

Enseco Incorporated

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ANALYTICAL RESULTS
FOR
U.S. GEOLOGICAL SURVEY
ENSECO-RMAL NO. 011235

SEPTEMBER 28, 1990



KAFB1049



ANALYTICAL RESULTS
FOR
U.S. GEOLOGICAL SURVEY
ENSECO-RMAL NO. 011235

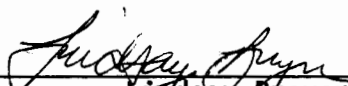


SEPTEMBER 28, 1990

Reviewed by:



Randall Thompson



Lindsay Breyer

Introduction

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:

- o Sample Description Information
- o Analytical Test Requests
- o Analytical Results
- o Quality Control Report

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 Date	Time	Received Date
011235-0001-SA	KAFB060804-2	AQUEOUS	05 SEP 90	08:00	06 SEP 90

ANALYTICAL TEST REQUESTS
for
U.S. Geological Survey

Lab ID: 011235	Group Code	Analysis Description	Custom Test?
0001	A	Total Organic Carbon (TOC)	N
		Total Organic Halogen (TOX)	N
		Nitrate Plus Nitrite	N
		Chromium, Furnace AA	N
		Chromium, Furnace AA (Total)	N
		Prep - Total Metals, ICP	N
		Semivolatile Organics Appendix IX List	N
		Prep - Semivolatile Organics by GC/MS	N
		Semivolatiles Library Search (20 Compound ID)	N
		Volatile Organics Appendix IX List	N
		Screen - Volatile Organics	N
		Volatiles Library Search (10 Compound TID)	N

Analytical Results

The analytical results for this project are presented in the following data tables. Each data table includes sample identification information, and when available and appropriate, dates sampled, received, authorized, prepared and analyzed. The authorization data is the date when the project was defined by the client such that laboratory work could begin.

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.

The results from the Standard Enseco QA/QC Program, which generates data which are independent of matrix effects, is provided subsequently.

Volatile Organics
Appendix IX List
Method 8240

Client Name: U.S. Geological Survey
Client ID: KAFB060804-2
Lab ID: 011235-0001-SA
Matrix: AQUEOUS
Authorized: 06 SEP 90

Sampled: 05 SEP 90
Prepared: 09 SEP 90

Received: 06 SEP 90
Analyzed: 16 SEP 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

(continued on following page)

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: KAFB060804-2

Lab ID: 011235-0001-SA

Matrix: AQUEOUS

Authorized: 06 SEP 90

Sampled: 05 SEP 90

Prepared: 09 SEP 90

Received: 06 SEP 90

Analyzed: 16 SEP 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	99	%	--
4-Bromofluorobenzene	98	%	--
1,2-Dichloroethane-d4	99	%	--

ND = Not detected
NA = Not applicable

Reported By: Michael Blades

Approved By: Jeff Lowry

TENTATIVELY IDENTIFIED COMPOUNDS

FOR

U.S. GEOLOGICAL SURVEY

SAMPLE NUMBER 011235-0001

<u>Compound Name</u>	<u>Fraction</u>	<u>Confidence Level</u>	<u>Estimated Concentration ug/L</u>
Cyclopentane, Methyl-	VOA		6.3
2-Hexane, 3, 5, 5-Trimethyl-	VOA		5.3

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: KAFB060804-2
Lab ID: 011235-0001-SA
Matrix: AQUEOUS
Authorized: 06 SEP 90

Sampled: 05 SEP 90
Prepared: 07 SEP 90

Received: 06 SEP 90
Analyzed: 17 SEP 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: Dan Albritton

Approved By: Jeff Lowry

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey
Client ID: KAFB060804-2
Lab ID: 011235-0001-SA
Matrix: AQUEOUS
Authorized: 06 SEP 90

Sampled: 05 SEP 90
Prepared: 07 SEP 90

Received: 06 SEP 90
Analyzed: 17 SEP 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: Dan Albritton

Approved By: Jeff Lowry

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey
Client ID: KAFB060804-2
Lab ID: 011235-0001-SA
Matrix: AQUEOUS
Authorized: 06 SEP 90

Sampled: 05 SEP 90
Prepared: 07 SEP 90

Received: 06 SEP 90
Analyzed: 17 SEP 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-Tetrachlorobenzene	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: Dan Albritton

Approved By: Jeff Lowry

Semivolatile Organics
Appendix IX List
Method 8270

Client Name: U.S. Geological Survey

Client ID: KAFB060804-2

Lab ID: 011235-0001-SA

Matrix: AQUEOUS

Authorized: 06 SEP 90

Sampled: 05 SEP 90

Prepared: 07 SEP 90

Received: 06 SEP 90

Analyzed: 17 SEP 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
0,0,0-Triethylphosphorothioate	ND	ug/L	10
2,4,6-Trichlorophenol	ND	ug/L	10
1,3,5-Trinitrobenzene	ND	ug/L	10
Surrogate	Recovery		
Nitrobenzene-d5	83	%	--
2-Fluorobiphenyl	72	%	--
Terphenyl-d14	79	%	--
Phenol-d5	84	%	--
2-Fluorophenol	76	%	--
2,4,6-Tribromophenol	86	%	--

ND = Not detected
NA = Not applicable

Reported By: Dan Albritton

Approved By: Jeff Lowry

TENTATIVELY IDENTIFIED COMPOUNDS

FOR

U.S. GEOLOGICAL SURVEY

SAMPLE NUMBER 011235-0001

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

NOTES:

Confidence Levels

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

Please refer to the discussion for further details.

Metals

Total Metals

Client Name: U.S. Geological Survey

Client ID: KAFB060804-2

Lab ID: 011235-0001-SA

Matrix: AQUEOUS

Authorized: 06 SEP 90

Sampled: 05 SEP 90

Prepared: See Below

Received: 06 SEP 90

Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Chromium	0.014	mg/L	0.0050	7191	20 SEP 90	25 SEP 90

ND = Not detected
NA = Not applicable

Reported By: Mark Brundege

Approved By: Dave Roberts

Metals

Dissolved Metals

Client Name: U.S. Geological Survey
 Client ID: KAFB060804-2
 Lab ID: 011235-0001-SA
 Matrix: AQUEOUS
 Authorized: 06 SEP 90

Sampled: 05 SEP 90
 Prepared: See Below

Received: 06 SEP 90
 Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Chromium	0.0074	mg/L	0.0050	7191	NA	11 SEP 90

ND = Not detected
 NA = Not applicable

Reported By: Scott Moroschan

Approved By: Dave Roberts

General Inorganics

Client Name: U.S. Geological Survey
 Client ID: KAFB060804-2
 Lab ID: 011235-0001-SA
 Matrix: AQUEOUS
 Authorized: 06 SEP 90

Sampled: 05 SEP 90
 Prepared: See Below

Received: 06 SEP 90
 Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrate plus Nitrite	26.4	mg/L	1.0	353.2	NA	17 SEP 90
Total Organic Carbon	18.6	mg/L	0.50	9060	NA	07 SEP 90
Total Organic Halogen as Cl	ND	ug/L	30.0	9020	NA	18 SEP 90

ND = Not detected
 NA = Not applicable

Reported By: Steve Pope

Approved By: John Laferty

Quality Control Results

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.

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 either representative target compounds or surrogate compounds appropriate to the method being used. An SCS is prepared for each sample lot for which the DCS pair are not analyzed.

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.

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)
011235-0001-SA	AQUEOUS	624-A	12 SEP 90-H	16 SEP 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: 12 SEP 90-H									
Concentration Units: ug/L									
1,1-Dichloroethene	50	43.0	44.7	43.8	88	61-145	3.9	14	
Trichloroethene	50	47.7	48.7	48.2	96	71-120	2.1	14	
Benzene	50	50.3	53.5	51.9	104	76-127	6.2	11	
Toluene	50	56.7	57.9	57.3	115	76-125	2.1	13	
Chlorobenzene	50	52.7	54.2	53.4	107	75-130	2.8	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: 12 SEP 90-H QC Run: 16 SEP 90-H				
Concentration Units: ug/L				
1,2-Dichloroethane-d4	50.0	49.9	100	76-114
4-Bromofluorobenzene	50.0	50.5	101	86-115
Toluene-d8	50.0	50.9	102	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: 12 SEP 90-H QC Run: 16 SEP 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
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: 12 SEP 90-H QC Run: 16 SEP 90-H			
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

QC LOT ASSIGNMENT REPORT
Semivolatile Organics by GC/MS

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
011235-0001-SA	AQUEOUS	625-A	07 SEP 90-A	07 SEP 90-B

DUPLICATE CONTROL SAMPLE REPORT
Semivolatile Organics 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: 07 SEP 90-A									
Concentration Units: ug/L									
Phenol	100	87.1	80.3	83.7	84	12- 89	8.1	42	
2-Chlorophenol	100	83.3	80.9	82.1	82	27-123	2.9	40	
1,4-Dichlorobenzene	50	33.6	35.4	34.5	69	36- 97	5.2	28	
N-Nitroso-di- n-propylamine	50	47.9	48.2	48.0	96	41-116	0.6	38	
1,2,4-Trichlorobenzene	50	32.1	32.6	32.4	65	39- 98	1.5	28	
4-Chloro-3-methylphenol	100	63.6	77.9	70.8	71	23- 97	20	42	
Acenaphthene	50	36.7	36.0	36.4	73	46-118	1.9	31	
4-Nitrophenol	100	60.6	51.5	56.0	56	10- 80	16	50	
2,4-Dinitrotoluene	50	38.4	36.2	37.3	75	24- 96	5.9	38	
Pentachlorophenol	100	31.5	14.2	22.8	23	9-103	76	50	
Pyrene	50	35.3	34.5	34.9	70	26-127	2.3	31	

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: 07 SEP 90-A QC Run: 07 SEP 90-B				
Concentration Units: ug/L				
Nitrobenzene-d5	100	64.2	64	35-114
2-Fluorobiphenyl	100	61.1	61	43-116
Terphenyl-d14	100	75.2	75	33-141
2-Fluorophenol	200	127	64	21-100
Phenol-d5	200	131	66	10- 94
2,4,6-Tribromophenol	200	99.6	50	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: 07 SEP 90-A	QC Run: 07 SEP 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
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

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

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 07 SEP 90-A QC Run: 07 SEP 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
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 bis(2-Ethylhexyl) phthalate	ND	ug/L	50
Ethyl methanesulfonate	ND	ug/L	10
Famphur	ND	ug/L	10
Fluoranthene	ND	ug/L	--
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	10
Methapyrilene	ND	ug/L	20
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: 07 SEP 90-A QC Run: 07 SEP 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
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

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

Analyte	Result	Units	Reporting Limit
Test: 8270CP-AP9-A			
Matrix: AQUEOUS			
QC Lot: 07 SEP 90-A QC Run: 07 SEP 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

QC LOT ASSIGNMENT REPORT
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK)
011235-0001-SA	AQUEOUS	CR-FAA-AD	11 SEP 90-A	-
011235-0001-SA	AQUEOUS	CR-FAA-AT	20 SEP 90-A	20 SEP 90-A

DUPLICATE CONTROL SAMPLE REPORT
Metals Analysis and Preparation

Analyte	Concentration Spiked	Concentration Measured		AVG	Accuracy Average(%)		Precision (RPD)		
		DCS1	DCS2		DCS	Limits	DCS	Limit	
Category: CR-FAA-AD Matrix: AQUEOUS QC Lot: 11 SEP 90-A Concentration Units: mg/L									
Chromium	0.02	0.0191	0.0188	0.0190	95	75-125	1.6	20	
Category: CR-FAA-AT Matrix: AQUEOUS QC Lot: 20 SEP 90-A Concentration Units: mg/L									
Chromium	0.2	0.200	0.208	0.204	102	75-125	3.9	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: 20 SEP 90-A QC Run: 20 SEP 90-A			
Chromium	ND	mg/L	0.0050

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)
011235-0001-SA	AQUEOUS	TOC-A	07 SEP 90-A	-
011235-0001-SA	AQUEOUS	TOX-A	18 SEP 90-A	-
011235-0001-SA	AQUEOUS	NO3-A	17 SEP 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: 07 SEP 90-A Concentration Units: mg/L									
Total Organic Carbon	25	25.6	25.8	25.7	103	91-109	0.8	20	
Category: TOX-A Matrix: AQUEOUS QC Lot: 18 SEP 90-A Concentration Units: ug Cl/L									
Total Organic Halogen as Cl	100	95.9	93.9	94.9	95	80-120	2.1	20	
Category: NO3-A Matrix: AQUEOUS QC Lot: 17 SEP 90-A Concentration Units: mg/L									
Nitrate as N	3.8	3.82	3.84	3.83	101	91-109	0.5	10	

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



Appendix

Special Handling (Circle as appropriate and explain in record 5)

Site Type (circle one)
SW - Surface Water
GW - Ground Water
ME - Meteorological
LK - Lake
ES - Estuary
SP - Spring
SS - Special Source
(505) 262-6678
Phone (FTS)
BILL DAM

Hazardous material

Field ID: KAFB060804-2
Field Office: USGS/WRD/NEW MEXICO SWMU
Project: USGS
Collector: (505) 262-6678
Station Name: KAFB060804-2
Field Office: USGS/WRD/NEW MEXICO SWMU
Project: USGS
Collector: (505) 262-6678
Phone (FTS): BILL DAM

File Deposition* (Circle one)

Sample identification

Q - WATSTORE
X - Lab File
Station ID or Unique Number: KAFB060804-2
Project Account #: 463536001

Year: 1990
Month: 09
Day: 05
Time: 0800
Composite End Date: 09 05 0920
State Code: NM
District/User Code: 035
County Code: 001

Analysis level codes and schedules
6=GW, 9=SW
H or 9
Analysis Status: H
Analysis Source: G
Hydrologic Condition: 9
Sample Type: 9
Hydrologic Event: 9

PARAMETER: TOC, TOX, NO2+NO3, DISSOLVED CHROMIUM, TOTAL CHROMIUM
METHOD: SW9060, SW9020, E353.2, SW3005/SW791, SW3020/SW791
PARAMETER: VOX, APP. IX VOC, DIOXIN/FURANS, HERBICIDES
METHOD: SW5030/SW8010, SW5030/SW8240, SW3520/SW8280, SW3520/SW8150
PARAMETER: APP. IX ICP, DISSOLVED CO, CU, Fe, Pb, Mn, Mo, Ni, V, Zn
METHOD: SW3005/SW6010
PARAMETER: APP. IX SEMI-VOC
METHOD: SW3520/SW8270

Chain-of-Custody Record

PROJECT NAME: KIRTLAND AFB SWMU
PROJECT NO.: 463536001
P.O. NO.:

Relinquished by: (Signature) Received by: (Signature) Date: 900905 Time: 1740
Relinquished by: (Signature) Received by: (Signature) Date: 9-6-90 Time: 1000

Comments (Only 50 characters stored in NWIS)

Record 5: WELL NNW OF GOLF COURSE POND
Record 6:

Total number of sample bottles for this request: 9 INCLUDING EXTRA BOTTLE GCC

SHIP TO:
Enseco-Rocky Mountain Analytical
4955 Yarrow Street
Arvada, CO 80002
(303) 421-6611
ATTENTION: THOMPSON, BREYER OR MCDEVITT

PL REPORT
reparation

Spiked	Concentration		AVG	Accuracy		Precision		Reporting Limit
	DCS1	Measured DCS2		Average(%) DCS	Limits	(RPD) DCS	Limit	

D

s: mg/L

0.02	0.0191	0.0188	0.0190	95	75-125	1.6	20	1.0050
------	--------	--------	--------	----	--------	-----	----	--------

T

90-A
its: mg/L

0.2	0.200	0.208	0.204	102	75-125	3.9	20
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re 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)
011235-0001-SA	AQUEOUS	TOC-A	07 SEP 90-A	-
011235-0001-SA	AQUEOUS	TOX-A	18 SEP 90-A	-
011235-0001-SA	AQUEOUS	N03-A	17 SEP 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: 07 SEP 90-A Concentration Units: mg/L									
Total Organic Carbon	25	25.6	25.8	25.7	103	91-109	0.8	20	
Category: TOX-A Matrix: AQUEOUS QC Lot: 18 SEP 90-A Concentration Units: ug Cl/L									
Total Organic Halogen as Cl	100	95.9	93.9	94.9	95	80-120	2.1	20	
Category: N03-A Matrix: AQUEOUS QC Lot: 17 SEP 90-A Concentration Units: mg/L									
Nitrate as N	3.8	3.82	3.84	3.83	101	91-109	0.5	10	

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

KAFB060804-2

Station Name

USGS/WRD/NEW MEXICO SWMU

Field Office

Project

USGS

Collector

(505) 262-6678

Phone (FTS)

BILL DAM

File Deposition* (Circle one)

Q - WATSTORE
X - Lab File

Sample identification

KAFB060804-2

Station ID or Unique Number*

463536001

Project Account #

1990
Year*

09
Month*

05
Day*

0800
Time*

09
Month

05
Day

0920
Time

NM
State Code*

035
District/ User Code*

001
County Code

Begin Date

Composite End Date

6=GW
9=SW

Analysis level codes and schedules

1=SPIKE
5=DUPLICATE
9=REGULAR

J=STORM
9=ROUTINE

6
Sample Medium**

Geologic Unit

H or 9
Analysis Status**

GS FIELD
ANALYSIS-LAB
G
Analysis Source**

9
Hydrologic Condition**

9
Sample Type**

9
Hydrologic Event**

PARAMETER:

METHOD:

TDC SW9060
TOX SW9020
NO2+NO3 E353.2
DISSOLVED CHROMIUM SW3005/SW791
TOTAL CHROMIUM SW3020/SW791

PARAMETER:

METHOD:

VOC SW5030/SW8010
APP. IX VOC SW5030/SW8240
DIOXIN/FURANS SW3520/SW8280
HERBICIDES SW3520/SW8150

PARAMETER:

METHOD:

APPENDIX IX ICP DISSOLVED
CO, CU, FE, Pb, Mn, Mo, Ni, V, Zn
SW3005/SW6010
APPENDIX IX ICP TOTAL
CO, CU, FE, Pb, Mn, Mo, Ni, V, Zn
SW3010/SW6010

PARAMETER:

METHOD:

APP. IX SEMI-VOC
SW3520/SW8270

Chain-of-Custody Record

PROJECT NAME KIRTLAND AFB SWMU

PROJECT NO. 463536001 P.O. NO.

Relinquished by: (Signature)

Received by: (Signature)

Date

Time

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 WELL NNW OF GOLF COURSE POND

Record 6

Total number of sample bottles for this request:

9 INCLUDING EXTRA BOTTLE GCC

SHIP TO:

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

ATTENTION: THOMPSON, BREYER, OR MCDEVITT