC 90

Analyzed: 09 DEC 90

Parameter	Result	Units	Reporting Limit
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0
Surrogate	Recovery		
Toluene-d8	100	%	--
4-Bromofluorobenzene	101	%	--
1,2-Dichloroethane-d4	101	%	--

ND = Not detected
NA = Not applicable

Reported By: Michael Blades

Approved By: Jeff Lowry

Volatile Organics
Appendix IX List
Method 8240

Client Name: U.S. Geological Survey
Client ID: KAFB021303-2
Lab ID: 012685-0001-SA
Matrix: AQUEOUS
Authorized: 04 DEC 90

Sampled: 03 DEC 90
Prepared: 05 DEC 90

Received: 04 DEC 90
Analyzed: 10 DEC 90

Parameter	Result	Units	Reporting Limit
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0
Surrogate	Recovery		
Toluene-d8	119	%	--
4-Bromofluorobenzene	99	%	--
1,2-Dichloroethane-d4	104	%	--

ND = Not detected
NA = Not applicable

Reported By: Shawn Kassner

Approved By: Jeff Lowry

TENTATIVELY IDENTIFIED COMPOUNDS
FOR
U.S. GEOLOGICAL SURVEY

SAMPLE NUMBER 012685-0001

<u>Compound Name</u>	<u>Fraction</u>	<u>Confidence Level</u>	<u>Estimated Concentration ug/L</u>
Hexane	VOA	3	38
Cyclopentane, Methyl-	VOA	2	8.9

NOTES:

Confidence Levels

- Level 3 - Confirmed Identification
- Level 2 - Confident Identification
- Level 1 - Tentative Identification

Please refer to the discussion for further details.

Volatile Organics
Appendix IX List
Method 8240

Client Name: U.S. Geological Survey
Client ID: KAFB021306-2
Lab ID: 012685-0002-SA
Matrix: AQUEOUS
Authorized: 04 DEC 90

Sampled: 03 DEC 90
Prepared: 05 DEC 90

Received: 04 DEC 90
Analyzed: 09 DEC 90

Parameter	Result	Units	Reporting Limit
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro- 2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0

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ND = Not detected
NA = Not applicable

Reported By: Michael Blades

Approved By: Jeff Lowry

TENTATIVELY IDENTIFIED COMPOUNDS
FOR
U.S. GEOLOGICAL SURVEY

SAMPLE NUMBER 012685-0002

<u>Compound Name</u>	<u>Fraction</u>	<u>Confidence Level</u>	<u>Estimated Concentration ug/L</u>
None Detected	VOA		

NOTES:

Confidence Levels

- Level 3 - Confirmed Identification
- Level 2 - Confident Identification
- Level 1 - Tentative Identification

Please refer to the discussion for further details.

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey

Client ID: KAFB021303-2

Lab ID: 012685-0001-SA

Matrix: AQUEOUS

Authorized: 04 DEC 90

Sampled: 03 DEC 90

Prepared: 06 DEC 90

Received: 04 DEC 90

Analyzed: 31 DEC 90

Parameter	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	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
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	10
4-Chloroaniline	ND	ug/L	10
bis(2-Chloroethoxy)- methane	ND	ug/L	10
bis(2-Chloroethyl) ether	ND	ug/L	10
bis(2-Chloroisopropyl)- ether	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	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Bob Martin

Approved By: Jeff Lowry

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey
Client ID: KAFB021303-2
Lab ID: 012685-0001-SA
Matrix: AQUEOUS
Authorized: 04 DEC 90

Sampled: 03 DEC 90
Prepared: 06 DEC 90

Received: 04 DEC 90
Analyzed: 31 DEC 90

Parameter	Result	Units	Reporting Limit
Dimethoate	ND	ug/L	--
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
a,a-Dimethylphenethylamine	ND	ug/L	10
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	--
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
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

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Bob Martin

Approved By: Jeff Lowry

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey
Client ID: KAFB021303-2
Lab ID: 012685-0001-SA
Matrix: AQUEOUS
Authorized: 04 DEC 90

Sampled: 03 DEC 90
Prepared: 06 DEC 90

Received: 04 DEC 90
Analyzed: 31 DEC 90

Parameter	Result	Units	Reporting Limit
1,4-Naphthoquinone	ND	ug/L	10
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	--
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	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
4-Phenylenediamine	ND	ug/L	--
Phorate	ND	ug/L	100
2-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
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

(continued on following page)

ND = Not detected
NA = Not applicable

Reported By: Bob Martin

Approved By: Jeff Lowry

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey

Client ID: KAFB021303-2

Lab ID: 012685-0001-SA

Matrix: AQUEOUS

Authorized: 04 DEC 90

Sampled: 03 DEC 90

Prepared: 06 DEC 90

Received: 04 DEC 90

Analyzed: 31 DEC 90

Parameter	Result	Units	Reporting Limit
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphorothioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10
Surrogate	Recovery		
Nitrobenzene-d5	62	%	--
2-Fluorobiphenyl	55	%	--
Terphenyl-d14	64	%	--
Phenol-d5	56	%	--
2-Fluorophenol	58	%	--
2,4,6-Tribromophenol	69	%	--

ND = Not detected
NA = Not applicable

Reported By: Bob Martin

Approved By: Jeff Lowry

TENTATIVELY IDENTIFIED COMPOUNDS
FOR
U.S. GEOLOGICAL SURVEY

SAMPLE NUMBER 012685-0001

<u>Compound Name</u>	<u>Fraction</u>	<u>Confidence Level</u>	<u>Estimated Concentration ug/L</u>
Cyclobutane, Ethenyl-	BNA	1	100
1,2-Benzenedicarboxylic Acid, Diisononyl Ester	BNA	2	11
1,2-Benzenedicarboxylic Acid, Diisononyl Ester	BNA	2	10

NOTES:

Confidence Levels

- Level 3 - Confirmed Identification
- Level 2 - Confident Identification
- Level 1 - Tentative Identification

Please refer to the discussion for further details.

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey
 Client ID: KAFB021303-2
 Lab ID: 012685-0001-SA
 Matrix: AQUEOUS
 Authorized: 04 DEC 90
 Sampled: 03 DEC 90
 Prepared: 09 DEC 90
 Received: 04 DEC 90
 Analyzed: 02 JAN 91

Sample Amount 500 MLS
 Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.066	
PeCDFs (total)	ND	ng/L	0.098	
HxCDFs (total)	ND	ng/L	0.18	
Dioxins				
TCDDs (total)	ND	ng/L	0.10	
2,3,7,8-TCDD	ND	ng/L	0.10	
PeCDDs (total)	ND	ng/L	0.19	
HxCDDs (total)	ND	ng/L	0.25	
% Recovery				
13C-2,3,7,8-TCDF	91			
13C-2,3,7,8-TCDD	91			
13C-1,2,3,7,8-PeCDD	94			
13C-1,2,3,6,7,8-HxCDD	91			

ND = Not detected
 NA = Not applicable

Reported By: Bob Martin

Approved By: Jeff Lowry

Appendix IX Herbicides

Method 8150

Client Name: U.S. Geological Survey

Client ID: KAFB021303-2

Lab ID: 012685-0001-SA

Matrix: AQUEOUS

Authorized: 04 DEC 90

Sampled: 03 DEC 90

Prepared: 05 DEC 90

Received: 04 DEC 90

Analyzed: 16 DEC 90

Parameter	Result	Units	Reporting Limit
2,4-D	ND	ug/L	1.2
2,4,5-T	ND	ug/L	0.20
2,4,5-TP (Silvex)	ND	ug/L	0.17
Surrogate	Recovery		
DCAA	87	%	

ND = Not detected
NA = Not applicable

Reported By: Stan Dunlavy

Approved By: Jeff Lowry

Metals

Total Metals

Client Name: U.S. Geological Survey
 Client ID: KAFB021303-2
 Lab ID: 012685-0001-SA
 Matrix: AQUEOUS
 Authorized: 04 DEC 90

Sampled: 03 DEC 90
 Prepared: See Below

Received: 04 DEC 90
 Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Antimony	ND	mg/L	0.060	6010	03 JAN 91	15 JAN 91
Arsenic	ND	mg/L	0.0050	7060	03 JAN 91	19 JAN 91
Chromium	0.033	mg/L	0.0010	7191	03 JAN 91	22 JAN 91
Barium	0.15	mg/L	0.010	6010	03 JAN 91	15 JAN 91
Beryllium	ND	mg/L	0.0020	6010	03 JAN 91	15 JAN 91
Cadmium	ND	mg/L	0.0050	6010	03 JAN 91	15 JAN 91
Chromium	0.017	mg/L	0.010	6010	03 JAN 91	15 JAN 91
Cobalt	ND	mg/L	0.010	6010	03 JAN 91	15 JAN 91
Copper	ND	mg/L	0.020	6010	03 JAN 91	15 JAN 91
Lead	0.010	mg/L	0.010	7421	03 JAN 91	18 JAN 91
Mercury	ND	mg/L	0.00020	7470	19 DEC 90	20 DEC 90
Nickel	ND	mg/L	0.040	6010	03 JAN 91	15 JAN 91
Selenium	ND	mg/L	0.010	7740	24 JAN 91	24 JAN 91
Silver	ND	mg/L	0.010	6010	03 JAN 91	15 JAN 91
Thallium	ND	mg/L	0.010	7841	24 JAN 91	25 JAN 91
Tin	ND	mg/L	0.10	6010	03 JAN 91	15 JAN 91
Vanadium	0.018	mg/L	0.010	6010	03 JAN 91	15 JAN 91
Zinc	0.17	mg/L	0.020	6010	03 JAN 91	15 JAN 91

ND = Not detected
 NA = Not applicable

Reported By: Dan Appelhans

Approved By: Roxanne Sullivan

Metals

Dissolved Metals

Client Name: U.S. Geological Survey

Client ID: KAFB021303-2

Lab ID: 012685-0001-SA

Matrix: AQUEOUS

Authorized: 04 DEC 90

Sampled: 03 DEC 90

Prepared: See Below

Received: 04 DEC 90

Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Antimony	ND	mg/L	0.060	6010	NA	21 JAN 91
Chromium	0.0016	mg/L	0.0010	7191	NA	17 JAN 91
Arsenic	ND	mg/L	0.0050	7060	NA	19 JAN 91
Barium	0.059	mg/L	0.010	6010	NA	21 JAN 91
Beryllium	ND	mg/L	0.0020	6010	NA	21 JAN 91
Cadmium	ND	mg/L	0.0050	6010	NA	21 JAN 91
Chromium	ND	mg/L	0.010	6010	NA	21 JAN 91
Cobalt	ND	mg/L	0.010	6010	NA	21 JAN 91
Copper	ND	mg/L	0.020	6010	NA	21 JAN 91
Lead	ND	mg/L	0.0050	7421	NA	18 JAN 91
Mercury	ND	mg/L	0.00020	7470	19 DEC 90	20 DEC 90
Nickel	ND	mg/L	0.040	6010	NA	21 JAN 91
Selenium	ND	mg/L	0.0050	7740	NA	20 JAN 91
Silver	ND	mg/L	0.010	6010	NA	21 JAN 91
Thallium	ND	mg/L	0.010	7841	NA	21 JAN 91
Tin	ND	mg/L	0.10	6010	NA	21 JAN 91
Vanadium	ND	mg/L	0.010	6010	NA	21 JAN 91
Zinc	ND	mg/L	0.020	6010	NA	21 JAN 91

ND = Not detected
NA = Not applicable

Reported By: Sandra Jones

Approved By: Roxanne Sullivan

General Inorganics



Client Name: U.S. Geological Survey
Client ID: KAFB021303-2
Lab ID: 012685-0001-SA
Matrix: AQUEOUS
Authorized: 04 DEC 90

Sampled: 03 DEC 90
Prepared: See Below

Received: 04 DEC 90
Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Cyanide	ND	mg/L	0.010	9012	NA	08 DEC 90
Nitrate plus Nitrite	3.8	mg/L	0.25	353.2	NA	19 DEC 90
Sulfide, Total	ND	mg/L	0.050	376.2	NA	08 DEC 90
Total Organic Carbon	0.97	mg/L	0.50	9060	NA	18 DEC 90
Total Organic Halogen as Cl	ND	ug/L	30.0	9020	NA	18 DEC 90

ND = Not detected
NA = Not applicable

Reported By: Steve Pope

Approved By: Roxanne Sullivan



IV. QUALITY CONTROL REPORT

The Enseco 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.

In addition, the Enseco laboratories maintain a comprehensive set of certifications from both state and federal governmental agencies which require frequent analyses of blind audit samples. Enseco-Rocky Mountain Analytical Laboratory is certified by the EPA under the EPA/CLP program for both Organic and Inorganic analyses, under the USATHAMA (U.S. Army) program, by the Army Corps of Engineers, and the states of Colorado, New Jersey, New York, Utah, and Florida, among others.

A. Standard Enseco QC

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 Enseco 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.

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.

B. Project-Specific QC

With this project, additional QC was requested in the form of duplicate sample analyses and/or spiked sample analyses. The use of an actual sample as the QC matrix is termed "project-specific" QC.

Project-specific QC is valuable in assessing the affect of the sample matrix on the performance of the analytical method. No QC limits for accuracy and precision are assigned to data generated on actual sample matrices due to the variability of the matrix.

The results of the duplicate and spike sample analyses follow. For matrix spike analyses, the project specific QC results contain the analytical results from both analyses along with the spike level and percent recovery. The percent recovery calculation is not performed if the spike level is less than or equal to 50% of the value in the sample.

For duplicate analyses, the results from both the analyses are reported along with the relative percent difference (RPD). An RPD is not calculated if one of the results is reported as ND.

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)
012685-0001-SA	AQUEOUS	624-A	06 DEC 90-L	10 DEC 90-L
012685-0001-MS	AQUEOUS	624-A	06 DEC 90-L	10 DEC 90-L
012685-0001-SD	AQUEOUS	624-A	06 DEC 90-L	10 DEC 90-L
012685-0002-SA	AQUEOUS	624-A	07 DEC 90-H	09 DEC 90-H

DUPLICATE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte	Concentration Spiked	Concentration Measured		AVG	Accuracy Average(%)		Precision (RPD)	
		DCS1	DCS2		DCS	Limits	DCS	Limit
Category: 624-A								
Matrix: AQUEOUS								
QC Lot: 06 DEC 90-L								
Concentration Units: ug/L								
1,1-Dichloroethene	50	50.0	53.9	52.0	104	61-145	7.5	14
Trichloroethene	50	44.4	47.9	46.2	92	71-120	7.6	14
Benzene	50	48.0	51.0	49.5	99	76-127	6.1	11
Toluene	50	47.6	50.7	49.2	98	76-125	6.3	13
Chlorobenzene	50	47.3	51.0	49.2	98	75-130	7.5	13

Category: 624-A
Matrix: AQUEOUS
QC Lot: 07 DEC 90-H
Concentration Units: ug/L

1,1-Dichloroethene	50	54.7	48.4	51.6	103	61-145	12	14
Trichloroethene	50	58.5	55.3	56.9	114	71-120	5.6	14
Benzene	50	56.5	54.1	55.3	111	76-127	4.3	11
Toluene	50	59.8	56.3	58.0	116	76-125	6.0	13
Chlorobenzene	50	62.9	55.3	59.1	118	75-130	13	13

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

SINGLE CONTROL SAMPLE REPORT
Volatile Organics by GC/MS

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits
Category: 624-A				
Matrix: AQUEOUS				
QC Lot: 06 DEC 90-L QC Run: 10 DEC 90-L				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	48.9	98	76-114
4-Bromofluorobenzene	50.0	47.6	95	86-115
Toluene-d8	50.0	49.7	99	88-110

Category: 624-A
Matrix: AQUEOUS
QC Lot: 07 DEC 90-H QC Run: 09 DEC 90-H
Concentration Units: ug/L

1,2-Dichloroethane-d4	50.0	52.2	104	76-114
4-Bromofluorobenzene	50.0	47.9	96	86-115
Toluene-d8	50.0	49.0	98	88-110

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

METHOD BLANK REPORT
Volatile Organics by GC/MS

Analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: 06 DEC 90-L QC Run: 10 DEC 90-L			
Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro- 2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0

METHOD BLANK REPORT
Volatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-AP			
Matrix: AQUEOUS			
QC Lot: 06 DEC 90-L QC Run: 10 DEC 90-L			
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

Test: 8240CP-AP9-A
Matrix: AQUEOUS
QC Lot: 07 DEC 90-H QC Run: 09 DEC 90-H

Acetone	ND	ug/L	10
Acetonitrile	ND	ug/L	200
Acrolein	ND	ug/L	100
Acrylonitrile	ND	ug/L	100
Allyl chloride	ND	ug/L	10
Benzene	ND	ug/L	5.0
Bromodichloromethane	ND	ug/L	5.0
Bromoform	ND	ug/L	5.0
Bromomethane	ND	ug/L	10
2-Butanone (MEK)	ND	ug/L	10
Carbon disulfide	ND	ug/L	5.0
Carbon tetrachloride	ND	ug/L	5.0
Chlorobenzene	ND	ug/L	5.0
Chloroethane	ND	ug/L	10
Chloroform	ND	ug/L	5.0
Chloromethane	ND	ug/L	10
Chloroprene	ND	ug/L	5.0
Dibromochloromethane	ND	ug/L	5.0

METHOD BLANK REPORT
 Volatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8240CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 07 DEC 90-H QC Run: 09 DEC 90-H			
1,2-Dibromo-3-chloro- propane (DBCP)	ND	ug/L	10
1,2-Dibromoethane (EDB)	ND	ug/L	10
Dibromomethane	ND	ug/L	5.0
trans-1,4-Dichloro- 2-butene	ND	ug/L	5.0
Dichlorodifluoromethane	ND	ug/L	20
1,1-Dichloroethane	ND	ug/L	5.0
1,2-Dichloroethane	ND	ug/L	5.0
1,1-Dichloroethene	ND	ug/L	5.0
1,2-Dichloroethene (total)	ND	ug/L	5.0
1,2-Dichloropropane	ND	ug/L	5.0
cis-1,3-Dichloropropene	ND	ug/L	5.0
trans-1,3-Dichloropropene	ND	ug/L	5.0
1,4-Dioxane	ND	ug/L	500
Ethylbenzene	ND	ug/L	5.0
Ethyl methacrylate	ND	ug/L	20
Iodomethane	ND	ug/L	5.0
Isobutanol	ND	ug/L	200
2-Hexanone	ND	ug/L	10
Methacrylonitrile	ND	ug/L	5.0
Methylene chloride	ND	ug/L	5.0
Methyl methacrylate	ND	ug/L	20
4-Methyl-2-pentanone (MIBK)	ND	ug/L	10
Propionitrile	ND	ug/L	5.0
Styrene	ND	ug/L	5.0
1,1,1,2-Tetrachloroethane	ND	ug/L	5.0
1,1,2,2-Tetrachloroethane	ND	ug/L	5.0
Tetrachloroethene	ND	ug/L	5.0
Toluene	ND	ug/L	5.0
1,1,1-Trichloroethane	ND	ug/L	5.0
1,1,2-Trichloroethane	ND	ug/L	5.0
Trichloroethene	ND	ug/L	5.0
Trichlorofluoromethane	ND	ug/L	5.0
1,2,3-Trichloropropane	ND	ug/L	5.0
Vinyl acetate	ND	ug/L	10
Vinyl chloride	ND	ug/L	10
Xylenes (total)	ND	ug/L	5.0

MATRIX SPECIFIC QC
ASSIGNMENT REPORT
Volatile Organics by GC/MS

QC SAMPLE TYPE	TEST	LABORATORY SAMPLE NUMBER	QC LOT
MATRIX SPIKE DUPLICATE	8240CP-AP9-AP	012685-0001-SD	06 DEC 90-L
MATRIX SPIKE	8240CP-AP9-AP	012685-0001-MS	06 DEC 90-L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE REPORT
Volatile Organics by GC/MS

Analyte	Sample	Concentration			Spiked		%Recovery		%RPD
		Matrix Spike	Matrix Spike Dup		MS	MSD	MS	MSD	
Benzene	ND	44	47		50	50	89	94	5
Chlorobenzene	ND	46	46		50	50	93	92	1
1,1-Dichloroethene	ND	56	57		50	50	112	113	1
Toluene	ND	48	48		50	50	97	96	0
Trichloroethene	ND	39	40		50	50	78	79	2

ND = Not detected
NC = Not calculated, calculation not applicable

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

QC LOT ASSIGNMENT REPORT
Semivolatiles Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
012685-0001-SA	AQUEOUS	625-A	06 DEC 90-A	06 DEC 90-B
012685-0001-SA	AQUEOUS	8280-AP9-A	13 NOV 90-A	-
012685-0001-MS	AQUEOUS	625-A	06 DEC 90-A	06 DEC 90-B
012685-0001-MS	AQUEOUS	8280-AP9-A	13 NOV 90-A	-
012685-0001-SD	AQUEOUS	625-A	06 DEC 90-A	06 DEC 90-B
012685-0001-SD	AQUEOUS	8280-AP9-A	13 NOV 90-A	-
012685-0001-MB	AQUEOUS	8280-AP9-A	13 NOV 90-A	-

DUPLICATE CONTROL SAMPLE REPORT
Semivolatiles by GC/MS

Analyte	Concentration Spiked	Concentration Measured		AVG	Accuracy Average (%)		Precision (RPD)		
		DCS1	DCS2		DCS	Limits	DCS	Limit	
Category: 625-A									
Matrix: AQUEOUS									
QC Lot: 06 DEC 90-A									
Concentration Units: ug/L									
Phenol	100	65.4	63.8	64.6	65	12- 89	2.5	42	
2-Chlorophenol	100	65.5	63.3	64.4	64	27-123	3.4	40	
1,4-Dichlorobenzene	50	30.5	32.1	31.3	63	36- 97	5.1	28	
N-Nitroso-di-n-propylamine	50	31.9	35.9	33.9	68	41-116	12	38	
1,2,4-Trichlorobenzene	50	29.7	32.4	31.0	62	39- 98	8.7	28	
4-Chloro-3-methylphenol	100	65.2	68.2	66.7	67	23- 97	4.5	42	
Acenaphthene	50	28.3	32.6	30.4	61	46-118	14	31	
4-Nitrophenol	100	66.6	72.1	69.4	69	10- 80	7.9	50	
2,4-Dinitrotoluene	50	29.0	34.7	31.8	64	24- 96	18	38	
Pentachlorophenol	100	43.4	53.0	48.2	48	9-103	20	50	
Pyrene	50	26.3	31.3	28.8	58	26-127	17	31	

Category: 8280-AP9-A
Matrix: AQUEOUS
QC Lot: 13 NOV 90-A
Concentration Units: ng/L

2,3,7,8-TCDF	10.0	10.0	10.0	10.0	100	60-140	0.0	20
1,2,3,7,8-PeCDF	10.0	10.2	9.76	9.98	100	60-140	4.4	20
1,2,3,4,7,8-HeCDF	10.0	10.1	9.63	9.86	99	60-140	4.8	20
1,2,3,4,6,7,8-HpCDF	10.0	NA	NA	NC	NC	60-140	NC	20
OCDF	20.0	NA	NA	NC	NC	60-140	NC	20
2,3,7,8-TCDD	10.0	10.4	9.76	10.1	101	60-140	6.3	20
1,2,3,7,8-PeCDD	10.0	9.86	9.50	9.68	97	60-140	3.7	20
1,2,3,4,7,8-HeCDD	10.0	10.4	9.74	10.1	101	60-140	6.6	20
1,2,3,4,6,7,8-HpCDD	10.0	NA	NA	NC	NC	60-140	NC	20
OCDD	20.0	NA	NA	NC	NC	60-140	NC	20

ND = Not detected
NC = Not calculated, calculation not applicable
NA = Not applicable

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

SINGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC/MS

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits

Category: 625-A
 Matrix: AQUEOUS
 QC Lot: 06 DEC 90-A QC Run: 06 DEC 90-B
 Concentration Units: ug/L

Nitrobenzene-d5	100	64.6	65	35-114
2-Fluorobiphenyl	100	61.5	62	43-116
Terphenyl-d14	100	58.6	59	33-141
2-Fluorophenol	200	121	60	21-100
Phenol-d5	200	127	64	10- 94
2,4,6-Tribromophenol	200	137	68	10-123

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

METHOD BLANK REPORT
Semivolatile Organics by GC/MS

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 DEC 90-A QC Run: 06 DEC 90-B			
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	10
Aniline	ND	ug/L	10
Anthracene	ND	ug/L	10
Aramite	ND	ug/L	10
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
-Bromophenyl phenyl ether	ND	ug/L	10
Diethyl benzyl phthalate	ND	ug/L	10
sec-Butyl-4,6-dinitro- phenol	ND	ug/L	10
-Chloroaniline	ND	ug/L	10
Bis(2-Chloroethoxy)- methane	ND	ug/L	10
Bis(2-Chloroethyl) ether	ND	ug/L	10
Bis(2-Chloroisopropyl)- ether	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	20
2,4-Dichlorophenol	ND	ug/L	10
2,6-Dichlorophenol	ND	ug/L	10
Diethyl phthalate	ND	ug/L	10

METHOD BLANK REPORT
Semivolatle Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 DEC 90-A QC Run: 06 DEC 90-B			
Dimethoate	ND	ug/L	--
p-Dimethylaminoazobenzene	ND	ug/L	10
7,12-Dimethylbenz(a)-anthracene	ND	ug/L	10
3,3'-Dimethylbenzidine	ND	ug/L	10
a,a-Dimethylphenethylamine	ND	ug/L	10
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
1,4-Dinitrophenol	ND	ug/L	50
1,4-Dinitrotoluene	ND	ug/L	10
1,6-Dinitrotoluene	ND	ug/L	10
Di-n-octyl phthalate	ND	ug/L	10
Diphenylamine	ND	ug/L	10
Disulfoton	ND	ug/L	50
Diis(2-Ethylhexyl) phthalate	ND	ug/L	10
Ethyl methanesulfonate	ND	ug/L	10
Gamma-hexachlorocyclopentadiene	ND	ug/L	--
Fluoranthene	ND	ug/L	10
Fluorene	ND	ug/L	10
Hexachlorobenzene	ND	ug/L	10
Hexachlorobutadiene	ND	ug/L	10
Hexachlorocyclopentadiene	ND	ug/L	10
Hexachloroethane	ND	ug/L	10
Hexachlorophene	ND	ug/L	--
Hexachloropropene	ND	ug/L	10
Indeno(1,2,3-cd)pyrene	ND	ug/L	10
Isophorone	ND	ug/L	10
Isosafrole	ND	ug/L	20
Methapyrilene	ND	ug/L	10
3-Methylcholanthrene	ND	ug/L	10
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

METHOD BLANK REPORT
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 DEC 90-A QC Run: 06 DEC 90-B			
1,4-Naphthoquinone	ND	ug/L	10
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	--
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
Nitrosomorpholine	ND	ug/L	10
N-Nitrosopiperidine	ND	ug/L	10
N-Nitrosopyrrolidine	ND	ug/L	10
5-Nitro-o-toluidine	ND	ug/L	10
Parathion	ND	ug/L	50
Pentachlorobenzene	ND	ug/L	10
Pentachloroethane	ND	ug/L	10
Pentachloronitrobenzene	ND	ug/L	50
Pentachlorophenol	ND	ug/L	50
Phenacetin	ND	ug/L	10
Phenanthrene	ND	ug/L	10
Phenol	ND	ug/L	10
4-Phenylenediamine	ND	ug/L	--
Phorate	ND	ug/L	100
2-Picoline	ND	ug/L	10
Pronamide	ND	ug/L	10
Pyrene	ND	ug/L	10
Pyridine	ND	ug/L	20
Safrole	ND	ug/L	10
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

METHOD BLANK REPORT
Semivolatile Organics by GC/MS (cont.)

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 06 DEC 90-A QC Run: 06 DEC 90-B			
2-Toluidine	ND	ug/L	10
1,2,4-Trichlorobenzene	ND	ug/L	10
2,4,5-Trichlorophenol	ND	ug/L	50
2,4,6-Trichlorophenol	ND	ug/L	10
0,0,0-Triethylphosphorothioate	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10

Appendix IX Dioxins/Furans

Low Resolution

Client Name: U.S. Geological Survey

Client ID: METHOD BLANK

Lab ID: 012685-0001-MB

Matrix:

Authorized: 04 DEC 90

Sampled: NA

Prepared: 06 DEC 90

Received: NA

Analyzed: 02 JAN 91

Sample Amount 500 MLS

Column Type DB-5

Parameter	Result	Units	Detection Limit	Data Qualifiers
Furans				
TCDFs (total)	ND	ng/L	0.057	
PeCDFs (total)	ND	ng/L	0.091	
HxCDFs (total)	ND	ng/L	0.16	
Dioxins				
TCDDs (total)	ND	ng/L	0.10	
2,3,7,8-TCDD	ND	ng/L	0.10	
PeCDDs (total)	ND	ng/L	0.15	
HxCDDs (total)	ND	ng/L	0.25	
% Recovery				
13C-2,3,7,8-TCDF	89			
13C-2,3,7,8-TCDD	86			
13C-1,2,3,7,8-PeCDD	93			
13C-1,2,3,6,7,8-HxCDD	92			

ND = Not detected
NA = Not applicable

Reported By: Bob Martin

Approved By: Jeff Lowry

MATRIX SPECIFIC QC
ASSIGNMENT REPORT
Semivolatile Organics by GC/MS

QC SAMPLE TYPE	TEST	LABORATORY SAMPLE NUMBER	QC LOT
MATRIX SPIKE DUPLICATE	8270CP-AP9-A	012685-0001-SD	06 DEC 90-A
MATRIX SPIKE	8270CP-AP9-A	012685-0001-MS	06 DEC 90-A
MATRIX SPIKE DUPLICATE	8280-AP9-A	012685-0001-SD	13 NOV 90-A
MATRIX SPIKE	8280-AP9-A	012685-0001-MS	13 NOV 90-A

MATRIX SPIKE / MATRIX SPIKE DUPLICATE REPORT
Semivolatile Organics by GC/MS

Analyte	Sample	Concentration			Spiked		%Recovery		% RPD
		Matrix Spike	Matrix Spike Dup	MS	MSD	MS	MSD		
Acenaphthene	ND	31	31	48	47	64	67	3	
4-Chloro-3-methylphenol	ND	48	70	96	94	49	75	41	
2-Chlorophenol	ND	50	66	96	94	52	69	29	
1,4-Dichlorobenzene	ND	32	29	48	47	66	61	8	
2,4-Dinitrotoluene	ND	35	34	48	47	72	72	1	
4-Nitrophenol	ND	36	77	96	94	37	82	75	
N-Nitroso-di-n-propylamine	ND	33	33	48	47	69	70	1	
Pentachlorophenol	ND	37	54	96	94	38	58	41	
Phenol	ND	38	64	96	94	39	68	55	
Pyrene	ND	27	33	48	47	56	71	22	
1,2,4-Trichlorobenzene	ND	33	31	48	47	68	66	3	

Test: 8280-AP9-A
Matrix AQUEOUS
Sample: 012685-0001
Units: ng/L

2,3,7,8-TCDD	ND	18	19	20	20	90	95	5
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ND = Not detected
NC = Not calculated, calculation not applicable

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

QC LOT ASSIGNMENT REPORT
Semivolatile Organics by GC

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
012685-0001-SA	AQUEOUS	608-A	21 NOV 90-A	06 DEC 90-A
012685-0001-SA	AQUEOUS	615-A	21 NOV 90-A	05 DEC 90-B
012685-0001-MS	AQUEOUS	608-A	21 NOV 90-A	06 DEC 90-A
012685-0001-MS	AQUEOUS	615-A	21 NOV 90-A	05 DEC 90-B
012685-0001-SD	AQUEOUS	608-A	21 NOV 90-A	06 DEC 90-A
012685-0001-SD	AQUEOUS	615-A	21 NOV 90-A	05 DEC 90-B

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Spiked	Concentration		AVG	Accuracy		Precision		
		DCS1	Measured DCS2		DCS	Average(%) Limits	(RPD) DCS	Limit	
Category: 608-A									
Matrix: AQUEOUS									
QC Lot: 21 NOV 90-A									
Concentration Units: ug/L									
gamma-BHC (Lindane)	0.200	0.162	0.167	0.164	82	56-123	3.0	15	
Heptachlor	0.200	0.169	0.180	0.174	87	40-131	6.3	20	
Aldrin	0.200	0.150	0.161	0.156	78	40-120	7.1	22	
Dieldrin	0.500	0.425	0.436	0.430	86	52-126	2.6	18	
Endrin	0.500	0.457	0.467	0.462	92	56-121	2.2	21	
4,4'-DDT	0.500	0.462	0.472	0.467	93	38-127	2.1	27	

Category: 615-A
Matrix: AQUEOUS
QC Lot: 21 NOV 90-A
Concentration Units: ug/L

2,4-D	5.0	2.98	3.68	3.33	67	19-129	21	54
2,4,5-TP (Silvex)	1.0	0.701	0.876	0.788	79	23-127	22	39
2,4,5-T	1.0	0.687	0.844	0.766	77	40-112	21	20

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

SINGLE CONTROL SAMPLE REPORT
Semivolatile Organics by GC

Analyte	Concentration		Accuracy(%)	
	Spiked	Measured	SCS	Limits

Category: 608-A

Matrix: AQUEOUS

QC Lot: 21 NOV 90-A QC Run: 06 DEC 90-A

Concentration Units: ug/L

Dibutyl chlorendate	1.00	0.819	82	48-136
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Category: 615-A

Matrix: AQUEOUS

QC Lot: 21 NOV 90-A QC Run: 05 DEC 90-B

Concentration Units: ug/L

DCAA	5.00	4.75	95	60-120
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Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT
Semivolatle Organics by GC

Analyte	Result	Units	Reporting Limit
Test: 8080CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 21 NOV 90-A QC Run: 06 DEC 90-A			
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	0.10
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	1.0
Methoxychlor	ND	ug/L	0.50
Toxaphene	ND	ug/L	5.0

Test: 615-AP9-A
Matrix: AQUEOUS
QC Lot: 21 NOV 90-A QC Run: 05 DEC 90-B

2,4-D	ND	ug/L	1.2
2,4,5-T	ND	ug/L	0.20
2,4,5-TP (Silvex)	ND	ug/L	0.17

MATRIX SPECIFIC QC
ASSIGNMENT REPORT
Semivolatile Organics by GC

QC SAMPLE TYPE	TEST	LABORATORY SAMPLE NUMBER	QC LOT
MATRIX SPIKE DUPLICATE	8080CP-AP9-A	012685-0001-SD	21 NOV 90-A
MATRIX SPIKE	8080CP-AP9-A	012685-0001-MS	21 NOV 90-A
MATRIX SPIKE DUPLICATE	615-AP9-A	012685-0001-SD	21 NOV 90-A
MATRIX SPIKE	615-AP9-A	012685-0001-MS	21 NOV 90-A

MATRIX SPIKE / MATRIX SPIKE DUPLICATE REPORT
Semivolatile Organics by GC

Analyte	Sample	Concentration			Spiked		%Recovery		% RPD
		Matrix Spike	Matrix Spike Dup	MS	MSD	MS	MSD		
Test: 8080CP-AP9-A									
Matrix AQUEOUS									
Sample: 012685-0001									
Units: ug/L									
Aldrin	ND	0.15	0.17	0.21	0.22	71	77	8	
gamma-BHC (Lindane)	ND	0.16	0.18	0.21	0.22	77	81	5	
4,4'-DDT	ND	0.32	0.37	0.52	0.54	62	69	11	
Dieldrin	ND	0.36	0.41	0.52	0.54	71	75	6	
Endrin	ND	0.39	0.43	0.52	0.54	75	80	5	
Heptachlor	ND	0.16	0.17	0.21	0.22	77	80	4	

Test: 615-AP9-A
Matrix AQUEOUS
Sample: 012685-0001
Units: ug/L

2,4-D	ND	3.1	3.4	4.7	5.6	66	62	7
2,4,5-T	ND	0.72	0.77	0.94	1.1	77	70	10
2,4,5-TP (Silvex)	ND	0.75	0.84	0.94	1.1	79	76	4

ND = Not detected
NC = Not calculated, calculation not applicable

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

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
012685-0001-SA	AQUEOUS	CR-FAA-AD	17 JAN 91-A	-
012685-0001-SA	AQUEOUS	CR-FAA-AT	21 JAN 91-A	21 JAN 91-A
012685-0001-SA	AQUEOUS	ICP-AT	03 JAN 91-A	03 JAN 91-A
012685-0001-SA	AQUEOUS	AS-FAA-AT	03 JAN 91-A	03 JAN 91-A
012685-0001-SA	AQUEOUS	TL-FAA-AT	24 JAN 91-R	24 JAN 91-R
012685-0001-SA	AQUEOUS	SE-FAA-AT	24 JAN 91-R	24 JAN 91-R
012685-0001-SA	AQUEOUS	PB-FAA-AT	03 JAN 91-A	03 JAN 91-A
012685-0001-SA	AQUEOUS	ICP-AD	21 JAN 91-E	-
012685-0001-SA	AQUEOUS	AS-FAA-AD	19 JAN 91-A	-
012685-0001-SA	AQUEOUS	TL-FAA-AD	21 JAN 91-J	-
012685-0001-SA	AQUEOUS	SE-FAA-AD	20 JAN 91-E	-
012685-0001-SA	AQUEOUS	PB-FAA-AD	18 JAN 91-B	-
012685-0001-SA	AQUEOUS	HG-CVAA-AT	19 DEC 90-B	19 DEC 90-B
012685-0001-SA	AQUEOUS	HG-CVAA-AT	19 DEC 90-C	19 DEC 90-C
012685-0001-MS	AQUEOUS	CR-FAA-AD	17 JAN 91-A	-
012685-0001-MS	AQUEOUS	CR-FAA-AT	21 JAN 91-A	21 JAN 91-A
012685-0001-MS	AQUEOUS	ICP-AT	03 JAN 91-A	03 JAN 91-A
012685-0001-MS	AQUEOUS	AS-FAA-AT	03 JAN 91-A	03 JAN 91-A
012685-0001-MS	AQUEOUS	TL-FAA-AT	24 JAN 91-R	24 JAN 91-R
012685-0001-MS	AQUEOUS	SE-FAA-AT	24 JAN 91-R	24 JAN 91-R
012685-0001-MS	AQUEOUS	PB-FAA-AT	03 JAN 91-A	03 JAN 91-A
012685-0001-MS	AQUEOUS	ICP-AD	21 JAN 91-E	-
012685-0001-MS	AQUEOUS	AS-FAA-AD	19 JAN 91-A	-
012685-0001-MS	AQUEOUS	TL-FAA-AD	21 JAN 91-J	-
012685-0001-MS	AQUEOUS	SE-FAA-AD	20 JAN 91-E	-
012685-0001-MS	AQUEOUS	PB-FAA-AD	18 JAN 91-B	-
012685-0001-MS	AQUEOUS	HG-CVAA-AT	19 DEC 90-B	19 DEC 90-B
012685-0001-MS	AQUEOUS	HG-CVAA-AT	19 DEC 90-C	19 DEC 90-C
012685-0001-SD	AQUEOUS	CR-FAA-AD	17 JAN 91-A	-
012685-0001-SD	AQUEOUS	CR-FAA-AT	21 JAN 91-A	21 JAN 91-A
012685-0001-SD	AQUEOUS	ICP-AT	03 JAN 91-A	03 JAN 91-A
012685-0001-SD	AQUEOUS	AS-FAA-AT	03 JAN 91-A	03 JAN 91-A
012685-0001-SD	AQUEOUS	TL-FAA-AT	24 JAN 91-R	24 JAN 91-R
012685-0001-SD	AQUEOUS	SE-FAA-AT	24 JAN 91-R	24 JAN 91-R
012685-0001-SD	AQUEOUS	PB-FAA-AT	03 JAN 91-A	03 JAN 91-A
012685-0001-SD	AQUEOUS	ICP-AD	21 JAN 91-E	-
012685-0001-SD	AQUEOUS	AS-FAA-AD	19 JAN 91-A	-
012685-0001-SD	AQUEOUS	TL-FAA-AD	21 JAN 91-J	-
012685-0001-SD	AQUEOUS	SE-FAA-AD	20 JAN 91-E	-
012685-0001-SD	AQUEOUS	PB-FAA-AD	18 JAN 91-B	-
012685-0001-SD	AQUEOUS	HG-CVAA-AT	19 DEC 90-B	19 DEC 90-B
012685-0001-SD	AQUEOUS	HG-CVAA-AT	19 DEC 90-C	19 DEC 90-C

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Spiked	Concentration		AVG	Accuracy		Precision		
		DCS1	Measured DCS2		DCS	Average(%) Limits	(RPD) DCS Limit	Limit	
Category: CR-FAA-AD									
Matrix: AQUEOUS									
QC Lot: 17 JAN 91-A									
Concentration Units: mg/L									
Chromium	0.02	0.0216	0.0224	0.0220	110	75-125	3.6	20	
Category: CR-FAA-AT									
Matrix: AQUEOUS									
QC Lot: 21 JAN 91-A									
Concentration Units: mg/L									
Chromium	0.20	0.203	0.214	0.208	104	75-125	5.3	20	
Category: ICP-AT									
Matrix: AQUEOUS									
QC Lot: 03 JAN 91-A									
Concentration Units: mg/L									
Aluminum	2.0	2.02	1.99	2.00	100	75-125	1.6	20	
Antimony	0.5	0.489	0.475	0.482	96	75-125	3.1	20	
Arsenic	0.5	0.495	0.495	0.495	99	75-125	0.0	20	
Barium	2.0	1.94	1.92	1.93	96	75-125	1.4	20	
Beryllium	0.05	0.0480	0.0504	0.0492	98	75-125	4.9	20	
Cadmium	0.05	0.0481	0.0439	0.0460	92	75-125	9.1	20	
Calcium	100	101	99.3	99.9	100	75-125	1.3	20	
Chromium	0.2	0.196	0.197	0.197	98	75-125	0.1	20	
Cobalt	0.5	0.483	0.475	0.479	96	75-125	1.6	20	
Copper	0.25	0.247	0.253	0.250	100	75-125	2.5	20	
Iron	1.0	1.01	1.02	1.02	102	75-125	0.3	20	
Lead	0.5	0.480	0.467	0.474	95	75-125	2.6	20	
Magnesium	50	50.0	49.1	49.5	99	75-125	1.9	20	
Manganese	0.5	0.490	0.487	0.488	98	75-125	0.6	20	
Nickel	0.5	0.490	0.481	0.486	97	75-125	1.8	20	
Potassium	50	48.0	46.8	47.4	95	75-125	2.4	20	
Silver	0.05	0.0499	0.0488	0.0494	99	75-125	2.2	20	
Sodium	100	97.6	95.8	96.7	97	75-125	1.8	20	
Vanadium	0.5	0.498	0.495	0.496	99	75-125	0.6	20	
Zinc	0.5	0.486	0.474	0.480	96	75-125	2.3	20	

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

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)

Analyte	Concentration			AVG	Accuracy		Precision	
	Spiked	DCS1	Measured DCS2		DCS	Average (%) Limits	(RPD) DCS Limit	
Category: AS-FAA-AT Matrix: AQUEOUS QC Lot: 03 JAN 91-A Concentration Units: mg/L								
Arsenic	0.04	0.0467	0.0463	0.0465	116	75-125	0.9	20
Category: TL-FAA-AT Matrix: AQUEOUS QC Lot: 24 JAN 91-R Concentration Units: mg/L								
Thallium	0.05	0.0419	0.0445	0.0432	86	75-125	6.0	20
Category: SE-FAA-AT Matrix: AQUEOUS QC Lot: 24 JAN 91-R Concentration Units: mg/L								
Selenium	0.01	0.0104	0.0124	0.0114	114	75-125	18	20
Category: PB-FAA-AT Matrix: AQUEOUS QC Lot: 03 JAN 91-A Concentration Units: mg/L								
Lead	0.02	0.0227	0.0204	0.0216	108	75-125	11	20
Category: ICP-AD Matrix: AQUEOUS QC Lot: 21 JAN 91-E Concentration Units: mg/L								
Aluminum	2.0	1.91	1.93	1.92	96	75-125	0.9	20
Antimony	0.5	0.455	0.450	0.452	90	75-125	1.3	20
Arsenic	0.5	0.451	0.455	0.453	91	75-125	0.8	20
Barium	2.0	1.83	1.85	1.84	92	75-125	1.2	20
Beryllium	0.05	0.0476	0.0479	0.0478	96	75-125	0.5	20
Cadmium	0.05	0.0436	0.0436	0.0436	87	75-125	0.1	20
Calcium	100	90.4	91.6	91.0	91	75-125	1.3	20
Chromium	0.2	0.196	0.201	0.199	99	75-125	2.3	20

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

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)

Analyte	Concentration			AVG	Accuracy Average(%)		Precision (RPD)	
	Spiked	DCS1	Measured DCS2		DCS	Limits	DCS	Limit
Category: ICP-AD								
Matrix: AQUEOUS								
QC Lot: 21 JAN 91-E								
Concentration Units: mg/L								
Cobalt	0.5	0.455	0.464	0.460	92	75-125	1.7	20
Copper	0.25	0.252	0.251	0.251	100	75-125	0.3	20
Iron	1.0	0.967	0.971	0.969	97	75-125	0.4	20
Lead	0.5	0.453	0.452	0.452	90	75-125	0.0	20
Magnesium	50	45.2	45.6	45.4	91	75-125	0.8	20
Manganese	0.5	0.465	0.469	0.467	93	75-125	0.7	20
Nickel	0.5	0.465	0.472	0.469	94	75-125	1.6	20
Potassium	50	45.3	44.3	44.8	90	75-125	2.2	20
Silver	0.05	0.0553	0.0557	0.0555	111	75-125	0.8	20
Sodium	100	91.7	90.6	91.2	91	75-125	1.2	20
Vanadium	0.5	0.472	0.476	0.474	95	75-125	0.8	20
Zinc	0.5	0.454	0.462	0.458	92	75-125	1.7	20

Category: AS-FAA-AD
Matrix: AQUEOUS
QC Lot: 19 JAN 91-A
Concentration Units: mg/L

Arsenic	0.04	0.0388	0.0392	0.0390	98	75-125	1.0	20
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Category: TL-FAA-AD
Matrix: AQUEOUS
QC Lot: 21 JAN 91-J
Concentration Units: mg/L

Thallium	0.05	0.0554	0.0532	0.0543	109	75-125	4.1	20
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Category: SE-FAA-AD
Matrix: AQUEOUS
QC Lot: 20 JAN 91-E
Concentration Units: mg/L

Selenium	0.01	0.0103	0.00980	0.0100	101	75-125	5.0	20
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Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation (cont.)

Analyte	Spiked	Concentration		AVG	Accuracy		Precision		
		DCS1	Measured DCS2		DCS	Average (%) Limits	(RPD) DCS Limit	DCS Limit	
Category: PB-FAA-AD Matrix: AQUEOUS QC Lot: 18 JAN 91-B Concentration Units: mg/L									
Lead	0.02	0.0224	0.0237	0.0230	115	75-125	5.6	20	
Category: HG-CVAA-AT Matrix: AQUEOUS QC Lot: 19 DEC 90-B Concentration Units: mg/L									
Mercury	0.0010	0.000960	0.000980	0.000970	97	75-125	2.1	20	
Category: HG-CVAA-AT Matrix: AQUEOUS QC Lot: 19 DEC 90-C Concentration Units: mg/L									
Mercury	0.0010	0.000930	0.000970	0.000950	95	75-125	4.2	20	

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

METHOD BLANK REPORT
Metals Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: CR-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 21 JAN 91-A QC Run: 21 JAN 91-A			
Chromium	ND	mg/L	0.0050
Test: ICP-AP9-AT			
Matrix: AQUEOUS			
QC Lot: 03 JAN 91-A QC Run: 03 JAN 91-A			
Antimony	ND	mg/L	0.060
Barium	ND	mg/L	0.010
Beryllium	ND	mg/L	0.0020
Cadmium	ND	mg/L	0.0050
Chromium	ND	mg/L	0.010
Cobalt	ND	mg/L	0.010
Copper	ND	mg/L	0.020
Nickel	ND	mg/L	0.040
Silver	ND	mg/L	0.010
Tin	ND	mg/L	0.10
Vanadium	ND	mg/L	0.010
Zinc	ND	mg/L	0.020
Test: AS-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 03 JAN 91-A QC Run: 03 JAN 91-A			
Arsenic	ND	mg/L	0.0050
Test: TL-FAA-AT			
Matrix: AQUEOUS			
QC Lot: 24 JAN 91-R QC Run: 24 JAN 91-R			
Thallium	ND	mg/L	0.0050

METHOD BLANK REPORT
Metals Analysis and Preparation (cont.)

Analyte	Result	Units	Reporting Limit
Test: SE-FAA-AT Matrix: AQUEOUS QC Lot: 24 JAN 91-R QC Run: 24 JAN 91-R			
Selenium	ND	mg/L	0.0050
Test: PB-FAA-AT Matrix: AQUEOUS QC Lot: 03 JAN 91-A QC Run: 03 JAN 91-A			
Lead	ND	mg/L	0.0050
Test: HG-CVAA-AD Matrix: AQUEOUS QC Lot: 19 DEC 90-B QC Run: 19 DEC 90-B			
Mercury	ND	mg/L	0.00020
Test: HG-CVAA-AT Matrix: AQUEOUS QC Lot: 19 DEC 90-C QC Run: 19 DEC 90-C			
Mercury	ND	mg/L	0.00020

MATRIX SPECIFIC QC
ASSIGNMENT REPORT
Metals Analysis and Preparation

QC SAMPLE TYPE	TEST	LABORATORY SAMPLE NUMBER	QC LOT
MATRIX SPIKE DUPLICATE MATRIX SPIKE	CR-FAA-AD CR-FAA-AD	012685-0001-SD 012685-0001-MS	17 JAN 91-A 17 JAN 91-A
MATRIX SPIKE DUPLICATE MATRIX SPIKE	CR-FAA-AT CR-FAA-AT	012685-0001-SD 012685-0001-MS	21 JAN 91-A 21 JAN 91-A
MATRIX SPIKE DUPLICATE MATRIX SPIKE	ICP-AP9-AT ICP-AP9-AT	012685-0001-SD 012685-0001-MS	03 JAN 91-A 03 JAN 91-A
MATRIX SPIKE DUPLICATE MATRIX SPIKE	AS-FAA-AT AS-FAA-AT	012685-0001-SD 012685-0001-MS	03 JAN 91-A 03 JAN 91-A
MATRIX SPIKE DUPLICATE MATRIX SPIKE	TL-FAA-AT TL-FAA-AT	012685-0001-SD 012685-0001-MS	24 JAN 91-R 24 JAN 91-R
MATRIX SPIKE DUPLICATE MATRIX SPIKE	SE-FAA-AT SE-FAA-AT	012685-0001-SD 012685-0001-MS	24 JAN 91-R 24 JAN 91-R
MATRIX SPIKE DUPLICATE MATRIX SPIKE	PB-FAA-AT PB-FAA-AT	012685-0001-SD 012685-0001-MS	03 JAN 91-A 03 JAN 91-A
MATRIX SPIKE DUPLICATE MATRIX SPIKE	ICP-AP9-AD ICP-AP9-AD	012685-0001-SD 012685-0001-MS	21 JAN 91-E 21 JAN 91-E
MATRIX SPIKE DUPLICATE MATRIX SPIKE	AS-FAA-AD AS-FAA-AD	012685-0001-SD 012685-0001-MS	19 JAN 91-A 19 JAN 91-A
MATRIX SPIKE DUPLICATE MATRIX SPIKE	TL-FAA-AD TL-FAA-AD	012685-0001-SD 012685-0001-MS	21 JAN 91-J 21 JAN 91-J
MATRIX SPIKE DUPLICATE MATRIX SPIKE	SE-FAA-AD SE-FAA-AD	012685-0001-SD 012685-0001-MS	20 JAN 91-E 20 JAN 91-E
MATRIX SPIKE DUPLICATE MATRIX SPIKE	PB-FAA-AD PB-FAA-AD	012685-0001-SD 012685-0001-MS	18 JAN 91-B 18 JAN 91-B
MATRIX SPIKE DUPLICATE MATRIX SPIKE	HG-CVAA-AD HG-CVAA-AD	012685-0001-SD 012685-0001-MS	19 DEC 90-B 19 DEC 90-B
MATRIX SPIKE DUPLICATE MATRIX SPIKE	HG-CVAA-AT HG-CVAA-AT	012685-0001-SD 012685-0001-MS	19 DEC 90-C 19 DEC 90-C

MATRIX SPIKE / MATRIX SPIKE DUPLICATE REPORT
Metals Analysis and Preparation

Analyte	Sample	Concentration		Spiked		%Recovery		% RPD
		Matrix Spike	Matrix Spike Dup	MS	MSD	MS	MSD	
Test: CR-FAA-AD Matrix AQUEOUS Sample: 012685-0001 Units: mg/L								
Chromium	0.0016	0.022	0.023	0.020	0.020	103	105	2

Chromium	0.0016	0.022	0.023	0.020	0.020	103	105	2
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Test: CR-FAA-AT
Matrix AQUEOUS
Sample: 012685-0001
Units: mg/L

Chromium	0.033	0.40	0.46	0.20	0.20	183	212	14
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Test: ICP-AP9-AT
Matrix AQUEOUS
Sample: 012685-0001
Units: mg/L

Antimony	ND	0.34	0.35	0.50	0.50	68	71	5
Barium	0.15	1.9	2.0	2.0	2.0	88	92	5
Beryllium	ND	0.047	0.048	0.050	0.050	95	96	1
Cadmium	ND	0.040	0.043	0.050	0.050	81	87	8
Chromium	0.017	0.20	0.21	0.20	0.20	90	94	5
Cobalt	ND	0.44	0.45	0.50	0.50	88	90	3
Copper	ND	0.24	0.25	0.25	0.25	95	99	4
Nickel	ND	0.45	0.47	0.50	0.50	90	93	4
Silver	ND	0.044	0.044	0.050	0.050	87	89	2
Tin	ND	-0.021	-0.030	0.0	0.0	NC	NC	NC
Vanadium	0.018	0.48	0.49	0.50	0.50	92	95	3
Zinc	0.17	0.59	0.66	0.50	0.50	84	97	14

Test: AS-FAA-AT
Matrix AQUEOUS
Sample: 012685-0001
Units: mg/L

Arsenic	ND	0.039	0.035	0.040	0.040	98	88	11
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ND = Not detected
NC = Not calculated, calculation not applicable

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

MATRIX SPIKE / MATRIX SPIKE DUPLICATE REPORT
Metals Analysis and Preparation (cont.)

Analyte	Sample	Concentration		Spiked		%Recovery		% RPD
		Matrix Spike	Matrix Spike Dup	MS	MSD	MS	MSD	
Test: TL-FAA-AT Matrix AQUEOUS Sample: 012685-0001 Units: mg/L								
Thallium	ND	0.032	0.046	0.050	0.050	64	92	36
Test: SE-FAA-AT Matrix AQUEOUS Sample: 012685-0001 Units: mg/L								
Selenium	ND	0.0057	0.018	0.010	0.010	57	180	104
Test: PB-FAA-AT Matrix AQUEOUS Sample: 012685-0001 Units: mg/L								
Lead	0.010	0.024	0.025	0.020	0.020	118	125	6
Test: ICP-AP9-AD Matrix AQUEOUS Sample: 012685-0001 Units: mg/L								
Antimony	ND	1.1	1.1	1.0	1.0	107	109	2
Barium	0.059	0.52	0.55	0.50	0.50	92	99	7
Beryllium	ND	0.046	0.049	0.050	0.050	92	99	7
Cadmium	ND	0.046	0.055	0.050	0.050	92	110	18
Chromium	ND	0.20	0.21	0.20	0.20	98	106	8
Cobalt	ND	0.46	0.50	0.50	0.50	93	99	7
Copper	ND	0.24	0.26	0.25	0.25	95	103	7
Nickel	ND	0.46	0.50	0.50	0.50	93	99	7
Silver	ND	0.25	0.26	0.25	0.25	99	103	4
Tin	ND	0.37	0.38	0.40	0.40	92	96	4
Vanadium	ND	0.48	0.52	0.50	0.50	97	103	6
Zinc	ND	0.52	0.55	0.50	0.50	103	109	6

ND = Not detected

NC = Not calculated, calculation not applicable

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

MATRIX SPIKE / MATRIX SPIKE DUPLICATE REPORT
Metals Analysis and Preparation (cont.)

Analyte	Sample	Concentration			Spiked		%Recovery		%RPD
		Matrix Spike	Matrix Spike Dup	MS	MSD	MS	MSD		
Test: AS-FAA-AD Matrix AQUEOUS Sample: 012685-0001 Units: mg/L									
Arsenic	ND	0.018	0.018	0.020	0.020	90	90	1	
Test: TL-FAA-AD Matrix AQUEOUS Sample: 012685-0001 Units: mg/L									
Thallium	ND	0.011	0.013	0.020	0.020	55	65	17	
Test: SE-FAA-AD Matrix AQUEOUS Sample: 012685-0001 Units: mg/L									
Selenium	ND	0.017	0.017	0.020	0.020	83	85	2	
Test: PB-FAA-AD Matrix AQUEOUS Sample: 012685-0001 Units: mg/L									
Lead	ND	0.019	0.016	0.020	0.020	95	81	16	
Test: HG-CVAA-AD Matrix AQUEOUS Sample: 012685-0001 Units: mg/L									
Mercury	ND	0.00095	0.00098	0.0010	0.0010	95	98	3	

ND = Not detected

NC = Not calculated, calculation not applicable

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

MATRIX SPIKE / MATRIX SPIKE DUPLICATE REPORT
Metals Analysis and Preparation (cont.)

Analyte	Sample	Concentration			Spiked		%Recovery		% RPD
		Matrix Spike	Matrix Spike Dup	MS	MSD	MS	MSD		
Mercury	ND	0.00099	0.00097	0.0010	0.0010	99	97	2	

Test: HG-CVAA-AT
Matrix AQUEOUS
Sample: 012685-0001
Units: mg/L

ND = Not detected
NC = Not calculated, calculation not applicable

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

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)
012685-0001-SA	AQUEOUS	TOC-A	18 DEC 90-X	-
012685-0001-SA	AQUEOUS	TOX-A	18 DEC 90-M	-
012685-0001-SA	AQUEOUS	CN-A	08 DEC 90-R	08 DEC 90-R
012685-0001-SA	AQUEOUS	S-A	07 DEC 90-A	-
012685-0001-SA	AQUEOUS	NO3-A	19 DEC 90-A	-
012685-0001-MS	AQUEOUS	TOC-A	18 DEC 90-X	-
012685-0001-MS	AQUEOUS	TOX-A	18 DEC 90-M	-
012685-0001-MS	AQUEOUS	CN-A	08 DEC 90-R	08 DEC 90-R
012685-0001-MS	AQUEOUS	S-A	07 DEC 90-A	-
012685-0001-MS	AQUEOUS	NO3-A	19 DEC 90-A	-
012685-0001-SD	AQUEOUS	TOC-A	18 DEC 90-X	-
012685-0001-SD	AQUEOUS	TOX-A	18 DEC 90-M	-
012685-0001-SD	AQUEOUS	CN-A	08 DEC 90-R	08 DEC 90-R
012685-0001-SD	AQUEOUS	S-A	07 DEC 90-A	-
012685-0001-SD	AQUEOUS	NO3-A	19 DEC 90-A	-

DUPLICATE CONTROL SAMPLE REPORT
Wet Chemistry Analysis and Preparation

Analyte	Spiked	Concentration		AVG	Accuracy		Precision		
		DCS1	Measured DCS2		DCS	Average(%) Limits	(RPD) DCS Limit	DCS Limit	
Category: TOC-A Matrix: AQUEOUS QC Lot: 18 DEC 90-X Concentration Units: mg/L									
Total Organic Carbon	25.0	24.1	24.0	24.0	96	91-109	0.4	20	
Category: TOX-A Matrix: AQUEOUS QC Lot: 18 DEC 90-M Concentration Units: ug Cl/L									
Total Organic Halogen as Cl	100	97.2	95.1	96.2	96	80-120	2.2	20	
Category: CN-A Matrix: AQUEOUS QC Lot: 08 DEC 90-R Concentration Units: mg/L									
Cyanide	0.20	0.197	0.172	0.184	92	75-125	14	20	
Category: S-A Matrix: AQUEOUS QC Lot: 07 DEC 90-A Concentration Units: mg/L									
Sulfide, Total	0.456	0.475	0.471	0.473	104	80-120	0.9	20	
Category: NO3-A Matrix: AQUEOUS QC Lot: 19 DEC 90-A Concentration Units: mg/L									
Nitrate as N	5.4	5.36	5.35	5.36	99	91-109	0.2	10	

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

METHOD BLANK REPORT
Wet Chemistry Analysis and Preparation

Analyte	Result	Units	Reporting Limit
Test: CNTOT-TEC-A			
Matrix: AQUEOUS			
QC Lot: 08 DEC 90-R	QC Run: 08 DEC 90-R		
Cyanide	ND	mg/L	0.010

MATRIX SPECIFIC QC
ASSIGNMENT REPORT
Wet Chemistry Analysis and Preparation

QC SAMPLE TYPE	TEST	LABORATORY SAMPLE NUMBER	QC LOT
MATRIX SPIKE DUPLICATE	TOC-TOC-A	012685-0001-SD	18 DEC 90-X
MATRIX SPIKE	TOC-TOC-A	012685-0001-MS	18 DEC 90-X
MATRIX SPIKE DUPLICATE	TOX-TOX-A	012685-0001-SD	18 DEC 90-M
MATRIX SPIKE	TOX-TOX-A	012685-0001-MS	18 DEC 90-M
MATRIX SPIKE DUPLICATE	CNTOT-TEC-A	012685-0001-SD	08 DEC 90-R
MATRIX SPIKE	CNTOT-TEC-A	012685-0001-MS	08 DEC 90-R
MATRIX SPIKE DUPLICATE	S-SPEC-AT	012685-0001-SD	07 DEC 90-A
MATRIX SPIKE	S-SPEC-AT	012685-0001-MS	07 DEC 90-A
MATRIX SPIKE DUPLICATE	NO3+NO2-TEC-A	012685-0001-SD	19 DEC 90-A
MATRIX SPIKE	NO3+NO2-TEC-A	012685-0001-MS	19 DEC 90-A

MATRIX SPIKE / MATRIX SPIKE DUPLICATE REPORT
Wet Chemistry Analysis and Preparation

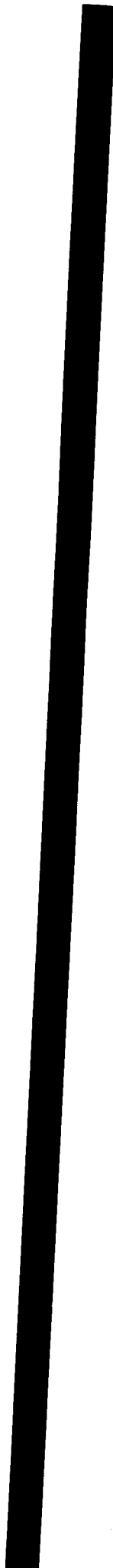
Analyte	Sample	Concentration			Spiked		%Recovery		% RPD
		Matrix Spike	Matrix Spike Dup		MS	MSD	MS	MSD	
Test: TOC-TOC-A Matrix AQUEOUS Sample: 012685-0001 Units: mg/L									
Total Organic Carbon	0.97	11.4	10.5	10.0	10.0	104	95	9	
Test: TOX-TOX-A Matrix AQUEOUS Sample: 012685-0001 Units: ug/L									
Total Organic Halogen as Cl	ND	101	104	100	100	101	104	3	
Test: CNTOT-TEC-A Matrix AQUEOUS Sample: 012685-0001 Units: mg/L									
Cyanide	ND	0.19	0.19	0.20	0.20	97	95	2	
Test: S-SPEC-AT Matrix AQUEOUS Sample: 012685-0001 Units: mg/L									
Sulfide	ND	0.48	0.33	0.91	0.91	53	36	37	
Test: Matrix ... Sample: 012085-0001 Units: mg/L									
Nitrate plus Nitrite as N	3.8	5.8	6.0	2.0	2.0	100	110	10	

ND = Not detected
NC = Not calculated, calculation not applicable

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



Appendix



Special Handling

(Circle as appropriate and explain in record 5)

Hazardous material

Site Type (circle one)

SW - Surface Water
GW - Ground Water
ME - Meteorological

LK - Lake
ES - Estuary
SP - Spring
SS - Special Source

KAFB021303-2

Station Name

Field ID

KIRTLAND

USGS/WRD/NEWMEXICO

Field/Office

AFB IRP

Project

Collector

(305) 262-5340

Phone (FTS)

File Deposition*

(Circle one)

Q - WATSTORE

X - Lab File

[Empty box for Laboratory Use Only]

For Laboratory Use Only

Sample identification

12685-01

KAFB021303-2

Station ID or Unique Number*

463536001

Project Account #

1990
Year*

12 03
Month* Day*

Begin Date

1330
Time*

12 03
Month* Day*

Composite End Date

1606
Time*

NM
State Code*

035
District/ User Code*

001
County Code

Analysis level codes and schedules

Sample Medium**	Geologic Unit	H or 9 Analysis Status**	9 Analysis Source**	Hydrologic Condition**	9 Sample Type**	9 Hydrologic Event**
		DISSOLVED		TOTAL CHROMIUM		APPIX VOC
PARAMETER:	TOC TOX					
METHOD:	SW9060 SW9020	SW3005/SW7911		SW3020/SW7191		SW5030/SW8240
PARAMETER:	APPIX SEMI-VOC	APPIX PESTICIDES		APPIX HERBICIDES		APPIX DRUGS APPIX
METHOD:	SW3510/SW8270	SW3520/SW8080		SW3520/SW8150		SW3520/SW8280 EXTRA SAMPLE
PARAMETER:	APPIX ICP, TOTAL	APPIX, ICP, DISS		APPIX	APPIX	NITRATE
METHOD:	SW3005/SW690	SW3005/SW6010		CHLORIDE	SULFIDE	E553.1 + E554.1

Chain-of-Custody Record

PROJECT NAME KIRTLAND AFB IRP PROJECT NO. 463536001 P.O. NO. _____

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
<u>[Signature]</u>	<u>AIRBORNE EXPRESS</u>	<u>12/3/90</u>	<u>1800</u>

Relinquished by: (Signature)	Received at lab by: (Signature)	Date	Time
	<u>[Signature]</u>	<u>12-4-90</u>	<u>1000 hrs</u>

Relinquished from lab by: (Signature)	Received by: (Signature)	Date	Time
---------------------------------------	--------------------------	------	------

Comments (Only 50 characters stored in NWIS)

Record 5 _____

Record 6 _____

Total number of sample bottles for this request: _____

SHIP TO:

Enseco-Rocky Mountain Analytical
4955 Yarrow Street
Arvada, CO 80002
(303) 421-6611

ATTENTION: LINDSAY BRYER

Special Handling

(Circle as appropriate and explain in record 5)

Hazardous material
MATRIX SPIKE SAMPLE
KAFB 021304-2

Site Type (circle one)

- SW - Surface Water
- GW** - Ground Water
- ME - Meteorological
- LK - Lake
- ES - Estuary
- SP - Spring
- SS - Special Source

Station Name: KAFB 021304-2 Field ID: KIRTLAND Project: USGS/WRD/NEWMEXICO AFB IRP Collector: _____ Phone (FTS): (505) 262-5340

File Deposition* (Circle one)

Sample identification

- Q - WATSTORE
- X - Lab File

[Empty box for Laboratory Use Only]

KAFB 021304-2

463536001

12685-02
IMS

Year: 1990 Month: 12 Day: 03 Time: 1330 Composite End Date: 12 03 1606 State Code: NM District/User Code: 035 County Code: 001

Analysis level codes and schedules

Sample Medium: 6 Geologic Unit: _____ Analysis Status: H or 9 Analysis Source: 9 Hydrologic Condition: _____ Sample Type: 9 Hydrologic Event: 9

PARAMETER:	TOC	TOX	DISSOLVED CHROMIUM	TOTAL CHROMIUM	VOC
METHOD:	SW9060	SW9020	SW3005/SW7191	SW3020/SW7191	SW5030/SW8240
PARAMETER:	APPX SEMI-VOC	APPX PESTICIDES	APPX HERBICIDES	APPX DIOXINS	APPX EXTRA SAMPLE
METHOD:	SW3510/SW8270	SW3520/SW8080	SW3520/SW8150	SW3520/SW8280	APPX EXTRA SAMPLE
PARAMETER:	APPX ICP, TOTAL	APPX ICP, DB	APPX CNIDE	APPX SULFIDE	NITRATE
METHOD:	SW3005/SW6010	SW3005/SW6010	CNIDE	SULFIDE	E355.2 + E354.1

Chain-of-Custody Record

PROJECT NAME KIRTLAND AFB IRP PROJECT NO. 463536001 P.O. NO. _____

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
<u>Fl. Eubank Royal</u>	<u>AIRBORNE EXPRESS</u>	<u>12/03/90</u>	<u>1800</u>
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received at lab by: (Signature)	Date	Time
Relinquished from lab by: (Signature)	Received by: (Signature)	Date	Time

Comments (Only 50 characters stored in NWIS)

Record 5 LANDFILL 2, MATRIX SPIKE SAMPLE

Record 6 _____

Total number of sample bottles for this request: 15

SHIP TO:

Enseco-Rocky Mountain Analytical
4955 Yarrow Street
Arvada, CO 80002
(303) 421-6611

ATTENTION: LINDSAY BRYER

Special Handling

(Circle as appropriate and explain in record 5)

Hazardous material

MATRIX SPIKE DUPLICATE SAMPLE
KAFB021305-2

Site Type (circle one)

SW - Surface Water
GW - Ground Water
ME - Meteorological

LK - Lake
ES - Estuary
SP - Spring
SS - Special Source

Station Name: USGS/WRD/NEWMEXICO Field Office: KIRTLAND Project: AFB IRP Collector: (305) 262-5340 Phone (FTS)

File Deposition* (Circle one)

Q - WATSTORE
X - Lab File

Sample identification

[Empty box for Laboratory Use Only]

KAFB021305-2

463536001

12685-03 JMAS
1M50

1990 Year* 12 Month* 03 Day* 1330 Time* 12 Month* 03 Day* 1606 Time* NM State Code* 035 District/User Code* 001 County Code

Analysis level codes and schedules

6 Sample Medium** Geologic Unit H or 9 Analysis Status** 9 Analysis Source** 9 Hydrologic Condition** 9 Sample Type** 9 Hydrologic Event**

PARAMETER:

TOC

TOX

DISSOLVED CHROMIUM

TOTAL CHROMIUM

APP IX ~~(SULFIDE)~~ VDC

METHOD:

SW9060

SW9020

SW3005/SW7191

SW3020/SW7191

SW5030/SW8240

PARAMETER:

APP IX SEMI VDC

APP IX PESTICIDES

APP IX HERBICIDES

APP IX DIOXINS

APP IX EXTRA SAMPLE

METHOD:

SW3510/SW8240

SW3520/SW8080

SW3520/SW8150

SW3520/SW8280

PARAMETER:

APP IX ICP, TOTAL

APP IX ICP, DISS

APP IX CYANIDE

APP IX SULFIDE

METHOD:

SW3005/SW6010

SW3005/SW6010

NITRATE
E-353.24 E-354.1

Chain-of-Custody Record

PROJECT NAME KIRTLAND AFB IRP PROJECT NO. 463536001 P.O. NO. _____

Relinquished by: (Signature) Received by: (Signature) Date Time

P. Edwin Roybal AIRBORNE EXPRESS 12/3/90 800

Relinquished by: (Signature) Received by: (Signature) Date Time

Relinquished by: (Signature) Received at lab by: (Signature) Date Time

Joseph A. Hayes 12-4-90 1000

Relinquished from lab by: (Signature) Received by: (Signature) Date Time

Comments (Only 50 characters stored in NWIS)

Record 5 LANDFILL 2, MATRIX SPIKE DUPLICATE SAMPLE

Record 6 _____

Total number of sample bottles for this request: 15

SHIP TO:

Enseco-Rocky Mountain Analytical
4955 Yarrow Street
Arvada, CO 80002
(303) 421-6611

ATTENTION: LINDSAY BRYER

Special Handling

(Circle as appropriate and explain in record 5)

Hazardous material

AMBIANT CONDITIONS BLANK

KAFB021306-2

Station Name

Field ID

KIRTLAND

USGS/WRD/NEW MEXICO

Field Office

AFB IRP

Project

Site Type (circle one)

SW - Surface Water

GW - Ground Water

ME - Meteorological

LK - Lake

ES - Estuary

SP - Spring

SS - Special Source

(305) 262-5340

Phone (FTS)

File Deposition*

(Circle one)

Q - WATSTORE

X - Lab File

[Empty box for Laboratory Use Only]

For Laboratory Use Only

Sample identification

KAFB0213

Station ID or Unique Number*

463536001

Project Account #

12685-04 Jm
02

1990
Year*

12 03
Month* Day*

1330
Time*

12 03
Month Day

1606
Time

NM
State Code*

035
District/ User Code*

001
County Code

Begin Date

Composite End Date

Analysis level codes and schedules

6
Sample Medium**

Geologic Unit

H or 9
Analysis Status**

9
Analysis Source**

Hydrologic Condition**

9
Sample Type**

9
Hydrologic Event**

PARAMETER:

METHOD:

APP II AMBIANT CONDITIONS BLANK
VBE
SWS030/SW8240

PARAMETER:

METHOD:

PARAMETER:

METHOD:

Chain-of-Custody Record

PROJECT NAME KIRTLAND AFB IRP PROJECT NO. 463536001 P.O. NO.

Relinquished by: (Signature) H. Eileen Royal Received by: (Signature) AIRBORNE EXPRESS Date 12/3/90 Time 1800

Relinquished by: (Signature) Received by: (Signature) Date Time

Relinquished by: (Signature) Received at lab by: (Signature) Date Time

Relinquished from lab by: (Signature) Received by: (Signature) Date 12-4-90 Time 1000

Comments (Only 50 characters stored in NWIS)

Record 5 LANDFILL 2, AMBIENT CONDITIONS BLANK

Record 6

Total number of sample bottles for this request: 3

SHIP TO:

Enseco-Rocky Mountain Analytical
4955 Yarrow Street
Arvada, CO 80002
(303) 421-6611

ATTENTION: LINDSAY BRYER