REMEDIAL INVESTIGATION REPORT FOR HIGH PRIORITY SITES (881 HILLSIDE AREA)

VOLUME IV
(APPENDIX E)

U.S. DEPARTMENT OF ENERGY
ROCKY FLATS PLANT
GOLDEN, COLORADO
JULY 1, 1987

ROCKWELL INTERNATIONAL
NORTH AMERICAN SPACE OPERATIONS
ROCKY FLATS PLANT

UNITED STATES DEPARTMENT OF ENERGY
ADMINISTRATION CONTRACT DE-AC04-76DP03533

FOR CLASSIFI
10/16/91

ADMIN RECORD

A-OU01-000257

APPENDIX E

ANALYTICAL CHEMISTRY RESULTS

APPENDIX E-1

VOLATILE ORGANIC COMPOUND RESULTS

7720 LORRAINE AVENUE
SUITE #102
STOCKTON, CA 95210
PHONE: (209) 957-3405

Samples in this batch:

BH0387
BH0687
BH0587

WESTON ANALYTICS
Laboratory Numbers: 87-05-51

ANALYSES OF ORGANICS

CASE NARRATIVE

1. **Qualifiers**

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	May 19,20, 1987
Lab Receipt (VOA) -	May 23, 1987
VOA Analysis -	May 26,27,28, 1987
BNA Analysis -	June 2,3, 1987
Pesticides/PCBs Analysis -	May 29,30, 1987

5. Methods

The water sample was analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

WESTON

The semivolatile surrogates met the recovery criteria except for tribromophenol in the following samples: Blank, BH06871020, BH068730BR, BH068726CT, BH058705CT. The method and matrix spikes met recommended recovery criteria except for 2,4-dinotrotoluene in both spikes and 4-nitrophenol in the matrix spike.

7. Comments

There were no significant extraneous peaks in any of the chromatograms. Hence, no tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

WESTON ANALYTICS
GC/MS DATA SUMMARY
VOLATILE HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Cust ID:	-	BH038712BR MS	BH038712BR MSD	BH03870204
	RFW#:	Blank	-04 MS	-04 MSD	-01
	Matrix:	Water	Soil	Soil	Soil
	D.F.:	1	1	1	1
	Units:	ug/L	ug/kg	ug/kg	ug/kg
Surrogate Recovery: (%)	Toluene-d8:	102	98	100	102
	Bromofluorobenzene:	96	97	99	90
	1,2-Dichloroethane-d4:	94	104	106	98
Chloromethane		10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U
Vinyl Chloride		10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U
Methylene Chloride		2 J	10 JB	13 JB	2 JB
Acetone		5 J	160 B	170 B	2 JB
Carbon Disulfide		5 U	5 U	5 U	5 U
1,1-Dichloroethene		5 U	112 %	108 %	5 U
1,1-Dichloroethane		5 U	5 U	5 U	5 U
Trans-1,2-Dichloroethene		5 U	5 U	5 U	5 U
Chloroform		5 U	5 U	5 U	5 U
1,2-Dichloroethane		5 U	5 U	5 U	5 U
2-Butanone		3 J	180 B	110 B	8 JB
1,1,1-Trichloroethane		5 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	5 U	5 U
Vinyl Acetate		10 U	10 U	10 U	10 U
Bromodichloromethane		5 U	5 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	5 U	5 U
Trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U
Trichloroethene		5 U	112 %	108 %	5 U
Dibromochloromethane		5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		5 U	5 U	5 U	5 U
Benzene		5 U	120 %	116 %	5 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U
2-Chloroethylvinylether		10 U	10 U	10 U	10 U

RFW Batch Number: 87-05-51

Cust ID:	-	BH038712BR MS	BH038712BR MSD	BH03870204
RFW#:	Blank	-04 MS	-04 MSD	-01
Bromoform	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	10 U	10 U	10 U	10 U
2-Hexanone	10 U	10 U	10 U	10 U
Tetrachloroethene	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U
Toluene	5 U	112 %	112 %	5 U
Chlorobenzene	5 U	112 %	108 %	5 U
Ethylbenzene	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U
Total Xylenes	5 U	5 U	5 U	5 U

U=Analyzed, not detected. B=Present in blank. %=Percent recovery.
J=Present at less than detection limit. NR=Not requested.

WESTON ANALYTICS
GC/MS DATA SUMMARY
VOLATILE HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Cust ID:	BH038702WT	-	BH038709CT	BH038712BR
	RFW#:	-02	Blank	-03	-04
	Matrix:	Soil	Water	Soil	Soil
	D.F.:	1	1	1	1
	Units:	ug/kg	ug/L	ug/kg	ug/kg
Surrogate Recovery: (%)	Toluene-d8:	98	98	98	99
	Bromofluorobenzene:	92	100	97	96
	1,2-Dichloroethane-d4:	100	94	98	102
Chloromethane		10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U
Vinyl Chloride		10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U
Methylene Chloride		24 JB	5 U	13 J	8 J
Acetone		9 JB	11	69 B	21 JB
Carbon Disulfide		5 U	5 U	5 U	5 U
1,1-Dichloroethene		5 U	5 U	5 U	5 U
1,1-Dichloroethane		5 U	5 U	5 U	5 U
Trans-1,2-Dichloroethene		5 U	5 U	5 U	5 U
Chloroform		5 U	5 U	5 U	5 U
1,2-Dichloroethane		5 U	5 U	5 U	5 U
2-Butanone		14 JB	10 U	10 U	60
1,1,1-Trichloroethane		5 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	5 U	5 U
Vinyl Acetate		10 U	10 U	10 U	10 U
Bromodichloromethane		5 U	5 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	5 U	5 U
Trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U
Trichloroethene		5 U	5 U	5 U	5 U
Dibromochloromethane		5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		5 U	5 U	5 U	5 U
Benzene		5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U
2-Chloroethylvinylether		10 U	10 U	10 U	10 U

RFW Batch Number: 87-05-51

Cust ID:	BH038702WT	-	BH038709CT	BH038712BR
RFW#:	-02	Blank	-03	-04
Bromoform	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	10 U	10 U	10 U	10 U
2-Hexanone	10 U	10 U	10 U	10 U
Tetrachloroethene	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U
Toluene	5 U	5 U	5 U	5 U
Chlorobenzene	5 U	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U
Total Xylenes	5 U	5 U	5 U	5 U

U=Analyzed, not detected. B=Present in blank. %=Percent recovery.
J=Present at less than detection limit. NR=Not requested.

WESTON ANALYTICS
GC/MS DATA SUMMARY
VOLATILE HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Cust ID:	BH06870010	BH06871020	BH068730BR	BH068726CT
	RFW#:	-09	-10	-11	-12
	Matrix:	Soil	Soil	Soil	Soil
	D.F.:	1	1	1	1
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate Recovery: (%)	Toluene-d8:	100	100	101	100
	Bromofluorobenzene:	96	100	100	101
	1,2-Dichloroethane-d4:	102	107	104	110
Chloromethane		10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U
Vinyl Chloride		10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U
Methylene Chloride		13 J	42	23 J	83
Acetone		37 JB	190 B	180 B	110 B
Carbon Disulfide		5 U	5 U	5 U	5 U
1,1-Dichloroethene		5 U	5 U	5 U	5 U
1,1-Dichloroethane		5 U	5 U	5 U	5 U
Trans-1,2-Dichloroethene		5 U	5 U	5 U	5 U
Chloroform		5 U	5 U	5 U	5 U
1,2-Dichloroethane		5 U	5 U	5 U	5 U
2-Butanone		10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		5 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	5 U	5 U
Vinyl Acetate		10 U	10 U	10 U	10 U
Bromodichloromethane		5 U	5 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	5 U	5 U
Trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U
Trichloroethene		5 U	5 U	5 U	5 U
Dibromochloromethane		5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		5 U	5 U	5 U	5 U
Benzene		5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U
2-Chloroethylvinylether		10 U	10 U	10 U	10 U

RFW Batch Number: 87-05-51

Cust ID:	BH06870010	BH06871020	BH068730BR	BH068726CT
RFW#:	-09	-10	-11	-12
Bromoform	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	10 U	10 U	10 U	10 U
2-Hexanone	10 U	10 U	10 U	10 U
Tetrachloroethene	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U
Toluene	5 U	5 U	5 U	5 U
Chlorobenzene	5 U	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U
Total Xylenes	5 U	5 U	5 U	5 U

U=Analyzed, not detected. B=Present in blank. %=Percent recovery.
J=Present at less than detection limit. NR=Not requested.

WESTON ANALYTICS
GC/MS DATA SUMMARY
VOLATILE HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Cust ID:	BH058708BR	BH05870005	BH058705CT	BH058708BR
	RFW#:	-13	-14	-15	-16
	Matrix:	Soil	Soil	Soil	Soil
	D.F.:	1	1	1	1
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate Recovery: (%)	Toluene-d8:	100	100	100	101
	Bromofluorobenzene:	102	109	98	97
	1,2-Dichloroethane-d4:	108	104	105	101
Chloromethane		10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U
Vinyl Chloride		10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U
Methylene Chloride		38	38	18 J	14 J
Acetone		130 B	150 B	49 JB	83 B
Carbon Disulfide		5 U	5 U	5 U	5 U
1,1-Dichloroethene		5 U	5 U	5 U	5 U
1,1-Dichloroethane		5 U	5 U	5 U	5 U
Trans-1,2-Dichloroethene		5 U	5 U	5 U	5 U
Chloroform		5 U	5 U	5 U	5 U
1,2-Dichloroethane		5 U	5 U	5 U	5 U
2-Butanone		10 U	10 U	10 U	10 U
1,1,1-Trichloroethane		5 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	5 U	5 U
Vinyl Acetate		10 U	10 U	10 U	10 U
Bromodichloromethane		5 U	5 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	5 U	5 U
Trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U
Trichloroethene		5 U	5 U	5 U	5 U
Dibromochloromethane		5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		5 U	5 U	5 U	5 U
Benzene		5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U
2-Chloroethylvinylether		10 U	10 U	10 U	10 U

RFW Batch Number: 87-05-51

Cust ID:	BH058708BR	BH05870005	BH058705CT	BH058708BR
RFW#:	-13	-14	-15	-16
Bromoform	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	10 U	10 U	10 U	10 U
2-Hexanone	10 U	10 U	10 U	10 U
Tetrachloroethene	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U
Toluene	5 U	5 U	5 U	5 U
Chlorobenzene	5 U	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U
Total Xylenes	5 U	5 U	5 U	5 U

U=Analyzed, not detected. B=Present in blank. %=Percent recovery.
J=Present at less than detection limit. NR=Not requested.

WESTON ANALYTICS
GC/MS DATA SUMMARY
VOLATILE HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Cust ID:	BH0587005	~~BH050405CT~~ BH0587005CT
	RFW#:	-17	-18
	Matrix:	Soil	Soil
	D.F.:	1	1
	Units:	ug/kg	ug/kg
Surrogate Recovery: (%)	Toluene-d8:	100	100
	Bromofluorobenzene:	92	100
	1,2-Dichloroethane-d4:	102	108
Chloromethane		10 U	10 U
Bromomethane		10 U	10 U
Vinyl Chloride		10 U	10 U
Chloroethane		10 U	10 U
Methylene Chloride		10 J	12 J
Acetone		140 B	70 B
Carbon Disulfide		5 U	5 U
1,1-Dichloroethene		5 U	5 U
1,1-Dichloroethane		5 U	5 U
Trans-1,2-Dichloroethene		5 U	5 U
Chloroform		5 U	5 U
1,2-Dichloroethane		5 U	5 U
2-Butanone		10 U	10 U
1,1,1-Trichloroethane		5 U	5 U
Carbon Tetrachloride		5 U	5 U
Vinyl Acetate		10 U	10 U
Bromodichloromethane		5 U	5 U
1,2-Dichloropropane		5 U	5 U
Trans-1,3-Dichloropropene		5 U	5 U
Trichloroethene		5 U	5 U
Dibromochloromethane		5 U	5 U
1,1,2-Trichloroethane		5 U	5 U
Benzene		5 U	5 U
cis-1,3-Dichloropropene		5 U	5 U
2-Chloroethylvinylether		10 U	10 U

RFW Batch Number: 87-05-51

Cust ID:	BH0587005	~~BH0504O5CT~~ BH0587O5CT
RFW#:	-17	-18
Bromoform	5 U	5 U
4-Methyl-2-pentanone	10 U	10 U
2-Hexanone	10 U	10 U
Tetrachloroethene	5 U	5 U
1,1,2,2-Tetrachloroethane	5 U	5 U
Toluene	5 U	5 U
Chlorobenzene	5 U	5 U
Ethylbenzene	5 U	5 U
Styrene	5 U	5 U
Total Xylenes	5 U	5 U

U=Analyzed, not detected. B=Present in blank. %=Percent recovery.
J=Present at less than detection limit. NR=Not requested.

7720 LORRAINE AVENUE
SUITE #102
STOCKTON, CA 95210
PHONE: (209) 957-3405

WESTON ANALYTICS
Laboratory Batch Numbers: 87-05-57
87-05-59

Samples in these batches:

BH0287
BH0787
BH1287
GW0487

ANALYSES OF ORGANICS

CASE NARRATIVE

1. Qualifiers

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	May 25, 1987 - 87-05-57
	May 29, 1987 - 87-05-59
Lab Receipt (VOA) -	May 29, 1987 - 87-05-57
	May 30, 1987 - 87-05-59
VOA Analysis -	May 29,30, 1987
BNA Analysis -	June 4, 1987
Pesticides/PCBs Analysis -	June 3,4, 1987

5. Methods

The water sample was analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

WESTON

The semivolatile surrogates met the recovery criteria. The method and matrix spike recoveries met the recovery criteria except for 2,4-dinitrotoluene in the method spikes and in samples BH07871013 and BH128702CT, and 4-nitrotoluene in BH07871013.

Pesticide method and matrix spikes were within acceptance criteria.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-05-57

	Customer ID:	-	-	BH02871420 MS	BH02871420
Sample	RFW#:	BLANK	BLANK	-11 MS	-11
Information:	Matrix:	WATER	WATER	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	100	102	100	99
Bromofluorobenzene:	100	102	95	98
1,2-Dichloroethane-d4:	98	96	99	102

Analyte:

Chloromethane	10.00 U	10.00 U	10.00 U	10.00 U
Bromomethane	10.00 U	10.00 U	10.00 U	10.00 U
Vinyl Chloride	10.00 U	10.00 U	10.00 U	10.00 U
Chloroethane	10.00 U	10.00 U	10.00 U	10.00 U
Methylene Chloride	5 J	2 J	190 B	200 B
Acetone	9 J	5 J	26 JB	100 B
Carbon Disulfide	5.00 U	5.00 U	5.00 U	5.00 U
1,1-Dichloroethene	5.00 U	5.00 U	142 %	5.00 U
1,1-Dichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,2-Dichloroethene	5.00 U	5.00 U	5.00 U	5.00 U
Chloroform	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
2-Butanone	10.00 U	10.00 U	10.00 U	100
1,1,1-Trichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Carbon Tetrachloride	5.00 U	5.00 U	5.00 U	5.00 U
Vinyl Acetate	10.00 U	10.00 U	10.00 U	10.00 U
Bromodichloromethane	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloropropane	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,3-Dichloropropene	5.00 U	5.00 U	5.00 U	5.00 U
Trichloroethene	5.00 U	5.00 U	120 %	5.00 U
Dibromochloromethane	5.00 U	5.00 U	5.00 U	5.00 U
1,1,2-Trichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Benzene	5.00 U	5.00 U	124 %	5.00 U
cis-1,3-Dichloropropene	5.00 U	5.00 U	5.00 U	5.00 U
2-Chloroethylvinylether	10.00 U	10.00 U	10.00 U	10.00 U
Bromoform	5.00 U	5.00 U	5.00 U	5.00 U
4-Methyl-2-pentanone	10.00 U	10.00 U	10.00 U	10.00 U
2-Hexanone	10.00 U	10.00 U	10.00 U	10.00 U
Tetrachloroethene	5.00 U	5.00 U	5.00 U	5.00 U
1,1,2,2-Tetrachloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Toluene	5.00 U	5.00 U	124 %	5.00 U
Chlorobenzene	5.00 U	5.00 U	124 %	5.00 U
Ethylbenzene	5.00 U	5.00 U	5.00 U	5.00 U
Styrene	5.00 U	5.00 U	5.00 U	5.00 U
Total Xylenes	5.00 U	5.00 U	5.00 U	5.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-57

	Customer ID:	BH028714CT	BH07870510	BH078705CT	BH07870BR
Sample	RFW#:	-13	-05	-07	-01
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	100	100	95	99
Bromofluorobenzene:	98	99	100	99
1,2-Dichloroethane-d4:	110	102	103	102

Analyte:

Chloromethane.....	10.00 U	10.00 U	10.00 U	10.00 U
Bromomethane.....	10.00 U	10.00 U	10.00 U	10.00 U
Vinyl Chloride.....	10.00 U	10.00 U	10.00 U	10.00 U
Chloroethane.....	10.00 U	10.00 U	10.00 U	10.00 U
Methylene Chloride.....	49 B	210 B	200 B	590 B
Acetone.....	82 B	63 B	64 B	100 B
Carbon Disulfide.....	5.00 U	5.00 U	5.00 U	5.00 U
1,1-Dichloroethene.....	5.00 U	5.00 U	5.00 U	5.00 U
1,1-Dichloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,2-Dichloroethene.....	5.00 U	5.00 U	5.00 U	5.00 U
Chloroform.....	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
2-Butanone.....	75	79	370	66
1,1,1-Trichloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
Carbon Tetrachloride.....	5.00 U	5.00 U	5.00 U	5.00 U
Vinyl Acetate.....	10.00 U	10.00 U	10.00 U	10.00 U
Bromodichloromethane.....	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloropropane.....	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,3-Dichloropropene.....	5.00 U	5.00 U	5.00 U	5.00 U
Trichloroethene.....	5.00 U	5.00 U	5.00 U	5.00 U
Dibromochloromethane.....	5.00 U	5.00 U	5.00 U	5.00 U
1,1,2-Trichloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
Benzene.....	5.00 U	5.00 U	5.00 U	5.00 U
cis-1,3-Dichloropropene.....	5.00 U	5.00 U	5.00 U	5.00 U
2-Chloroethylvinylether.....	10.00 U	10.00 U	10.00 U	10.00 U
Bromoform.....	5.00 U	5.00 U	5.00 U	5.00 U
4-Methyl-2-pentanone.....	10.00 U	10.00 U	10.00 U	10.00 U
2-Hexanone.....	10.00 U	10.00 U	10.00 U	10.00 U
Tetrachloroethene.....	5.00 U	5.00 U	5.00 U	5.00 U
1,1,2,2-Tetrachloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
Toluene.....	5.00 U	5.00 U	5.00 U	5.00 U
Chlorobenzene.....	5.00 U	5.00 U	5.00 U	5.00 U
Ethylbenzene.....	5.00 U	5.00 U	5.00 U	5.00 U
Styrene.....	5.00 U	5.00 U	5.00 U	5.00 U
Total Xylenes.....	5.00 U	5.00 U	5.00 U	5.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-57

	Customer ID:	BH078710I3	BH078710WS	GW0487
Sample	RFW#:	-09	-03	-10
Information:	Matrix:	SOIL	SOIL	WATER
	D.F.:	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/l

Surrogate Recovery (%):

Toluene-d8:	101	101	96
Bromofluorobenzene:	100	100	98
1,2-Dichloroethane-d4:	101	100	96

Analyte:

Chloromethane	10.00 U	10.00 U	10.00 U
Bromomethane	10.00 U	10.00 U	10.00 U
Vinyl Chloride	10.00 U	10.00 U	10.00 U
Chloroethane	10.00 U	10.00 U	10.00 U
Methylene Chloride	130 B	49 B	15 B
Acetone	270 B	38 JB	4 J
Carbon Disulfide	5.00 U	5.00 U	5.00 U
1,1-Dichloroethene	5.00 U	5.00 U	3 J
1,1-Dichloroethane	5.00 U	5.00 U	5.00 U
Trans-1,2-Dichloroethene	5.00 U	5.00 U	5.00 U
Chloroform	5.00 U	5.00 U	6
1,2-Dichloroethane	5.00 U	5.00 U	5.00 U
2-Butanone	21 J	130	10.00 U
1,1,1-Trichloroethane	5.00 U	5.00 U	5
Carbon Tetrachloride	5.00 U	5.00 U	21
Vinyl Acetate	10.00 U	10.00 U	10.00 U
Bromodichloromethane	5.00 U	5.00 U	5.00 U
1,2-Dichloropropane	5.00 U	5.00 U	5.00 U
Trans-1,3-Dichloropropene	5.00 U	5.00 U	5.00 U
Trichloroethene	5.00 U	5.00 U	230
Dibromochloromethane	5.00 U	5.00 U	5.00 U
1,1,2-Trichloroethane	5.00 U	5.00 U	5.00 U
Benzene	5.00 U	5.00 U	5.00 U
cis-1,3-Dichloropropene	5.00 U	5.00 U	5.00 U
2-Chloroethylvinylether	10.00 U	10.00 U	10.00 U
Bromoform	5.00 U	5.00 U	5.00 U
4-Methyl-2-pentanone	10.00 U	10.00 U	10.00 U
2-Hexanone	10.00 U	10.00 U	10.00 U
Tetrachloroethene	5.00 U	5.00 U	14
1,1,2,2-Tetrachloroethane	5.00 U	5.00 U	5.00 U
Toluene	5.00 U	5.00 U	5.00 U
Chlorobenzene	5.00 U	5.00 U	5.00 U
Ethylbenzene	5.00 U	5.00 U	5.00 U
Styrene	5.00 U	5.00 U	5.00 U
Total Xylenes	5.00 U	5.00 U	5.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-59

	Customer ID:	-	BH128702CT	BH128705BR	BH128705BR MS
Sample	RFW#:	BLANK	-01	-03	-03 MS
Information:	Matrix:	WATER	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	100	101	100	97
Bromofluorobenzene:	100	94	96	96
1,2-Dichloroethane-d4:	98	98	96	96

Analyte:

Chloromethane.....	10.00 U	10.00 U	10.00 U	10.00 U
Bromomethane.....	10.00 U	10.00 U	10.00 U	10.00 U
Vinyl Chloride.....	10.00 U	10.00 U	10.00 U	10.00 U
Chloroethane.....	10.00 U	10.00 U	10.00 U	10.00 U
Methylene Chloride.....	5 J	130 B	130 B	150 B
Acetone.....	9 J	85 B	66 B	150 B
Carbon Disulfide.....	5.00 U	5.00 U	5.00 U	5.00 U
1,1-Dichloroethene.....	5.00 U	5.00 U	5.00 U	132 %
1,1-Dichloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,2-Dichloroethene.....	5.00 U	5.00 U	5.00 U	5.00 U
Chloroform.....	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
2-Butanone.....	10.00 U	37 J	27 J	27 J
1,1,1-Trichloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
Carbon Tetrachloride.....	5.00 U	5.00 U	5.00 U	5.00 U
Vinyl Acetate.....	10.00 U	10.00 U	10.00 U	10.00 U
Bromodichloromethane.....	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloropropane.....	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,3-Dichloropropene.....	5.00 U	5.00 U	5.00 U	5.00 U
Trichloroethene.....	5.00 U	5.00 U	5.00 U	116 %
Dibromochloromethane.....	5.00 U	5.00 U	5.00 U	5.00 U
1,1,2-Trichloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
Benzene.....	5.00 U	5.00 U	5.00 U	124 %
cis-1,3-Dichloropropene.....	5.00 U	5.00 U	5.00 U	5.00 U
2-Chloroethylvinylether.....	10.00 U	10.00 U	10.00 U	10.00 U
Bromoform.....	5.00 U	5.00 U	5.00 U	5.00 U
4-Methyl-2-pentanone.....	10.00 U	10.00 U	10.00 U	10.00 U
2-Hexanone.....	10.00 U	10.00 U	10.00 U	10.00 U
Tetrachloroethene.....	5.00 U	19 J	5.00 U	5.00 U
1,1,2,2-Tetrachloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
Toluene.....	5.00 U	5.00 U	5.00 U	116 %
Chlorobenzene.....	5.00 U	5.00 U	5.00 U	118 %
Ethylbenzene.....	5.00 U	5.00 U	5.00 U	5.00 U
Styrene.....	5.00 U	5.00 U	5.00 U	5.00 U
Total Xylenes.....	5.00 U	5.00 U	5.00 U	5.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

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WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-02

Samples in this batch:

BH0987

ANALYSES OF ORGANICS

CASE NARRATIVE

1. Qualifiers

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

DUP - Indicates a duplicate.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	May 28, 1987
Lab Receipt (VOA) -	June 1, 1987
VOA Analysis -	June 8, 1987
BNA Analysis -	June 5, 1987
Pesticides/PCBs Analysis -	June 4,5, 1987

5. Methods

The water sample was analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

The semivolatile surrogates exhibit high recovery for the acid components due to the use of continuous extractors.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-02

	Customer ID:	-	BH09870010	BH09870010 MS	BH09870010
Sample	RFW#:	BLANK	-05	-05 MS	-03
Information:	Matrix:	WATER	SOLID	SOLID	SOLID
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	100	100	99	101
Bromofluorobenzene:	102	101	99	102
1,2-Dichloroethane-d4:	96	103	104	103

Analyte:

Chloromethane.....	10.00 U	10.00 U	10.00 U	10.00 U
Bromomethane.....	10.00 U	10.00 U	10.00 U	10.00 U
Vinyl Chloride.....	10.00 U	10.00 U	10.00 U	10.00 U
Chloroethane.....	10.00 U	10.00 U	10.00 U	10.00 U
Methylene Chloride.....	2 J	39 B	43 B	63 B
Acetone.....	29	93 B	130 B	110 B
Carbon Disulfide.....	5.00 U	5.00 U	5.00 U	5.00 U
1,1-Dichloroethene.....	5.00 U	5.00 U	153 %	5.00 U
1,1-Dichloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,2-Dichloroethene.....	5.00 U	5.00 U	5.00 U	5.00 U
Chloroform.....	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
2-Butanone.....	10.00 U	10.00 U	10.00 U	390
1,1,1-Trichloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
Carbon Tetrachloride.....	5.00 U	5.00 U	5.00 U	5.00 U
Vinyl Acetate.....	10.00 U	10.00 U	10.00 U	10.00 U
Bromodichloromethane.....	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloropropane.....	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,3-Dichloropropene.....	5.00 U	5.00 U	5.00 U	5.00 U
Trichloroethene.....	5.00 U	5.00 U	114 %	5.00 U
Dibromochloromethane.....	5.00 U	5.00 U	5.00 U	5.00 U
1,1,2-Trichloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
Benzene.....	5.00 U	5.00 U	128 %	5.00 U
cis-1,3-Dichloropropene.....	5.00 U	5.00 U	5.00 U	5.00 U
2-Chloroethylvinylether.....	10.00 U	10.00 U	10.00 U	10.00 U
Bromoform.....	5.00 U	5.00 U	5.00 U	5.00 U
4-Methyl-2-pentanone.....	10.00 U	10.00 U	10.00 U	10.00 U
2-Hexanone.....	10.00 U	10.00 U	10.00 U	10.00 U
Tetrachloroethene.....	5.00 U	5.00 U	5.00 U	5.00 U
1,1,2,2-Tetrachloroethane.....	5.00 U	5.00 U	5.00 U	5.00 U
Toluene.....	5.00 U	5.00 U	125 %	5.00 U
Chlorobenzene.....	5.00 U	5.00 U	121 %	5.00 U
Ethylbenzene.....	5.00 U	5.00 U	5.00 U	5.00 U
Styrene.....	5.00 U	5.00 U	5.00 U	5.00 U
Total Xylenes.....	5.00 U	5.00 U	5.00 U	5.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-02

	Customer ID:	BH0987148R
Sample	RFW#:	-01
Information:	Matrix:	SOLID
	D.F.:	1.0
	Units:	ug/kg

Surrogate Recovery (%):

Toluene-d8:	103
Bromofluorobenzene:	106
1,2-Dichloroethane-d4:	104

Analyte:

Chloromethane	10.00	U
Bromomethane	10.00	U
Vinyl Chloride	10.00	U
Chloroethane	10.00	U
Methylene Chloride	39	B
Acetone	280	B
Carbon Disulfide	5.00	U
1,1-Dichloroethene	5.00	U
1,1-Dichloroethane	5.00	U
Trans-1,2-Dichloroethene	5.00	U
Chloroform	5.00	U
1,2-Dichloroethane	5.00	U
2-Butanone	130	
1,1,1-Trichloroethane	5.00	U
Carbon Tetrachloride	5.00	U
Vinyl Acetate	10.00	U
Bromodichloromethane	5.00	U
1,2-Dichloropropane	5.00	U
Trans-1,3-Dichloropropene	5.00	U
Trichloroethene	5.00	U
Dibromochloromethane	5.00	U
1,1,2-Trichloroethane	5.00	U
Benzene	5.00	U
cis-1,3-Dichloropropene	5.00	U
2-Chloroethylvinylether	10.00	U
Bromoform	5.00	U
4-Methyl-2-pentanone	10.00	U
2-Hexanone	10.00	U
Tetrachloroethene	5.00	U
1,1,2,2-Tetrachloroethane	5.00	U
Toluene	5.00	U
Chlorobenzene	5.00	U
Ethylbenzene	5.00	U
Styrene	5.00	U
Total Xylenes	5.00	U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

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WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-04

Samples in this batch:

BH1387
GW0287

ANALYSES OF ORGANICS

CASE NARRATIVE

1. **Qualifiers**

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

2. **Internal Standards**

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	May 29, 1987
Lab Receipt (VOA) -	June 2, 1987
VOA Analysis -	June 8, 1987
BNA Analysis -	June 5, 1987
Pesticides/PCBs Analysis -	June 4,5, 1987

5. Methods

The water sample was analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

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The semivolatile surrogates exhibit high recovery for the acid components due to the use of continous extractors.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-04

	Customer ID:	-	BH13870010	BH13870010 MS	BH13871486
Sample	RFW#:	BLANK	-01	-01 MS	-03
Information:	Matrix:	WATER	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	100	98	101	102
Bromofluorobenzene:	102	101	102	98
1,2-Dichloroethane-d4:	96	105	106	106

Analyte:

Chloromethane	10.00 U	10.00 U	10.00 U	10.00 U
Bromomethane	10.00 U	10.00 U	10.00 U	10.00 U
Vinyl Chloride	10.00 U	10.00 U	10.00 U	10.00 U
Chloroethane	10.00 U	10.00 U	10.00 U	10.00 U
Methylene Chloride	2 J	27 B	110 B	46 B
Acetone	29	15 JB	120 B	280 B
Carbon Disulfide	5.00 U	5.00 U	5.00 U	5.00 U
1,1-Dichloroethene	5.00 U	5.00 U	148 %	5.00 U
1,1-Dichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,2-Dichloroethene	5.00 U	5.00 U	5.00 U	5.00 U
Chloroform	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
2-Butanone	10.00 U	10.00 U	150	10.00 U
1,1,1-Trichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Carbon Tetrachloride	5.00 U	5.00 U	5.00 U	5.00 U
Vinyl Acetate	10.00 U	10.00 U	10.00 U	10.00 U
Bromodichloromethane	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloropropane	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,3-Dichloropropene	5.00 U	5.00 U	5.00 U	5.00 U
Trichloroethene	5.00 U	5.00 U	120 %	5.00 U
Dibromochloromethane	5.00 U	5.00 U	5.00 U	5.00 U
1,1,2-Trichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Benzene	5.00 U	5.00 U	133 %	5.00 U
cis-1,3-Dichloropropene	5.00 U	5.00 U	5.00 U	5.00 U
2-Chloroethylvinylether	10.00 U	10.00 U	10.00 U	10.00 U
Bromoform	5.00 U	5.00 U	5.00 U	5.00 U
4-Methyl-2-pentanone	10.00 U	10.00 U	10.00 U	10.00 U
2-Hexanone	10.00 U	10.00 U	10.00 U	10.00 U
Tetrachloroethene	5.00 U	5.00 U	5.00 U	5.00 U
1,1,2,2-Tetrachloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Toluene	5.00 U	5.00 U	128 %	5.00 U
Chlorobenzene	5.00 U	5.00 U	122 %	5.00 U
Ethylbenzene	5.00 U	5.00 U	5.00 U	5.00 U
Styrene	5.00 U	5.00 U	5.00 U	5.00 U
Total Xylenes	5.00 U	5.00 U	5.00 U	5.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-04

	Customer ID:	BW287BH03
Sample	RFW#:	-05
Information:	Matrix:	WATER
	D.F.:	1.0
	Units:	ug/L

Surrogate Recovery (%):

Toluene-d8:	103
Bromofluorobenzene:	101
1,2-Dichloroethane-d4:	99

Analyte:

Chloromethane	10.00 U
Bromomethane	10.00 U
Vinyl Chloride	10.00 U
Chloroethane	10.00 U
Methylene Chloride	35 B
Acetone	65 B
Carbon Disulfide	5.00 U
1,1-Dichloroethene	5.00 U
1,1-Dichloroethane	5.00 U
Trans-1,2-Dichloroethene	5.00 U
Chloroform	5.00 U
1,2-Dichloroethane	5.00 U
2-Butanone	10.00 U
1,1,1-Trichloroethane	5.00 U
Carbon Tetrachloride	5.00 U
Vinyl Acetate	10.00 U
Bromodichloromethane	5.00 U
1,2-Dichloropropane	5.00 U
Trans-1,3-Dichloropropene	5.00 U
Trichloroethene	5.00 U
Dibromochloromethane	5.00 U
1,1,2-Trichloroethane	5.00 U
Benzene	5.00 U
cis-1,3-Dichloropropene	5.00 U
2-Chloroethylvinylether	10.00 U
Bromoform	5.00 U
4-Methyl-2-pentanone	10.00 U
2-Hexanone	10.00 U
Tetrachloroethene	5.00 U
1,1,2,2-Tetrachloroethane	5.00 U
Toluene	5.00 U
Chlorobenzene	5.00 U
Ethylbenzene	5.00 U
Styrene	5.00 U
Total Xylenes	5.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON
MANAGERS DESIGNERS/CONSULTANTS
7720 LORRAINE AVENUE
SUITE 105
STOCKTON, CA 95210
PHONE: 209-957-3405

SAMPLES IN THESE BATCHES:

BH1087
BH1187
BH1687

WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-05
87-06-10

ANALYSES OF ORGANICS

CASE NARRATIVE

1. **Qualifiers**

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

DUP - Indicates duplicate.

2. **Internal Standards**

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:
IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	June 1, 1987 - 87-06-05
	June 2, 1987 - 87-06-10
Lab Receipt (VOA) -	June 4, 1987 - 87-06-05
	June 4, 1987 - 87-06-10
VOA Analysis -	June 9, 1987
BNA Analysis -	June 6-7, 1987
Pesticides/PCBs Analysis -	June 6-9, 1987

5. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

WESTON

The acid surrogates phenol-d5 and 2-Fluorophenol recoveries were outside the criteria for the blank and method spike and samples BH108723BR spike, BH10871020, BH108720CT, BH118711CT, BH168706BR, BH168702CT, BH16870206 and BH11870010 with the exception in BH11870010 which only 2-Fluorophenol did not meet the criteria. The recoveries of 2,4-Dinotrotoluene, 1,4-Dichlorobenzene, phenol, 2-chlorophenol and 4-Chloro-3-Methylphenol did not meet the criteria in both method spike and matrix spike. In addition to that, pentachlorophenol in the method spike did not meet the recovery criteria either.

6. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: _____
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-05 ROCKY FLATS

	Customer ID:	-	BH10878010	BH10871020	BH10872OCT
Sample	RFW#:	BLANK	-05	-03	-07
Information:	Matrix:	WATER	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	100	99	101	98
Bromofluorobenzene:	100	97	98	97
1,2-Dichloroethane-d4:	98	105	106	102

Analyte:

Chloromethane	10.00 U	10.00 U	10.00 U	10.00 U
Bromomethane	10.00 U	10.00 U	10.00 U	10.00 U
Vinyl Chloride	10.00 U	10.00 U	10.00 U	10.00 U
Chloroethane	10.00 U	10.00 U	10.00 U	10.00 U
Methylene Chloride	5 J	29 B	46 B	36 B
Acetone	4 J	50 JB	100 B	150 B
Carbon Disulfide	5.00 U	5.00 U	5.00 U	5.00 U
1,1-Dichloroethene	5.00 U	5.00 U	5.00 U	5.00 U
1,1-Dichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,2-Dichloroethene	5.00 U	5.00 U	5.00 U	5.00 U
Chloroform	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
2-Butanone	10.00 U	10.00 U	10.00 U	10.00 U
1,1,1-Trichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Carbon Tetrachloride	5.00 U	5.00 U	5.00 U	5.00 U
Vinyl Acetate	10.00 U	10.00 U	10.00 U	10.00 U
Bromodichloromethane	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloropropane	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,3-Dichloropropene	5.00 U	5.00 U	5.00 U	5.00 U
Trichloroethene	5.00 U	5.00 U	5.00 U	5.00 U
Dibromochloromethane	5.00 U	5.00 U	5.00 U	5.00 U
1,1,2-Trichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Benzene	5.00 U	5.00 U	5.00 U	5.00 U
cis-1,3-Dichloropropene	5.00 U	5.00 U	5.00 U	5.00 U
2-Chloroethylvinylether	10.00 U	10.00 U	10.00 U	10.00 U
Bromoform	5.00 U	5.00 U	5.00 U	5.00 U
4-Methyl-2-pentanone	10.00 U	10.00 U	10.00 U	10.00 U
2-Hexanone	10.00 U	10.00 U	10.00 U	10.00 U
Tetrachloroethene	5.00 U	5.00 U	5.00 U	5.00 U
1,1,2,2-Tetrachloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Toluene	5.00 U	5.00 U	5.00 U	5.00 U
Chlorobenzene	5.00 U	5.00 U	5.00 U	5.00 U
Ethylbenzene	5.00 U	5.00 U	5.00 U	5.00 U
Styrene	5.00 U	5.00 U	5.00 U	5.00 U
Total Xylenes	5.00 U	5.00 U	5.00 U	5.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-05 ROCKY FLATS

	Customer ID:	BH10871020	BH10872001
Sample	RFW#:	-03	-07
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	101	98
Bromofluorobenzene:	98	97
1,2-Dichloroethane-d4:	106	102

Analyte:

Chloromethane	10.00 U	10.00 U
Bromomethane	10.00 U	10.00 U
Vinyl Chloride	10.00 U	10.00 U
Chloroethane	10.00 U	10.00 U
Methylene Chloride	46 B	36 B
Acetone	100 B	150 B
Carbon Disulfide	5.00 U	5.00 U
1,1-Dichloroethene	5.00 U	5.00 U
1,1-Dichloroethane	5.00 U	5.00 U
Trans-1,2-Dichloroethene	5.00 U	5.00 U
Chloroform	5.00 U	5.00 U
1,2-Dichloroethane	5.00 U	5.00 U
2-Butanone	10.00 U	10.00 U
1,1,1-Trichloroethane	5.00 U	5.00 U
Carbon Tetrachloride	5.00 U	5.00 U
Vinyl Acetate	10.00 U	10.00 U
Bromodichloromethane	5.00 U	5.00 U
1,2-Dichloropropane	5.00 U	5.00 U
Trans-1,3-Dichloropropene	5.00 U	5.00 U
Trichloroethene	5.00 U	5.00 U
Dibromochloromethane	5.00 U	5.00 U
1,1,2-Trichloroethane	5.00 U	5.00 U
Benzene	5.00 U	5.00 U
cis-1,3-Dichloropropene	5.00 U	5.00 U
2-Chloroethylvinylether	10.00 U	10.00 U
Bromoform	5.00 U	5.00 U
4-Methyl-2-pentanone	10.00 U	10.00 U
2-Hexanone	10.00 U	10.00 U
Tetrachloroethene	5.00 U	5.00 U
1,1,2,2-Tetrachloroethane	5.00 U	5.00 U
Toluene	5.00 U	5.00 U
Chlorobenzene	5.00 U	5.00 U
Ethylbenzene	5.00 U	5.00 U
Styrene	5.00 U	5.00 U
Total Xylenes	5.00 U	5.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-10 ROCKY FLATS

	Customer ID:	-	BH11870010	BH11870010 MS	BH11871107
Sample	RFW#:	BLANK	-05	-05 MS	-01
Information:	Matrix:	WATER	SOIL	SOIL	SOIL
	D.F.:	1.0	5.0	5.0	5.0
	Units:	ug/l	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	100	95	100	102
Bromofluorobenzene:	100	103	98	98
1,2-Dichloroethane-d4:	98	114	114	106

Analyte:

Chloromethane.....	10.00 U	50.00 U	50.00 U	50.00 U
Bromomethane.....	10.00 U	50.00 U	50.00 U	50.00 U
Vinyl Chloride.....	10.00 U	50.00 U	50.00 U	50.00 U
Chloroethane.....	10.00 U	50.00 U	50.00 U	50.00 U
Methylene Chloride.....	5 J	59 B	46 B	35 B
Acetone.....	4 J	180 B	86 B	130 B
Carbon Disulfide.....	5.00 U	25.00 U	25.00 U	25.00 U
1,1-Dichloroethene.....	5.00 U	25.00 U	164 %	25.00 U
1,1-Dichloroethane.....	5.00 U	25.00 U	25.00 U	25.00 U
Trans-1,2-Dichloroethene.....	5.00 U	25.00 U	25.00 U	25.00 U
Chloroform.....	5.00 U	25.00 U	25.00 U	25.00 U
1,2-Dichloroethane.....	5.00 U	25.00 U	25.00 U	25.00 U
2-Butanone.....	10.00 U	50.00 U	110	50.00 U
1,1,1-Trichloroethane.....	5.00 U	25.00 U	25.00 U	25.00 U
Carbon Tetrachloride.....	5.00 U	25.00 U	25.00 U	25.00 U
Vinyl Acetate.....	10.00 U	50.00 U	50.00 U	50.00 U
Bromodichloromethane.....	5.00 U	25.00 U	25.00 U	25.00 U
1,2-Dichloropropane.....	5.00 U	25.00 U	25.00 U	25.00 U
Trans-1,3-Dichloropropene.....	5.00 U	25.00 U	25.00 U	25.00 U
Trichloroethene.....	5.00 U	25.00 U	125 %	25.00 U
Dibromochloromethane.....	5.00 U	25.00 U	25.00 U	25.00 U
1,1,2-Trichloroethane.....	5.00 U	25.00 U	25.00 U	25.00 U
Benzene.....	5.00 U	25.00 U	139 %	25.00 U
cis-1,3-Dichloropropene.....	5.00 U	25.00 U	25.00 U	25.00 U
2-Chloroethylvinylether.....	10.00 U	50.00 U	50.00 U	50.00 U
Bromoform.....	5.00 U	25.00 U	25.00 U	25.00 U
4-Methyl-2-pentanone.....	10.00 U	50.00 U	50.00 U	50.00 U
2-Hexanone.....	10.00 U	50.00 U	50.00 U	50.00 U
Tetrachloroethene.....	5.00 U	25.00 U	25.00 U	25.00 U
1,1,2,2-Tetrachloroethane.....	5.00 U	25.00 U	25.00 U	25.00 U
Toluene.....	5.00 U	25.00 U	131 %	25.00 U
Chlorobenzene.....	5.00 U	25.00 U	125 %	25.00 U
Ethylbenzene.....	5.00 U	25.00 U	25.00 U	25.00 U
Styrene.....	5.00 U	25.00 U	25.00 U	25.00 U
Total Xylenes.....	5.00 U	25.00 U	25.00 U	25.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-10 ROCKY FLATS

	Customer ID:	BH118714WT	BH16870206	BH16870207	BH16870608
Sample	RFW#:	-03	-11	-09	-07
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	5.0	5.0	5.0	5.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate Recovery (%):					
	Toluene-d8:	102	101	102	101
	Bromofluorobenzene:	99	103	100	101
	1,2-Dichloroethane-d4:	107	114	111	110
Analyte:					
Chloromethane		50.00 U	50.00 U	50.00 U	50.00 U
Bromomethane		50.00 U	50.00 U	50.00 U	50.00 U
Vinyl Chloride		50.00 U	50.00 U	50.00 U	50.00 U
Chloroethane		50.00 U	50.00 U	50.00 U	50.00 U
Methylene Chloride		66 B	46 B	35 B	35 B
Acetone		160 B	75 B	56 B	75 B
Carbon Disulfide		25.00 U	25.00 U	25.00 U	25.00 U
1,1-Dichloroethene		25.00 U	25.00 U	25.00 U	25.00 U
1,1-Dichloroethane		25.00 U	25.00 U	25.00 U	25.00 U
Trans-1,2-Dichloroethene		25.00 U	25.00 U	25.00 U	25.00 U
Chloroform		25.00 U	25.00 U	25.00 U	25.00 U
1,2-Dichloroethane		25.00 U	25.00 U	25.00 U	25.00 U
2-Butanone		50.00 U	50.00 U	50.00 U	50.00 U
1,1,1-Trichloroethane		25.00 U	25.00 U	25.00 U	25.00 U
Carbon Tetrachloride		25.00 U	25.00 U	25.00 U	25.00 U
Vinyl Acetate		50.00 U	50.00 U	50.00 U	50.00 U
Bromodichloromethane		25.00 U	25.00 U	25.00 U	25.00 U
1,2-Dichloropropane		25.00 U	25.00 U	25.00 U	25.00 U
Trans-1,3-Dichloropropene		25.00 U	25.00 U	25.00 U	25.00 U
Trichloroethene		25.00 U	25.00 U	25.00 U	25.00 U
Dibromochloromethane		25.00 U	25.00 U	25.00 U	25.00 U
1,1,2-Trichloroethane		25.00 U	25.00 U	25.00 U	25.00 U
Benzene		25.00 U	25.00 U	25.00 U	25.00 U
cis-1,3-Dichloropropene		25.00 U	25.00 U	25.00 U	25.00 U
2-Chloroethylvinylether		50.00 U	50.00 U	50.00 U	50.00 U
Bromoform		25.00 U	25.00 U	25.00 U	25.00 U
4-Methyl-2-pentanone		50.00 U	50.00 U	50.00 U	50.00 U
2-Hexanone		50.00 U	50.00 U	50.00 U	50.00 U
Tetrachloroethene		25.00 U	25.00 U	25.00 U	25.00 U
1,1,2,2-Tetrachloroethane		25.00 U	25.00 U	25.00 U	25.00 U
Toluene		25.00 U	25.00 U	25.00 U	25.00 U
Chlorobenzene		25.00 U	25.00 U	25.00 U	25.00 U
Ethylbenzene		25.00 U	25.00 U	25.00 U	25.00 U
Styrene		25.00 U	25.00 U	25.00 U	25.00 U
Total Xylenes		25.00 U	25.00 U	25.00 U	25.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON
MANAGERS DESIGNERS/CONSULTANTS
7720 LORRAINE AVENUE
SUITE 105
STOCKTON, CA 95210
PHONE: 209-957-3405

Samples in these batches:

BH0887
BH1587
BH1787
BH0187

WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-14
87-06-22

ANALYSES OF ORGANICS

CASE NARRATIVE

1. **Qualifiers**

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

DUP - Indicates duplicate.

2. **Internal Standards**

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

SENT BY:XEROX TELECOPIER 7020 ; 6-18-87 ; 9:20AM ; 2099574081→ 13039801822;# 3

WESTON

Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	June 3, 1987 - 87-06-14
	June 4, 1987 - 87-06-22
Lab Receipt (VOA) -	June 5, 1987 - 87-06-14
	June 8, 1987 - 87-06-22
VOA Analysis -	June 12, 1987
BNA Analysis -	June 12, 1987
Pesticides/PCBs Analysis -	June 6,7, 1987

5. Methods

The samples were analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates met the recovery criteria. The volatiles matrix spike recoveries slightly exceeded the recommended limits. It is believed that the sample was spiked with a somewhat larger amount than normal.

SENT BY:Xerox 1818copier 7020 ; 6-18-87 ; 9:20AM ; 2099574061→ 13039801622;# 4

WESTON

The B/N/A surrogates, method and matrix spikes exhibited abnormally high recoveries. The spiking mixtures are being checked to determine if they have become more concentrated due to solvent evaporation.

Pesticide method and matrix spikes were within acceptance criteria.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

SENT BY:XEROX 1810COPIER 7020 ; 6-18-97 ; 9:21AM ; 2099574081→ 13039801822;# 5

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	-	-	BH08870007	BH088707CT
Sample	RFW#:	BLANK	BLANK	-03	-07
Information:	Matrix:	WATER	WATER	SOIL	SOIL
	D.F.:	1.0	1.0	5.0	5.0
	Units:	ug/l	ug/l	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	102	100	102	100
Bromofluorobenzene:	98	102	100	104
1,2-Dichloroethane-d4:	98	98	109	108

Analyte:

Chloromethane.....	10.00 U	10.00 U	50.00 U	50.00 U
Bromomethane.....	10.00 U	10.00 U	50.00 U	50.00 U
Vinyl Chloride.....	10.00 U	10.00 U	50.00 U	50.00 U
Chloroethane.....	10.00 U	10.00 U	50.00 U	50.00 U
Methylene Chloride.....	1 J	1 J	32 B	23 JB
Acetone.....	7 J	8 J	39 JB	31 JB
Carbon Disulfide.....	5.00 U	5.00 U	25.00 U	25.00 U
1,1-Dichloroethene.....	5.00 U	5.00 U	25.00 U	25.00 U
1,1-Dichloroethane.....	5.00 U	5.00 U	25.00 U	25.00 U
Trans-1,2-Dichloroethene.....	5.00 U	5.00 U	25.00 U	25.00 U
Chloroform.....	5.00 U	5.00 U	25.00 U	25.00 U
1,2-Dichloroethane.....	5.00 U	5.00 U	25.00 U	25.00 U
2-Butanone.....	10.00 U	7 J	33 J	20 J
1,1,1-Trichloroethane.....	5.00 U	5.00 U	25.00 U	25.00 U
Carbon Tetrachloride.....	5.00 U	5.00 U	25.00 U	25.00 U
Vinyl Acetate.....	10.00 U	10.00 U	50.00 U	50.00 U
Bromodichloromethane.....	5.00 U	5.00 U	25.00 U	25.00 U
1,2-Dichloropropane.....	5.00 U	5.00 U	25.00 U	25.00 U
Trans-1,3-Dichloropropene.....	5.00 U	5.00 U	25.00 U	25.00 U
Trichloroethene.....	5.00 U	5.00 U	25.00 U	25.00 U
Dibromochloromethane.....	5.00 U	5.00 U	25.00 U	25.00 U
1,1,2-Trichloroethane.....	5.00 U	5.00 U	25.00 U	25.00 U
Benzene.....	5.00 U	5.00 U	25.00 U	25.00 U
cis-1,3-Dichloropropene.....	5.00 U	5.00 U	25.00 U	25.00 U
2-Chloroethylvinylether.....	10.00 U	10.00 U	50.00 U	50.00 U
Bromoform.....	5.00 U	5.00 U	25.00 U	25.00 U
4-Methyl-2-pentanone.....	10.00 U	10.00 U	50.00 U	50.00 U
2-Hexanone.....	10.00 U	10.00 U	50.00 U	50.00 U
Tetrachloroethene.....	5.00 U	5.00 U	25.00 U	25.00 U
1,1,2,2-Tetrachloroethane.....	5.00 U	5.00 U	25.00 U	25.00 U
Toluene.....	5.00 U	5.00 U	25.00 U	25.00 U
Chlorobenzene.....	5.00 U	5.00 U	25.00 U	25.00 U
Ethylbenzene.....	5.00 U	5.00 U	25.00 U	25.00 U
Styrene.....	5.00 U	5.00 U	25.00 U	25.00 U
Total Xylenes.....	5.00 U	5.00 U	25.00 U	25.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	BH0887108R	BH15870005	BH15870510	BH158726BR
Sample	RFW#:	-15	-13	-17	-11
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	5.0	5.0	5.0	5.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	101	102	103	93
Bromofluorobenzene:	99	104	108	107
1,2-Dichloroethane-d4:	111	118	109	118

Analyte:

Chloromethane	50.00 U	50.00 U	50.00 U	50.00 U
Bromomethane	50.00 U	50.00 U	50.00 U	50.00 U
Vinyl Chloride	50.00 U	50.00 U	50.00 U	50.00 U
Chloroethane	50.00 U	50.00 U	50.00 U	50.00 U
Methylene Chloride	19 J	19 J	15 JB	37 B
Acetone	46 J	78	54 B	48 JB
Carbon Disulfide	25.00 U	25.00 U	25.00 U	25.00 U
1,1-Dichloroethene	25.00 U	25.00 U	25.00 U	25.00 U
1,1-Dichloroethane	25.00 U	25.00 U	25.00 U	25.00 U
Trans-1,2-Dichloroethene	25.00 U	25.00 U	25.00 U	25.00 U
Chloroform	25.00 U	25.00 U	25.00 U	25.00 U
1,2-Dichloroethane	25.00 U	25.00 U	25.00 U	25.00 U
2-Butanone	50.00 U	50.00 U	110 B	50.00 U
1,1,1-Trichloroethane	25.00 U	25.00 U	25.00 U	25.00 U
Carbon Tetrachloride	25.00 U	25.00 U	25.00 U	25.00 U
Vinyl Acetate	50.00 U	50.00 U	50.00 U	50.00 U
Bromodichloromethane	25.00 U	25.00 U	25.00 U	25.00 U
1,2-Dichloropropane	25.00 U	25.00 U	25.00 U	25.00 U
Trans-1,3-Dichloropropene	25.00 U	25.00 U	25.00 U	25.00 U
Trichloroethene	25.00 U	25.00 U	25.00 U	25.00 U
Dibromochloromethane	25.00 U	25.00 U	25.00 U	25.00 U
1,1,2-Trichloroethane	25.00 U	25.00 U	25.00 U	25.00 U
Benzene	25.00 U	25.00 U	25.00 U	25.00 U
cis-1,3-Dichloropropene	25.00 U	25.00 U	25.00 U	25.00 U
2-Chloroethylvinylether	50.00 U	50.00 U	50.00 U	50.00 U
Bromoform	25.00 U	25.00 U	25.00 U	25.00 U
4-Methyl-2-pentanone	50.00 U	50.00 U	50.00 U	50.00 U
2-Hexanone	50.00 U	50.00 U	50.00 U	50.00 U
Tetrachloroethene	25.00 U	25.00 U	25.00 U	25.00 U
1,1,2,2-Tetrachloroethane	25.00 U	25.00 U	25.00 U	25.00 U
Toluene	25.00 U	25.00 U	25.00 U	25.00 U
Chlorobenzene	25.00 U	25.00 U	25.00 U	25.00 U
Ethylbenzene	25.00 U	25.00 U	25.00 U	25.00 U
Styrene	25.00 U	25.00 U	25.00 U	25.00 U
Total Xylenes	25.00 U	25.00 U	25.00 U	25.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	BH17870005	BH17870SCT	BH17870SCT MS	BH17870BBR
Sample	RFW#:	-09	-05	-05 MS	-01
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	5.0	5.0	5.0	5.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	100	102	96	103
Bromofluorobenzene:	99	100	96	108
1,2-Dichloroethane-d4:	108	104	108	109

Analyte:

Chloromethane.....	50.00 U	50.00 U	50.00 U	50.00 U
Bromomethane.....	50.00 U	50.00 U	50.00 U	50.00 U
Vinyl Chloride.....	50.00 U	50.00 U	50.00 U	50.00 U
Chloroethane.....	50.00 U	50.00 U	50.00 U	50.00 U
Methylene Chloride.....	19 JB	19 JB	26 B	19 JB
Acetone.....	33 JB	40 JB	110 B	250 B
Carbon Disulfide.....	25.00 U	25.00 U	25.00 U	25.00 U
1,1-Dichloroethene.....	25.00 U	25.00 U	156 %	25.00 U
1,1-Dichloroethane.....	25.00 U	25.00 U	25.00 U	25.00 U
Trans-1,2-Dichloroethene.....	25.00 U	25.00 U	25.00 U	25.00 U
Chloroform.....	25.00 U	25.00 U	25.00 U	25.00 U
1,2-Dichloroethane.....	25.00 U	25.00 U	25.00 U	25.00 U
2-Butanone.....	10 J	16 J	120	130 B
1,1,1-Trichloroethane.....	25.00 U	25.00 U	25.00 U	25.00 U
Carbon Tetrachloride.....	25.00 U	25.00 U	25.00 U	25.00 U
Vinyl Acetate.....	50.00 U	50.00 U	50.00 U	50.00 U
Bromodichloromethane.....	25.00 U	25.00 U	25.00 U	25.00 U
1,2-Dichloropropane.....	25.00 U	25.00 U	25.00 U	25.00 U
Trans-1,3-Dichloropropene.....	25.00 U	25.00 U	25.00 U	25.00 U
Trichloroethene.....	25.00 U	25.00 U	124 %	25.00 U
Dibromochloromethane.....	25.00 U	25.00 U	25.00 U	25.00 U
1,1,2-Trichloroethane.....	25.00 U	25.00 U	25.00 U	25.00 U
Benzene.....	25.00 U	25.00 U	136 %	25.00 U
cis-1,3-Dichloropropene.....	25.00 U	25.00 U	25.00 U	25.00 U
2-Chloroethylvinylether.....	50.00 U	50.00 U	50.00 U	50.00 U
Bromoform.....	25.00 U	25.00 U	25.00 U	25.00 U
4-Methyl-2-pentanone.....	50.00 U	50.00 U	50.00 U	50.00 U
2-Hexanone.....	50.00 U	50.00 U	50.00 U	50.00 U
Tetrachloroethene.....	25.00 U	25.00 U	25.00 U	25.00 U
1,1,2,2-Tetrachloroethane.....	25.00 U	25.00 U	25.00 U	25.00 U
Toluene.....	25.00 U	25.00 U	129 %	25.00 U
Chlorobenzene.....	25.00 U	25.00 U	126 %	25.00 U
Ethylbenzene.....	25.00 U	25.00 U	25.00 U	25.00 U
Styrene.....	25.00 U	25.00 U	25.00 U	25.00 U
Total Xylenes.....	25.00 U	25.00 U	25.00 U	25.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-22 ROCKY FLATS

	Customer ID:	-	BH018701WT	BH018704WS	BH018710WS
Sample	RFW#:	BLANK	-01	-03	-05
Information:	Matrix:	WATER	SOIL	SOIL	SOIL
	D.F.:	1.0	5.0	5.0	5.0
	Units:	ug/l	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	100	103	103	102
Bromofluorobenzene:	102	104	103	103
1,2-Dichloroethane-d4:	98	110	110	111

Analyte:

Chloromethane	10.00 U	50.00 U	50.00 U	50.00 U
Bromomethane	10.00 U	50.00 U	50.00 U	50.00 U
Vinyl Chloride	10.00 U	50.00 U	50.00 U	50.00 U
Chloroethane	10.00 U	50.00 U	50.00 U	50.00 U
Methylene Chloride	1 J	10 JB	12 JB	10 JB
Acetone	8 J	400 B	400 B	470 B
Carbon Disulfide	5.00 U	25.00 U	25.00 U	25.00 U
1,1-Dichloroethene	5.00 U	25.00 U	25.00 U	25.00 U
1,1-Dichloroethane	5.00 U	25.00 U	25.00 U	25.00 U
Trans-1,2-Dichloroethene	5.00 U	25.00 U	18 J	25.00 U
Chloroform	5.00 U	25.00 U	25.00 U	25.00 U
1,2-Dichloroethane	5.00 U	25.00 U	25.00 U	25.00 U
2-Butanone	7 J	120 B	120 B	77 B
1,1,1-Trichloroethane	5.00 U	25.00 U	25.00 U	25.00 U
Carbon Tetrachloride	5.00 U	25.00 U	25.00 U	25.00 U
Vinyl Acetate	10.00 U	50.00 U	50.00 U	50.00 U
Bromodichloromethane	5.00 U	25.00 U	25.00 U	25.00 U
1,2-Dichloropropane	5.00 U	25.00 U	25.00 U	25.00 U
Trans-1,3-Dichloropropene	5.00 U	25.00 U	25.00 U	25.00 U
Trichloroethene	5.00 U	25.00 U	120	25.00 U
Dibromochloromethane	5.00 U	25.00 U	25.00 U	25.00 U
1,1,2-Trichloroethane	5.00 U	25.00 U	25.00 U	25.00 U
Benzene	5.00 U	25.00 U	25.00 U	25.00 U
cis-1,3-Dichloropropene	5.00 U	25.00 U	25.00 U	25.00 U
2-Chloroethylvinylether	10.00 U	50.00 U	50.00 U	50.00 U
Bromoform	5.00 U	25.00 U	25.00 U	25.00 U
4-Methyl-2-pentanone	10.00 U	50.00 U	50.00 U	50.00 U
2-Hexanone	10.00 U	50.00 U	50.00 U	50.00 U
Tetrachloroethene	5.00 U	25.00 U	190	11 J
1,1,2,2-Tetrachloroethane	5.00 U	25.00 U	25.00 U	25.00 U
Toluene	5.00 U	25.00 U	25.00 U	25.00 U
Chlorobenzene	5.00 U	25.00 U	25.00 U	25.00 U
Ethylbenzene	5.00 U	25.00 U	25.00 U	25.00 U
Styrene	5.00 U	25.00 U	25.00 U	25.00 U
Total Xylenes	5.00 U	25.00 U	25.00 U	25.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-22 ROCKY FLATS

	Customer ID:	BH018710WS MS
Sample	RFW#:	-05 MS
Information:	Matrix:	SOIL
	D.F.:	5.0
	Units:	ug/kg

Surrogate Recovery (%):

Toluene-d8:	99
Bromofluorobenzene:	102
1,2-Dichloroethane-d4:	114

Analyte:

Chloromethane.....	50.00 U
Bromomethane.....	50.00 U
Vinyl Chloride.....	50.00 U
Chloroethane.....	50.00 U
Methylene Chloride.....	16 J
Acetone.....	750
Carbon Disulfide.....	25.00 U
1,1-Dichloroethene.....	136 %
1,1-Dichloroethane.....	25.00 U
Trans-1,2-Dichloroethene.....	25.00 U
Chloroform.....	25.00 U
1,2-Dichloroethane.....	25.00 U
2-Butanone.....	180
1,1,1-Trichloroethane.....	25.00 U
Carbon Tetrachloride.....	25.00 U
Vinyl Acetate.....	50.00 U
Bromodichloromethane.....	25.00 U
1,2-Dichloropropane.....	25.00 U
Trans-1,3-Dichloropropene.....	25.00 U
Trichloroethene.....	116 %
Dibromochloromethane.....	25.00 U
1,1,2-Trichloroethane.....	25.00 U
Benzene.....	123 %
cis-1,3-Dichloropropene.....	25.00 U
2-Chloroethylvinylether.....	50.00 U
Bromoform.....	25.00 U
4-Methyl-2-pentanone.....	50.00 U
2-Hexanone.....	50.00 U
Tetrachloroethene.....	25.00 U
1,1,2,2-Tetrachloroethane.....	25.00 U
Toluene.....	118 %
Chlorobenzene.....	118 %
Ethylbenzene.....	25.00 U
Styrene.....	25.00 U
Total Xylenes.....	25.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON
MANAGERS DESIGNERS/CONSULTANTS
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WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-24
87-06-37
87-06-42 (water)

Samples in these batches:

BH0487	GW0887
GW0387	GW0587

ANALYSES OF ORGANICS

CASE NARRATIVE

1. **Qualifiers**

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

DUP - Indicates duplicate.

2. **Internal Standards**

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	June 5, 1987 - 87-06-24
	June 12, 1987 - 87-06-37
	June 12, 1987 - 87-06-42
Lab Receipt (VOA) -	June 9, 1987 - 87-06-24
	June 15, 1987 - 87-06-37 and 87-06-42
VOA Analysis -	June 15, 16, 1987 - 87-06-24,37,42
BNA Analysis -	June 13, 1987 - 87-06-24
Pesticides/PCBs Analysis -	June 13, 1987 - 87-06-24

5. Methods

The samples were analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spike met the recovery criteria.

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The B/N/A surrogates, method and matrix spikes exhibited abnormally high recoveries. The spiking mixtures are being checked to determine if they have become more concentrated due to solvent evaporation.

Pesticide method and matrix spikes were within acceptance criteria.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	-	BH0467 0010	BH0487 10WT	BH0487 15CT
Sample	RFW#:	BLANK	-07	04	-01
Information:	Matrix:	WATER	SOIL	SOIL	SOIL
	D.F.:	1.0	5.0	5.0	5.0
	Units:	ug/l	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	100	101	102	98
Bromofluorobenzene:	100	101	104	113
1,2-Dichloroethane-d4:	103	113	115	114

Analyte:

Chloromethane	10.00 U	50.00 U	50.00 U	50.00 U
Bromomethane	10.00 U	50.00 U	50.00 U	50.00 U
Vinyl Chloride	10.00 U	50.00 U	50.00 U	50.00 U
Chloroethane	10.00 U	50.00 U	50.00 U	50.00 U
Methylene Chloride	1 J	17 JB	16 JB	11 JB
Acetone	8 J	200 B	490 B	350 B
Carbon Disulfide	5.00 U	25.00 U	25.00 U	25.00 U
1,1-Dichloroethene	5.00 U	25.00 U	25.00 U	25.00 U
1,1-Dichloroethane	5.00 U	25.00 U	25.00 U	25.00 U
Trans-1,2-Dichloroethene	5.00 U	25.00 U	25.00 U	25.00 U
Chloroform	5.00 U	25.00 U	25.00 U	25.00 U
1,2-Dichloroethane	5.00 U	25.00 U	25.00 U	25.00 U
2-Butanone	7 J	110 B	110 B	120 B
1,1,1-Trichloroethane	5.00 U	25.00 U	25.00 U	25.00 U
Carbon Tetrachloride	5.00 U	25.00 U	25.00 U	25.00 U
Vinyl Acetate	10.00 U	50.00 U	50.00 U	50.00 U
Bromodichloromethane	5.00 U	25.00 U	25.00 U	25.00 U
1,2-Dichloropropane	5.00 U	25.00 U	25.00 U	25.00 U
Trans-1,3-Dichloropropene	5.00 U	25.00 U	25.00 U	25.00 U
Trichloroethene	5.00 U	25.00 U	25.00 U	25.00 U
Dibromochloromethane	5.00 U	25.00 U	25.00 U	25.00 U
1,1,2-Trichloroethane	5.00 U	25.00 U	25.00 U	25.00 U
Benzene	5.00 U	25.00 U	25.00 U	25.00 U
cis-1,3-Dichloropropene	5.00 U	25.00 U	25.00 U	25.00 U
2-Chloroethylvinylether	10.00 U	50.00 U	50.00 U	50.00 U
Bromoform	5.00 U	25.00 U	25.00 U	25.00 U
4-Methyl-2-pentanone	10.00 U	50.00 U	50.00 U	68
2-Hexanone	10.00 U	50.00 U	50.00 U	50.00 U
Tetrachloroethene	5.00 U	25.00 U	25.00 U	25.00 U
1,1,2,2-Tetrachloroethane	5.00 U	25.00 U	25.00 U	25.00 U
Toluene	5.00 U	25.00 U	25.00 U	25.00 U
Chlorobenzene	5.00 U	25.00 U	25.00 U	25.00 U
Ethylbenzene	5.00 U	25.00 U	25.00 U	25.00 U
Styrene	5.00 U	25.00 U	25.00 U	25.00 U
Total Xylenes	5.00 U	25.00 U	25.00 U	25.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-02-24 ROCKY FLATS

	Customer ID:	BH0487198R	BH0487198R MS
Sample	RFW#:	-01	-01 MS
Information:	Matrix:	SOIL	SOIL
	D.F.:	5.0	5.0
	Units:	ug/kg	ug/kg

Surrogate Recovery (%):

Toluene-d8:	102	101
Bromofluorobenzene:	109	99
1,2-Dichloroethane-d4:	106	112

Analyte:

Chloromethane	50.00 U	50.00 U
Bromomethane	50.00 U	50.00 U
Vinyl Chloride	50.00 U	50.00 U
Chloroethane	50.00 U	50.00 U
Methylene Chloride	22 JB	23 JB
Acetone	650 B	1100 B
Carbon Disulfide	25.00 U	25.00 U
1,1-Dichloroethene	25.00 U	137 %
1,1-Dichloroethane	25.00 U	25.00 U
Trans-1,2-Dichloroethene	25.00 U	25.00 U
Chloroform	25.00 U	25.00 U
1,2-Dichloroethane	25.00 U	25.00 U
2-Butanone	150 B	270 B
1,1,1-Trichloroethane	25.00 U	25.00 U
Carbon Tetrachloride	25.00 U	25.00 U
Vinyl Acetate	50.00 U	50.00 U
Bromodichloromethane	25.00 U	25.00 U
1,2-Dichloropropane	25.00 U	25.00 U
Trans-1,3-Dichloropropene	25.00 U	25.00 U
Trichloroethene	25.00 U	119 %
Dibromochloromethane	25.00 U	25.00 U
1,1,2-Trichloroethane	25.00 U	25.00 U
Benzene	25.00 U	127 %
cis-1,3-Dichloropropene	25.00 U	25.00 U
2-Chloroethylvinylether	50.00 U	50.00 U
Bromoform	25.00 U	25.00 U
4-Methyl-2-pentanone	50.00 U	50.00 U
2-Hexanone	50.00 U	50.00 U
Tetrachloroethene	25.00 U	25.00 U
1,1,2,2-Tetrachloroethane	25.00 U	25.00 U
Toluene	25.00 U	123 %
Chlorobenzene	25.00 U	122 %
Ethylbenzene	25.00 U	25.00 U
Styrene	25.00 U	25.00 U
Total Xylenes	25.00 U	25.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-42 ROCKY FLATS

	Customer ID:	-	GW0387	GW0387 MS	GW0887
Sample	RFW#:	0616 BLANK	-10	-10 MS	-09
Information:	Matrix:	WATER	WATER	WATER	WATER
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/l	ug/l

Surrogate Recovery (%):

Toluene-d8:	102	102	106	104
Bromofluorobenzene:	96	96	92	96
1,2-Dichloroethane-d4:	98	86	88	100

Analyte:

Chloromethane	10.00 U	10.00 U	10.00 U	10.00 U
Bromomethane	10.00 U	10.00 U	10.00 U	10.00 U
Vinyl Chloride	10.00 U	10.00 U	10.00 U	10.00 U
Chloroethane	10.00 U	10.00 U	10.00 U	10.00 U
Methylene Chloride	5.00 U	2 J	5 J	2 J
Acetone	6 J	33 B	31 B	11 B
Carbon Disulfide	5.00 U	5.00 U	5.00 U	5.00 U
1,1-Dichloroethene	5.00 U	5.00 U	240 %	2 J
1,1-Dichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,2-Dichloroethene	5.00 U	5.00 U	5.00 U	5.00 U
Chloroform	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
2-Butanone	10.00 U	10.00 U	6 J	10.00 U
1,1,1-Trichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Carbon Tetrachloride	5.00 U	5.00 U	5.00 U	5.00 U
Vinyl Acetate	10.00 U	10.00 U	10.00 U	10.00 U
Bromodichloromethane	5.00 U	5.00 U	5.00 U	5.00 U
1,2-Dichloropropane	5.00 U	5.00 U	5.00 U	5.00 U
Trans-1,3-Dichloropropene	5.00 U	5.00 U	5.00 U	5.00 U
Trichloroethene	5.00 U	5.00 U	138 %	5.00 U
Dibromochloromethane	5.00 U	5.00 U	5.00 U	5.00 U
1,1,2-Trichloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Benzene	5.00 U	5.00 U	140 %	5.00 U
cis-1,3-Dichloropropene	5.00 U	5.00 U	5.00 U	5.00 U
2-Chloroethylvinylether	10.00 U	10.00 U	10.00 U	10.00 U
Bromoform	5.00 U	5.00 U	5.00 U	5.00 U
4-Methyl-2-pentanone	10.00 U	10.00 U	10.00 U	10.00 U
2-Hexanone	10.00 U	10.00 U	10.00 U	10.00 U
Tetrachloroethene	5.00 U	5.00 U	5.00 U	5.00 U
1,1,2,2-Tetrachloroethane	5.00 U	5.00 U	5.00 U	5.00 U
Toluene	5.00 U	2 J	150 %	1 J
Chlorobenzene	5.00 U	5.00 U	136 %	5.00 U
Ethylbenzene	5.00 U	5.00 U	5.00 U	5.00 U
Styrene	5.00 U	5.00 U	5.00 U	5.00 U
Total Xylenes	5.00 U	5.00 U	5.00 U	5.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-37 ROCKY FLATS

	Customer ID:	-	GW0587
Sample	RFW#:	BLANK	-01
Information:	Matrix:	WATER	WATER
	D.F.:	1.0	1.0
	Units:	ug/l	ug/l

Surrogate Recovery (%):

Toluene-d8:	100	106
Bromofluorobenzene:	102	105
1,2-Dichloroethane-d4:	98	110

Analyte:

Chloromethane	10.00 U	10.00 U
Bromomethane	10.00 U	10.00 U
Vinyl Chloride	10.00 U	10.00 U
Chloroethane	10.00 U	10.00 U
Methylene Chloride	1 J	3 JB
Acetone	8 J	14 B
Carbon Disulfide	5.00 U	5.00 U
1,1-Dichloroethene	5.00 U	5.00 U
1,1-Dichloroethane	5.00 U	5.00 U
Trans-1,2-Dichloroethene	5.00 U	5.00 U
Chloroform	5.00 U	4 J
1,2-Dichloroethane	5.00 U	5.00 U
2-Butanone	7 J	10.00 U
1,1,1-Trichloroethane	5.00 U	5.00 U
Carbon Tetrachloride	5.00 U	5.00 U
Vinyl Acetate	10.00 U	10.00 U
Bromodichloromethane	5.00 U	5.00 U
1,2-Dichloropropane	5.00 U	5.00 U
Trans-1,3-Dichloropropene	5.00 U	5.00 U
Trichloroethene	5.00 U	5.00 U
Dibromochloromethane	5.00 U	5.00 U
1,1,2-Trichloroethane	5.00 U	5.00 U
Benzene	5.00 U	5.00 U
cis-1,3-Dichloropropene	5.00 U	5.00 U
2-Chloroethylvinylether	10.00 U	10.00 U
Bromoform	5.00 U	5.00 U
4-Methyl-2-pentanone	10.00 U	10.00 U
2-Hexanone	10.00 U	10.00 U
Tetrachloroethene	5.00 U	5.00 U
1,1,2,2-Tetrachloroethane	5.00 U	5.00 U
Toluene	5.00 U	5.00 U
Chlorobenzene	5.00 U	5.00 U
Ethylbenzene	5.00 U	5.00 U
Styrene	5.00 U	5.00 U
Total Xylenes	5.00 U	5.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

APPENDIX E-2

SEMI-VOLATILE RESULTS

WESTON
MANAGERS DESIGNERS/CONSULTANTS
7720 LORRAINE AVENUE
SUITE #102
STOCKTON, CA 95210
PHONE: (209) 957-3405

Samples in this batch:

BH0387
BH0687
BH0587

WESTON ANALYTICS
Laboratory Numbers: 87-05-51

ANALYSES OF ORGANICS

CASE NARRATIVE

1. Qualifiers

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	May 19,20, 1987
Lab Receipt (VOA) -	May 23, 1987
VOA Analysis -	May 26,27,28, 1987
BNA Analysis -	June 2,3, 1987
Pesticides/PCBs Analysis -	May 29,30, 1987

5. Methods

The water sample was analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

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The semivolatile surrogates met the recovery criteria except for tribromophenol in the following samples: Blank, BH06871020, BH068730BR, BH068726CT, BH058705CT. The method and matrix spikes met recommended recovery criteria except for 2,4-dinotrotoluene in both spikes and 4-nitrophenol in the matrix spike.

7. Comments

There were no significant extraneous peaks in any of the chromatograms. Hence, no tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

WESTON ANALYTICS
GC/MS DATA SUMMARY
SEMI-VOLATILE HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Cust ID:	-	-	BH038709CT	BH038712BR
	RFW#:	Blank	B.S.	-05	-06
	Matrix:	Water	Water	Soil	Soil
	D.F.:	1	1	1	1
	Units:	ug/L	ug/L	ug/kg	ug/kg
Surrogate Recovery (%)	2-Fluorophenol:	78	92	109	114
	Phenol-d5:	80	95	107	112
	2,4,6-Br3-Phenol:	125	83	106	115
	Nitrobenzene-d5:	68	93	95	99
	2-Fluorobiphenyl:	99	82	97	106
	p-Terphenyl-d14:	91	75	84	88
Phenol		10 U	95 %	10 U	10 U
bis(2-Chloroethyl)Ether		10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	93 %	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	90 %	10 U	10 U
Benzyl Alcohol		10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)Ether		10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine		10 U	92 %	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U
Benzoic Acid		50 U	50 U	50 U	50 U
bis(2-Chloroethoxy)Methane		10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	82 %	10 U	10 U
Naphthalene		10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		10 U	97 %	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U

RFW Batch Number: 87-05-51

Cust ID:	-	-	BH038709CT	BH038712BR
RFW#:	Blank	B.S.	-05	-06
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	50 U	50 U	50 U	50 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U
2-Nitroaniline	50 U	50 U	50 U	50 U
Dimethyl Phthalate	10 U	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	10 U	10 U
3-Nitroaniline	50 U	50 U	50 U	50 U
Acenaphthene	10 U	100 %	10 U	10 U
2,4-Dinitrophenol	50 U	50 U	50 U	50 U
4-Nitrophenol	50 U	110 %	50 U	50 U
Dibenzofuran	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10 U	114 %	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U
Diethyl Phthalate	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U
4-Nitroaniline	50 U	50 U	50 U	50 U
4,6-Dinitro-2-methylphenol	50 U	50 U	50 U	50 U
N-Nitrosodiphenylamine	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U
Hexachlorobenzene	10 U	10 U	10 U	10 U
Pentachlorophenol	50 U	86 %	50 U	50 U
Phenanthrene	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U
di-n-Butyl Phthalate	2 J	5 JB	10 U	10 U
Fluoranthene	10 U	10 U	10 U	10 U
Pyrene	10 U	100 %	10 U	10 U
Butyl Benzyl Phthalate	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20 U	20 U	20 U	20 U
Benzo(a)Anthracene	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)Phthalate	2 J	5 JB	660 B	730 B
Chrysene	10 U	10 U	10 U	10 U
di-n-Octyl Phthalate	10 U	10 U	10 U	10 U
Benzo(b)Fluoranthene	10 U	10 U	10 U	10 U
Benzo(k)Fluoranthene	10 U	10 U	10 U	10 U
Benzo(a)Pyrene	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)Pyrene	10 U	10 U	10 U	10 U
Dibenz(a,h)Anthracene	10 U	10 U	10 U	10 U
Benzo(g,h,i)Perylene	10 U	10 U	10 U	10 U

WESTON ANALYTICS
GC/MS DATA SUMMARY
SEMI-VOLATILE HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Cust ID:	BH038702WT	BH03870009	BH06870010	BH06870010 MS
	RFW#:	-07	-08	-09	-09 MS
	Matrix:	Soil	Soil	Soil	Soil
	D.F.:	1	1	1	1
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate Recovery (%)	2-Fluorophenol:	114	108	93	81
	Phenol-d5:	107	99	92	82
	2,4,6-Br3-Phenol:	116	119	98	117
	Nitrobenzene-d5:	94	91	83	79
	2-Fluorobiphenyl:	105	105	86	85
	p-Terphenyl-d14:	92	89	75	62
Phenol		10 U	10 U	10 U	81 %
bis(2-Chloroethyl)Ether		10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	95 %
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	95 %
Benzyl Alcohol		10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)Ether		10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine		10 U	10 U	10 U	90 %
Hexachloroethane		10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U
Benzoic Acid		50 U	50 U	50 U	50 U
bis(2-Chloroethoxy)Methane		10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	86 %
Naphthalene		10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		10 U	10 U	10 U	93 %
2-Methylnaphthalene		10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U

RFW Batch Number: 87-05-51

Cust ID:	BH038702WT	BH0387009	BH06870010	BH06870010 MS
RFW#:	-07	-08	-09	-09 MS
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	50 U	50 U	50 U	50 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U
2-Nitroaniline	50 U	50 U	50 U	50 U
Dimethyl Phthalate	10 U	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	10 U	10 U
3-Nitroaniline	50 U	50 U	50 U	50 U
Acenaphthene	10 U	10 U	10 U	100 %
2,4-Dinitrophenol	50 U	50 U	50 U	50 U
4-Nitrophenol	50 U	50 U	50 U	117 %
Dibenzofuran	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10 U	10 U	10 U	114 %
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U
Diethyl Phthalate	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U
4-Nitroaniline	50 U	50 U	50 U	50 U
4,6-Dinitro-2-methylphenol	50 U	50 U	50 U	50 U
N-Nitrosodiphenylamine	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U
Hexachlorobenzene	10 U	10 U	10 U	10 U
Pentachlorophenol	50 U	50 U	50 U	90 %
Phenanthrene	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U
di-n-Butyl Phthalate	10 U	10 U	10 U	10 U
Fluoranthene	10 U	10 U	10 U	10 U
Pyrene	10 U	10 U	10 U	62 %
Butyl Benzyl Phthalate	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20 U	20 U	20 U	20 U
Benzo(a)Anthracene	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)Phthalate	700 B	940 B	1,500 B	1,200 B
Chrysene	10 U	10 U	10 U	10 U
di-n-Octyl Phthalate	10 U	44 J	10 U	10 U
Benzo(b)Fluoranthene	10 U	10 U	10 U	10 U
Benzo(k)Fluoranthene	10 U	10 U	10 U	10 U
Benzo(a)Pyrene	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)Pyrene	10 U	10 U	10 U	10 U
Dibenz(a,h)Anthracene	10 U	10 U	10 U	10 U
Benzo(g,h,i)Perylene	10 U	10 U	10 U	10 U

WESTON ANALYTICS
GC/MS DATA SUMMARY
SEMI-VOLATILE HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number: 87-05-51 Client: Rocky Flats

	Cust ID:	BH06871020	BH068730BR	BH068726CT	BH058708BR
Sample Information	RFW#:	-10	-11	-12	-13
	Matrix:	Soil	Soil	Soil	Soil
	D.F.:	1	1	1	1
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate Recovery (%)	2-Fluorophenol:	101	97	96	67
	Phenol-d5:	99	99	92	67
	2,4,6-Br3-Phenol:	134	140	126	98
	Nitrobenzene-d5:	90	84	78	59
	2-Fluorobiphenyl:	109	106	98	75
	p-Terphenyl-d14:	79	72	70	55
Phenol		10 U	10 U	10 U	10 U
bis(2-Chloroethyl)Ether		10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U
Benzyl Alcohol		10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U
2-Methylphenol		10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)Ether		10 U	10 U	10 U	10 U
4-Methylphenol		10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine		10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U
2-Nitrophenol		10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U
Benzoic Acid		50 U	50 U	50 U	50 U
bis(2-Chloroethoxy)Methane		10 U	10 U	10 U	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U	10 U	10 U
Naphthalene		10 U	10 U	10 U	10 U
4-Chloroaniline		10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U

RFW Batch Number: 87-05-51

Cust ID:	BH06871020	BH068730BR	BH068726CT	BH058708BR
RFW#:	-10	-11	-12	-13
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	50 U	50 U	50 U	50 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U
2-Nitroaniline	50 U	50 U	50 U	50 U
Dimethyl Phthalate	10 U	10 U	10 U	10 U
Acenaphthylene	10 U	10 U	10 U	10 U
3-Nitroaniline	50 U	50 U	50 U	50 U
Acenaphthene	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	50 U	50 U	50 U	50 U
4-Nitrophenol	50 U	50 U	50 U	50 U
Dibenzofuran	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U
Diethyl Phthalate	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U
4-Nitroaniline	50 U	50 U	50 U	50 U
4,6-Dinitro-2-methylphenol	50 U	50 U	50 U	50 U
N-Nitrosodiphenylamine	10 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U
Hexachlorobenzene	10 U	10 U	10 U	10 U
Pentachlorophenol	50 U	50 U	50 U	50 U
Phenanthrene	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U
di-n-Butyl Phthalate	10 U	10 U	10 U	10 U
Fluoranthene	10 U	10 U	10 U	10 U
Pyrene	10 U	10 U	10 U	10 U
Butyl Benzyl Phthalate	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20 U	20 U	20 U	20 U
Benzo(a)Anthracene	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)Phthalate	1,100 B	1,200 B	510 B	950 B
Chrysene	10 U	10 U	10 U	10 U
di-n-Octyl Phthalate	10 U	10 U	10 U	10 U
Benzo(b)Fluoranthene	10 U	10 U	10 U	10 U
Benzo(k)Fluoranthene	10 U	10 U	10 U	10 U
Benzo(a)Pyrene	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)Pyrene	10 U	10 U	10 U	10 U
Dibenz(a,h)Anthracene	10 U	10 U	10 U	10 U
Benzo(g,h,i)Perylene	10 U	10 U	10 U	10 U

WESTON ANALYTICS
GC/MS DATA SUMMARY
SEMI-VOLATILE HAZARDOUS SUBSTANCE LIST COMPOUNDS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Cust ID:	~~BH0587005~~	BH058705CT
	RFW#:	-14 BH0587005	-15
	Matrix:	Soil	Soil
	D.F.:	1	1
	Units:	ug/kg	ug/kg
Surrogate Recovery (%)	2-Fluorophenol:	70	98
	Phenol-d5:	64	92
	2,4,6-Br3-Phenol:	106	152
	Nitrobenzene-d5:	53	79
	2-Fluorobiphenyl:	72	102
	p-Terphenyl-d14:	52	74
Phenol		10 U	10 U
bis(2-Chloroethyl)Ether		10 U	10 U
2-Chlorophenol		10 U	10 U
1,3-Dichlorobenzene		10 U	10 U
1,4-Dichlorobenzene		10 U	10 U
Benzyl Alcohol		10 U	10 U
1,2-Dichlorobenzene		10 U	10 U
2-Methylphenol		10 U	10 U
bis(2-Chloroisopropyl)Ether		10 U	10 U
4-Methylphenol		10 U	10 U
N-Nitroso-di-n-propylamine		10 U	10 U
Hexachloroethane		10 U	10 U
Nitrobenzene		10 U	10 U
Isophorone		10 U	10 U
2-Nitrophenol		10 U	10 U
2,4-Dimethylphenol		10 U	10 U
Benzoic Acid		50 U	50 U
bis(2-Chloroethoxy)Methane		10 U	10 U
2,4-Dichlorophenol		10 U	10 U
1,2,4-Trichlorobenzene		10 U	10 U
Naphthalene		10 U	10 U
4-Chloroaniline		10 U	10 U
Hexachlorobutadiene		10 U	10 U
4-Chloro-3-methylphenol		10 U	10 U
2-Methylnaphthalene		10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U

RFW Batch Number: 87-05-51

Cust ID:	~~BH0507005~~	BH058705CT
RFW#:	-14 BH0561005	-15
2,4,6-Trichlorophenol	10 U	10 U
2,4,5-Trichlorophenol	50 U	50 U
2-Chloronaphthalene	10 U	10 U
2-Nitroaniline	50 U	50 U
Dimethyl Phthalate	10 U	10 U
Acenaphthylene	10 U	10 U
3-Nitroaniline	50 U	50 U
Acenaphthene	10 U	10 U
2,4-Dinitrophenol	50 U	50 U
4-Nitrophenol	50 U	50 U
Dibenzofuran	10 U	10 U
2,4-Dinitrotoluene	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U
Diethyl Phthalate	10 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U
Fluorene	10 U	10 U
4-Nitroaniline	50 U	50 U
4,6-Dinitro-2-methylphenol	50 U	50 U
N-Nitrosodiphenylamine	10 U	10 U
4-Bromophenyl-phenylether	10 U	10 U
Hexachlorobenzene	10 U	10 U
Pentachlorophenol	50 U	50 U
Phenanthrene	10 U	10 U
Anthracene	10 U	10 U
di-n-Butyl Phthalate	10 U	10 U
Fluoranthene	10 U	10 U
Pyrene	10 U	10 U
Butyl Benzyl Phthalate	10 U	10 U
3,3'-Dichlorobenzidine	20 U	20 U
Benzo(a)Anthracene	10 U	10 U
bis(2-Ethylhexyl)Phthalate	880 B	870 B
Chrysene	10 U	10 U
di-n-Octyl Phthalate	10 U	10 U
Benzo(b)Fluoranthene	10 U	10 U
Benzo(k)Fluoranthene	10 U	10 U
Benzo(a)Pyrene	10 U	10 U
Indeno(1,2,3-cd)Pyrene	10 U	10 U
Dibenz(a,h)Anthracene	10 U	10 U
Benzo(g,h,i)Perylene	10 U	10 U

7720 LORRAINE AVENUE
SUITE #102
STOCKTON, CA 95210
PHONE (209) 957-3405

Samples in these batches:

BH0287
BH0787
BH1287

WESTON ANALYTICS
Laboratory Batch Numbers: 87-05-57
87-05-59

ANALYSES OF ORGANICS

CASE NARRATIVE

1. **Qualifiers**

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	May 25, 1987 - 87-05-57
	May 29, 1987 - 87-05-59
Lab Receipt (VOA) -	May 29, 1987 - 87-05-57
	May 30, 1987 - 87-05-59
VOA Analysis -	May 29,30, 1987
BNA Analysis -	June 4, 1987
Pesticides/PCBs Analysis -	June 3,4, 1987

5. Methods

The water sample was analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

WESTON

The semivolatile surrogates met the recovery criteria. The method and matrix spike recoveries met the recovery criteria except for 2,4-dinitrotoluene in the method spikes and in samples BH07871013 and BH128702CT, and 4-nitrotoluene in BH07871013.

Pesticide method and matrix spikes were within acceptance criteria.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-05-57

	Customer ID:	-	-	BH02871420	BH02871420
Sample	RFW#:	BLANK	B.S.	-11	-13
Information:	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	85	89	75	82
Phenol-d5:	78	83	72	79
2,4,6-Br3-Phenol:	88	89	83	91
Nitrobenzene-d5:	78	83	71	86
2-Fluorobiphenyl:	76	81	74	72
p-Terphenyl-d14:	70	72	68	64

Analyte:

Phenol	10.00 U	85 %	330.00 U	330.00 U
bis(2-Chloroethyl)Ether	10.00 U	50.00 U	330.00 U	330.00 U
2-Chlorophenol	10.00 U	91 %	330.00 U	330.00 U
1,3-Dichlorobenzene	10.00 U	10.00 U	330.00 U	330.00 U
1,4-Dichlorobenzene	10.00 U	92 %	330.00 U	330.00 U
Benzyl Alcohol	10.00 U	10.00 U	330.00 U	330.00 U
1,2-Dichlorobenzene	10.00 U	10.00 U	330.00 U	330.00 U
2-Methylphenol	10.00 U	10.00 U	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	10.00 U	10.00 U	330.00 U	330.00 U
4-Methylphenol	10.00 U	10.00 U	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	10.00 U	92 %	330.00 U	330.00 U
Hexachloroethane	10.00 U	10.00 U	330.00 U	330.00 U
Nitrobenzene	10.00 U	10.00 U	330.00 U	330.00 U
Isophorone	10.00 U	10.00 U	330.00 U	330.00 U
2-Nitrophenol	10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dimethylphenol	10.00 U	10.00 U	330.00 U	330.00 U
Benzoic Acid(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dichlorophenol	10.00 U	10.00 U	330.00 U	330.00 U
1,2,4-Trichlorobenzene	10.00 U	78 %	330.00 U	330.00 U
Naphthalene	10.00 U	10.00 U	330.00 U	330.00 U
4-Chloroaniline	10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorobutadiene	10.00 U	10.00 U	330.00 U	330.00 U
4-Chloro-3-methylphenol	10.00 U	97 %	330.00 U	330.00 U
2-Methylnaphthalene	10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorocyclopentadiene	10.00 U	10.00 U	330.00 U	330.00 U
2,4,6-Trichlorophenol	10.00 U	10.00 U	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
2-Chloronaphthalene	10.00 U	10.00 U	330.00 U	330.00 U
2-Nitroaniline(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
Dimethyl Phthalate	10.00 U	10.00 U	330.00 U	330.00 U
Acenaphthylene	10.00 U	10.00 U	330.00 U	330.00 U
3-Nitroaniline(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
Acenaphthene	10.00 U	98 %	330.00 U	330.00 U
2,4-Dinitrophenol(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
4-Nitrophenol(2)	50.00 U	110 %	1600.00 U	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-57

	Customer ID:	-	-	BH02971420	BH02971420
Sample	RFW#:	BLANK	B.S.	-11	-13
Information:	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg
Analyte:					
Dibenzofuran		10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dinitrotoluene		10.00 U	118 %	330.00 U	330.00 U
2,6-Dinitrotoluene		10.00 U	10.00 U	330.00 U	330.00 U
Diethylphthalate		10.00 U	10.00 U	330.00 U	330.00 U
4-Chlorophenyl-phenylether		10.00 U	10.00 U	330.00 U	330.00 U
Fluorene		10.00 U	10.00 U	330.00 U	330.00 U
4-Nitroaniline(2)		50.00 U	50.00 U	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21)		50.00 U	50.00 U	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1)		10.00 U	10.00 U	1600.00 U	1600.00 U
4-Bromophenyl-phenylether		10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorobenzene		10.00 U	10.00 U	330.00 U	330.00 U
Pentachlorophenol(2)		50.00 U	91 %	1600.00 U	1600.00 U
Phenanthrene		10.00 U	10.00 U	330.00 U	330.00 U
Anthracene		10.00 U	10.00 U	330.00 U	330.00 U
di-n-Butyl Phthalate		10.00 U	10.00 U	43.00 J	330.00 U
Fluoranthene		10.00 U	10.00 U	330.00 U	330.00 U
Pyrene		10.00 U	80 %	330.00 U	330.00 U
Butyl Benzyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3)		20.00 U	20.00 U	660.00 U	660.00 U
Benzo(a)Anthracene		10.00 U	10.00 U	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate		10.00 U	10.00 U	2800.00	2700.00
Chrysene		10.00 U	10.00 U	330.00 U	330.00 U
di-n-Octyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(b)Fluoranthene		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(k)Fluoranthene		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(a)Pyrene		10.00 U	10.00 U	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene		10.00 U	10.00 U	330.00 U	330.00 U
Dibenz(a,h)Anthracene		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(g,h,i)Perylene		10.00 U	10.00 U	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-57

	Customer ID:	BH07870510	BH078705CT	BH07870BR	BH07871013
Sample	RFW#:	-05	-07	-01	-09
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	84	89	77	81
Phenol-d5:	80	82	71	77
2,4,6-Br3-Phenol:	86	92	81	79
Nitrobenzene-d5:	73	81	77	72
2-Fluorobiphenyl:	74	78	67	71
p-Terphenyl-d14:	64	71	58	63

Analyte:

Phenol	330.00 U	330.00 U	330.00 U	330.00 U
bis(2-Chloroethyl)Ether	330.00 U	330.00 U	330.00 U	330.00 U
2-Chlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
1,3-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
1,4-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Benzyl Alcohol	330.00 U	330.00 U	330.00 U	330.00 U
1,2-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
2-Methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	330.00 U	330.00 U	330.00 U	330.00 U
4-Methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	330.00 U	330.00 U	330.00 U	330.00 U
Hexachloroethane	330.00 U	330.00 U	330.00 U	330.00 U
Nitrobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Isophorone	330.00 U	330.00 U	330.00 U	330.00 U
2-Nitrophenol	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dimethylphenol	330.00 U	330.00 U	330.00 U	330.00 U
Benzoic Acid(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dichlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
1,2,4-Trichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Naphthalene	330.00 U	330.00 U	330.00 U	330.00 U
4-Chloroaniline	330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorobutadiene	330.00 U	330.00 U	330.00 U	330.00 U
4-Chloro-3-methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
2-Methylnaphthalene	330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorocyclopentadiene	330.00 U	330.00 U	330.00 U	330.00 U
2,4,6-Trichlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
2-Chloronaphthalene	330.00 U	330.00 U	330.00 U	330.00 U
2-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
Dimethyl Phthalate	330.00 U	330.00 U	330.00 U	330.00 U
Acenaphthylene	330.00 U	330.00 U	330.00 U	330.00 U
3-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
Acenaphthene	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dinitrophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
4-Nitrophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-57

	Customer ID:	BH07870510	BH078705CT	BH078708P	BH07871017
Sample	RFW#:	-05	-07	-01	-09
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg

Analyte:

Dibenzofuran	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dinitrotoluene	330.00 U	330.00 U	330.00 U	330.00 U
2,6-Dinitrotoluene	330.00 U	330.00 U	330.00 U	330.00 U
Diethylphthalate	330.00 U	330.00 U	330.00 U	330.00 U
4-Chlorophenyl-phenylether	330.00 U	330.00 U	330.00 U	330.00 U
Fluorene	330.00 U	330.00 U	330.00 U	330.00 U
4-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
4-Bromophenyl-phenylether	330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Pentachlorophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
Phenanthrene	330.00 U	330.00 U	330.00 U	330.00 U
Anthracene	330.00 U	330.00 U	330.00 U	330.00 U
di-n-Butyl Phthalate	330.00 U	330.00 U	330.00 U	330.00 U
Fluoranthene	330.00 U	330.00 U	330.00 U	330.00 U
Pyrene	330.00 U	330.00 U	330.00 U	330.00 U
Butyl Benzyl Phthalate	330.00 U	330.00 U	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3)	660.00 U	660.00 U	660.00 U	660.00 U
Benzo(a)Anthracene	330.00 U	330.00 U	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate	3200.00	1300.00	1600.00	2500.00
Chrysene	330.00 U	330.00 U	330.00 U	330.00 U
di-n-Octyl Phthalate	330.00 U	330.00 U	330.00 U	330.00 U
Benzo(b)Fluoranthene	330.00 U	330.00 U	330.00 U	330.00 U
Benzo(k)Fluoranthene	330.00 U	330.00 U	330.00 U	330.00 U
Benzo(a)Pyrene	330.00 U	330.00 U	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene	330.00 U	330.00 U	330.00 U	330.00 U
Dibenz(a,h)Anthracene	330.00 U	330.00 U	330.00 U	330.00 U
Benzo(g,h,i)Perylene	330.00 U	330.00 U	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-57

	Customer ID:	BH07871013 MS	BH078710WS
Sample	RFW#:	-09 MS	-03
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	85	84
Phenol-d5:	81	80
2,4,6-Br3-Phenol:	84	86
Nitrobenzene-d5:	82	78
2-Fluorobiphenyl:	75	75
p-Terphenyl-d14:	64	66

Analyte:

Phenol	84 %	330.00 U
bis(2-Chloroethyl)Ether	330.00 U	330.00 U
2-Chlorophenol	82 %	330.00 U
1,3-Dichlorobenzene	330.00 U	330.00 U
1,4-Dichlorobenzene	87 %	330.00 U
Benzyl Alcohol	330.00 U	330.00 U
1,2-Dichlorobenzene	330.00 U	330.00 U
2-Methylphenol	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	330.00 U	330.00 U
4-Methylphenol	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	92 %	330.00 U
Hexachloroethane	330.00 U	330.00 U
Nitrobenzene	330.00 U	330.00 U
Isophorone	330.00 U	330.00 U
2-Nitrophenol	330.00 U	330.00 U
2,4-Dimethylphenol	330.00 U	330.00 U
Benzoic Acid(2)	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	330.00 U	330.00 U
2,4-Dichlorophenol	330.00 U	330.00 U
1,2,4-Trichlorobenzene	66 %	330.00 U
Naphthalene	330.00 U	330.00 U
4-Chloroaniline	330.00 U	330.00 U
Hexachlorobutadiene	330.00 U	330.00 U
4-Chloro-3-methylphenol	89 %	330.00 U
2-Methylnaphthalene	330.00 U	330.00 U
Hexachlorocyclopentadiene	330.00 U	330.00 U
2,4,6-Trichlorophenol	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	1600.00 U	1600.00 U
2-Chloronaphthalene	330.00 U	330.00 U
2-Nitroaniline(2)	1600.00 U	1600.00 U
Dimethyl Phthalate	330.00 U	330.00 U
Acenaphthylene	330.00 U	330.00 U
3-Nitroaniline(2)	1600.00 U	1600.00 U
Acenaphthene	92 %	330.00 U
2,4-Dinitrophenol(2)	1600.00 U	1600.00 U
4-Nitrophenol(2)	117 %	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-57

	Customer ID:	BH07871013 MS	BH078710WS
Sample	RFW#:	-09 MS	-03
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Analyte:		
Dibenzofuran.....	330.00 U	330.00 U
2,4-Dinitrotoluene.....	112 %	330.00 U
2,6-Dinitrotoluene.....	330.00 U	330.00 U
Diethylphthalate.....	330.00 U	330.00 U
4-Chlorophenyl-phenylether.....	330.00 U	330.00 U
Fluorene.....	330.00 U	330.00 U
4-Nitroaniline(2).....	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21).....	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1).....	1600.00 U	1600.00 U
4-Bromophenyl-phenylether.....	330.00 U	330.00 U
Hexachlorobenzene.....	330.00 U	330.00 U
Pentachlorophenol(2).....	87 %	1600.00 U
Phenanthrene.....	330.00 U	330.00 U
Anthracene.....	330.00 U	330.00 U
di-n-Butyl Phthalate.....	330.00 U	330.00 U
Fluoranthene.....	330.00 U	330.00 U
Pyrene.....	66 %	330.00 U
Butyl Benzyl Phthalate.....	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3).....	660.00 U	660.00 U
Benzo(a)Anthracene.....	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate.....	2300.00	1100.00
Chrysene.....	330.00 U	330.00 U
di-n-Octyl Phthalate.....	330.00 U	330.00 U
Benzo(b)Fluoranthene.....	330.00 U	330.00 U
Benzo(k)Fluoranthene.....	330.00 U	330.00 U
Benzo(a)Pyrene.....	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene.....	330.00 U	330.00 U
Dibenz(a,h)Anthracene.....	330.00 U	330.00 U
Benzo(g,h,i)Perylene.....	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

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WESTON ANALYTICS

Tentatively Identified Compounds, B/N/A Fraction

Lab No. 87-05-57

Sample ID	Scan No.	Identity	Estimated Conc., ug/kg
BH078708BR	1636	Fatty acid ester	630
	1863	Hydrocarbon	140
	1947	Hydrocarbon	320
	2036	Hydrocarbon	370
	2141	Hydrocarbon	370
	2264	Hydrocarbon	300
BH078710WS	1634	Fatty acid ester	320
BH07870510	1630	Fatty acid ester	330
BH078705CT	1620	Fatty acid ester	470
BH07871013	1615	Fatty acid ester	390
BH02871420	1609	Fatty acid ester	550
BH028714CT	1624	Fatty acid ester	620

Reviewed and approved _____
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-05-59

	Customer ID:	--	--	BH128702CT	BH128702CTMS
Sample	RFW#:	BLANK	B.S.	-02	-02MS
Information:	Matrix:	REAGENT	REAGENT	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	86	79	78	85
Phenol-d5:	81	75	77	84
2,4,6-Br3-Phenol:	84	84	80	82
Nitrobenzene-d5:	78	71	72	80
2-Fluorobiphenyl:	76	72	73	72
p-Terphenyl-d14:	67	67	67	68

Analyte:

Phenol	10.00 U	74 %	330.00 U	81 %
bis(2-Chloroethyl)Ether	10.00 U	10.00 U	330.00 U	330.00 U
2-Chlorophenol	10.00 U	76 %	330.00 U	83 %
1,3-Dichlorobenzene	10.00 U	10.00 U	330.00 U	330.00 U
1,4-Dichlorobenzene	10.00 U	76 %	330.00 U	83 %
Benzyl Alcohol	10.00 U	10.00 U	330.00 U	330.00 U
1,2-Dichlorobenzene	10.00 U	10.00 U	330.00 U	330.00 U
2-Methylphenol	10.00 U	10.00 U	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	10.00 U	10.00 U	330.00 U	330.00 U
4-Methylphenol	10.00 U	10.00 U	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	10.00 U	82 %	330.00 U	94 %
Hexachloroethane	10.00 U	10.00 U	330.00 U	330.00 U
Nitrobenzene	10.00 U	10.00 U	330.00 U	330.00 U
Isophorone	10.00 U	10.00 U	330.00 U	330.00 U
2-Nitrophenol	10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dimethylphenol	10.00 U	10.00 U	330.00 U	330.00 U
Benzoic Acid(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dichlorophenol	10.00 U	10.00 U	330.00 U	330.00 U
1,2,4-Trichlorobenzene	10.00 U	60 %	330.00 U	68 %
Naphthalene	10.00 U	10.00 U	330.00 U	330.00 U
4-Chloroaniline	10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorobutadiene	10.00 U	10.00 U	330.00 U	330.00 U
4-Chloro-3-methylphenol	10.00 U	79 %	330.00 U	86 %
2-Methylnaphthalene	10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorocyclopentadiene	10.00 U	10.00 U	330.00 U	330.00 U
2,4,6-Trichlorophenol	10.00 U	10.00 U	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
2-Chloronaphthalene	10.00 U	10.00 U	330.00 U	330.00 U
2-Nitroaniline(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
Dimethyl Phthalate	10.00 U	10.00 U	330.00 U	330.00 U
Acenaphthylene	10.00 U	10.00 U	330.00 U	330.00 U
3-Nitroaniline(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
Acenaphthene	10.00 U	86 %	330.00 U	89 %
2,4-Dinitrophenol(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
4-Nitrophenol(2)	50.00 U	110 %	1600.00 U	139 %

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-59

	Customer ID:	--	--	BH128702CT	BH128702CTMS
Sample	RFW#:	BLANK	B.S.	-02	-02MS
Information:	Matrix:	REAGENT	REAGENT	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg

Analyte:				
Dibenzofuran.....	10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dinitrotoluene.....	10.00 U	110 %	330.00 U	109 %
2,6-Dinitrotoluene.....	10.00 U	10.00 U	330.00 U	330.00 U
Diethylphthalate.....	10.00 U	10.00 U	330.00 U	330.00 U
4-Chlorophenyl-phenylether.....	10.00 U	10.00 U	330.00 U	330.00 U
Fluorene.....	10.00 U	10.00 U	330.00 U	330.00 U
4-Nitroaniline(2).....	50.00 U	50.00 U	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21).....	50.00 U	50.00 U	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1).....	10.00 U	10.00 U	1600.00 U	1600.00 U
4-Bromophenyl-phenylether.....	10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorobenzene.....	10.00 U	10.00 U	330.00 U	330.00 U
Pentachlorophenol(2).....	50.00 U	61 %	1600.00 U	83 %
Phenanthrene.....	10.00 U	10.00 U	92.00 J	330.00 U
Anthracene.....	10.00 U	10.00 U	330.00 U	37.00 J
di-n-Butyl Phthalate.....	10.00 U	10.00 U	330.00 U	330.00 U
Fluoranthene.....	10.00 U	10.00 U	110.00 J	300.00 J
Pyrene.....	10.00 U	70 %	110.00 J	82 %
Butyl Benzyl Phthalate.....	10.00 U	10.00 U	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3).....	20.00 U	20.00 U	660.00 U	660.00 U
Benzo(a)Anthracene.....	10.00 U	10.00 U	36.00 J	94.00 J
bis(2-Ethylhexyl)Phthalate.....	1.00 J	2.00 J	490.00	590.00
Chrysene.....	10.00 U	10.00 U	42.00 J	110.00 J
di-n-Octyl Phthalate.....	10.00 U	10.00 U	330.00 U	330.00 U
Benzo(b)Fluoranthene.....	10.00 U	10.00 U	34.00 J	99.00 J
Benzo(k)Fluoranthene.....	10.00 U	10.00 U	35.00 J	330.00 U
Benzo(a)Pyrene.....	10.00 U	10.00 U	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene.....	10.00 U	10.00 U	330.00 U	330.00 U
Dibenz(a,h)Anthracene.....	10.00 U	10.00 U	330.00 U	330.00 U
Benzo(g,h,i)Perylene.....	10.00 U	10.00 U	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not

RFW Batch Number: 87-05-59

	Customer ID:	BH1287058R
Sample	RFW#:	-04
Information:	Matrix:	SOIL
	D.F.:	1.0
	Units:	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	66
Phenol-d5:	63
2,4,6-Br3-Phenol:	62
Nitrobenzene-d5:	59
2-Fluorobiphenyl:	56
p-Terphenyl-d14:	49

Analyte:

Phenol	330.00	U
bis(2-Chloroethyl)Ether	330.00	U
2-Chlorophenol	330.00	U
1,3-Dichlorobenzene	330.00	U
1,4-Dichlorobenzene	330.00	U
Benzyl Alcohol	330.00	U
1,2-Dichlorobenzene	330.00	U
2-Methylphenol	330.00	U
bis(2-Chloroisopropyl)Ether	330.00	U
4-Methylphenol	330.00	U
N-Nitroso-di-n-propylamine	330.00	U
Hexachloroethane	330.00	U
Nitrobenzene	330.00	U
Isophorone	330.00	U
2-Nitrophenol	330.00	U
2,4-Dimethylphenol	330.00	U
Benzoic Acid(2)	1600.00	U
bis(2-Chloroethoxy)Methane	330.00	U
2,4-Dichlorophenol	330.00	U
1,2,4-Trichlorobenzene	330.00	U
Naphthalene	330.00	U
4-Chloroaniline	330.00	U
Hexachlorobutadiene	330.00	U
4-Chloro-3-methylphenol	330.00	U
2-Methylnaphthalene	330.00	U
Hexachlorocyclopentadiene	330.00	U
2,4,6-Trichlorophenol	330.00	U
2,4,5-Trichlorophenol(2)	1600.00	U
2-Chloronaphthalene	330.00	U
2-Nitroaniline(2)	1600.00	U
Dimethyl Phthalate	330.00	U
Acenaphthylene	330.00	U
3-Nitroaniline(2)	1600.00	U
Acenaphthene	330.00	U
2,4-Dinitrophenol(2)	1600.00	U
4-Nitrophenol(2)	1600.00	U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-59

	Customer ID:	BH128705BR
Sample	RFW#:	-04
Information:	Matrix:	SOIL
	D.F.:	1.0
	Units:	ug/kg

Analyte:		
Dibenzofuran	330.00	U
2,4-Dinitrotoluene	330.00	U
2,6-Dinitrotoluene	330.00	U
Diethylphthalate	330.00	U
4-Chlorophenyl-phenylether	330.00	U
Fluorene	330.00	U
4-Nitroaniline(2)	1600.00	U
4,6-Dinitro-2-methylphenol(21)	1600.00	U
N-Nitrosodiphenylamine(1)	1600.00	U
4-Bromophenyl-phenylether	330.00	U
Hexachlorobenzene	330.00	U
Pentachlorophenol(2)	1600.00	U
Phenanthrene	330.00	U
Anthracene	330.00	U
di-n-Butyl Phthalate	330.00	U
Fluoranthene	330.00	U
Pyrene	330.00	U
Butyl Benzyl Phthalate	330.00	U
3,3'-Dichlorobenzidine(3)	660.00	U
Benzo(a)Anthracene	330.00	U
bis(2-Ethylhexyl)Phthalate	600.00	
Chrysene	330.00	U
di-n-Octyl Phthalate	330.00	U
Benzo(b)Fluoranthene	330.00	U
Benzo(k)Fluoranthene	330.00	U
Benzo(a)Pyrene	330.00	U
Indeno(1,2,3-cd)Pyrene	330.00	U
Dibenz(a,h)Anthracene	330.00	U
Benzo(g,h,i)Perylene	330.00	U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

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MANAGERS DESIGNERS/CONSULTANTS
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SUITE #102
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PHONE: (209) 957-3405

WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-02

Samples in this batch:

BH0987

ANALYSES OF ORGANICS

CASE NARRATIVE

1. Qualifiers

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

DUP - Indicates a duplicate.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	May 28, 1987
Lab Receipt (VOA) -	June 1, 1987
VOA Analysis -	June 8, 1987
BNA Analysis -	June 5, 1987
Pesticides/PCBs Analysis -	June 4,5, 1987

5. Methods

The water sample was analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

The semivolatile surrogates exhibit high recovery for the acid components due to the use of continuous extractors.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-02

	Customer ID:	-	-	BH09870010	BH09870602
Sample	RFW#:	BLANK	B.S.	-05	-03
Information:	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	86	79	139	124
Phenol-d5:	81	75	125	113
2,4,6-Br3-Phenol:	84	84	113	110
Nitrobenzene-d5:	78	71	109	109
2-Fluorobiphenyl:	76	72	98	98
o-Terphenyl-d14:	67	67	115	109

Analyte:

Phenol	10.00 U	74 %	330.00 U	330.00 U
bis(2-Chloroethyl)Ether	10.00 U	10.00 U	330.00 U	330.00 U
2-Chlorophenol	10.00 U	76 %	330.00 U	330.00 U
1,3-Dichlorobenzene	10.00 U	10.00 U	330.00 U	330.00 U
1,4-Dichlorobenzene	10.00 U	76 %	330.00 U	330.00 U
Benzyl Alcohol	10.00 U	10.00 U	330.00 U	330.00 U
1,2-Dichlorobenzene	10.00 U	10.00 U	330.00 U	330.00 U
2-Methylphenol	10.00 U	10.00 U	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	10.00 U	10.00 U	330.00 U	330.00 U
4-Methylphenol	10.00 U	10.00 U	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	10.00 U	82 %	330.00 U	330.00 U
Hexachloroethane	10.00 U	10.00 U	330.00 U	330.00 U
Nitrobenzene	10.00 U	10.00 U	330.00 U	330.00 U
Isophorone	10.00 U	10.00 U	330.00 U	330.00 U
2-Nitrophenol	10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dimethylphenol	10.00 U	10.00 U	330.00 U	330.00 U
Benzoic Acid(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dichlorophenol	10.00 U	10.00 U	330.00 U	330.00 U
1,2,4-Trichlorobenzene	10.00 U	60 %	330.00 U	330.00 U
Naphthalene	10.00 U	10.00 U	330.00 U	330.00 U
4-Chloroaniline	10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorobutadiene	10.00 U	10.00 U	330.00 U	330.00 U
4-Chloro-3-methylphenol	10.00 U	79 %	330.00 U	330.00 U
2-Methylnaphthalene	10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorocyclopentadiene	10.00 U	10.00 U	330.00 U	330.00 U
2,4,6-Trichlorophenol	10.00 U	10.00 U	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
2-Chloronaphthalene	10.00 U	10.00 U	330.00 U	330.00 U
2-Nitroaniline(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
Dimethyl Phthalate	10.00 U	10.00 U	330.00 U	330.00 U
Acenaphthylene	10.00 U	10.00 U	330.00 U	330.00 U
3-Nitroaniline(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
Acenaphthene	10.00 U	86 %	57 J	330.00 U
2,4-Dinitrophenol(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
4-Nitrophenol(2)	50.00 U	110 %	1600.00 U	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-02

	Customer ID:	-	-	BH0987010	BH0987060WT
Sample	RFW#:	BLANK	B.S.	-01	-03
Information:	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg
Analyte:					
Dibenzofuran		10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dinitrotoluene		10.00 U	110 %	330.00 U	330.00 U
2,6-Dinitrotoluene		10.00 U	10.00 U	330.00 U	330.00 U
Diethylphthalate		10.00 U	10.00 U	330.00 U	330.00 U
4-Chlorophenyl-phenylether		10.00 U	10.00 U	330.00 U	330.00 U
Fluorene		10.00 U	10.00 U	54 J	330.00 U
4-Nitroaniline(2)		50.00 U	50.00 U	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21)		50.00 U	50.00 U	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1)		10.00 U	10.00 U	1600.00 U	1600.00 U
4-Bromophenyl-phenylether		10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorobenzene		10.00 U	10.00 U	330.00 U	330.00 U
Pentachlorophenol(2)		50.00 U	61 %	1600.00 U	1600.00 U
Phenanthrene		10.00 U	10.00 U	310 J	35 J
Anthracene		10.00 U	10.00 U	74 J	330.00 U
di-n-Butyl Phthalate		10.00 U	10.00 U	330.00 U	35 J
Fluoranthene		10.00 U	10.00 U	240 J	330.00 U
Pyrene		10.00 U	10.00 U	250 J	330.00 U
Butyl Benzyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
3,3 -Dichlorobenzidine(3)		20.00 U	20.00 U	660.00 U	660.00 U
Benzo(a)Anthracene		10.00 U	10.00 U	84 J	330.00 U
bis(2-Ethylhexyl)Phthalate		1 J	6 J	3000	1900
Chrysene		10.00 U	10.00 U	91 J	330.00 U
di-n-Octyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(b)Fluoranthene		10.00 U	10.00 U	61 J	330.00 U
Benzo(k)Fluoranthene		10.00 U	10.00 U	78 J	330.00 U
Benzo(a)Pyrene		10.00 U	10.00 U	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene		10.00 U	10.00 U	47 J	330.00 U
Dibenz(a,h)Anthracene		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(g,h,i)Perylene		10.00 U	10.00 U	50 J	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-02

	Customer ID:	BH098714BR	BH128702CT MS
Sample	RFW#:	-02	87-05-59-02 MS
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	123	85
Phenol-d5:	112	84
2,4,6-Br3-Phenol:	102	82
Nitrobenzene-d5:	106	80
2-Fluorobiphenyl:	91	72
p-Terphenyl-d14:	109	68

Analyte:

Phenol	330.00 U	81 %
bis(2-Chloroethyl)Ether	330.00 U	330.00 U
2-Chlorophenol	330.00 U	83 %
1,3-Dichlorobenzene	330.00 U	330.00 U
1,4-Dichlorobenzene	330.00 U	83 %
Benzyl Alcohol	330.00 U	330.00 U
1,2-Dichlorobenzene	330.00 U	330.00 U
2-Methylphenol	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	330.00 U	330.00 U
4-Methylphenol	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	330.00 U	94 %
Hexachloroethane	330.00 U	330.00 U
Nitrobenzene	330.00 U	330.00 U
Isophorone	330.00 U	330.00 U
2-Nitrophenol	330.00 U	330.00 U
2,4-Dimethylphenol	330.00 U	330.00 U
Benzoic Acid(2)	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	330.00 U	330.00 U
2,4-Dichlorophenol	330.00 U	330.00 U
1,2,4-Trichlorobenzene	330.00 U	68 %
Naphthalene	330.00 U	330.00 U
4-Chloroaniline	330.00 U	330.00 U
Hexachlorobutadiene	330.00 U	330.00 U
4-Chloro-3-methylphenol	330.00 U	86 %
2-Methylnaphthalene	330.00 U	330.00 U
Hexachlorocyclopentadiene	330.00 U	330.00 U
2,4,6-Trichlorophenol	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	1600.00 U	1600.00 U
2-Chloronaphthalene	330.00 U	330.00 U
2-Nitroaniline(2)	1600.00 U	1600.00 U
Dimethyl Phthalate	330.00 U	330.00 U
Acenaphthylene	330.00 U	330.00 U
3-Nitroaniline(2)	1600.00 U	1600.00 U
Acenaphthene	330.00 U	89 %
2,4-Dinitrophenol(2)	1600.00 U	1600.00 U
4-Nitrophenol(2)	1600.00 U	109 %

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-02

	Customer ID:	BH098714BR	BH128702CT MS
Sample	RFW#:	-02	87-05-59-02 MS
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Analyte:

Dibenzofuran	330.00 U	330.00 U
2,4-Dinitrotoluene	330.00 U	109 %
2,6-Dinitrotoluene	330.00 U	330.00 U
Diethylphthalate	330.00 U	330.00 U
4-Chlorophenyl-phenylether	330.00 U	330.00 U
Fluorene	330.00 U	330.00 U
4-Nitroaniline(2)	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21)	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1)	1600.00 U	1600.00 U
4-Bromophenyl-phenylether	330.00 U	330.00 U
Hexachlorobenzene	330.00 U	330.00 U
Pentachlorophenol(2)	1600.00 U	83 %
Phenanthrene	330.00 U	330.00 U
Anthracene	330.00 U	37 J
di-n-Butyl Phthalate	330.00 U	330.00 U
Fluoranthene	330.00 U	300 J
Pyrene	330.00 U	82 %
Butyl Benzyl Phthalate	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3)	660.00 U	660.00 U
Benzo(a)Anthracene	330.00 U	94 J
bis(2-Ethylhexyl)Phthalate	1000	590
Chrysene	330.00 U	110 J
di-n-Octyl Phthalate	330.00 U	330.00 U
Benzo(b)Fluoranthene	330.00 U	99 J
Benzo(k)Fluoranthene	330.00 U	330.00 U
Benzo(a)Pyrene	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene	330.00 U	330.00 U
Dibenz(a,h)Anthracene	330.00 U	330.00 U
Benzo(g,h,i)Perylene	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Tentatively Identified Compounds, B/N/A Fraction

Lab No. 87-06-02

Sample ID	Scan No.	Identity	Estimated Conc.,ug/kg
BH098714BR	1624	Fatty acid ester	710
BH098706WT	1614	Fatty acid ester	820
BH09870010	1630	Fatty acid ester	620

Reviewed and approved David Ben-Hur

David Ben-Hur, Ph.D.

DB/vk

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WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-04

Samples in this batch:

BH1387

ANALYSES OF ORGANICS

CASE NARRATIVE

1. Qualifiers

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	May 29, 1987
Lab Receipt (VOA) -	June 2, 1987
VOA Analysis -	June 8, 1987
BNA Analysis -	June 5, 1987
Pesticides/PCBs Analysis -	June 4,5, 1987

5. Methods

The water sample was analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

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The semivolatile surrogates exhibit high recovery for the acid components due to the use of continous extractors.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-04

	Customer ID:	BH13870010	BH1387148F
Sample	RFW#:	-02	-04
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	127	128
Phenol-d5:	114	117
2,4,6-Br3-Phenol:	108	108
Nitrobenzene-d5:	105	102
2-Fluorobiphenyl:	97	96
p-Terphenyl-d14:	107	112

Analyte:

Phenol.....	330.00 U	330.00 U
bis(2-Chloroethyl)Ether.....	330.00 U	330.00 U
2-Chlorophenol.....	330.00 U	330.00 U
1,3-Dichlorobenzene.....	330.00 U	330.00 U
1,4-Dichlorobenzene.....	330.00 U	330.00 U
Benzyl Alcohol.....	330.00 U	330.00 U
1,2-Dichlorobenzene.....	330.00 U	330.00 U
2-Methylphenol.....	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether.....	330.00 U	330.00 U
4-Methylphenol.....	330.00 U	330.00 U
N-Nitroso-di-n-propylamine.....	330.00 U	330.00 U
Hexachloroethane.....	330.00 U	330.00 U
Nitrobenzene.....	330.00 U	330.00 U
Isophorone.....	330.00 U	330.00 U
2-Nitrophenol.....	330.00 U	330.00 U
2,4-Dimethylphenol.....	330.00 U	330.00 U
Benzoic Acid(2).....	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane.....	330.00 U	330.00 U
2,4-Dichlorophenol.....	330.00 U	330.00 U
1,2,4-Trichlorobenzene.....	330.00 U	330.00 U
Naphthalene.....	330.00 U	330.00 U
4-Chloroaniline.....	330.00 U	330.00 U
Hexachlororbutadiene.....	330.00 U	330.00 U
4-Chloro-3-methylphenol.....	330.00 U	330.00 U
2-Methylnaphthalene.....	330.00 U	330.00 U
Hexachlorocyclopentadiene.....	330.00 U	330.00 U
2,4,6-Trichlorophenol.....	330.00 U	330.00 U
2,4,5-Trichlorophenol(2).....	1600.00 U	1600.00 U
2-Chloronaphthalene.....	330.00 U	330.00 U
2-Nitroaniline(2).....	1600.00 U	1600.00 U
Dimethyl Phthalate.....	330.00 U	330.00 U
Acenaphthylene.....	330.00 U	330.00 U
3-Nitroaniline(2).....	1600.00 U	1600.00 U
Acenaphthene.....	330.00 U	330.00 U
2,4-Dinitrophenol(2).....	1600.00 U	1600.00 U
4-Nitrophenol(2).....	1600.00 U	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-04

	Customer ID:	BH13870010	BH1387148F
Sample	RFW#:	-02	-04
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Analyte:		
Dibenzofuran.....	330.00 U	330.00 U
2,4-Dinitrotoluene.....	330.00 U	330.00 U
2,6-Dinitrotoluene.....	330.00 U	330.00 U
Diethylphthalate.....	330.00 U	330.00 U
4-Chlorophenyl-phenylether.....	330.00 U	330.00 U
Fluorene.....	330.00 U	330.00 U
4-Nitroaniline(2).....	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21).....	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1).....	1600.00 U	1600.00 U
4-Bromophenyl-phenylether.....	330.00 U	330.00 U
Hexachlorobenzene.....	330.00 U	330.00 U
Pentachlorophenol(2).....	1600.00 U	1600.00 U
Phenanthrene.....	330.00 U	330.00 U
Anthracene.....	330.00 U	330.00 U
di-n-Butyl Phthalate.....	330.00 U	41 J
Fluoranthene.....	330.00 U	330.00 U
Pyrene.....	330.00 U	330.00 U
Butyl Benzyl Phthalate.....	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3).....	660.00 U	660.00 U
Benzo(a)Anthracene.....	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate.....	1000	3500
Chrysene.....	330.00 U	330.00 U
di-n-Octyl Phthalate.....	170 J	330.00 U
Benzo(b)Fluoranthene.....	330.00 U	330.00 U
Benzo(k)Fluoranthene.....	330.00 U	330.00 U
Benzo(a)Pyrene.....	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene.....	330.00 U	330.00 U
Dibenz(a,h)Anthracene.....	330.00 U	330.00 U
Benzo(g,h,i)Perylene.....	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Tentatively Identified Compounds, B/N/A Fraction

Lab No. 87-06-04

Sample ID	Scan No.	Identity	Estimated Conc.,ug/kg
BH13870010	1624	Fatty acid ester	540
BH138714BR	1655	Fatty acid ester	670

Reviewed and approved David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

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SAMPLES IN THESE BATCHES:

BH1087
BH1187
BH1687

WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-05
87-06-10

ANALYSES OF ORGANICS

CASE NARRATIVE

1. **Qualifiers**

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

DUP - Indicates duplicate.

2. **Internal Standards**

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:
IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	June 1, 1987 - 87-06-05
	June 2, 1987 - 87-06-10
Lab Receipt (VOA) -	June 4, 1987 - 87-06-05
	June 4, 1987 - 87-06-10
VOA Analysis -	June 9, 1987
BNA Analysis -	June 6-7, 1987
Pesticides/PCBs Analysis -	June 6-9, 1987

5. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

The acid surrogates phenol-d5 and 2-Fluorophenol recoveries were outside the criteria for the blank and method spike and samples BH108723BR spike, BH10871020, BH108720CT, BH118711CT, BH168706BR, BH168702CT, BH16870206 and BH11870010 with the exception in BH11870010 which only 2-Fluorophenol did not meet the criteria. The recoveries of 2,4-Dinotrotoluene, 1,4-Dichlorobenzene, phenol, 2-chlorophenol and 4-Chloro-3-Methylphenol did not meet the criteria in both method spike and matrix spike. In addition to that, pentachlorophenol in the method spike did not meet the recovery criteria either.

6. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: _____
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-05 ROCKY FLATS

	Customer ID:	-	-	BH10870010	BH10871020
Sample	RFW#:	BLANK	B.S.	-06	-04
Information:	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	132	136	108	136
Phenol-d5:	120	126	101	128
2,4,6-Br3-Phenol:	115	120	96	122
Nitrobenzene-d5:	108	118	90	112
2-Fluorobiphenyl:	98	102	85	101
p-Terphenyl-d14:	96	98	83	99

Analyte:

Phenol	10.00 U	120	330.00 U	330.00 U
bis(2-Chloroethyl)Ether	10.00 U	10.00 U	330.00 U	330.00 U
2-Chlorophenol	10.00 U	120	330.00 U	330.00 U
1,3-Dichlorobenzene	10.00 U	10.00 U	330.00 U	330.00 U
1,4-Dichlorobenzene	10.00 U	62	330.00 U	330.00 U
Benzyl Alcohol	10.00 U	10.00 U	330.00 U	330.00 U
1,2-Dichlorobenzene	10.00 U	10.00 U	330.00 U	330.00 U
2-Methylphenol	10.00 U	10.00 U	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	10.00 U	10.00 U	330.00 U	330.00 U
4-Methylphenol	10.00 U	10.00 U	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	10.00 U	57	330.00 U	330.00 U
Hexachloroethane	10.00 U	10.00 U	330.00 U	330.00 U
Nitrobenzene	10.00 U	10.00 U	330.00 U	330.00 U
Isophorone	10.00 U	10.00 U	330.00 U	330.00 U
2-Nitrophenol	10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dimethylphenol	10.00 U	10.00 U	330.00 U	330.00 U
Benzoic Acid(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dichlorophenol	10.00 U	10.00 U	330.00 U	330.00 U
1,2,4-Trichlorobenzene	10.00 U	52	330.00 U	330.00 U
Naphthalene	10.00 U	10.00 U	330.00 U	330.00 U
4-Chloroaniline	10.00 U	10.00 U	330.00 U	330.00 U
Hexachlororbutadiene	10.00 U	10.00 U	330.00 U	330.00 U
4-Chloro-3-methylphenol	10.00 U	120	330.00 U	330.00 U
2-Methylnaphthalene	10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorocyclopentadiene	10.00 U	10.00 U	330.00 U	330.00 U
2,4,6-Trichlorophenol	10.00 U	10.00 U	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
2-Chloronaphthalene	10.00 U	10.00 U	330.00 U	330.00 U
2-Nitroaniline(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
Dimethyl Phthalate	10.00 U	10.00 U	330.00 U	330.00 U
Acenaphthylene	10.00 U	10.00 U	330.00 U	330.00 U
3-Nitroaniline(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
Acenaphthene	10.00 U	53	330.00 U	330.00 U
2,4-Dinitrophenol(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
4-Nitrophenol(2)	50.00 U	100	1600.00 U	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-05 ROCKY FLATS

	Customer ID:	-	-	BH10870010	BH10871020
Sample	RFW#:	BLANK	B.S.	-06	-04
Information:	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg
Analyte:					
Dibenzofuran		10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dinitrotoluene		10.00 U	62	330.00 U	330.00 U
2,6-Dinitrotoluene		10.00 U	10.00 U	330.00 U	330.00 U
Diethylphthalate		10.00 U	10.00 U	330.00 U	330.00 U
4-Chlorophenyl-phenylether		10.00 U	10.00 U	330.00 U	330.00 U
Fluorene		10.00 U	10.00 U	330.00 U	330.00 U
4-Nitroaniline(2)		50.00 U	50.00 U	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21)		50.00 U	50.00 U	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1)		10.00 U	10.00 U	1600.00 U	1600.00 U
4-Bromophenyl-phenylether		10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorobenzene		10.00 U	10.00 U	330.00 U	330.00 U
Pentachlorophenol(2)		50.00 U	110	1600.00 U	1600.00 U
Phenanthrene		10.00 U	10.00 U	330.00 U	330.00 U
Anthracene		10.00 U	10.00 U	330.00 U	330.00 U
di-n-Butyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
Fluoranthene		10.00 U	10.00 U	330.00 U	330.00 U
Pyrene		10.00 U	48	330.00 U	330.00 U
Butyl Benzyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3)		20.00 U	20.00 U	660.00 U	660.00 U
Benzo(a)Anthracene		10.00 U	10.00 U	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate		10.00 U	1 J	1000	820
Chrysene		10.00 U	10.00 U	330.00 U	330.00 U
di-n-Octyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(b)Fluoranthene		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(k)Fluoranthene		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(a)Pyrene		10.00 U	10.00 U	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene		10.00 U	10.00 U	330.00 U	330.00 U
Dibenz(a,h)Anthracene		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(g,h,i)Perylene		10.00 U	10.00 U	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-05 ROCKY FLATS

	Customer ID:	BH108720CT	BH108723BR	BH108723BR MS
Sample	RFW#:	-08	-02	-02 MS
Information:	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	133	120	128
Phenol-d5:	120	113	118
2,4,6-Br3-Phenol:	113	104	114
Nitrobenzene-d5:	109	100	112
2-Fluorobiphenyl:	96	89	98
p-Terphenyl-d14:	93	82	91

Analyte:

Phenol	330.00 U	330.00 U	3600
bis(2-Chloroethyl)Ether	330.00 U	330.00 U	330.00 U
2-Chlorophenol	330.00 U	330.00 U	3900
1,3-Dichlorobenzene	330.00 U	330.00 U	330.00 U
1,4-Dichlorobenzene	330.00 U	330.00 U	1900
Benzyl Alcohol	330.00 U	330.00 U	330.00 U
1,2-Dichlorobenzene	330.00 U	330.00 U	330.00 U
2-Methylphenol	330.00 U	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	330.00 U	330.00 U	330.00 U
4-Methylphenol	330.00 U	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	330.00 U	330.00 U	1800
Hexachloroethane	330.00 U	330.00 U	330.00 U
Nitrobenzene	330.00 U	330.00 U	330.00 U
Isophorone	330.00 U	330.00 U	330.00 U
2-Nitrophenol	330.00 U	330.00 U	330.00 U
2,4-Dimethylphenol	330.00 U	330.00 U	330.00 U
Benzoic Acid(2)	1600.00 U	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	330.00 U	330.00 U	330.00 U
2,4-Dichlorophenol	330.00 U	330.00 U	330.00 U
1,2,4-Trichlorobenzene	330.00 U	330.00 U	1600
Naphthalene	330.00 U	330.00 U	330.00 U
4-Chloroaniline	330.00 U	330.00 U	330.00 U
Hexachlororbutadiene	330.00 U	330.00 U	330.00 U
4-Chloro-3-methylphenol	330.00 U	330.00 U	3800
2-Methylnaphthalene	330.00 U	330.00 U	330.00 U
Hexachlorocyclopentadiene	330.00 U	330.00 U	330.00 U
2,4,6-Trichlorophenol	330.00 U	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	1600.00 U	1600.00 U	1600.00 U
2-Chloronaphthalene	330.00 U	330.00 U	330.00 U
2-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U
Dimethyl Phthalate	330.00 U	330.00 U	330.00 U
Acenaphthylene	330.00 U	330.00 U	330.00 U
3-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U
Acenaphthene	330.00 U	330.00 U	1700
2,4-Dinitrophenol(2)	1600.00 U	1600.00 U	1600.00 U
4-Nitrophenol(2)	1600.00 U	1600.00 U	3000

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-05 ROCKY FLATS

	Customer ID:	BH108720CT	BH108723BR	BH108723BR MS
Sample	RFW#:	-06	-02	-02 MS
Information:	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg
Analyte:				
Dibenzofuran		330.00 U	330.00 U	330.00 U
2,4-Dinitrotoluene		330.00 U	330.00 U	2000
2,6-Dinitrotoluene		330.00 U	330.00 U	330.00 U
Diethylphthalate		330.00 U	330.00 U	330.00 U
4-Chlorophenyl-phenylether		330.00 U	330.00 U	330.00 U
Fluorene		330.00 U	330.00 U	330.00 U
4-Nitroaniline(2)		1600.00 U	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21)		1600.00 U	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1)		1600.00 U	1600.00 U	1600.00 U
4-Bromophenyl-phenylether		330.00 U	330.00 U	330.00 U
Hexachlorobenzene		330.00 U	330.00 U	330.00 U
Pentachlorophenol(2)		1600.00 U	1600.00 U	3500
Phenanthrene		330.00 U	330.00 U	330.00 U
Anthracene		330.00 U	330.00 U	330.00 U
di-n-Butyl Phthalate		330.00 U	330.00 U	330.00 U
Fluoranthene		330.00 U	330.00 U	330.00 U
Pyrene		330.00 U	330.00 U	1500
Butyl Benzyl Phthalate		330.00 U	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3)		660.00 U	660.00 U	660.00 U
Benzo(a)Anthracene		330.00 U	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate		590	730	790
Chrysene		330.00 U	330.00 U	330.00 U
di-n-Octyl Phthalate		330.00 U	330.00 U	330.00 U
Benzo(b)Fluoranthene		330.00 U	330.00 U	330.00 U
Benzo(k)Fluoranthene		330.00 U	330.00 U	330.00 U
Benzo(a)Pyrene		330.00 U	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene		330.00 U	330.00 U	330.00 U
Dibenz(a,h)Anthracene		330.00 U	330.00 U	330.00 U
Benzo(g,h,i)Perylene		330.00 U	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Tentatively Identified Compounds, B/N/A Fraction

Lab No. 87-06-05

Sample ID	Scan No.	Identity	Estimated Conc.,ug/kg
BH108723BR	1646	Fatty acid ester	450
BH10871020	1618	Fatty acid ester	490
BH10870010	1619	Fatty acid ester	500
BH108720CT	1617	Fatty acid ester	380

Reviewed and approved _____
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-10 ROCKY FLATS

	Customer ID:	BH11870010	BH118711CT	BH118714WT	BH1687020c
Sample	RFW#:	-06	-02	-04	-12
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	127	132	118	125
Phenol-d5:	108	121	107	114
2,4,6-Br3-Phenol:	90	116	100	112
Nitrobenzene-d5:	97	110	99	105
2-Fluorobiphenyl:	98	96	90	92
p-Terphenyl-d14:	88	92	90	90

Analyte:

Phenol	330.00 U	330.00 U	330.00 U	330.00 U
bis(2-Chloroethyl)Ether	330.00 U	330.00 U	330.00 U	330.00 U
2-Chlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
1,3-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
1,4-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Benzyl Alcohol	330.00 U	330.00 U	330.00 U	330.00 U
1,2-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
2-Methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	330.00 U	330.00 U	330.00 U	330.00 U
4-Methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	330.00 U	330.00 U	330.00 U	330.00 U
Hexachloroethane	330.00 U	330.00 U	330.00 U	330.00 U
Nitrobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Isophorone	330.00 U	330.00 U	330.00 U	330.00 U
2-Nitrophenol	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dimethylphenol	330.00 U	330.00 U	330.00 U	330.00 U
Benzoic Acid(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dichlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
1,2,4-Trichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Naphthalene	330.00 U	330.00 U	330.00 U	330.00 U
4-Chloroaniline	330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorobutadiene	330.00 U	330.00 U	330.00 U	330.00 U
4-Chloro-3-methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
2-Methylnaphthalene	330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorocyclopentadiene	330.00 U	330.00 U	330.00 U	330.00 U
2,4,6-Trichlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
2-Chloronaphthalene	330.00 U	330.00 U	330.00 U	330.00 U
2-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
Dimethyl Phthalate	330.00 U	330.00 U	330.00 U	330.00 U
Acenaphthylene	330.00 U	330.00 U	330.00 U	330.00 U
3-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
Acenaphthene	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dinitrophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
4-Nitrophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-10 ROCKY FLATS

	Customer ID:	BH11870010	BH118711CT	BH118714WT	BH1687020E
Sample	RFW#:	-06	-02	-04	-12
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Analyte:					
Dibenzofuran		330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dinitrotoluene		330.00 U	330.00 U	330.00 U	330.00 U
2,6-Dinitrotoluene		330.00 U	330.00 U	330.00 U	330.00 U
Diethylphthalate		330.00 U	330.00 U	330.00 U	330.00 U
4-Chlorophenyl-phenylether		330.00 U	330.00 U	330.00 U	330.00 U
Fluorene		330.00 U	330.00 U	330.00 U	330.00 U
4-Nitroaniline(2)		1600.00 U	1600.00 U	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21)		1600.00 U	1600.00 U	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1)		1600.00 U	1600.00 U	1600.00 U	1600.00 U
4-Bromophenyl-phenylether		330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorobenzene		330.00 U	330.00 U	330.00 U	330.00 U
Pentachlorophenol(2)		1600.00 U	1600.00 U	1600.00 U	1600.00 U
Phenanthrene		330.00 U	330.00 U	330.00 U	330.00 U
Anthracene		330.00 U	330.00 U	330.00 U	330.00 U
di-n-Butyl Phthalate		330.00 U	330.00 U	330.00 U	330.00 U
Fluoranthene		330.00 U	330.00 U	330.00 U	330.00 U
Pyrene		330.00 U	330.00 U	330.00 U	330.00 U
Butyl Benzyl Phthalate		330.00 U	330.00 U	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3)		660.00 U	660.00 U	660.00 U	660.00 U
Benzo(a)Anthracene		330.00 U	330.00 U	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate		880	760	1000	800
Chrysene		330.00 U	330.00 U	330.00 U	330.00 U
di-n-Octyl Phthalate		330.00 U	330.00 U	330.00 U	330.00 U
Benzo(b)Fluoranthene		330.00 U	330.00 U	330.00 U	330.00 U
Benzo(k)Fluoranthene		330.00 U	330.00 U	330.00 U	330.00 U
Benzo(a)Pyrene		330.00 U	330.00 U	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene		330.00 U	330.00 U	330.00 U	330.00 U
Dibenz(a,h)Anthracene		330.00 U	330.00 U	330.00 U	330.00 U
Benzo(g,h,i)Perylene		330.00 U	330.00 U	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-10 ROCKY FLATS

	Customer ID:	BH168702CT	BH168706BR
Sample	RFW#:	-10	-08
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	136	129
Phenol-d5:	124	118
2,4,6-Br3-Phenol:	116	114
Nitrobenzene-d5:	109	106
2-Fluorobiphenyl:	101	96
p-Terphenyl-d14:	95	92

Analyte:

Phenol	330.00 U	330.00 U
bis(2-Chloroethyl)Ether	330.00 U	330.00 U
2-Chlorophenol	330.00 U	330.00 U
1,3-Dichlorobenzene	330.00 U	330.00 U
1,4-Dichlorobenzene	330.00 U	330.00 U
Benzyl Alcohol	330.00 U	330.00 U
1,2-Dichlorobenzene	330.00 U	330.00 U
2-Methylphenol	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	330.00 U	330.00 U
4-Methylphenol	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	330.00 U	330.00 U
Hexachloroethane	330.00 U	330.00 U
Nitrobenzene	330.00 U	330.00 U
Isophorone	330.00 U	330.00 U
2-Nitrophenol	330.00 U	330.00 U
2,4-Dimethylphenol	330.00 U	330.00 U
Benzoic Acid(2)	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	330.00 U	330.00 U
2,4-Dichlorophenol	330.00 U	330.00 U
1,2,4-Trichlorobenzene	330.00 U	330.00 U
Naphthalene	330.00 U	330.00 U
4-Chloroaniline	330.00 U	330.00 U
Hexachlororbutadiene	330.00 U	330.00 U
4-Chloro-3-methylphenol	330.00 U	330.00 U
2-Methylnaphthalene	330.00 U	330.00 U
Hexachlorocyclopentadiene	330.00 U	330.00 U
2,4,6-Trichlorophenol	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	1600.00 U	1600.00 U
2-Chloronaphthalene	330.00 U	330.00 U
2-Nitroaniline(2)	1600.00 U	1600.00 U
Dimethyl Phthalate	330.00 U	330.00 U
Acenaphthylene	330.00 U	330.00 U
3-Nitroaniline(2)	1600.00 U	1600.00 U
Acenaphthene	330.00 U	330.00 U
2,4-Dinitrophenol(2)	1600.00 U	1600.00 U
4-Nitrophenol(2)	1600.00 U	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: B7-06-10 ROCKY FLATS

	Customer ID:	BH168702CT	BH1687068R
Sample	RFW#:	-10	-08
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Analyte:		
Dibenzofuran	330.00 U	330.00 U
2,4-Dinitrotoluene	330.00 U	330.00 U
2,6-Dinitrotoluene	330.00 U	330.00 U
Diethylphthalate	330.00 U	330.00 U
4-Chlorophenyl-phenylether	330.00 U	330.00 U
Fluorene	330.00 U	330.00 U
4-Nitroaniline(2)	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21)	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1)	1600.00 U	1600.00 U
4-Bromophenyl-phenylether	330.00 U	330.00 U
Hexachlorobenzene	330.00 U	330.00 U
Pentachlorophenol(2)	1600.00 U	1600.00 U
Phenanthrene	330.00 U	330.00 U
Anthracene	330.00 U	330.00 U
di-n-Butyl Phthalate	330.00 U	330.00 U
Fluoranthene	330.00 U	330.00 U
Pyrene	330.00 U	330.00 U
Butyl Benzyl Phthalate	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3)	660.00 U	660.00 U
Benzo(a)Anthracene	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate	800	750
Chrysene	330.00 U	330.00 U
di-n-Octyl Phthalate	330.00 U	330.00 U
Benzo(b)Fluoranthene	330.00 U	330.00 U
Benzo(k)Fluoranthene	330.00 U	330.00 U
Benzo(a)Pyrene	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene	330.00 U	330.00 U
Dibenz(a,h)Anthracene	330.00 U	330.00 U
Benzo(g,h,i)Perylene	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Tentatively Identified Compounds, B/N/A Fraction

Lab No. 87-06-10

Sample ID	Scan No.	Identity	Estimated Conc.,ug/kg
BH118711CT	1611	Fatty acid ester	450
BH118714WT	1612	Fatty acid ester	560
BH168706BR	1619	Fatty acid ester	450
BH168702CT	1616	Fatty acid ester	400
BH16870206	1620	Fatty acid ester	400

Reviewed and approved _____
David Ben-Hur, Ph.D.

DB/vk

WESTON
MANAGERS DESIGNERS/CONSULTANTS
7720 LORRAINE AVENUE
SUITE 105
STOCKTON, CA 95210
PHONE: 209-957-3405

Samples in these batches:

BH0887
BH1587
BH1787
BH0187

WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-14
87-06-22

ANALYSES OF ORGANICS

CASE NARRATIVE

1. Qualifiers

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

DUP - Indicates duplicate.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:
IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

SENT BY:Xerox Telecopier 7020 ; 6-18-87 ; 9:20AM ; 2099574061→ 13039801622;# 3

WESTON

Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	June 3, 1987 - 87-06-14
	June 4, 1987 - 87-06-22
Lab Receipt (VOA) -	June 5, 1987 - 87-06-14
	June 8, 1987 - 87-06-22
VOA Analysis -	June 12, 1987
BNA Analysis -	June 12, 1987
Pesticides/PCBs Analysis -	June 6,7, 1987

5. Methods

The samples were analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates met the recovery criteria. The volatiles matrix spike recoveries slightly exceeded the recommended limits. It is believed that the sample was spiked with a somewhat larger amount than normal.

SENT BY:XEROX 1810COPIER 7020 ; 6-18-87 ; 9:20AM ; 2099574061→ 13039801622;# 4

WESTON

The B/N/A surrogates, method and matrix spikes exhibited abnormally high recoveries. The spiking mixtures are being checked to determine if they have become more concentrated due to solvent evaporation.

Pesticide method and matrix spikes were within acceptance criteria.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

SENT BY:XEROX 1810COPIER 7020 ; 6-18-87 ; 9:21AM ; 2098574081→ 13039801622;# 5

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	-	-	BH05870007	BH08870707
Sample	RFW#:	BLANK	B.S.	04	-08
Information:	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg
Surrogate Recovery (%):					
	2-Fluorophenol:	115	112	119	115
	Phenol-d5:	118	113	117	114
	2,4,6-Br3-Phenol:	127	140	144	146
	Nitrobenzene-d5:	106	98	105	99
	2-Fluorobiphenyl:	98	96	101	101
	p-Terphenyl-d14:	92	90	90	90

Analyte:

Phenol	10.00 U	100 %	330.00 U	330.00 U
bis(2-Chloroethyl)Ether	10.00 U	10.00 U	330.00 U	330.00 U
2-Chlorophenol	10.00 U	120 %	330.00 U	330.00 U
1,3-Dichlorobenzene	10.00 U	10.00 U	330.00 U	330.00 U
1,4-Dichlorobenzene	10.00 U	122 %	330.00 U	330.00 U
Benzyl Alcohol	10.00 U	10.00 U	330.00 U	330.00 U
1,2-Dichlorobenzene	10.00 U	10.00 U	330.00 U	330.00 U
2-Methylphenol	10.00 U	10.00 U	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	10.00 U	10.00 U	330.00 U	330.00 U
4-Methylphenol	10.00 U	10.00 U	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	10.00 U	100 %	330.00 U	330.00 U
Hexachloroethane	10.00 U	10.00 U	330.00 U	330.00 U
Nitrobenzene	10.00 U	10.00 U	330.00 U	330.00 U
Isophorone	10.00 U	10.00 U	330.00 U	330.00 U
2-Nitrophenol	10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dimethylphenol	10.00 U	10.00 U	330.00 U	330.00 U
Benzoic Acid(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dichlorophenol	10.00 U	10.00 U	330.00 U	330.00 U
1,2,4-Trichlorobenzene	10.00 U	110 %	330.00 U	330.00 U
Naphthalene	10.00 U	10.00 U	330.00 U	330.00 U
4-Chloroaniline	10.00 U	10.00 U	330.00 U	330.00 U
Hexachlororbutadiene	10.00 U	10.00 U	330.00 U	330.00 U
4-Chloro-3-methylphenol	10.00 U	120 %	330.00 U	330.00 U
2-Methylnaphthalene	10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorocyclopentadiene	10.00 U	10.00 U	330.00 U	330.00 U
2,4,6-Trichlorophenol	10.00 U	10.00 U	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
2-Chloronaphthalene	10.00 U	10.00 U	330.00 U	330.00 U
2-Nitroaniline(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
Dimethyl Phthalate	10.00 U	10.00 U	330.00 U	330.00 U
Acenaphthylene	10.00 U	10.00 U	330.00 U	330.00 U
3-Nitroaniline(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
Acenaphthene	10.00 U	104 %	330.00 U	330.00 U
2,4-Dinitrophenol(2)	50.00 U	50.00 U	1600.00 U	1600.00 U
4-Nitrophenol(2)	50.00 U	100 %	1600.00 U	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	-	-	BH08870007	BH08870701
Sample	RFW#:	BLANK	B.S.	-04	-08
Information:	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg
Analyte:					
Dibenzofuran		10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dinitrotoluene		10.00 U	128 %	330.00 U	330.00 U
2,6-Dinitrotoluene		10.00 U	10.00 U	330.00 U	330.00 U
Diethylphthalate		10.00 U	10.00 U	330.00 U	330.00 U
4-Chlorophenyl-phenylether		10.00 U	10.00 U	330.00 U	330.00 U
Fluorene		10.00 U	10.00 U	330.00 U	330.00 U
4-Nitroaniline(2)		50.00 U	50.00 U	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21)		50.00 U	50.00 U	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1)		10.00 U	10.00 U	1600.00 U	1600.00 U
4-Bromophenyl-phenylether		10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorobenzene		10.00 U	10.00 U	330.00 U	330.00 U
Pentachlorophenol(2)		50.00 U	120 %	1600.00 U	1600.00 U
Phenanthrene		10.00 U	10.00 U	330.00 U	330.00 U
Anthracene		10.00 U	10.00 U	330.00 U	330.00 U
di-n-Butyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
Fluoranthene		10.00 U	10.00 U	330.00 U	330.00 U
Pyrene		10.00 U	86 %	330.00 U	330.00 U
Butyl Benzyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3)		20.00 U	20.00 U	660.00 U	660.00 U
Benzo(a)Anthracene		10.00 U	10.00 U	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate		6 J	2 J	3800	3100
Chrysene		10.00 U	10.00 U	330.00 U	330.00 U
di-n-Octyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(b)Fluoranthene		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(k)Fluoranthene		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(a)Pyrene		10.00 U	10.00 U	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene		10.00 U	10.00 U	330.00 U	330.00 U
Dibenz(a,h)Anthracene		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(g,h,i)Perylene		10.00 U	10.00 U	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	BH088710BR	BH15870005	BH15870510	BH15872608R
Sample	RFW#:	-16	-14	-18	-12
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	109	113	103	118
Phenol-d5:	107	110	100	117
2,4,6-Br3-Phenol:	135	142	138	148
Nitrobenzene-d5:	90	98	90	101
2-Fluorobiphenyl:	95	100	93	101
p-Terphenyl-d14:	83	84	82	92

Analyte:

Phenol	330.00 U	330.00 U	330.00 U	330.00 U
bis(2-Chloroethyl)Ether	330.00 U	330.00 U	330.00 U	330.00 U
2-Chlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
1,3-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
1,4-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Benzyl Alcohol	330.00 U	330.00 U	330.00 U	330.00 U
1,2-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
2-Methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	330.00 U	330.00 U	330.00 U	330.00 U
4-Methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	330.00 U	330.00 U	330.00 U	330.00 U
Hexachloroethane	330.00 U	330.00 U	330.00 U	330.00 U
Nitrobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Isophorone	330.00 U	330.00 U	330.00 U	330.00 U
2-Nitrophenol	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dimethylphenol	330.00 U	330.00 U	330.00 U	330.00 U
Benzoic Acid(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dichlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
1,2,4-Trichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Naphthalene	330.00 U	330.00 U	330.00 U	330.00 U
4-Chloroaniline	330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorobutadiene	330.00 U	330.00 U	330.00 U	330.00 U
4-Chloro-3-methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
2-Methylnaphthalene	330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorocyclopentadiene	330.00 U	330.00 U	330.00 U	330.00 U
2,4,6-Trichlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
2-Chloronaphthalene	330.00 U	330.00 U	330.00 U	330.00 U
2-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
Dimethyl Phthalate	330.00 U	330.00 U	330.00 U	330.00 U
Acenaphthylene	330.00 U	330.00 U	330.00 U	330.00 U
3-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
Acenaphthene	330.00 U	57 J	330.00 U	330.00 U
2,4-Dinitrophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
4-Nitrophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-14 ROCKY FLATS

Customer ID:	BH08871088	BH15870005	BH15870510	BH15872688
Sample Information: RFW#:	-16	-14	-18	-12
Matrix:	SOIL	SOIL	SOIL	SOIL
D.F.:	1.0	1.0	1.0	1.0
Units:	ug/kg	ug/kg	ug/kg	ug/kg

Analyte:

Dibenzofuran	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dinitrotoluene	330.00 U	330.00 U	330.00 U	330.00 U
2,6-Dinitrotoluene	330.00 U	330.00 U	330.00 U	330.00 U
Diethylphthalate	330.00 U	330.00 U	330.00 U	330.00 U
4-Chlorophenyl-phenylether	330.00 U	330.00 U	330.00 U	330.00 U
Fluorene	330.00 U	55 J	330.00 U	330.00 U
4-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
4-Bromophenyl-phenylether	330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Pentachlorophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
Phenanthrene	330.00 U	370	330.00 U	330.00 U
Anthracene	330.00 U	81 J	330.00 U	330.00 U
di-n-Butyl Phthalate	330.00 U	330.00 U	330.00 U	330.00 U
Fluoranthene	330.00 U	350	330.00 U	330.00 U
Pyrene	330.00 U	270 J	330.00 U	330.00 U
Butyl Benzyl Phthalate	330.00 U	330.00 U	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3)	660.00 U	660.00 U	660.00 U	660.00 U
Benzo(a)Anthracene	330.00 U	110 J	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate	3700	1900	1000	850
Chrysene	330.00 U	150 J	330.00 U	330.00 U
di-n-Octyl Phthalate	330.00 U	330.00 U	330.00 U	330.00 U
Benzo(b)Fluoranthene	330.00 U	86 J	330.00 U	330.00 U
Benzo(k)Fluoranthene	330.00 U	180 J	330.00 U	330.00 U
Benzo(a)Pyrene	330.00 U	130 J	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene	330.00 U	330.00 U	330.00 U	330.00 U
Dibenz(a,h)Anthracene	330.00 U	330.00 U	330.00 U	330.00 U
Benzo(g,h,i)Perylene	330.00 U	330.00 U	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	BH17870005	BH178705CT	BH178705CT MS	BH17870BBR
Sample	RFW#:	-10	-06	-06 MS	-02
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	113	120	122	118
Phenol-d5:	110	120	120	117
2,4,6-Br3-Phenol:	142	143	140	140
Nitrobenzene-d5:	98	104	104	100
2-Fluorobiphenyl:	100	105	101	102
p-Terphenyl-d14:	84	90	90	88

Analyte:

Phenol	330.00 U	330.00 U	100 %	330.00 U
bis(2-Chloroethyl)Ether	330.00 U	330.00 U	330.00 U	330.00 U
2-Chlorophenol	330.00 U	330.00 U	118 %	330.00 U
1,3-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
1,4-Dichlorobenzene	330.00 U	330.00 U	109 %	330.00 U
Benzyl Alcohol	330.00 U	330.00 U	330.00 U	330.00 U
1,2-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
2-Methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	330.00 U	330.00 U	330.00 U	330.00 U
4-Methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	330.00 U	330.00 U	103 %	330.00 U
Hexachloroethane	330.00 U	330.00 U	330.00 U	330.00 U
Nitrobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Isophorone	330.00 U	330.00 U	330.00 U	330.00 U
2-Nitrophenol	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dimethylphenol	330.00 U	330.00 U	330.00 U	330.00 U
Benzoic Acid(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dichlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
1,2,4-Trichlorobenzene	330.00 U	330.00 U	109 %	330.00 U
Naphthalene	330.00 U	330.00 U	330.00 U	330.00 U
4-Chloroaniline	330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorobutadiene	330.00 U	330.00 U	330.00 U	330.00 U
4-Chloro-3-methylphenol	330.00 U	330.00 U	121 %	330.00 U
2-Methylnaphthalene	330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorocyclopentadiene	330.00 U	330.00 U	330.00 U	330.00 U
2,4,6-Trichlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
2-Chloronaphthalene	330.00 U	330.00 U	330.00 U	330.00 U
2-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
Dimethyl Phthalate	330.00 U	330.00 U	330.00 U	330.00 U
Acenaphthylene	330.00 U	330.00 U	330.00 U	330.00 U
3-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
Acenaphthene	330.00 U	330.00 U	103 %	330.00 U
2,4-Dinitrophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
4-Nitrophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	BH17870005	BH178705CT	BH178705CT MS	BH17870BSF
Sample	RFW#:	-10	-06	-06 MS	-02
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Analyte:					
Dibenzofuran		330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dinitrotoluene		330.00 U	330.00 U	127 %	330.00 U
2,6-Dinitrotoluene		330.00 U	330.00 U	330.00 U	330.00 U
Diethylphthalate		330.00 U	330.00 U	330.00 U	330.00 U
4-Chlorophenyl-phenylether		330.00 U	330.00 U	330.00 U	330.00 U
Fluorene		330.00 U	330.00 U	330.00 U	330.00 U
4-Nitroaniline(2)		1600.00 U	1600.00 U	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21)		1600.00 U	1600.00 U	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1)		1600.00 U	1600.00 U	1600.00 U	1600.00 U
4-Bromophenyl-phenylether		330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorobenzene		330.00 U	330.00 U	330.00 U	330.00 U
Pentachlorophenol(2)		1600.00 U	1600.00 U	136 %	1600.00 U
Phenanthrene		180 J	330.00 U	330.00 U	330.00 U
Anthracene		46 J	330.00 U	330.00 U	330.00 U
di-n-Butyl Phthalate		330.00 U	330.00 U	330.00 U	330.00 U
Fluoranthene		200 J	330.00 U	330.00 U	330.00 U
Pyrene		140 J	330.00 U	85 %	330.00 U
Butyl Benzyl Phthalate		330.00 U	330.00 U	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3)		660.00 U	660.00 U	660.00 U	660.00 U
Benzo(a)Anthracene		66 J	330.00 U	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate		1200	1300	1100	1500
Chrysene		72 J	330.00 U	330.00 U	330.00 U
di-n-Octyl Phthalate		250 J	330.00 U	330.00 U	330.00 U
Benzo(b)Fluoranthene		89 J	330.00 U	330.00 U	330.00 U
Benzo(k)Fluoranthene		330.00 U	330.00 U	330.00 U	330.00 U
Benzo(a)Pyrene		330.00 U	330.00 U	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene		330.00 U	330.00 U	330.00 U	330.00 U
Dibenz(a,h)Anthracene		330.00 U	330.00 U	330.00 U	330.00 U
Benzo(g,h,i)Perylene		330.00 U	330.00 U	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON

WESTON ANALYTICS

Tentatively Identified Compounds, B/N/A Fraction

Lab No. 87-06-14

Sample ID	Scan No.	Identity	Estimated Conc.,ug/kg
BH178708BR	1672	Fatty acid ester	650
	1959	Phthalate	370
	2007	Hydrocarbon	280
	2099	Hydrocarbon	390
	2207	Hydrocarbon	330
	2327	Hydrocarbon	280
	2475	Hydrocarbon	190
BH08870007	1089	Propanoic acid ester	220
	1657	Fatty acid ester	690
BH178705CT	1632	Fatty acid ester	690
BH088707CT	1634	Fatty acid ester	590
BH17870005	1625	Fatty acid ester	430
BH158726BR	1611	Fatty acid ester	600
BH15870005	1605	Fatty acid ester	720
BH088710BR	1601	Fatty acid ester	590
BH15870510	1615	Fatty acid ester	760

Reviewed and approved David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-22 ROCKY FLATS

	Customer ID:	-	-	BH018701WT	BH018704WE
Sample	RFW#:	BLANK	B.S.	-02	-04
Information:	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg
Surrogate Recovery (%):					
	2-Fluorophenol:	134	108	108	110
	Phenol-d5:	132	109	107	112
	2,4,6-Br3-Phenol:	168	151	143	142
	Nitrobenzene-d5:	116	104	93	94
	2-Fluorobiphenyl:	121	102	98	100
	p-Terphenyl-d14:	108	90	85	89
Analyte:					
Phenol		10.00 U	96 %	330.00 U	330.00 U
bis(2-Chloroethyl)Ether		10.00 U	10.00 U	330.00 U	330.00 U
2-Chlorophenol		10.00 U	120 %	330.00 U	330.00 U
1,3-Dichlorobenzene		10.00 U	10.00 U	330.00 U	330.00 U
1,4-Dichlorobenzene		10.00 U	120 %	330.00 U	330.00 U
Benzyl Alcohol		10.00 U	10.00 U	330.00 U	330.00 U
1,2-Dichlorobenzene		10.00 U	10.00 U	330.00 U	330.00 U
2-Methylphenol		10.00 U	10.00 U	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether		10.00 U	10.00 U	330.00 U	330.00 U
4-Methylphenol		10.00 U	10.00 U	330.00 U	330.00 U
N-Nitroso-di-n-propylamine		10.00 U	102 %	330.00 U	330.00 U
Hexachloroethane		10.00 U	10.00 U	330.00 U	330.00 U
Nitrobenzene		10.00 U	10.00 U	330.00 U	330.00 U
Isophorone		10.00 U	10.00 U	330.00 U	330.00 U
2-Nitrophenol		10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dimethylphenol		10.00 U	10.00 U	330.00 U	330.00 U
Benzoic Acid(2)		50.00 U	50.00 U	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane		10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dichlorophenol		10.00 U	10.00 U	330.00 U	330.00 U
1,2,4-Trichlorobenzene		10.00 U	114 %	330.00 U	330.00 U
Naphthalene		10.00 U	10.00 U	330.00 U	330.00 U
4-Chloroaniline		10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorobutadiene		10.00 U	10.00 U	330.00 U	330.00 U
4-Chloro-3-methylphenol		10.00 U	130 %	330.00 U	330.00 U
2-Methylnaphthalene		10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorocyclopentadiene		10.00 U	10.00 U	330.00 U	330.00 U
2,4,6-Trichlorophenol		10.00 U	10.00 U	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)		50.00 U	50.00 U	1600.00 U	1600.00 U
2-Chloronaphthalene		10.00 U	10.00 U	330.00 U	330.00 U
2-Nitroaniline(2)		50.00 U	50.00 U	1600.00 U	1600.00 U
Dimethyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
Acenaphthylene		10.00 U	10.00 U	330.00 U	330.00 U
3-Nitroaniline(2)		50.00 U	50.00 U	1600.00 U	1600.00 U
Acenaphthene		10.00 U	106 %	330.00 U	330.00 U
2,4-Dinitrophenol(2)		50.00 U	50.00 U	1600.00 U	1600.00 U
4-Nitrophenol(2)		50.00 U	110 %	1600.00 U	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-22 ROCKY FLATS

	Customer ID:	-	-	BH018701WT	BH018704WS
Sample	RFW#:	BLANK	B.S.	-02	-04
Information:	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg
Analyte:					
Dibenzofuran		10.00 U	10.00 U	330.00 U	330.00 U
2,4-Dinitrotoluene		10.00 U	124 %	330.00 U	330.00 U
2,6-Dinitrotoluene		10.00 U	10.00 U	330.00 U	330.00 U
Diethylphthalate		10.00 U	10.00 U	330.00 U	330.00 U
4-Chlorophenyl-phenylether		10.00 U	10.00 U	330.00 U	330.00 U
Fluorene		10.00 U	10.00 U	330.00 U	330.00 U
4-Nitroaniline(2)		50.00 U	50.00 U	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21)		50.00 U	50.00 U	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1)		10.00 U	10.00 U	1600.00 U	1600.00 U
4-Bromophenyl-phenylether		10.00 U	10.00 U	330.00 U	330.00 U
Hexachlorobenzene		10.00 U	10.00 U	330.00 U	330.00 U
Pentachlorophenol(2)		50.00 U	130 %	1600.00 U	1600.00 U
Phenanthrene		10.00 U	10.00 U	330.00 U	330.00 U
Anthracene		10.00 U	10.00 U	330.00 U	330.00 U
di-n-Butyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
Fluoranthene		10.00 U	10.00 U	330.00 U	330.00 U
Pyrene		10.00 U	80 %	330.00 U	330.00 U
Butyl Benzyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3)		20.00 U	20.00 U	660.00 U	660.00 U
Benzo(a)Anthracene		10.00 U	10.00 U	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate		240 J	1 J	880	1100
Chrysene		10.00 U	10.00 U	330.00 U	330.00 U
di-n-Octyl Phthalate		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(b)Fluoranthene		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(k)Fluoranthene		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(a)Pyrene		10.00 U	10.00 U	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene		10.00 U	10.00 U	330.00 U	330.00 U
Dibenz(a,h)Anthracene		10.00 U	10.00 U	330.00 U	330.00 U
Benzo(g,h,i)Perylene		10.00 U	10.00 U	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-22 ROCKY FLATS

	Customer ID:	BH018704WS MS	BH018710WS
Sample	RFW#:	-04 MS	-06
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	88	103
Phenol-d5:	92	103
2,4,6-Br3-Phenol:	146	141
Nitrobenzene-d5:	90	90
2-Fluorobiphenyl:	98	98
p-Terphenyl-d14:	89	88

Analyte:

Phenol	82 %	330.00 U
bis(2-Chloroethyl)Ether	330.00 U	330.00 U
2-Chlorophenol	103 %	330.00 U
1,3-Dichlorobenzene	330.00 U	330.00 U
1,4-Dichlorobenzene	103 %	330.00 U
Benzyl Alcohol	330.00 U	330.00 U
1,2-Dichlorobenzene	330.00 U	330.00 U
2-Methylphenol	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	330.00 U	330.00 U
4-Methylphenol	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	97 %	330.00 U
Hexachloroethane	330.00 U	330.00 U
Nitrobenzene	330.00 U	330.00 U
Isophorone	330.00 U	330.00 U
2-Nitrophenol	330.00 U	330.00 U
2,4-Dimethylphenol	330.00 U	330.00 U
Benzoic Acid(2)	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	330.00 U	330.00 U
2,4-Dichlorophenol	330.00 U	330.00 U
1,2,4-Trichlorobenzene	97 %	330.00 U
Naphthalene	330.00 U	330.00 U
4-Chloroaniline	330.00 U	330.00 U
Hexachlorobutadiene	330.00 U	330.00 U
4-Chloro-3-methylphenol	118 %	330.00 U
2-Methylnaphthalene	330.00 U	330.00 U
Hexachlorocyclopentadiene	330.00 U	330.00 U
2,4,6-Trichlorophenol	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	1600.00 U	1600.00 U
2-Chloronaphthalene	330.00 U	330.00 U
2-Nitroaniline(2)	1600.00 U	1600.00 U
Dimethyl Phthalate	330.00 U	330.00 U
Acenaphthylene	330.00 U	330.00 U
3-Nitroaniline(2)	1600.00 U	1600.00 U
Acenaphthene	103 %	330.00 U
2,4-Dinitrophenol(2)	1600.00 U	1600.00 U
4-Nitrophenol(2)	109 %	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-22 ROCKY FLATS

	Customer ID:	BH018704WS MS	BH018710WS
Sample	RFW#:	-04 MS	-06
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Analyte:

Dibenzofuran.....	330.00 U	330.00 U
2,4-Dinitrotoluene.....	121 %	330.00 U
2,6-Dinitrotoluene.....	330.00 U	330.00 U
Diethylphthalate.....	330.00 U	330.00 U
4-Chlorophenyl-phenylether.....	330.00 U	330.00 U
Fluorene.....	330.00 U	330.00 U
4-Nitroaniline(2).....	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21).....	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1).....	1600.00 U	1600.00 U
4-Bromophenyl-phenylether.....	330.00 U	330.00 U
Hexachlorobenzene.....	330.00 U	330.00 U
Pentachlorophenol(2).....	136 %	1600.00 U
Phenanthrene.....	330.00 U	330.00 U
Anthracene.....	330.00 U	330.00 U
di-n-Butyl Phthalate.....	330.00 U	330.00 U
Fluoranthene.....	330.00 U	330.00 U
Pyrene.....	79 %	330.00 U
Butyl Benzyl Phthalate.....	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3).....	660.00 U	660.00 U
Benzo(a)Anthracene.....	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate.....	1600	140 J
Chrysene.....	330.00 U	330.00 U
di-n-Octyl Phthalate.....	110 J	330.00 U
Benzo(b)Fluoranthene.....	330.00 U	330.00 U
Benzo(k)Fluoranthene.....	330.00 U	330.00 U
Benzo(a)Pyrene.....	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene.....	330.00 U	330.00 U
Dibenz(a,h)Anthracene.....	330.00 U	330.00 U
Benzo(g,h,i)Perylene.....	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON

WESTON ANALYTICS

Tentatively Identified Compounds, B/N/A Fraction

Lab No. 87-06-22

Sample ID	Scan No.	Identity	Estimated Conc.,ug/kg
BH018701WT	1612	Fatty acid ester	680
BH018704WS	1623	Fatty acid ester	710
BH018710WS	1631	Fatty acid ester	780

Reviewed and approved David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

WESTON
MANAGERS DESIGNERS/CONSULTANTS
7720 LORRAINE AVENUE
SUITE 105
STOCKTON, CA 95210
PHONE 209-957-3405

SAMPLES IN THIS BATCH:
BH0487

WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-24
87-06-37
87-06-42 (water)

ANALYSES OF ORGANICS

CASE NARRATIVE

1. Qualifiers

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

DUP - Indicates duplicate.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:
IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	June 5, 1987 - 87-06-24
	June 12, 1987 - 87-06-37
	June 12, 1987 - 87-06-42
Lab Receipt (VOA) -	June 9, 1987 - 87-06-24
	June 15, 1987 - 87-06-37 and 87-06-42
VOA Analysis -	June 15, 16, 1987 - 87-06-24,37,42
BNA Analysis -	June 13, 1987 - 87-06-24
Pesticides/PCBs Analysis -	June 13, 1987 - 87-06-24

5. Methods

The samples were analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spike met the recovery criteria.

WESTON

The B/N/A surrogates, method and matrix spikes exhibited abnormally high recoveries. The spiking mixtures are being checked to determine if they have become more concentrated due to solvent evaporation.

Pesticide method and matrix spikes were within acceptance criteria.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-24 ROCKY FLATS

	Customer ID:	BH04870010	BH048710WT	BH048715CT	BH048719BF
Sample	RFW#:	-06	-03	-04	-02
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate Recovery (%):					
	Di-n-butylchlorendate:	82%	78%	78%	79%
Analyte:					
Alpha-BHC		2.00 U	2.00 U	2.00 U	2.00 U
Beta-BHC		2.00 U	2.00 U	2.00 U	2.00 U
Delta-BHC		2.00 U	2.00 U	2.00 U	2.00 U
Gamma-BHC (Lindane)		2.00 U	2.00 U	2.00 U	2.00 U
Heptachlor		2.00 U	2.00 U	2.00 U	2.00 U
Aldrin		2.00 U	2.00 U	2.00 U	2.00 U
Heptachlor Epoxide		2.00 U	2.00 U	2.00 U	2.00 U
Endosulfan I		2.00 U	2.00 U	2.00 U	2.00 U
Dieldrin		4.00 U	4.00 U	4.00 U	4.00 U
4,4'-DDE		4.00 U	4.00 U	4.00 U	4.00 U
Endrin		4.00 U	4.00 U	4.00 U	4.00 U
Endosulfan II		4.00 U	4.00 U	4.00 U	4.00 U
4,4'-DDD		4.00 U	4.00 U	4.00 U	4.00 U
Endosulfan Sulfate		4.00 U	4.00 U	4.00 U	4.00 U
4,4'-DDT		4.00 U	4.00 U	4.00 U	4.00 U
Methoxychlor		20.00 U	20.00 U	20.00 U	20.00 U
Endrin Ketone		4.00 U	4.00 U	4.00 U	4.00 U
Chlordane		20.00 U	20.00 U	20.00 U	20.00 U
Toxaphene		40.00 U	40.00 U	40.00 U	40.00 U
Aroclor-1016		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1221		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1232		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1242		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1248		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1254		60	40.00 U	40.00 U	40.00 U
Aroclor-1260		40.00 U	40.00 U	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

7720 LORRAINE AVENUE
SUITE 105
STOCKTON, CA 95210
PHONE: 209-957-3405

WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-24
87-06-37
87-06-42 (water)

Samples in this batch:

BH0487

ANALYSES OF ORGANICS

CASE NARRATIVE

1. Qualifiers

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

DUP - Indicates duplicate.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	June 5, 1987 - 87-06-24
	June 12, 1987 - 87-06-37
	June 12, 1987 - 87-06-42
Lab Receipt (VOA) -	June 9, 1987 - 87-06-24
	June 15, 1987 - 87-06-37 and 87-06-42
VOA Analysis -	June 15, 16, 1987 - 87-06-24,37,42
BNA Analysis -	June 13, 1987 - 87-06-24
Pesticides/PCBs Analysis -	June 13, 1987 - 87-06-24

5. Methods

The samples were analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spike met the recovery criteria.

WESTON

The B/N/A surrogates, method and matrix spikes exhibited abnormally high recoveries. The spiking mixtures are being checked to determine if they have become more concentrated due to solvent evaporation.

Pesticide method and matrix spikes were within acceptance criteria.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-24 ROCKY FLATS

	Customer ID:	BH04870010	BH04871[illegible]	BH04871[illegible]	BH04871[illegible]
Sample	RFW#:	-06	-08	-04	-02
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

2-Fluorophenol:	73	113	106	119
Phenol-d5:	71	112	105	121
2,4,6-Br3-Phenol:	92	142	142	160
Nitrobenzene-d5:	64	98	93	108
2-Fluorobiphenyl:	72	101	101	112
p-Terphenyl-d14:	65	90	91	98

Analyte:

Phenol	330.00 U	330.00 U	330.00 U	330.00 U
bis(2-Chloroethyl)Ether	330.00 U	330.00 U	330.00 U	330.00 U
2-Chlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
1,3-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
1,4-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Benzyl Alcohol	330.00 U	330.00 U	330.00 U	330.00 U
1,2-Dichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
2-Methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
bis(2-Chloroisopropyl)Ether	330.00 U	330.00 U	330.00 U	330.00 U
4-Methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
N-Nitroso-di-n-propylamine	330.00 U	330.00 U	330.00 U	330.00 U
Hexachloroethane	330.00 U	330.00 U	330.00 U	330.00 U
Nitrobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Isophorone	330.00 U	330.00 U	330.00 U	330.00 U
2-Nitrophenol	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dimethylphenol	330.00 U	330.00 U	330.00 U	330.00 U
Benzoic Acid(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
bis(2-Chloroethoxy)Methane	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dichlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
1,2,4-Trichlorobenzene	330.00 U	330.00 U	330.00 U	330.00 U
Naphthalene	330.00 U	330.00 U	330.00 U	330.00 U
4-Chloroaniline	330.00 U	330.00 U	330.00 U	330.00 U
Hexachlororbutadiene	330.00 U	330.00 U	330.00 U	330.00 U
4-Chloro-3-methylphenol	330.00 U	330.00 U	330.00 U	330.00 U
2-Methylnaphthalene	330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorocyclopentadiene	330.00 U	330.00 U	330.00 U	330.00 U
2,4,6-Trichlorophenol	330.00 U	330.00 U	330.00 U	330.00 U
2,4,5-Trichlorophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
2-Chloronaphthalene	330.00 U	330.00 U	330.00 U	330.00 U
2-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
Dimethyl Phthalate	330.00 U	330.00 U	330.00 U	330.00 U
Acenaphthylene	330.00 U	330.00 U	330.00 U	330.00 U
3-Nitroaniline(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
Acenaphthene	330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dinitrophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U
4-Nitrophenol(2)	1600.00 U	1600.00 U	1600.00 U	1600.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-24 ROCKY FLATS

	Customer ID:	BH04870010	BH048710WT	BH04871SST	BH048719BP
Sample	RFW#:	-06	-08	-04	-02
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Analyte:					
Dibenzofuran		330.00 U	330.00 U	330.00 U	330.00 U
2,4-Dinitrotoluene		330.00 U	330.00 U	330.00 U	330.00 U
2,6-Dinitrotoluene		330.00 U	330.00 U	330.00 U	330.00 U
Diethylphthalate		330.00 U	330.00 U	330.00 U	330.00 U
4-Chlorophenyl-phenylether		330.00 U	330.00 U	330.00 U	330.00 U
Fluorene		330.00 U	330.00 U	330.00 U	330.00 U
4-Nitroaniline(2)		1600.00 U	1600.00 U	1600.00 U	1600.00 U
4,6-Dinitro-2-methylphenol(21)		1600.00 U	1600.00 U	1600.00 U	1600.00 U
N-Nitrosodiphenylamine(1)		1600.00 U	1600.00 U	1600.00 U	1600.00 U
4-Bromophenyl-phenylether		330.00 U	330.00 U	330.00 U	330.00 U
Hexachlorobenzene		330.00 U	330.00 U	330.00 U	330.00 U
Pentachlorophenol(2)		1600.00 U	1600.00 U	1600.00 U	1600.00 U
Phenanthrene		210 J	330.00 U	330.00 U	330.00 U
Anthracene		330.00 U	330.00 U	330.00 U	330.00 U
di-n-Butyl Phthalate		330.00 U	330.00 U	330.00 U	330.00 U
Fluoranthene		290 J	330.00 U	330.00 U	330.00 U
Pyrene		240 J	330.00 U	330.00 U	330.00 U
Butyl Benzyl Phthalate		330.00 U	330.00 U	330.00 U	330.00 U
3,3'-Dichlorobenzidine(3)		660.00 U	660.00 U	660.00 U	660.00 U
Benzo(a)Anthracene		330.00 U	330.00 U	330.00 U	330.00 U
bis(2-Ethylhexyl)Phthalate		470 J	1600	960	650
Chrysene		330.00 U	330.00 U	330.00 U	330.00 U
di-n-Octyl Phthalate		330.00 U	330.00 U	330.00 U	330.00 U
Benzo(b)Fluoranthene		330.00 U	330.00 U	330.00 U	330.00 U
Benzo(k)Fluoranthene		330.00 U	330.00 U	330.00 U	330.00 U
Benzo(a)Pyrene		330.00 U	330.00 U	330.00 U	330.00 U
Indeno(1,2,3-cd)Pyrene		330.00 U	330.00 U	330.00 U	330.00 U
Dibenz(a,h)Anthracene		330.00 U	330.00 U	330.00 U	330.00 U
Benzo(g,h,i)Perylene		330.00 U	330.00 U	330.00 U	330.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Tentatively Identified Compounds, B/N/A Fraction

Lab No. 87-06-24

Sample ID	Scan No.	Identity	Estimated Conc.,ug/kg
BH048719BR	1634	Fatty acid ester	340
BH048715CT	1670	Fatty acid ester	620
BH048710WT	1663	Fatty acid ester	560
	1424	Hydrocarbon	220

Reviewed and approved David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

APPENDIX E-3

PESTICIDE/PCBs RESULTS

7720 LORRAINE AVENUE
SUITE #102
STOCKTON, CA 95210
PHONE: (209) 957-3405

Samples in this batch:

BH0387

BH0687

BH0587

WESTON ANALYTICS
Laboratory Numbers: 87-05-51

ANALYSES OF ORGANICS

CASE NARRATIVE

1. **Qualifiers**

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	May 19,20, 1987
Lab Receipt (VOA) -	May 23, 1987
VOA Analysis -	May 26,27,28, 1987
BNA Analysis -	June 2,3, 1987
Pesticides/PCBs Analysis -	May 29,30, 1987

5. Methods

The water sample was analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

WESTON

The semivolatile surrogates met the recovery criteria except for tribromophenol in the following samples: Blank, BH06871020, BH068730BR, BH068726CT, BH058705CT. The method and matrix spikes met recommended recovery criteria except for 2,4-dinotrotoluene in both spikes and 4-nitrophenol in the matrix spike.

7. Comments

There were no significant extraneous peaks in any of the chromatograms. Hence, no tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

WESTON ANALYTICS
PESTICIDE/PCBs

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information			
	Cust ID:	-	-
	RFW #:	Method Blank 5/26	Method Spike 5/26
	Matrix:	Reagents	Reagents
	D.F.:	10	10
	Units:	ug/L	ug/L
Analyte:			
BHC-Alpha		0.05 U	0.05 U
BHC-Beta		0.05 U	0.05 U
BHC-Delta		0.05 U	0.05 U
BHC-Gamma (Lindane)		0.05 U	61 %
Heptachlor		0.05 U	83 %
Aldrin		0.05 U	82 %
Heptachlor Epoxide		0.05 U	0.05 U
Endosulfan I		0.05 U	0.05 U
Dieldrin		0.1 U	97 %
4,4'-DDE		0.1 U	0.1 U
Endrin		0.1 U	94 %
Endosulfan II		0.1 U	0.1 U
4,4'-DDD		0.1 U	0.1 U
Endosulfan Sulfate		0.1 U	0.1 U
4,4'-DDT		0.1 U	104 %
Methoxychlor		0.5 U	0.5 U
Endrin Ketone		0.1 U	0.1 U
Chlordane-Gamma		0.5 U	0.5 U
Chlordane-Alpha		0.5 U	0.5 U
Toxaphene		1.0 U	1.0 U
Arochlor-1016		0.5 U	0.5 U
Arochlor-1221		0.5 U	0.5 U
Arochlor-1232		0.5 U	0.5 U
Arochlor-1242		0.5 U	0.5 U
Arochlor-1248		0.5 U	0.5 U
Arochlor-1254		1.0 U	1.0 U
Arochlor-1260		1.0 U	1.0 U

U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. %=Percent recovery. NS=Not spiked.

WESTON ANALYTICS
PESTICIDE/PCBs

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Cust ID:	BH038709CT	BH038712BR	BH038702WT	BH03870009
	RFW #:	-05	-06	-07	-08
	Matrix:	Soil	Soil	Soil	Soil
	D.F.:	30	30	30	30
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Analyte:					
BHC-Alpha		0.05 U	0.05 U	0.05 U	0.05 U
BHC-Beta		0.05 U	0.05 U	0.05 U	0.05 U
BHC-Delta		0.05 U	0.05 U	0.05 U	0.05 U
BHC-Gamma (Lindane)		0.05 U	0.05 U	0.05 U	0.05 U
Heptachlor		0.05 U	0.05 U	0.05 U	0.05 U
Aldrin		0.05 U	0.05 U	0.05 U	0.05 U
Heptachlor Epoxide		0.05 U	0.05 U	0.05 U	0.05 U
Endosulfan I		0.05 U	0.05 U	0.05 U	0.05 U
Dieldrin		0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE		0.1 U	0.1 U	0.1 U	0.1 U
Endrin		0.1 U	0.1 U	0.1 U	0.1 U
Endosulfan II		0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDD		0.1 U	0.1 U	0.1 U	0.1 U
Endosulfan Sulfate		0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT		0.1 U	0.1 U	0.1 U	0.1 U
Methoxychlor		0.5 U	0.5 U	0.5 U	0.5 U
Endrin Ketone		0.1 U	0.1 U	0.1 U	0.1 U
Chlordane-Gamma		0.5 U	0.5 U	0.5 U	0.5 U
Chlordane-Alpha		0.5 U	0.5 U	0.5 U	0.5 U
Toxaphene		1.0 U	1.0 U	1.0 U	1.0 U
Arochlor-1016		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1221		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1232		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1242		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1248		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1254		1.0 U	1.0 U	1.0 U	1.0 U
Arochlor-1260		1.0 U	1.0 U	1.0 U	1.0 U

U=Analyzed, not detected. J=Present below detection limit. B=Present in blank.
NR=Not requested. NS=Not spiked. %=Percent recovery.

WESTON ANALYTICS
PESTICIDE/PCBs

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Cust ID:	BH06870010	BH06871020	BH068730BR	BH068726CT
	RFW #:	-09	-10	-11	-12
	Matrix:	Soil	Soil	Soil	Soil
	D.F.:	30	30	30	30
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Analyte:					
BHC-Alpha		0.05 U	0.05 U	0.05 U	0.05 U
BHC-Beta		0.05 U	0.05 U	0.05 U	0.05 U
BHC-Delta		0.05 U	0.05 U	0.05 U	0.05 U
BHC-Gamma (Lindane)		0.05 U	0.05 U	0.05 U	0.05 U
Heptachlor		0.05 U	0.05 U	0.05 U	0.05 U
Aldrin		0.05 U	0.05 U	0.05 U	0.05 U
Heptachlor Epoxide		0.05 U	0.05 U	0.05 U	0.05 U
Endosulfan I		0.05 U	0.05 U	0.05 U	0.05 U
Dieldrin		0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE		0.1 U	0.1 U	0.1 U	0.1 U
Endrin		0.1 U	0.1 U	0.1 U	0.1 U
Endosulfan II		0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDD		0.1 U	0.1 U	0.1 U	0.1 U
Endosulfan Sulfate		0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT		0.1 U	0.1 U	0.1 U	0.1 U
Methoxychlor		0.5 U	0.5 U	0.5 U	0.5 U
Endrin Ketone		0.1 U	0.1 U	0.1 U	0.1 U
Chlordane-Gamma		0.5 U	0.5 U	0.5 U	0.5 U
Chlordane-Alpha		0.5 U	0.5 U	0.5 U	0.5 U
Toxaphene		1.0 U	1.0 U	1.0 U	1.0 U
Arochlor-1016		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1221		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1232		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1242		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1248		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1254		1.0 U	1.0 U	1.0 U	1.0 U
Arochlor-1260		1.0 U	1.0 U	1.0 U	1.0 U

U=Analyzed, not detected. J=Present below detection limit. B=Present in blank.
NR=Not requested. NS=Not spiked. %=Percent recovery.

WESTON ANALYTICS
PESTICIDE/PCBs

RFW Batch Number: 87-05-51 **Client: Rocky Flats**

	Cust ID:	BH058708BR	BH05870005	BH058705CT	BH058705CT Duplicate
Sample Information	RFW #:	-13	-14	-15	-15 Dup.
	Matrix:	Soil	Soil	Soil	Soil
	D.F.:	30	30	30	30
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Analyte:					
BHC-Alpha		0.05 U	0.05 U	0.05 U	0.05 U
BHC-Beta		0.05 U	0.05 U	0.05 U	0.05 U
BHC-Delta		0.05 U	0.05 U	0.05 U	0.05 U
BHC-Gamma (Lindane)		0.05 U	0.05 U	0.05 U	0.05 U
Heptachlor		0.05 U	0.05 U	0.05 U	0.05 U
Aldrin		0.05 U	0.05 U	0.05 U	0.05 U
Heptachlor Epoxide		0.05 U	0.05 U	0.05 U	0.05 U
Endosulfan I		0.05 U	0.05 U	0.05 U	0.05 U
Dieldrin		0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE		0.1 U	0.1 U	0.1 U	0.1 U
Endrin		0.1 U	0.1 U	0.1 U	0.1 U
Endosulfan II		0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDD		0.1 U	0.1 U	0.1 U	0.1 U
Endosulfan Sulfate		0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT		0.1 U	0.1 U	0.1 U	0.1 U
Methoxychlor		0.5 U	0.5 U	0.5 U	0.5 U
Endrin Ketone		0.1 U	0.1 U	0.1 U	0.1 U
Chlordane-Gamma		0.5 U	0.5 U	0.5 U	0.5 U
Chlordane-Alpha		0.5 U	0.5 U	0.5 U	0.5 U
Toxaphene		1.0 U	1.0 U	1.0 U	1.0 U
Arochlor-1016		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1221		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1232		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1242		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1248		0.5 U	0.5 U	0.5 U	0.5 U
Arochlor-1254		1.0 U	1.0 U	1.0 U	1.0 U
Arochlor-1260		1.0 U	1.0 U	1.0 U	1.0 U

U=Analyzed, not detected. J=Present below detection limit. B=Present in blank.
NR=Not requested. NS=Not spiked. %=Percent recovery.

WESTON ANALYTICS
PESTICIDE/PCBs

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information		
	Cust ID:	BH058705CT (MS)
	RFW #:	-15 MS
	Matrix:	Soil
	D.F.:	30
	Units:	ug/kg

Analyte:		
BHC-Alpha	0.05	U
BHC-Beta	0.05	U
BHC-Delta	0.05	U
BHC-Gamma (Lindane)	63	%
Heptachlor	84	%
Aldrin	85	%
Heptachlor Epoxide	0.05	U
Endosulfan I	0.05	U
Dieldrin	100	%
4,4'-DDE	0.1	U
Endrin	93	%
Endosulfan II	0.1	U
4,4'-DDD	0.1	U
Endosulfan Sulfate	0.1	U
4,4'-DDT	107	%
Methoxychlor	0.5	U
Endrin Ketone	0.1	U
Chlordane-Gamma	0.5	U
Chlordane-Alpha	0.5	U
Toxaphene	1.0	U
Arochlor-1016	0.5	U
Arochlor-1221	0.5	U
Arochlor-1232	0.5	U
Arochlor-1242	0.5	U
Arochlor-1248	0.5	U
Arochlor-1254	1.0	U
Arochlor-1260	1.0	U

U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. %=Percent recovery. NS=Not spiked.

7720 LORRAINE AVENUE
SUITE #102
STOCKTON, CA 95210
PHONE: (209) 957-3405

Samples in this batch:

BH0287
BH0787
BH1287

WESTON ANALYTICS
Laboratory Batch Numbers: 87-05-57
87-05-59

ANALYSES OF ORGANICS

CASE NARRATIVE

1. **Qualifiers**

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	May 25, 1987 - 87-05-57
	May 29, 1987 - 87-05-59
Lab Receipt (VOA) -	May 29, 1987 - 87-05-57
	May 30, 1987 - 87-05-59
VOA Analysis -	May 29,30, 1987
BNA Analysis -	June 4, 1987
Pesticides/PCBs Analysis -	June 3,4, 1987

5. Methods

The water sample was analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

WESTON

The semivolatile surrogates met the recovery criteria. The method and matrix spike recoveries met the recovery criteria except for 2,4-dinitrotoluene in the method spikes and in samples BH07871013 and BH128702CT, and 4-nitrotoluene in BH07871013.

Pesticide method and matrix spikes were within acceptance criteria.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RF# Batch Number: 87-05-57

	Customer ID:	-	-	BH02871420	BH02871407
Sample	RF#:	METH BLANK 5/29	METH SPIKE 5/29	-12	-14
Information:	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	10.0	10.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg

Surrogate Recovery (%):

Di-n-butylchlorendate:

Analyte:

Alpha-BHC	0.50 U	0.50 U	2.00 U	2.00 U
Beta-BHC	0.50 U	0.50 U	2.00 U	2.00 U
Delta-BHC	0.50 U	0.50 U	2.00 U	2.00 U
Gamma-BHC (Lindane)	0.50 U	94 %	2.00 U	2.00 U
Heptachlor	0.50 U	87 %	2.00 U	2.00 U
Aldrin	0.50 U	88 %	2.00 U	2.00 U
Heptachlor Epoxide	0.50 U	0.50 U	2.00 U	2.00 U
Endosulfan I	0.50 U	0.50 U	2.00 U	2.00 U
Dieldrin	1.00 U	88 %	4.00 U	4.00 U
4,4'-DDE	1.00 U	1.00 U	4.00 U	4.00 U
Endrin	1.00 U	93 %	4.00 U	4.00 U
Endosulfan II	1.00 U	1.00 U	4.00 U	4.00 U
4,4'-DDD	1.00 U	1.00 U	4.00 U	4.00 U
Endosulfan Sulfate	1.00 U	1.00 U	4.00 U	4.00 U
4,4'-DDT	1.00 U	99 %	4.00 U	4.00 U
Methoxychlor	5.00 U	5.00 U	20.00 U	20.00 U
Endrin ketone	1.00 U	1.00 U	4.00 U	4.00 U
Chlordane	5.00 U	5.00 U	20.00 U	20.00 U
Toxaphene	10.00 U	10.00 U	40.00 U	40.00 U
Aroclor-1016	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1221	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1232	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1242	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1248	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1254	10.00 U	10.00 U	40.00 U	40.00 U
Aroclor-1260	10.00 U	10.00 U	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-57

	Customer ID:	BH07870510	BH07870SCT	BH07870BR	BH07871013
Sample	RFW#:	-06	-08	-02	-09
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Di-n-butylchlorendate:

Analyte:				
Alpha-BHC	2.00 U	2.00 U	2.00 U	2.00 U
Beta-BHC	2.00 U	2.00 U	2.00 U	2.00 U
Delta-BHC	2.00 U	2.00 U	2.00 U	2.00 U
Gamma-BHC (Lindane)	2.00 U	2.00 U	2.00 U	2.00 U
Heptachlor	2.00 U	2.00 U	2.00 U	2.00 U
Aldrin	2.00 U	2.00 U	2.00 U	2.00 U
Heptachlor Epoxide	2.00 U	2.00 U	2.00 U	2.00 U
Endosulfan I	2.00 U	2.00 U	2.00 U	2.00 U
Dieldrin	4.00 U	4.00 U	4.00 U	4.00 U
4,4'-DDE	4.00 U	4.00 U	4.00 U	4.00 U
Endrin	4.00 U	4.00 U	4.00 U	4.00 U
Endosulfan II	4.00 U	4.00 U	4.00 U	4.00 U
4,4'-DDD	4.00 U	4.00 U	4.00 U	4.00 U
Endosulfan Sulfate	4.00 U	4.00 U	4.00 U	4.00 U
4,4'-DDT	4.00 U	4.00 U	4.00 U	4.00 U
Methoxychlor	20.00 U	20.00 U	20.00 U	20.00 U
Endrin Ketone	4.00 U	4.00 U	4.00 U	4.00 U
Chlordane	20.00 U	20.00 U	20.00 U	20.00 U
Toxaphene	40.00 U	40.00 U	40.00 U	40.00 U
Aroclor-1016	20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1221	20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1232	20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1242	20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1248	20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1254	40.00 U	40.00 U	40.00 U	40.00 U
Aroclor-1260	40.00 U	40.00 U	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-57

	Customer ID:	BH07871013 (DUP.)	BH07871013 (MS)	BH07871OMS
Sample	RFW#:	-09 (DUP.)	-09 (MS)	-04
Information:	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Di-n-butylchlorendate:

Analyte:

Alpha-BHC	2.00 U	2.00 U	2.00 U
Beta-BHC	2.00 U	2.00 U	2.00 U
Delta-BHC	2.00 U	2.00 U	2.00 U
Gamma-BHC (Lindane)	2.00 U	94 %	2.00 U
Heptachlor	2.00 U	90 %	2.00 U
Aldrin	2.00 U	85 %	2.00 U
Heptachlor Epoxide	2.00 U	2.00 U	2.00 U
Endosulfan I	2.00 U	2.00 U	2.00 U
Dieldrin	4.00 U	89 %	4.00 U
4,4'-DDE	4.00 U	4.00 U	4.00 U
Endrin	4.00 U	95 %	4.00 U
Endosulfan II	4.00 U	4.00 U	4.00 U
4,4'-DDD	4.00 U	4.00 U	4.00 U
Endosulfan Sulfate	4.00 U	4.00 U	4.00 U
4,4'-DDT	4.00 U	110 %	4.00 U
Methoxychlor	20.00 U	20.00 U	20.00 U
Endrin Ketone	4.00 U	4.00 U	4.00 U
Chlordane	20.00 U	20.00 U	20.00 U
Toxaphene	40.00 U	40.00 U	40.00 U
Aroclor-1016	20.00 U	20.00 U	20.00 U
Aroclor-1221	20.00 U	20.00 U	20.00 U
Aroclor-1232	20.00 U	20.00 U	20.00 U
Aroclor-1242	20.00 U	20.00 U	20.00 U
Aroclor-1248	20.00 U	20.00 U	20.00 U
Aroclor-1254	40.00 U	40.00 U	40.00 U
Aroclor-1260	40.00 U	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-59

	Customer ID:	-	-	BH128702CT	BH128705BK
Sample	RFW#:	METH BLANK 6/2	METH SPIKE 6/2	-02	-04
Information:	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	10.0	10.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg

Surrogate Recovery (%):

Di-n-butylchlorendate:

Analyte:				
Alpha-BHC	0.50 U	0.50 U	2.00 U	2.00 U
Beta-BHC	0.50 U	0.50 U	2.00 U	2.00 U
Delta-BHC	0.50 U	0.50 U	2.00 U	2.00 U
Gamma-BHC (Lindane)	0.50 U	93 %	2.00 U	2.00 U
Heptachlor	0.50 U	78 %	2.00 U	2.00 U
Aldrin	0.50 U	85 %	2.00 U	2.00 U
Heptachlor Epoxide	0.50 U	0.50 U	2.00 U	2.00 U
Endosulfan I	0.50 U	0.50 U	2.00 U	2.00 U
Dieldrin	1.00 U	81 %	4.00 U	4.00 U
4,4'-DDE	1.00 U	1.00 U	4.00 U	4.00 U
Endrin	1.00 U	87 %	4.00 U	4.00 U
Endosulfan II	1.00 U	1.00 U	4.00 U	4.00 U
4,4'-DDD	1.00 U	1.00 U	4.00 U	4.00 U
Endosulfan Sulfate	1.00 U	1.00 U	4.00 U	4.00 U
4,4'-DDT	1.00 U	94 %	4.00 U	4.00 U
Methoxychlor	5.00 U	5.00 U	20.00 U	20.00 U
Endrin Ketone	1.00 U	1.00 U	4.00 U	4.00 U
Chlordane	5.00 U	5.00 U	20.00 U	20.00 U
Toxaphene	10.00 U	10.00 U	40.00 U	40.00 U
Aroclor-1016	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1221	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1232	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1242	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1248	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1254	10.00 U	10.00 U	70	40.00 U
Aroclor-1260	10.00 U	10.00 U	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-59

	Customer ID:	BH128705BR (DUP)	BH128705BR (MS)
Sample	RFW#:	-04 (DUP)	-04 (MS)
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Surrogate Recovery (%):

Di-n-butylchlorendate:

Analyte:		
Alpha-BHC	2.00 U	2.00 U
Beta-BHC	2.00 U	2.00 U
Delta-BHC	2.00 U	2.00 U
Gamma-BHC (Lindane)	2.00 U	88 %
Heptachlor	2.00 U	87 %
Aldrin	2.00 U	81 %
Heptachlor Epoxide	2.00 U	2.00 U
Endosulfan I	2.00 U	2.00 U
Dieldrin	4.00 U	84 %
4,4'-DDE	4.00 U	4.00 U
Endrin	4.00 U	90 %
Endosulfan II	4.00 U	4.00 U
4,4'-DDD	4.00 U	4.00 U
Endosulfan Sulfate	4.00 U	4.00 U
4,4'-DDT	4.00 U	106 %
Methoxychlor	20.00 U	20.00 U
Endrin Ketone	4.00 U	4.00 U
Chlordane	20.00 U	20.00 U
Toxaphene	40.00 U	40.00 U
Aroclor-1016	20.00 U	20.00 U
Aroclor-1221	20.00 U	20.00 U
Aroclor-1232	20.00 U	20.00 U
Aroclor-1242	20.00 U	20.00 U
Aroclor-1248	20.00 U	20.00 U
Aroclor-1254	40.00 U	40.00 U
Aroclor-1260	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON
MANAGERS DESIGNERS/CONSULTANTS
7720 LORRAINE AVENUE
SUITE #102
STOCKTON, CA 95210
PHONE: (209) 957-3405

Samples in this batch:

BH0987

WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-02

ANALYSES OF ORGANICS

CASE NARRATIVE

1. Qualifiers

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

DUP - Indicates a duplicate.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:

IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	May 28, 1987
Lab Receipt (VOA) -	June 1, 1987
VOA Analysis -	June 8, 1987
BNA Analysis -	June 5, 1987
Pesticides/PCBs Analysis -	June 4,5, 1987

5. Methods

The water sample was analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

The semivolatile surrogates exhibit high recovery for the acid components due to the use of continuous extractors.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-02

	Customer ID:	BH098700810	BH098706WT	BH098714BR
Sample	RFW#:	-06	-04	-01
Information:	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Di-n-butylchlorendate:			

Analyte:

Alpha-BHC	2.00 U	2.00 U	2.00 U
Beta-BHC	2.00 U	2.00 U	2.00 U
Delta-BHC	2.00 U	2.00 U	2.00 U
Gamma-BHC (Lindane)	2.00 U	2.00 U	2.00 U
Heptachlor	2.00 U	2.00 U	2.00 U
Aldrin	2.00 U	2.00 U	2.00 U
Heptachlor Epoxide	2.00 U	2.00 U	2.00 U
Endosulfan I	2.00 U	2.00 U	2.00 U
Dieldrin	4.00 U	4.00 U	4.00 U
4,4'-DDE	4.00 U	4.00 U	4.00 U
Endrin	4.00 U	4.00 U	4.00 U
Endosulfan II	4.00 U	4.00 U	4.00 U
4,4 -DDD	4.00 U	4.00 U	4.00 U
Endosulfan Sulfate	4.00 U	4.00 U	4.00 U
4,4'-DDT	4.00 U	4.00 U	4.00 U
Methoxychlor	20.00 U	20.00 U	20.00 U
Endrin Ketone	4.00 U	4.00 U	4.00 U
Chlordane	20.00 U	20.00 U	20.00 U
Toxaphene	40.00 U	40.00 U	40.00 U
Aroclor-1016	20.00 U	20.00 U	20.00 U
Aroclor-1221	20.00 U	20.00 U	20.00 U
Aroclor-1232	20.00 U	20.00 U	20.00 U
Aroclor-1242	20.00 U	20.00 U	20.00 U
Aroclor-1248	20.00 U	20.00 U	20.00 U
Aroclor-1254	40.00 U	44	40.00 U
Aroclor-1260	40.00 U	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

7720 LORRAINE AVENUE
SUITE 105
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PHONE: 209-957-3405

Samples in this batch:

BH1387

WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-04

ANALYSES OF ORGANICS

CASE NARRATIVE

1. **Qualifiers**

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

2. Internal Standards

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:
IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	May 29, 1987
Lab Receipt (VOA) -	June 2, 1987
VOA Analysis -	June 8, 1987
BNA Analysis -	June 5, 1987
Pesticides/PCBs Analysis -	June 4,5, 1987

5. Methods

The water sample was analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

WESTON

The semivolatile surrogates exhibit high recovery for the acid components due to the use of continous extractors.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-04

	Customer ID:	BH13870010	BH13871480
Sample Information:	RFW#:	-02	-04
	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Surrogate Recovery (%):

Di-n-butylchlorendate:

Analyte:		
Alpha-BHC	2.00 U	2.00 U
Beta-BHC	2.00 U	2.00 U
Delta-BHC	2.00 U	2.00 U
Gamma-BHC (Lindane)	2.00 U	2.00 U
Heptachlor	2.00 U	2.00 U
Aldrin	2.00 U	2.00 U
Heptachlor Epoxide	2.00 U	2.00 U
Endosulfan I	2.00 U	2.00 U
Dieldrin	4.00 U	4.00 U
4,4'-DDE	4.00 U	4.00 U
Endrin	4.00 U	4.00 U
Endosulfan II	4.00 U	4.00 U
4,4'-DDD	4.00 U	4.00 U
Endosulfan Sulfate	4.00 U	4.00 U
4,4'-DDT	4.00 U	4.00 U
Methoxychlor	20.00 U	20.00 U
Endrin Ketone	4.00 U	4.00 U
Chlordane	20.00 U	20.00 U
Toxaphene	40.00 U	40.00 U
Aroclor-1016	20.00 U	20.00 U
Aroclor-1221	20.00 U	20.00 U
Aroclor-1232	20.00 U	20.00 U
Aroclor-1242	20.00 U	20.00 U
Aroclor-1248	20.00 U	20.00 U
Aroclor-1254	40.00 U	40.00 U
Aroclor-1260	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON
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SAMPLES IN THESE BATCHES:

BH1087
BH1187
BH1687

WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-05
87-06-10

ANALYSES OF ORGANICS

CASE NARRATIVE

1. **Qualifiers**

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

DUP - Indicates duplicate.

2. **Internal Standards**

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:
IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	June 1, 1987 - 87-06-05
	June 2, 1987 - 87-06-10
Lab Receipt (VOA) -	June 4, 1987 - 87-06-05
	June 4, 1987 - 87-06-10
VOA Analysis -	June 9, 1987
BNA Analysis -	June 6-7, 1987
Pesticides/PCBs Analysis -	June 6-9, 1987

5. Recoveries

All of the volatile surrogates and matrix spikes met the recovery criteria.

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The acid surrogates phenol-d5 and 2-Fluorophenol recoveries were outside the criteria for the blank and method spike and samples BH108723BR spike, BH10871020, BH108720CT, BH118711CT, BH168706BR, BH168702CT, BH16870206 and BH11870010 with the exception in BH11870010 which only 2-Fluorophenol did not meet the criteria. The recoveries of 2,4-Dinotrotoluene, 1,4-Dichlorobenzene, phenol, 2-chlorophenol and 4-Chloro-3-Methylphenol did not meet the criteria in both method spike and matrix spike. In addition to that, pentachlorophenol in the method spike did not meet the recovery criteria either.

6. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: _____
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-05 ROCKY FLATS

	Customer ID:	-	-	BH08723BR	BH08723BR MS
Sample	RFW#:	METH BLANK 6/4	METH SPIKE 6/4	-02	-02 MS
Information:	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	10.0	10.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg
Surrogate Recovery (%):					
	Di-n-butylchlorendate:	78%	78%	77%	72%
Analyte:					
Alpha-BHC		0.50 U	0.50 U	2.00 U	2.00 U
Beta-BHC		0.50 U	0.50 U	2.00 U	2.00 U
Delta-BHC		0.50 U	0.50 U	2.00 U	2.00 U
Gamma-BHC (Lindane)		0.50 U	92 %	2.00 U	96 %
Heptachlor		0.50 U	87 %	2.00 U	83 %
Aldrin		0.50 U	87 %	2.00 U	80 %
Heptachlor Epoxide		0.50 U	0.50 U	2.00 U	2.00 U
Endosulfan I		0.50 U	0.50 U	2.00 U	2.00 U
Dieldrin		1.00 U	89 %	4.00 U	86 %
4,4'-DDE		1.00 U	1.00 U	4.00 U	4.00 U
Endrin		1.00 U	88 %	4.00 U	87 %
Endosulfan II		1.00 U	1.00 U	4.00 U	4.00 U
4,4'-DDD		1.00 U	1.00 U	4.00 U	4.00 U
Endosulfan Sulfate		1.00 U	1.00 U	4.00 U	4.00 U
4,4'-DDT		1.00 U	89 %	4.00 U	98 %
Methoxychlor		5.00 U	5.00 U	20.00 U	20.00 U
Endrin Ketone		1.00 U	1.00 U	4.00 U	4.00 U
Chlordane		5.00 U	5.00 U	20.00 U	20.00 U
Toxaphene		10.00 U	10.00 U	40.00 U	40.00 U
Aroclor-1016		5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1221		5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1232		5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1242		5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1248		5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1254		10.00 U	10.00 U	40.00 U	40.00 U
Aroclor-1260		10.00 U	10.00 U	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-05 ROCKY FLATS

	Customer ID:	BH10870010	BH10871020	BH10872010
Sample	RFW#:	-06	-04	-06
Information:	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg

Surrogate Recovery (%):

Di-n-butylchlorendate:	77%	75%	76%

Analyte:

Alpha-BHC	2.00 U	2.00 U	2.00 U
Beta-BHC	2.00 U	2.00 U	2.00 U
Delta-BHC	2.00 U	2.00 U	2.00 U
Gamma-BHC (Lindane)	2.00 U	2.00 U	2.00 U
Heptachlor	2.00 U	2.00 U	2.00 U
Aldrin	2.00 U	2.00 U	2.00 U
Heptachlor Epoxide	2.00 U	2.00 U	2.00 U
Endosulfan I	2.00 U	2.00 U	2.00 U
Dieldrin	4.00 U	4.00 U	4.00 U
4,4'-DDE	4.00 U	4.00 U	4.00 U
Endrin	4.00 U	4.00 U	4.00 U
Endosulfan II	4.00 U	4.00 U	4.00 U
4,4'-DDD	4.00 U	4.00 U	4.00 U
Endosulfan Sulfate	4.00 U	4.00 U	4.00 U
4,4'-DDT	4.00 U	4.00 U	4.00 U
Methoxychlor	20.00 U	20.00 U	20.00 U
Endrin Ketone	4.00 U	4.00 U	4.00 U
Chlordane	20.00 U	20.00 U	20.00 U
Toxaphene	40.00 U	40.00 U	40.00 U
Aroclor-1016	20.00 U	20.00 U	20.00 U
Aroclor-1221	20.00 U	20.00 U	20.00 U
Aroclor-1232	20.00 U	20.00 U	20.00 U
Aroclor-1242	20.00 U	20.00 U	20.00 U
Aroclor-1248	20.00 U	20.00 U	20.00 U
Aroclor-1254	40.00 U	40.00 U	40.00 U
Aroclor-1260	40.00 U	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-10 ROCKY FLATS

	Customer ID:	BH11870010	BH118711CT	BH118714WT	BH1687020c
Sample	RFW#:	-06	-02	-04	-12
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate Recovery (%):					
	Di-n-butylchlorendate:	72%	76%	75%	76%
Analyte:					
Alpha-BHC		2.00 U	2.00 U	2.00 U	2.00 U
Beta-BHC		2.00 U	2.00 U	2.00 U	2.00 U
Delta-BHC		2.00 U	2.00 U	2.00 U	2.00 U
Gamma-BHC (Lindane)		2.00 U	2.00 U	2.00 U	2.00 U
Heptachlor		2.00 U	2.00 U	2.00 U	2.00 U
Aldrin		2.00 U	2.00 U	2.00 U	2.00 U
Heptachlor Epoxide		2.00 U	2.00 U	2.00 U	2.00 U
Endosulfan I		2.00 U	2.00 U	2.00 U	2.00 U
Dieldrin		4.00 U	4.00 U	4.00 U	4.00 U
4,4 -DDE		4.00 U	4.00 U	4.00 U	4.00 U
Endrin		4.00 U	4.00 U	4.00 U	4.00 U
Endosulfan II		4.00 U	4.00 U	4.00 U	4.00 U
4,4 -DDD		4.00 U	4.00 U	4.00 U	4.00 U
Endosulfan Sulfate		4.00 U	4.00 U	4.00 U	4.00 U
4,4'-DDT		4.00 U	4.00 U	4.00 U	4.00 U
Methoxychlor		20.00 U	20.00 U	20.00 U	20.00 U
Endrin Ketone		4.00 U	4.00 U	4.00 U	4.00 U
Chlordane		20.00 U	20.00 U	20.00 U	20.00 U
Toxaphene		40.00 U	40.00 U	40.00 U	40.00 U
Aroclor-1016		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1221		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1232		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1242		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1248		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1254		43	40.00 U	40.00 U	40.00 U
Aroclor-1260		40.00 U	40.00 U	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-10 ROCKY FLATS

	Customer ID:	BH168702CT	BH168706BF
Sample	RFW#:	-10	-08
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Surrogate Recovery (%):

Di-n-butylchlorendate:	74%	75%

Analyte:

Alpha-BHC	2.00 U	2.00 U
Beta-BHC	2.00 U	2.00 U
Delta-BHC	2.00 U	2.00 U
Gamma-BHC (Lindane)	2.00 U	2.00 U
Heptachlor	2.00 U	2.00 U
Aldrin	2.00 U	2.00 U
Heptachlor Epoxide	2.00 U	2.00 U
Endosulfan I	2.00 U	2.00 U
Dieldrin	4.00 U	4.00 U
4,4'-DDE	4.00 U	4.00 U
Endrin	4.00 U	4.00 U
Endosulfan II	4.00 U	4.00 U
4,4'-DDD	4.00 U	4.00 U
Endosulfan Sulfate	4.00 U	4.00 U
4,4 -DDT	4.00 U	4.00 U
Methoxychlor	20.00 U	20.00 U
Endrin Ketone	4.00 U	4.00 U
Chlordane	20.00 U	20.00 U
Toxaphene	40.00 U	40.00 U
Aroclor-1016	20.00 U	20.00 U
Aroclor-1221	20.00 U	20.00 U
Aroclor-1232	20.00 U	20.00 U
Aroclor-1242	20.00 U	20.00 U
Aroclor-1248	20.00 U	20.00 U
Aroclor-1254	40.00 U	40.00 U
Aroclor-1260	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON
MANAGERS DESIGNERS/CONSULTANTS
7720 LORRAINE AVENUE
SUITE 105
STOCKTON, CA 95210
PHONE: 209-957-3405

Samples in these batches:

BH0887
BH1587
BH1787
BH0187

WESTON ANALYTICS
Laboratory Batch Numbers: 87-06-14
87-06-22

ANALYSES OF ORGANICS

CASE NARRATIVE

1. **Qualifiers**

The following qualifiers are used in the data summaries:

U - Indicates that the compound was analyzed for, but not detected. The minimum detection limit for the sample, not the method detection limit, is reported with the U (e.g., 10U).

J - Indicates an estimated value. This flag is used either for compounds on the target list which are found below the detection limit, or for compounds which are not on the target list. For the latter case, it is assumed that the compound displays the same response as the nearest eluting internal standard.

B - Indicates that the compound is also found in the blank.

BS - Indicates a method spike.

MS - Indicates a matrix spike.

MSD - Indicates a duplicate matrix spike.

DF - Indicates dilution factor.

DUP - Indicates duplicate.

2. **Internal Standards**

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:
IS1 - Bromochloromethane
IS2 - 1,4-Difluorobenzene
IS3 - Chlorobenzene-d5

SENT BY:Xerox Telecopier 7020 ; 6-18-87 ; 9:20AM ; 2099574061→ 13039801622;# 3

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Semivolatiles:	IS1 - 1,4-Dichlorobenzene-d4
	IS2 - Naphthalene-d8
	IS3 - Acenaphthene-d10
	IS4 - Phenanthrene-d10
	IS5 - Chrysene-d12
	IS6 - Perylene-d12

3. Surrogate Compounds

The following abbreviations are used on the chromatograms. The chromatograms are not attached in this report but are kept on file at Weston Analytics.

Volatiles:	SS1 - 1,2-Dichloroethane-d4
	SS2 - Toluene-d8
	SS3 - Bromofluorobenzene
Semivolatiles:	SS1 - Phenol-d5
	SS2 - 2-Fluorophenol
	SS3 - Nitrobenzene-d5
	SS4 - 2-Fluorobiphenyl
	SS5 - 2,4,6-Tribromophenol
	SS6 - Terphenyl-d14

4. Chronology

Sampling -	June 3, 1987 - 87-06-14
	June 4, 1987 - 87-06-22
Lab Receipt (VOA) -	June 5, 1987 - 87-06-14
	June 8, 1987 - 87-06-22
VOA Analysis -	June 12, 1987
BNA Analysis -	June 12, 1987
Pesticides/PCBs Analysis -	June 6,7, 1987

5. Methods

The samples were analyzed in accordance with the methods described in the Statement of Work for Organic Analysis, USEPA Contract Laboratory Program, 7/85 revision.

6. Recoveries

All of the volatile surrogates met the recovery criteria. The volatiles matrix spike recoveries slightly exceeded the recommended limits. It is believed that the sample was spiked with a somewhat larger amount than normal.

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The B/N/A surrogates, method and matrix spikes exhibited abnormally high recoveries. The spiking mixtures are being checked to determine if they have become more concentrated due to solvent evaporation.

Pesticide method and matrix spikes were within acceptance criteria.

7. Comments

There were some extraneous peaks in the BNA chromatograms and tentatively identified compounds are reported.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

SENT BY:Xerox Telecopier 7020 ; 6-18-87 ; 9:21AM ; 2099574061→ 13039801622;# 5

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	-	-	BH0887000[illegible]	BH0887070[illegible]
Sample Information:	RFW#:	METH BLANK 6/5	METH SPIKE 6/5	-04	-08
	Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
	D.F.:	10.0	10.0	1.0	1.0
	Units:	ug/l	ug/l	ug/kg	ug/kg
Surrogate Recovery (%):					
	Di-n-butylchlorendate:	75%	76%	77%	76%
Analyte:					
Alpha-BHC		0.50 U	0.50 U	2.00 U	2.00 U
Beta-BHC		0.50 U	0.50 U	2.00 U	2.00 U
Delta-BHC		0.50 U	0.50 U	2.00 U	2.00 U
Gamma-BHC (Lindane)		0.50 U	87 %	2.00 U	2.00 U
Heptachlor		0.50 U	85 %	2.00 U	2.00 U
Aldrin		0.50 U	84 %	2.00 U	2.00 U
Heptachlor Epoxide		0.50 U	0.50 U	2.00 U	2.00 U
Endosulfan I		0.50 U	0.50 U	2.00 U	2.00 U
Dieldrin		1.00 U	86 %	4.00 U	4.00 U
4,4'-DDE		1.00 U	1.00 U	4.00 U	4.00 U
Endrin		1.00 U	88 %	4.00 U	4.00 U
Endosulfan II		1.00 U	1.00 U	4.00 U	4.00 U
4,4'-DDD		1.00 U	1.00 U	4.00 U	4.00 U
Endosulfan Sulfate		1.00 U	1.00 U	4.00 U	4.00 U
4,4'-DDT		1.00 U	90 %	4.00 U	4.00 U
Methoxychlor		5.00 U	5.00 U	20.00 U	20.00 U
Endrin Ketone		1.00 U	1.00 U	4.00 U	4.00 U
Chlordane		5.00 U	5.00 U	20.00 U	20.00 U
Toxaphene		10.00 U	10.00 U	40.00 U	40.00 U
Aroclor-1016		5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1221		5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1232		5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1242		5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1248		5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1254		10.00 U	10.00 U	40.00 U	40.00 U
Aroclor-1260		10.00 U	10.00 U	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	BH0887108R	BH15870005	BH15870510	BH15872608F
Sample	RFW#:	-16	-14	-18	-12
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate Recovery (%):					
Di-n-butylchlorendate:		74%	101	76%	74%

Analyte:

Alpha-BHC	2.00 U	2.00 U	2.00 U	2.00 U
Beta-BHC	2.00 U	2.00 U	2.00 U	2.00 U
Delta-BHC	2.00 U	2.00 U	2.00 U	2.00 U
Gamma-BHC (Lindane)	2.00 U	2.00 U	2.00 U	2.00 U
Heptachlor	2.00 U	2.00 U	2.00 U	2.00 U
Aldrin	2.00 U	2.00 U	2.00 U	2.00 U
Heptachlor Epoxide	2.00 U	2.00 U	2.00 U	2.00 U
Endosulfan I	2.00 U	2.00 U	2.00 U	2.00 U
Dieldrin	4.00 U	4.00 U	4.00 U	4.00 U
4,4'-DDE	4.00 U	4.00 U	4.00 U	4.00 U
Endrin	4.00 U	4.00 U	4.00 U	4.00 U
Endosulfan II	4.00 U	4.00 U	4.00 U	4.00 U
4,4'-DDD	4.00 U	4.00 U	4.00 U	4.00 U
Endosulfan Sulfate	4.00 U	4.00 U	4.00 U	4.00 U
4,4'-DDT	4.00 U	4.00 U	4.00 U	4.00 U
Methoxychlor	20.00 U	20.00 U	20.00 U	20.00 U
Endrin ketone	4.00 U	4.00 U	4.00 U	4.00 U
Chlordane	20.00 U	20.00 U	20.00 U	20.00 U
Toxaphene	40.00 U	40.00 U	40.00 U	40.00 U
Aroclor-1016	20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1221	20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1232	20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1242	20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1248	20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1254	40.00 U	40.00 U	40.00 U	40.00 U
Aroclor-1260	40.00 U	40.00 U	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	BH17870005	BH178705CT	BH178705CT MS	BH178708BF
Sample	RFW#:	-10	-06	-06 MS	-02
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate Recovery (%):					
	Di-n-butylchlorendate:	80%	79%	78%	77%
Analyte:					
Alpha-BHC		2.00 U	2.00 U	2.00 U	2.00 U
Beta-BHC		2.00 U	2.00 U	2.00 U	2.00 U
Delta-BHC		2.00 U	2.00 U	2.00 U	2.00 U
Gamma-BHC (Lindane)		2.00 U	2.00 U	93 %	2.00 U
Heptachlor		2.00 U	2.00 U	89 %	2.00 U
Aldrin		2.00 U	2.00 U	88 %	2.00 U
Heptachlor Epoxide		2.00 U	2.00 U	2.00 U	2.00 U
Endosulfan I		2.00 U	2.00 U	2.00 U	2.00 U
Dieldrin		4.00 U	4.00 U	90 %	4.00 U
4,4'-DDE		4.00 U	4.00 U	4.00 U	4.00 U
Endrin		4.00 U	4.00 U	92 %	4.00 U
Endosulfan II		4.00 U	4.00 U	4.00 U	4.00 U
4,4'-DDD		4.00 U	4.00 U	4.00 U	4.00 U
Endosulfan Sulfate		4.00 U	4.00 U	4.00 U	4.00 U
4,4'-DDT		4.00 U	4.00 U	103 %	4.00 U
Methoxychlor		20.00 U	20.00 U	20.00 U	20.00 U
Endrin Ketone		4.00 U	4.00 U	4.00 U	4.00 U
Chlordane		20.00 U	20.00 U	20.00 U	20.00 U
Toxaphene		40.00 U	40.00 U	40.00 U	40.00 U
Aroclor-1016		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1221		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1232		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1242		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1248		20.00 U	20.00 U	20.00 U	20.00 U
Aroclor-1254		40.00 U	40.00 U	40.00 U	40.00 U
Aroclor-1260		40.00 U	40.00 U	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-22 ROCKY FLATS

Customer ID:	-	-	BH018701WT	BH018704WS
Sample RFW#:	METH BLANK 6/10	METH SPIKE 6/10	-02	-04
Information: Matrix:	REAGENTS	REAGENTS	SOIL	SOIL
D.F.:	10.0	10.0	1.0	1.0
Units:	ug/l	ug/l	ug/kg	ug/kg
Surrogate Recovery (%):				
Di-n-butylchlorendate:	83%	77%	78%	80%
Analyte:				
Alpha-BHC	0.50 U	0.50 U	2.00 U	2.00 U
Beta-BHC	0.50 U	0.50 U	2.00 U	2.00 U
Delta-BHC	0.50 U	0.50 U	2.00 U	2.00 U
Gamma-BHC (Lindane)	0.50 U	92 %	2.00 U	2.00 U
Heptachlor	0.50 U	89 %	2.00 U	2.00 U
Aldrin	0.50 U	86 %	2.00 U	2.00 U
Heptachlor Epoxide	0.50 U	0.50 U	2.00 U	2.00 U
Endosulfan I	0.50 U	0.50 U	2.00 U	2.00 U
Dieldrin	1.00 U	91 %	4.00 U	4.00 U
4,4'-DDE	1.00 U	1.00 U	4.00 U	4.00 U
Endrin	1.00 U	92 %	4.00 U	4.00 U
Endosulfan II	1.00 U	1.00 U	4.00 U	4.00 U
4,4'-DDD	1.00 U	1.00 U	4.00 U	4.00 U
Endosulfan Sulfate	1.00 U	1.00 U	4.00 U	4.00 U
4,4'-DDT	1.00 U	97 %	4.00 U	4.00 U
Methoxychlor	5.00 U	5.00 U	20.00 U	20.00 U
Endrin Ketone	1.00 U	1.00 U	4.00 U	4.00 U
Chlordane	5.00 U	5.00 U	20.00 U	20.00 U
Toxaphene	10.00 U	10.00 U	40.00 U	40.00 U
Aroclor-1016	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1221	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1232	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1242	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1248	5.00 U	5.00 U	20.00 U	20.00 U
Aroclor-1254	10.00 U	10.00 U	40.00 U	40.00 U
Aroclor-1260	10.00 U	10.00 U	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-22 ROCKY FLATS

	Customer ID:	BH018704WS MS	BH018710WS
Sample	RFW#:	-04 MS	-06
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	ug/kg	ug/kg

Surrogate Recovery (%):

Di-n-butylchlorendate:	72%	78%

Analyte:

Alpha-BHC	2.00 U	2.00 U
Beta-BHC	2.00 U	2.00 U
Delta-BHC	2.00 U	2.00 U
Gamma-BHC (Lindane)	89 %	2.00 U
Heptachlor	83 %	2.00 U
Aldrin	80 %	2.00 U
Heptachlor Epoxide	2.00 U	2.00 U
Endosulfan I	2.00 U	2.00 U
Dieldrin	88 %	4.00 U
4,4'-DDE	4.00 U	4.00 U
Endrin	90 %	4.00 U
Endosulfan II	4.00 U	4.00 U
4,4'-DDD	4.00 U	4.00 U
Endosulfan Sulfate	4.00 U	4.00 U
4,4'-DDT	103 %	4.00 U
Methoxychlor	20.00 U	20.00 U
Endrin Ketone	4.00 U	4.00 U
Chlordane	20.00 U	20.00 U
Toxaphene	40.00 U	40.00 U
Aroclor-1016	20.00 U	20.00 U
Aroclor-1221	20.00 U	20.00 U
Aroclor-1232	20.00 U	20.00 U
Aroclor-1242	20.00 U	20.00 U
Aroclor-1248	20.00 U	20.00 U
Aroclor-1254	40.00 U	40.00 U
Aroclor-1260	40.00 U	40.00 U

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

APPENDIX E-4

METAL RESULTS

7720 LORRAINE AVENUE
SUITE #102
STOCKTON, CA 95210
PHONE (209) 957-3405

Samples in this batch:

BH0387
BH0687
BH0587

WESTON ANALYTICS
Laboratory Number: 87-05-51

ANALYSES OF INORGANICS

CASE NARRATIVE

1. Qualifier

The following qualifiers are used in the data summaries:

U - Indicates the parameter was analyzed for but not detected. The minimum detection limit for the sample, not the method detection limitl, is reported preceding the U.

D - Indicates duplicate analysis of the same sample.

R - The spike falls outside the control limits.

NR - Not requested.

NA - Not applicable.

NS - Not spiked.

B - The parameter was found in the laboratory blank.

MS - Matrix spike.

BS - Method spike.

2. Chronology

Sampling -	May 19,20, 1987
Lab Receipt -	May 23, 1987
Metal digestion -	May 27, 1987
Metals analysis -	May 28,29, 1987
Percent solids -	May 29, 1987

3. Methods

Metals were determined in accordance with 7/84 and 7/85 revisions of the CLP protocol.

WESTON

4. The matrix spike for metals met the recommended recovery criteria for all metals except antimony, arsenic, cadmium, lead, manganese and silver.

   The method spike met the recovery criteria except for arsenic, lead, selenium, silver and thallium.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

WESTON ANALYTICS
METALS DATA SUMMARY

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Customer ID:	-	-	BH038709CT	BH038709CT Duplicate
	RFW#:	Blank	B.S.	-05	-05 Dup.
	Matrix:	Water	Water	Soil	Soil
	Units:	ug/L	% Recovery	mg/kg	mg/kg
Analyte:					
Aluminum (Al)		40 U	93 %	17,200	13,400
Antimony (Sb)		60 U	83 %	11 U	9.2 U
Arsenic (As)		2.0 U	53 %	10	-
Barium (Ba)		9.4 U	92 %	99	720
Beryllium (Be)		0.4 U	97 %	0.7	0.8
Cadmium (Cd)		0.5 U	92 %	4.0	3.8
Calcium (Ca)		62 U	94 %	66,700	31,300
Chromium (Cr)		2 U	97 %	14	12
Chromium VI (Cr (VI))		-	-	2.1 U	-
Cobalt (Co)		4.4 U	92 %	11	16
Copper (Cu)		4 U	91 %	8.8	12
Iron (Fe)		10 U	95 %	13,400	15,300
Lead (Pb)		1 U	78 %	12	-
Lithium (Li)		51 U	Not added	47 U	39 U
Magnesium (Mg)		46 U	95 %	3,600	3,220
Manganese (Mn)		2 U	94 %	116	297
Mercury (Hg)		0.02 U	119 %	0.23	0.23
Nickel (Ni)		4 U	92 %	21	27
Potassium (K)		100 U	90 %	1,000	917
Selenium (Se)		1.0 U	60 %	0.9 U	-
Silver (Ag)		2 U	19 %	1.8 U	1.5 U
Sodium (Na)		200 U	96 %	547	598
Strontium (Sr)		11 U	93 %	129	130
Thallium (Tl)		1.0 U	62 %	0.9 U	-
Vanadium (V)		4 U	98 %	39	34
Zinc (Zn)		1.4 U	91 %	50	62

WESTON ANALYTICS
METALS DATA SUMMARY

RFW Batch Number: 87-05-51 Client: Rocky Flats

	Customer ID:	BH038712BR	BH038712BR MS	BH038702WT	BH03870009
Sample Information	RFW#:	-06	-06 MS	-07	-08
	Matrix:	Soil	Soil	Soil	Soil
	Units:	mg/kg	% Recovery	mg/kg	mg/kg
Analyte:					
Aluminum (Al)		10,800	Not added	21,200	17,200
Antimony (Sb)		11 U	0 %	11 U	8.9 U
Arsenic (As)		12	-	14	14
Barium (Ba)		62	83 %	147	140
Beryllium (Be)		0.6	76 %	0.9	0.9
Cadmium (Cd)		2.8	68 %	4.5	4.7
Calcium (Ca)		16,300	Not added	13,600	8,580
Chromium (Cr)		11	76 %	22	19
Chromium VI (Cr (VI))		2.0 U	-	2.1 U	2.1 U
Cobalt (Co)		5.0	121 %	8.9	8.7
Copper (Cu)		13	102 %	12	10
Iron (Fe)		5,780	Not added	22,800	18,300
Lead (Pb)		14	-	9.4	11
Lithium (Li)		47 U	Not added	46 U	38 U
Magnesium (Mg)		3,000	Not added	6,330	4,220
Manganese (Mn)		43	173 %	496	283
Mercury (Hg)		0.19	98 %	0.12	0.12
Nickel (Ni)		11	85 %	18	15
Potassium (K)		1,140	Not added	3,040	1,600
Selenium (Se)		0.9 U	-	1.0 U	0.9 U
Silver (Ag)		1.8 U	30 %	1.8 U	1.5 U
Sodium (Na)		519	Not added	941	788
Strontium (Sr)		90	77 %	66	63
Thallium (Tl)		0.9 U	-	1.0 U	0.9 U
Vanadium (V)		22	94 %	44	40
Zinc (Zn)		31	78 %	53	46

WESTON ANALYTICS
METALS DATA SUMMARY

RFW Batch Number: 87-05-51 Client: Rocky Flats

	Customer ID:	BH06870010	BH06870010 Duplicate	BH06871020	BH068730BR
Sample Information	RFW#:	-09	-09 Dup.	-10	-11
	Matrix:	Soil	Soil	Soil	Soil
	Units:	mg/kg	mg/kg	mg/kg	mg/kg
Analyte:					
Aluminum (Al)		16,600	-	15,200	6,720
Antimony (Sb)		10 U	-	9.4 U	9.8 U
Arsenic (As)		11	12	8.6	5.8
Barium (Ba)		111	-	165	56
Beryllium (Be)		0.8	-	0.9	0.6
Cadmium (Cd)		4.2	-	4.8	3.4
Calcium (Ca)		7,260	-	8,270	4,440
Chromium (Cr)		17	-	20	9.0
Chromium VI (Cr (VI))		2.0 U	-	2.1 U	1.9 U
Cobalt (Co)		9.2	-	12	11
Copper (Cu)		9.8	-	20	23
Iron (Fe)		17,900	-	20,000	20,600
Lead (Pb)		12	11	6.7	10
Lithium (Li)		42 U	-	39 U	42 U
Magnesium (Mg)		3,860	-	5,290	2,080
Manganese (Mn)		337	-	563	163
Mercury (Hg)		0.12	-	2.07	0.33
Nickel (Ni)		16	-	18	24
Potassium (K)		2,120	-	2,170	643
Selenium (Se)		1.0 U	0.9 U	0.9 U	1.0 U
Silver (Ag)		1.7 U	-	1.5 U	1.6 U
Sodium (Na)		782	-	900	918
Strontium (Sr)		42	-	49	59
Thallium (Tl)		1.0 U	0.9 U	0.9 U	1.0 U
Vanadium (V)		36	-	38	25
Zinc (Zn)		52	-	49	93

WESTON ANALYTICS
METALS DATA SUMMARY

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information				
Customer ID:	BH068726CT	BH058708BR	BH05870005	BH058705CT
RFW#:	-12	-13	-14	-15
Matrix:	Soil	Soil	Soil	Soil
Units:	mg/kg	mg/kg	mg/kg	mg/kg
Analyte:				
Aluminum (Al)	15,300	11,600	12,700	12,100
Antimony (Sb)	9.4 U	9.9 U	9.8 U	9.8 U
Arsenic (As)	12	8.7	8.6	7.7
Barium (Ba)	59	103	112	122
Beryllium (Be)	0.8	0.7	0.6	0.6
Cadmium (Cd)	3.5	3.1	3.4	3.6
Calcium (Ca)	3,000	5,250	5,040	10,600
Chromium (Cr)	12	13	11	9.9
Chromium VI (Cr (VI))	1.9 U	2.0 U	1.9 U	2.1 U
Cobalt (Co)	9.8	17	9.1	13
Copper (Cu)	5.8	12	10	10
Iron (Fe)	13,800	10,100	16,500	13,900
Lead (Pb)	6.6	9.7	9.6	10
Lithium (Li)	40 U	42 U	41 U	41 U
Magnesium (Mg)	2,880	2,470	3,220	3,180
Manganese (Mn)	128	557	144	528
Mercury (Hg)	0.10 U	0.18	0.10 U	0.17
Nickel (Ni)	15	20	14	18
Potassium (K)	1,300	1,040	854	1,030
Selenium (Se)	0.9 U	1.0 U	1.0 U	1.0 U
Silver (Ag)	1.6 U	1.6 U	1.6 U	1.6 U
Sodium (Na)	666	572	691	683
Strontium (Sr)	28	75	41	41
Thallium (Tl)	0.9 U	1.0 U	1.0 U	1.0 U
Vanadium (V)	25	26	21	22
Zinc (Zn)	27	51	47	43

WESTON ANALYTICS
METALS DATA SUMMARY

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information		
	Customer ID:	BH058705CT MS
	RFW#:	-15 MS
	Matrix:	Soil
	Units:	% Recovery

Analyte:	
Aluminum (Al)	-
Antimony (Sb)	-
Arsenic (As)	21 %
Barium (Ba)	-
Beryllium (Be)	-
Cadmium (Cd)	-
Calcium (Ca)	-
Chromium (Cr)	-
Chromium VI (Cr (VI))	-
Cobalt (Co)	-
Copper (Cu)	-
Iron (Fe)	-
Lead (Pb)	63 %
Lithium (Li)	-
Magnesium (Mg)	-
Manganese (Mn)	-
Mercury (Hg)	-
Nickel (Ni)	-
Potassium (K)	-
Selenium (Se)	121 %
Silver (Ag)	-
Sodium (Na)	-
Strontium (Sr)	-
Thallium (Tl)	79 %
Vanadium (V)	-
Zinc (Zn)	-

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information					
	Customer ID:	BH03870204	BH038702WT	BH038709CT	BH038712BR
	RFW#:	-01	-02	-03	-04
	Matrix:	Soil	Soil	Soil	Soil
Analyte:					
% Solids		**	**	**	**
Reactivity*					
Corrosivity*					
Ignitability*					
Oil and Grease%					

*) Results to be forwarded at a later date.
**) Not Performed.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information					
	Customer ID:	BH038709CT	BH038712BR	BH038702WT	BH03870009
	RFW#:	-05	-06	-07	-08
	Matrix:	Soil	Soil	Soil	Soil
Analyte:					
% Solids		79.3	79.2	84.0	81.9
Reactivity*					
Corrosivity*					
Ignitability*					
Oil and Grease*					

*) Results to be forwarded at a later date.
**) Not performed.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Customer ID:	BH038709CT	BH038712BR	BH038702WT	BH03870009
	RFW#:	-05	-06	-07	-08
	Matrix:	Soil	Soil	Soil	Soil
Analyte:					
% Solids		79.3	79.2	84.0	81.9
Cyanide, mg/kg		1.3 U	2.0	1.2 U	1.3 U
Sulfide, mg/kg		200 U	200 U	200 U	200 U
Corrosivity, pH		7.64	8.51	7.96	7.44
Ignitability, °F		230 U	230 U	230 U	230 U
Oil and Grease, mg/kg		1.7 U	1.7 U	1.7 U	1.7 U

*) Results to be forwarded at a later date.
**) Not performed.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Customer ID:	BH06870010	BH06870010 DUP	BH06871020	BH06871020 DUP
	RFW#:	-09	-09 DUP	-10	-10 DUP
	Matrix:	Soil	Soil	Soil	Soil
Analyte:					
% Solids		79.3		83.6	
Cyanide, mg/kg		1.2 U	1.3 U	1.3 U	
Sulfide, mg/kg		200 U		200 U	200 U
Corrosivity, pH		7.22		8.47	
Ignitability, F		230 U		230 U	
Oil and Grease, mg/kg		1.7 U		1.7 U	

*) Results to be forwarded at a later date.
**) Not performed.

WESTON
MANAGERS DESIGNERS/CONSULTANTS
7720 LORRAINE AVENUE
SUITE #102
STOCKTON, CA 95210
PHONE: (209) 957-3405

Samples in these batches:

BH0287
BH0787
BH1287

WESTON ANALYTICS
Laboratory Batch Number: 87-05-57
87-05-59

ANALYSES OF INORGANICS

CASE NARRATIVE

1. **Qualifier**

The following qualifiers are used in the data summaries:

U - Indicates the parameter was analyzed for but not detected. The minimum detection limit for the sample, not the method detection limitl, is reported preceding the U.

D - Indicates duplicate analysis of the same sample.

R - The spike falls outside the control limits.

NR - Not requested.

NA - Not applicable.

NS - Not spiked.

B - The parameter was found in the laboratory blank.

MS - Matrix spike.

BS - Method spike.

2. Chronology

Sampling -	May 25, 1987 - 87-05-57
	May 29, 1987 - 87-05-59
Lab Receipt -	May 29, 1987 - 87-05-57
	May 30, 1987 - 87-05-59
Metal digestion -	June 1-3, 1987
Metals analysis -	June 2,4, 1987
Other parameters -	June 2-10, 1987

3. Methods

Metals were determined in accordance with 7/84 and 7/85 revisions of the CLP protocol.

WESTON

4. The method spike for metals met the recommended recovery criteria for all metals except arsenic, selenium, silver and thallium.

   The matrix spike met the recovery criteria except for antimony, arsenic, barium, selenium, silver and thallium.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-05-57

	Customer ID:	-	-	BH02871420	BH02871420 MS
Sample	RFW#:	BLANK	B.S.	-12	-12 MS
Information:	Matrix:	WATER	WATER	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	% RECOVERY	mg/kg	% RECOVERY

Analyte:

Aluminum (Al).....	200.00 U	94 %	8730	NS
Antimony (Sb).....	60.00 U	87 %	12.00 U	NS
Arsenic (As).....	10.00 U	51 %	7.7	36 %
Barium (Ba).....	200.00 U	96 %	70	NS
Beryllium (Be).....	5.00 U	96 %	0.7 J	NS
Cadmium (Cd).....	5.00 U	85 %	1.00 U	NS
Calcium (Ca).....	5000.00 U	91 %	5680	NS
Cesium (Cs).....	NR	NR	NR	NR
Chromium (Cr).....	10.00 U	88 %	7.8	NS
Cobalt (Co).....	50.00 U	91 %	10.00 U	NS
Copper (Cu).....	25.00 U	94 %	11	NS
Iron (Fe).....	100.00 U	95 %	19400	NS
Lead (Pb).....	5.00 U	88 %	11	92 %
Magnesium (Mg).....	5000.00 U	91 %	2000	NS
Manganese (Mn).....	15.00 U	91 %	101	NS
Mercury (Hg).....	0.20 U	104 %	0.1 U	NS
Molybdenum (Mo).....	NR	NR	NR	NR
Nickel (Ni).....	40.00 U	90 %	8.00 U	NS
Potassium (K).....	5000.00 U	91 %	648 J	NS
Selenium (Se).....	5.00 U	27 %	1.1 U	0 %
Silver (Ag).....	10.00 U	21 %	2.00 U	NS
Sodium (Na).....	5000.00 U	88 %	814 J	NS
Strontium (Sr).....	100.00 U	98 %	78	NS
Thallium ((Tl).....	10.00 U	63 %	2.00 U	48 %
Vanadium (V).....	50.00 U	94 %	17	NS
Zinc (Zn).....	2.2 J	89 %	30	NS

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-57

	Customer ID:	BH028714CT	BH07870510	BH07870510 MS	BH07870SCT
Sample	RFW#:	-14	-06	-06 MS	-08
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	mg/kg	mg/kg	% RECOVERY	mg/kg
Analyte:					
Aluminum (Al)		8690	8750	NS	13800
Antimony (Sb)		12.00 U	12.00 U	0 %	12.00 U
Arsenic (As)		11	9.1	NS	7.9
Barium (Ba)		81	124	41 %	69
Beryllium (Be)		0.9 J	0.6 J	94 %	0.9 J
Cadmium (Cd)		1.00 U	1.00 U	78 %	1.00 U
Calcium (Ca)		7690	4920	NS	2280
Cesium (Cs)		NR	NR	NR	NR
Chromium (Cr)		10	8.5	86 %	16
Cobalt (Co)		10.00 U	10.00 U	80 %	10.00 U
Copper (Cu)		16	14	76 %	6.8
Iron (Fe)		28300	6720	NS	14800
Lead (Pb)		14	14	NS	3.4
Magnesium (Mg)		2460	2020	NS	1810
Manganese (Mn)		123	291	96 %	372
Mercury (Hg)		0.08 U	0.1 U	NS	0.1 U
Molybdenum (Mo)		NR	NR	NR	NR
Nickel (Ni)		8.00 U	8.00 U	77 %	8.00 U
Potassium (K)		788 J	765 J	NS	605 J
Selenium (Se)		1.00 U	1.00 U	NS	1.00 U
Silver (Ag)		2.00 U	2.00 U	0 %	2.00 U
Sodium (Na)		1090	556 J	NS	574 J
Strontium (Sr)		78	56	90 %	21
Thallium (Tl)		2.00 U	2.00 U	NS	2.00 U
Vanadium (V)		38	15	86 %	22
Zinc (Zn)		56	36	73 %	8.4

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-57

	Customer ID:	BH07870BR	BH07870BR (DUP)	BH07871010	BH07871OWS
Sample	RFW#:	-02	-02 DUP	-09	-04
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	mg/kg	mg/kg	mg/kg	mg/kg
Analyte:					
Aluminum (Al)		9280	13100	6360	8650
Antimony (Sb)		12.00 U	12.00 U	12.00 U	12.00 U
Arsenic (As)		9.1	NR	6.1	4.3
Barium (Ba)		56	123	70	73
Beryllium (Be)		0.5 J	0.6 J	0.9 J	0.5 J
Cadmium (Cd)		1.9	1.1	1.00 U	1.00 U
Calcium (Ca)		4600	4830	3990	5000
Cesium (Cs)		NR	NR	NR	NR
Chromium (Cr)		8.2	8.5	4.6	6.2
Cobalt (Co)		10.00 U	10.00 U	10.00 U	10.00 U
Copper (Cu)		9.2	9.0	12	16
Iron (Fe)		8560	11800	2460	3560
Lead (Pb)		16	NR	8.0	7.7
Magnesium (Mg)		2330	2440	1160	1840
Manganese (Mn)		219	420	250	142
Mercury (Hg)		0.09 U	0.09 U	0.09 U	0.1 U
Molybdenum (Mo)		NR	NR	NR	NR
Nickel (Ni)		4.5 J	8.00 U	8.00 U	8.00 U
Potassium (K)		873 J	985 J	402 J	692 J
Selenium (Se)		1.00 U	NR	1.00 U	1.00 U
Silver (Ag)		2.00 U	2.00 U	2.00 U	2.00 U
Sodium (Na)		579 J	602 J	367 J	456 J
Strontium (Sr)		42	45	51	70
Thallium (Tl)		2.00 U	NR	2.00 U	2.00 U
Vanadium (V)		13	15	11	10
Zinc (Zn)		59	56	12	23

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-05-57

	Customer ID:	BH078710WS (DUP)	BH078710WS MS
Sample	RFW#:	-04 DUP	-04 MS
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	mg/kg	% RECOVERY

Analyte:

Aluminum (Al).....	NR	NS
Antimony (Sb).....	NR	NS
Arsenic (As).....	7.2	NS
Barium (Ba).....	NR	NS
Beryllium (Be).....	NR	NS
Cadmium (Cd).....	NR	NS
Calcium (Ca).....	NR	NS
Cesium (Cs).....	NR	NR
Chromium (Cr).....	NR	NS
Cobalt (Co).....	NR	NS
Copper (Cu).....	NR	NS
Iron (Fe).....	NR	NS
Lead (Pb).....	8.0	NS
Magnesium (Mg).....	NR	NS
Manganese (Mn).....	NR	NS
Mercury (Hg).....	NR	89 %
Molybdenum (Mo).....	NR	NR
Nickel (Ni).....	NR	NS
Potassium (K).....	NR	NS
Selenium (Se).....	1.0 U	NS
Silver (Ag).....	NR	NS
Sodium (Na).....	NR	NS
Strontium (Sr).....	NR	NS
Thallium (Tl).....	2.00 U	NS
Vanadium (V).....	NR	NS
Zinc (Zn).....	NR	NS

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Lithium Analysis Summary*

RFW Batch Number: 87-05-57

Customer ID	RFW #	Lithium
-	Blank	100 U, ug/L
-	B.S.	90 %, % Recovery
BH07870BR DUP	-02 DUP	82 U, mg/kg
BH07870510 MS	-06 MS	100 %, % Recovery
BH078710WS DUP	-04 DUP	NR
BH02871420 MS	-12 MS	NS
BH078710WS MS	-04 MS	NS
BH07870BR	-02	87 U, mg/kg
BH078710WS	-04	88 U, mg/kg
BH07870510	-06	76 U, mg/kg
BH078705CT	-08	78 U, mg/kg
BH0787101B	-09	86 U, mg/kg
BH02871420	-12	86 U, mg/kg
BH028714CT	-14	75 U, mg/kg

*) For other sample information, please refer to Metals Data Summary.

RFW Batch Number: 87-05-59

	Customer ID:	BH128702CT	BH128705BR
Sample	RFW#:	-02	-04
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	mg/kg	mg/kg

Analyte:		
Aluminum (Al).....	17400	9230
Antimony (Sb).....	12.00 U	12.00 U
Arsenic (As).....	14	3.9
Barium (Ba).....	134	258
Beryllium (Be).....	1.00	0.6 J
Cadmium (Cd).....	1.00 U	1.00 U
Calcium (Ca).....	24800	3880
Cesium (Cs).....	NR	NR
Chromium (Cr).....	14	8.2
Cobalt (Co).....	10.00 U	10.00 U
Copper (Cu).....	12	17
Iron (Fe).....	13800	13600
Lead (Pb).....	17	14
Magnesium (Mg).....	2730	1560
Manganese (Mn).....	149	113
Mercury (Hg).....	0.09 U	1.63
Molybdenum (Mo).....	NR	NR
Nickel (Ni).....	8.00 U	8.00 U
Potassium (K).....	1110	708 J
Selenium (Se).....	1.00 U	1.00 U
Silver (Ag).....	2.00 U	2.00 U
Sodium (Na).....	357 J	487 J
Strontium (Sr).....	63	50
Thallium ((Tl).....	2.00 U	2.00 U
Vanadium (V).....	34	20
Zinc (Zn).....	32	39

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Lithium Analysis Summary*

RFW Batch Number: 87-05-59

Customer ID	RFW #	Lithium
BH128702CT	-02	83 U, mg/kg
BH128705BR	-04	81 U, mg/kg

*) For other sample information, please refer to Metals Data Summary.

7720 LORRAINE AVENUE
SUITE #102
STOCKTON, CA 95210
PHONE: (209) 957-3405

Samples in this batch:

WESTON ANALYTICS
Laboratory Batch Number: 87-06-02

BH0987

ANALYSES OF INORGANICS

CASE NARRATIVE

1. Qualifier

The following qualifiers are used in the data summaries:

U - Indicates the parameter was analyzed for but not detected. The minimum detection limit for the sample, not the method detection limitl, is reported preceding the U.

D - Indicates duplicate analysis of the same sample.

R - The spike falls outside the control limits.

NR - Not requested.

NA - Not applicable.

NS - Not spiked.

B - The parameter was found in the laboratory blank.

MS - Matrix spike.

BS - Method spike.

DUP - Indicates a duplicate.

2. Chronology

Sampling -	May 28, 1987
Lab Receipt -	June 1, 1987
Metal digestion -	June 4-6, 1987
Metals analysis -	June 6-9, 1987
Other parameters -	June 6-11, 1987

3. Methods

Metals were determined in accordance with 7/84 and 7/85 revisions of the CLP protocol.

WESTON

4. The method spike for metals met the recommended recovery criteria for all metals except selenium.

   The matrix spike met the recovery criteria except for selenium, silver and thallium.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-02

	Customer ID:	BH0987001B	BH098706WT	BH098714BR
Sample	RFW#:	-06	-04	-02
Information:	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0
	Units:	mg/kg	mg/kg	mg/kg

Analyte:			
Aluminum (Al)	8430	18600	8860
Antimony (Sb)	12.00 U	12.00 U	12.00 U
Arsenic (As)	4.1	15	11
Barium (Ba)	88	126	66
Beryllium (Be)	0.7 J	0.9 J	0.7 J
Cadmium (Cd)	1.00 U	1.00 U	1.00 U
Calcium (Ca)	6590	3980	4280
Cesium (Cs)	NR	NR	NR
Chromium (Cr)	9.7	16	9.0
Cobalt (Co)	10.00 U	10.00 U	3.8 J
Copper (Cu)	10	7.7	13
Iron (Fe)	11000	17500	8370
Lead (Pb)	13	7.9	14
Magnesium (Mg)	2360	2440	2020
Manganese (Mn)	137	169	105
Mercury (Hg)	0.1 U	0.1 U	0.13
Molybdenum (Mo)	NR	NR	NR
Nickel (Ni)	8.00 U	8.00 U	8.00 U
Potassium (K)	983 J	1520	900 J
Selenium (Se)	1.00 U	1.00 U	1.00 U
Silver (Ag)	2.00 U	2.00 U	2.00 U
Sodium (Na)	504 J	709 J	405 J
Strontium (Sr)	55	34	70
Thallium ((Tl)	2.00 U	2.00 U	2.00 U
Vanadium (V)	21	35	17
Zinc (Zn)	46	38	62

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Lithium Analysis Summary*

RFW Batch Number: 87-06-02

Customer ID	RFW #	Lithium
BH098714BR	-02	83 U, mg/kg
BH098706WT	-04	79 U, mg/kg
BH09870010	-06	84 U, mg/kg

*) For other sample information, please refer to Metals Data Summary.

WESTON
MANAGERS DESIGNERS/CONSULTANTS
7720 LORRAINE AVENUE
SUITE 105
STOCKTON, CA 95210
PHONE: 209-957-3405

Samples in this batch:

BH1387

WESTON ANALYTICS
Laboratory Batch Number: 87-06-04

ANALYSES OF INORGANICS

CASE NARRATIVE

1. Qualifier

The following qualifiers are used in the data summaries:

U - Indicates the parameter was analyzed for but not detected. The minimum detection limit for the sample, not the method detection limitl, is reported preceding the U.

D - Indicates duplicate analysis of the same sample.

R - The spike falls outside the control limits.

NR - Not requested.

NA - Not applicable.

NS - Not spiked.

B - The parameter was found in the laboratory blank.

MS - Matrix spike.

BS - Method spike.

2. Chronology

Sampling -	May 29, 1987
Lab Receipt -	June 2, 1987
Metal digestion -	June 4-6, 1987
Metals analysis -	June 6-9, 1987
Other parameters -	June 6-11, 1987

3. Methods

Metals were determined in accordance with 7/84 and 7/85 revisions of the CLP protocol.

WESTON

4. The method spike for metals met the recommended recovery criteria for all metals except selenium.

   The matrix spike met the recovery criteria except for selenium, silver and thallium.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

FN Batch Number: B7-06-04

	Customer ID:	BH13878010	BH138714BR
ample	RFW#:	-02	-04
nformation:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	mg/kg	mg/kg

nalyte:

luminum (Al).....	18900 U	7850
ntimony (Sb).....	12.00 U	12.00 U
rsenic (As).....	12	6.5
arium (Ba).....	124	231
eryllium (Be).....	0.7 J	0.5 J
admium (Cd).....	2.7	4.1
alcium (Ca).....	56400	4540
esium (Cs).....	NR	NR
hromium (Cr).....	7.4	9.9
obalt (Co).....	8.3 J	5.7 J
opper (Cu).....	5.6	8.9
ron (Fe).....	10200	33600
ead (Pb).....	9.5	11
agnesium (Mg).....	3600	2170
anganese (Mn).....	116	333
ercury (Hg).....	0.18	0.1 U
olybdenum (Mo).....	NR	NR
ickel (Ni).....	12	12
otassium (K).....	459 J	784 J
elenium (Se).....	1.00 U	1.00 U
ilver (Ag).....	2.00 U	2.00 U
odium (Na).....	547 J	1100
trontium (Sr).....	135	138
hallium ((Tl).....	2.00 U	2.00 U
anadium (V).....	25	21
inc (Zn).....	34	43

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Lithium Analysis Summary*

RFW Batch Number: 87-06-04

Customer ID	RFW #	Lithium
BH13870010	-02	85 U
BH138714BR	-03	81 U

*) For other sample information, please refer to Metals Data Summary.

7720 LORRAINE AVENUE
SUITE 105
STOCKTON, CA 95210
PHONE: 209-957-3405

SAMPLES IN THESE BATCHES:
BH1087
BH1187
BH1687

WESTON ANALYTICS
Laboratory Batch Number: 87-06-05
87-06-10

ANALYSES OF INORGANICS

CASE NARRATIVE

1. Qualifier

The following qualifiers are used in the data summaries:

U - Indicates the parameter was analyzed for but not detected. The minimum detection limit for the sample, not the method detection limitl, is reported preceding the U.

D - Indicates duplicate analysis of the same sample.

R - The spike falls outside the control limits.

NR - Not requested.

NA - Not applicable.

NS - Not spiked.

B - The parameter was found in the laboratory blank.

MS - Matrix spike.

BS - Method spike.

2. Chronology

Sampling -	June 1, 1987 - 87-06-05
	June 2, 1987 - 87-06-10
Lab Receipt -	June 4, 1987 - 87-06-05
	June 4, 1987 - 87-06-10
Metal digestion -	June 4-5, 1987
Metals analysis -	June 5-9, 1987
Other parameters -	June 5-15, 1987

3. Methods

Metals were determined in accordance with 7/84 and 7/85 revisions of the CLP protocol.

WESTON

4. The method spike for metals met the recommended recovery criteria for all metals except selenium.

   The matrix spike met the recovery criteria except for selenium, silver and thallium.

Reviewed and approved: _____
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-05 ROCKY FLATS

	Customer ID:	BH10870010	BH10871020	BH10872OCT	BH1087238R
Sample	RFW#:	-06	-04	-08	-02
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	mg/kg	mg/kg	mg/kg	mg/kg

Analyte:

Aluminum (Al)	11900	14400	9050	8310
Antimony (Sb)	12.00 U	12.00 U	12.00 U	12.00 U
Arsenic (As)	11	19	9.4	9.4
Barium (Ba)	97	192	120	186
Beryllium (Be)	0.6 J	1.0	0.7 J	0.6 J
Cadmium (Cd)	1.7	3.0	2.9	3.1
Calcium (Ca)	70800	21600	26200	7710
Cesium (Cs)	NR	NR	NR	NR
Chromium (Cr)	18	14	9.7	10
Cobalt (Co)	10.00 U	9.4 J	5.6 J	12
Copper (Cu)	7.4	13	12	17
Iron (Fe)	11200	12800	16100	23700
Lead (Pb)	11	10	10	10
Magnesium (Mg)	2660	3350	2630	2470
Manganese (Mn)	168	124	113	536
Mercury (Hg)	0.22	0.08	0.16	0.19
Molybdenum (Mo)	NR	NR	NR	NR
Nickel (Ni)	3.5 J	21	18	25
Potassium (K)	1510	917 J	813 J	1860
Selenium (Se)	1.00 U	1.00 U	1.00 U	1.00 U
Silver (Ag)	2.00 U	2.00 U	2.00 U	2.00 U
Sodium (Na)	466 J	603 J	760 J	1130
Strontium (Sr)	86	82	78	73
Thallium (Tl)	2.00 U	2.00 U	2.00 U	2.00 U
Vanadium (V)	26	38	28	30
Zinc (Zn)	30	52	51	100

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Lithium Analysis Summary*

RFW Batch Number: 87-06-05

Customer ID	RFW #	Lithium
BH108723BR	-02	82 U
BH10871020	-04	79 U
BH10870010	-06	79 U
BH108720CT	-08	74 U

*) For other sample information, please refer to Metals Data Summary.

RFW Batch Number: 87-06-10 ROCKY FLATS

	Customer ID:	BH11870010	BH118711CT	BH118714WT	BH16870206
Sample	RFW#:	-06	-02	-04	-12
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	mg/kg	mg/kg	mg/kg	mg/kg

Analyte:

Aluminum (Al).....	9900	15000	9750	7540
Antimony (Sb).....	12.00 U	12.00 U	12.00 U	12.00 U
Arsenic (As).....	8.2	13	9.4	10
Barium (Ba).....	77	127	76	35 J
Beryllium (Be).....	0.7 J	0.8 J	1.9	0.6 J
Cadmium (Cd).....	1.9	3.4	6.6	1.6
Calcium (Ca).....	5790	2770	6920	12700
Cesium (Cs).....	NR	NR	NR	NR
Chromium (Cr).....	10	16	12	5.8
Cobalt (Co).....	6.6 J	6.2 J	36	10.00 U
Copper (Cu).....	9.3	9.1	9.9	15
Iron (Fe).....	11200	15400	67200	7010
Lead (Pb).....	24	9.4	12	12
Magnesium (Mg).....	2090	2460	2600	1800
Manganese (Mn).....	135	318	522	9.8
Mercury (Hg).....	0.09 U	0.12	0.18	0.14
Molybdenum (Mo).....	NR	NR	NR	NR
Nickel (Ni).....	7.4 J	11	71	7.1 J
Potassium (K).....	1270	1760	944 J	624 J
Selenium (Se).....	1.00 U	1.1 U	1.00 U	1.00 U
Silver (Ag).....	2.00 U	2.00 U	2.00 U	2.00 U
Sodium (Na).....	534 J	617 J	2230	435 J
Strontium (Sr).....	34	34	72	53
Thallium ((Tl).....	2.00 U	2.00 U	2.00 U	2.00 U
Vanadium (V).....	28	38	41	16
Zinc (Zn).....	38	39	159	39

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-10 ROCKY FLATS

	Customer ID:	BH168702C7	BH168706BR
Sample	RFW#:	-10	-08
Information:	Matrix:	SOIL	SOIL
	D.F.:	1.0	1.0
	Units:	mg/kg	mg/kg

Analyte:

Aluminum (Al).....	8120	6590
Antimony (Sb).....	12.00 U	12.00 U
Arsenic (As).....	11	9.4
Barium (Ba).....	75	49
Beryllium (Be).....	0.6 J	0.7 J
Cadmium (Cd).....	1.0	1.0
Calcium (Ca).....	3020	5320
Cesium (Cs).....	NR	NR
Chromium (Cr).....	10	5.3
Cobalt (Co).....	4.3 J	4.2 J
Copper (Cu).....	8.5	16
Iron (Fe).....	9390	3100
Lead (Pb).....	10	22
Magnesium (Mg).....	1620	1610
Manganese (Mn).....	202	101
Mercury (Hg).....	0.14	0.32
Molybdenum (Mo).....	NR	NR
Nickel (Ni).....	5.5 J	9.8
Potassium (K).....	1820	600 J
Selenium (Se).....	1.00 U	1.00 U
Silver (Ag).....	2.00 U	2.00 U
Sodium (Na).....	392 J	417 J
Strontium (Sr).....	23	57
Thallium ((Tl).....	2.00 U	2.00 U
Vanadium (V).....	26	15
Zinc (Zn).....	35	50

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Lithium Analysis Summary*

RFW Batch Number: 87-06-10

Customer ID	RFW #	Lithium
BH118711CT	-02	84 U
BH118714WT	-04	87 U
BH11870010	-06	85 U
BH168706BR	-08	83 U
BH168702CT	-10	76 U
BH16870206	-12	81 U

*) For other sample information, please refer to Metals Data Summary.

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PHONE: 209-957-3405

Samples in these batches:

BH0887
BH1587
BH1787
BH0187

WESTON ANALYTICS
Laboratory Batch Number: 87-06-14
87-06-22

ANALYSES OF INORGANICS

CASE NARRATIVE

1. Qualifier

The following qualifiers are used in the data summaries:

U - Indicates the parameter was analyzed for but not detected. The minimum detection limit for the sample, not the method detection limit, is reported preceding the U.

D - Indicates duplicate analysis of the same sample.

R - The spike falls outside the control limits.

NR - Not requested.

NA - Not applicable.

NS - Not spiked.

B - The parameter was found in the laboratory blank.

MS - Matrix spike.

BS - Method spike.

2. Chronology

Sampling -	June 3, 1987 - 87-06-14
	June 4, 1987 - 87-06-22
Lab Receipt -	June 5, 1987 - 87-06-14
	June 8, 1987 - 87-06-22
Metal digestion -	June 8, 1987
Metals analysis -	June 10-12, 1987
Other parameters -	June 10-16, 1987

3. Methods

Metals were determined in accordance with 7/84 and 7/85 revisions of the CLP protocol.

SENT BY:XEROX TELECOPIER 7020 ; 6-18-87 ; 9:21AM ; 2098574081→ 13039801622;# 8

WESTON

4. The method spike for metals met the recommended recovery criteria for all metals except antimony.

   The matrix spike met the recovery criteria except for antimony, arsenic and magnesium.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

SENT BY:Xerox Telecopier 7020 ; 8-10-87 ; 9:22AM ; 2099574061→ 13039801622;# 7

RFW Batch Number: 87-06-22 ROCKY FLATS

	Customer ID:	BH018701WT	BH018704WS	BH018710WS	BH018710WS MS
Sample	RFW#:	-02	-04	-06	-06 MS
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	mg/kg	mg/kg	mg/kg	% Recovery
Analyte:					
Aluminum (Al)		11100	13500	9660	*
Antimony (Sb)		12.00 U	12.00 U	12.00 U	0 %
Arsenic (As)		8.9	4.8	2.8	64 %
Barium (Ba)		131	52	50	96 %
Beryllium (Be)		0.8 J	0.8 J	0.8 J	96 %
Cadmium (Cd)		2.7	2.8	1.2	106 %
Calcium (Ca)		3160	4650	4200	117 %
Cesium (Cs)		NR	NR	NR	NR
Chromium (Cr)		14	12	9.0	100 %
Cobalt (Co)		10.00 U	10.00 U	10.00 U	97 %
Copper (Cu)		4.8 J	14	13	92 %
Iron (Fe)		9650	6360	3600	*
Lead (Pb)		4.6	23	20	82 %
Magnesium (Mg)		2520	2210	1800	130 %
Manganese (Mn)		48	12	28	89 %
Mercury (Hg)		0.45	0.20	0.10	114 %
Molybdenum (Mo)		NR	NR	NR	NR
Nickel (Ni)		7.9 J	8.00 U	8.00 U	96 %
Potassium (K)		810 J	957 J	777 J	102 %
Selenium (Se)		1.00 U	1.00 U	1.00 U	83 %
Silver (Ag)		2.00 U	2.1 U	2.00 U	88 %
Sodium (Na)		510 J	581 J	521 J	113 %
Strontium (Sr)		33	46	52	103 %
Thallium (Tl)		2.00 U	2.00 U	2.00 U	90 %
Vanadium (V)		19	23	18	98 %
Zinc (Zn)		22	36	40	115 %

***) Sample concentration too high.**

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Lithium Analysis Summary*

RFW Batch Number: 87-06-22

Customer ID	RFW #	Lithium,mg/kg
BH018701WT	-02	96 U
BH018704WS	-04	106 U
BH018710WS	-06	96 U

*) For other sample information, please refer to Metals Data Summary.

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	--	--	BH08870007	BH08870707
Sample	RFW#:	BLANK	B.S.	-04	-08
Information:	Matrix:	WATER	WATER	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/l	ug/l	mg/kg	mg/kg
Analyte:					
Aluminum (Al)		31.00 U	96 %	17600	11600
Antimony (Sb)		12.00 U	59 %	12.00 U	12.00 U
Arsenic (As)		2.00 U	85 %	12	6.5
Barium (Ba)		9.4 U	94 %	76	43
Beryllium (Be)		0.40 U	99 %	0.7 J	0.9 J
Cadmium (Cd)		0.60 U	92 %	4.3	2.1
Calcium (Ca)		62.00 U	99 %	2194	11000
Cesium (Cs)		3000.00 U	3000.00 U	NR	NR
Chromium (Cr)		2.00 U	94 %	14	11
Cobalt (Co)		2.00 U	95 %	10.00 U	10
Copper (Cu)		4.40 U	96 %	8.0	11
Iron (Fe)		5.00 U	97 %	14100	14600
Lead (Pb)		1.00 U	92 %	5.3	9.6
Magnesium (Mg)		46.00 U	100 %	2490	2680
Manganese (Mn)		2.00 U	94 %	115	180
Mercury (Hg)		0.02 U	110 %	0.27	0.09 U
Molybdenum (Mo)		100.00 U	4.00 U	NR	NR
Nickel (Ni)		4.00 U	92 %	7.5 J	14
Potassium (K)		200.00 U	84 %	1550	1140
Selenium (Se)		1.00 U	89 %	1.00 U	1.00 U
Silver (Ag)		2.00 U	90 %	2.00 U	2.00 U
Sodium (Na)		200.00 U	109 %	736 J	1640
Strontium (Sr)		11.00 U	95 %	21	58
Thallium ((Tl)		2.00 U	100 %	2.00 U	2.00 U
Vanadium (V)		4.00 U	96 %	28	33
Zinc (Zn)		2.00 U	95 %	28	46

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	BH0887108R	BH15870005	BH15870510	BH15872608
Sample	RFW#:	-16	-14	-18	-12
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	mg/kg	mg/kg	mg/kg	mg/kg

Analyte:

Aluminum (Al).....	20800	16900	15300	15800
Antimony (Sb).....	12.00 U	12.00 U	12.00 U	12.00 U
Arsenic (As).....	9.8	12	7.6	8.3
Barium (Ba).....	78	96	187	76
Beryllium (Be).....	1.4	0.9 J	0.9 J	1.00 U
Cadmium (Cd).....	4.1	3.5	3.2	2.9
Calcium (Ca).....	4640	4110	6910	4540
Cesium (Cs).....	NR	NR	NR	NR
Chromium (Cr).....	20	13	12	15
Cobalt (Co).....	6.1 J	8.6 J	5.0 J	21
Copper (Cu).....	19	13	10	16
Iron (Fe).....	13500	16700	11300	18800
Lead (Pb).....	21	6.5	14	13
Magnesium (Mg).....	3230	3330	3240	2980
Manganese (Mn).....	34	161	88	165
Mercury (Hg).....	0.29	0.60	0.15	0.58
Molybdenum (Mo).....	NR	NR	NR	NR
Nickel (Ni).....	16	13	8.3	48
Potassium (K).....	1780	1260	1240	1350
Selenium (Se).....	1.00 U	1.00 U	1.00 U	1.00 U
Silver (Ag).....	2.00 U	2.00 U	2.00 U	2.00 U
Sodium (Na).....	1570	810 J	890 J	810 J
Strontium (Sr).....	85	52	53	63
Thallium ((Tl).....	2.00 U	2.00 U	2.00 U	2.00 U
Vanadium (V).....	49	31	31	37
Zinc (Zn).....	100	66	55	102

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-14 ROCKY FLATS

	Customer ID:	BH17870005	BH178705CT	BH178706BR
Sample	RFW#:	-10	-06	-02
Information:	Matrix:	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0
	Units:	mg/kg	mg/kg	mg/kg
Analyte:				
Aluminum (Al).....		13400	21300	22000
Antimony (Sb).....		12.00 U	12.00 U	12.00 U
Arsenic (As).....		10	12	8.7
Barium (Ba).....		87	63	85
Beryllium (Be).....		0.9 J	1.3	1.0
Cadmium (Cd).....		3.8	5.9	4.1
Calcium (Ca).....		3240	3950	6010
Cesium (Cs).....		NR	NR	NR
Chromium (Cr).....		14	18	19
Cobalt (Co).....		7.2 J	6.9 J	10.00 U
Copper (Cu).....		9.8	11	9.3
Iron (Fe).....		28700	26600	11500
Lead (Pb).....		13	12	16
Magnesium (Mg).....		2480	3470	3000
Manganese (Mn).....		179	335	26
Mercury (Hg).....		0.26	0.12	0.32
Molybdenum (Mo).....		NR	NR	NR
Nickel (Ni).....		22	19	4.1 J
Potassium (K).....		1260	1910	1690
Selenium (Se).....		1.00 U	1.1 U	1.00 U
Silver (Ag).....		2.00 U	2.1 U	2.1 U
Sodium (Na).....		1030	1390	674 J
Strontium (Sr).....		42	49	78
Thallium ((Tl).....		2.00 U	2.1 U	2.00 U
Vanadium (V).....		39	49	42
Zinc (Zn).....		66	61	39

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Lithium Analysis Summary*

RFW Batch Number: 87-06-14

Customer ID	RFW #	Lithium,mg/kg
BH178708BR	-02	103 U
BH178708BR DUP	-02 DUP	101 U
BH08870007	-04	93 U
BH178705CT	-06	105 U
BH088707CT	-08	88 U
BH17870005	-10	94 U
BH158726BR	-12	96 U
BH15870005	-14	74
BH088710BR	-16	102
BH15870510	-18	103

*) For other sample information, please refer to Metals Data Summary.

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SAMPLES IN THIS BATCH:

BH0487

WESTON ANALYTICS
Laboratory Batch Number: 87-06-24
87-06-37
87-06-42

ANALYSES OF INORGANICS

CASE NARRATIVE

1. Qualifier

The following qualifiers are used in the data summaries:

U - Indicates the parameter was analyzed for but not detected. The minimum detection limit for the sample, not the method detection limit, is reported preceding the U.

D - Indicates duplicate analysis of the same sample.

R - The spike falls outside the control limits.

NR - Not requested.

NA - Not applicable.

NS - Not spiked.

B - The parameter was found in the laboratory blank.

MS - Matrix spike.

BS - Method spike.

2. Chronology

	June 5, 1987 - 87-06-24
Sampling -	June 11, 1987 - 87-06-37
	June 12, 1987 - 87-06-42
Lab Receipt -	June 9, 1987 - 87-06-24
	June 15, 1987 - 87-06-37, 87-06-42
Metal digestion -	June 15, 1987 - 87-06-24
Metals analysis -	June 15-18, 1987 - 87-06-24
Other parameters -	June 17, 1987 - 87-06-24

3. Methods
Metals were determined in accordance with 7/84 and 7/85 revisions of the CLP protocol.

WESTON

4. The matrix spike met the recovery criteria except for antimony, arsenic, calcium manganese and silver. The high percentage of manganese in the spike, was due to the matrix interference.

Reviewed and approved: David Ben-Hur
David Ben-Hur, Ph.D.

DB/vk

RFW Batch Number: 87-06-24 ROCKY FLATS

	Customer ID:	-	-	BH04E70010	BH04B710W7
Sample	RFW#:	BLANK	B.S	-06	-06
Information:	Matrix:	WATER	WATER	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	ug/L	% RECOVERY	mg/kg	mg/kg
Analyte:					
Aluminum (Al).....		31 U	96 %	9320	10300
Antimony (Sb).....		12 U	125 %	21	24
Arsenic (As).....		2.0 U	106 %	24	17
Barium (Ba).....		9.4 U	96 %	47	85
Beryllium (Be).....		0.4 U	92 %	1.0	1.1
Cadmium (Cd).....		0.8 U	86 %	1.4	1.5
Calcium (Ca).....		62 U	94 %	2920	2980
Cesium (Cs).....		NR	NR	NR	NR
Chromium (Cr).....		2.0 U	85 %	9.0	9.8
Cobalt (Co).....		4.4 U	94 %	10.00 U	4.3 J
Copper (Cu).....		4.0 U	92 %	9.1	8.3
Iron (Fe).....		6.2 U	92 %	12600	14200
Lead (Pb).....		1.0 U	99 %	8.3	7.7
Magnesium (Mg).....		46 U	94 %	1910	2650
Manganese (Mn).....		2.0 U	93 %	101	434
Mercury (Hg).....		0.02 U	120 %	0.24	0.08 U
Molybdenum (Mo).....		NR U	NR	NR	NR
Nickel (Ni).....		4.0 U	93 %	6.9 J	10
Potassium (K).....		200 U	60 %	510 J	952 J
Selenium (Se).....		1.0 U	117 %	1.00 U	1.00 U
Silver (Ag).....		2.0 U	87 %	2.00 U	2.00 U
Sodium (Na).....		200 U	94 %	464 J	722 J
Strontium (Sr).....		11 U	93 %	18 J	31
Thallium (Tl).....		2.0 U	97 %	2.00 U	2.00 U
Vanadium (V).....		4.0 U	95 %	25	22
Zinc (Zn).....		2.0 U	96 %	19	20

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

RFW Batch Number: 87-06-24 ROCKY FLATS

	Customer ID:	8H0487150T	8H0487150T MS	8H0487198R	8H0487198R DUP
Sample	RFW#:	-04	-04 MS	-02	-02 DUP
Information:	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.0	1.0	1.0	1.0
	Units:	mg/kg	% RECOVERY	mg/kg	mg/kg
Analyte:					
Aluminum (Al)		7650	*	9380	11700
Antimony (Sb)		12.00 U	29 %	21	20
Arsenic (As)		16	0 %	18	26
Barium (Ba)		36 J	84 %	151	83
Beryllium (Be)		0.6 J	94 %	0.8 J	0.6 J
Cadmium (Cd)		1.5	94 %	1.9	2.1
Calcium (Ca)		1790	69 %	4250	4350
Cesium (Cs)		NR	NR	NR	NR
Chromium (Cr)		7.8	89 %	7.8	9.4
Cobalt (Co)		10.00 U	99 %	10	5.2 J
Copper (Cu)		7.3	97 %	22	20
Iron (Fe)		11300	*	14600	15400
Lead (Pb)		5.2	84 %	17	22
Magnesium (Mg)		1930	77 %	2490	2690
Manganese (Mn)		96	220 %	438	107
Mercury (Hg)		0.20	NS	0.23	NR
Molybdenum (Mo)		NR	NR	NR	NR
Nickel (Ni)		5.8 J	95 %	16	11
Potassium (K)		882 J	98 %	819 J	1050
Selenium (Se)		1.00 U	71 %	1.00 U	1.00 U
Silver (Ag)		2.00 U	40 %	2.00 U	2.00 U
Sodium (Na)		444 J	96 %	597 J	551 J
Strontium (Sr)		17 J	82 %	58	55
Thallium (Tl)		2.00 U	95 %	2.00 U	2.00 U
Vanadium (V)		18	99 %	26	26
Zinc (Zn)		20	98 %	84	78

Modifiers: U=Analyzed, not detected. J=Present below detection limit. B=Present in blank. NR=Not requested. NS=Not spiked.

WESTON ANALYTICS

Lithium Analysis Summary*

RFW Batch Number: 87-06-24

Customer ID	RFW #	Lithium,mg/kg
BH048719BR	-02	100 U
BH048715CT	-04	100 U
BH04870010	-06	100 U
BH048710WT	-08	100 U

*) For other sample information, please refer to Metals Data Summary.

APPENDIX E-5

OTHER PARAMETER RESULTS

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information			
	Customer ID:	BH068730BR	BH068726CT
	RFW#:	-11	-12
	Matrix:	Soil	Soil
Analyte:			
% Solids		83.4	84.3
Cyanide, mg/kg		1.3	1.1 U
Sulfide, mg/kg		200 U	200 U
Corrosivity, pH		7.52	6.63
Ignitability, F		230 U	230 U
Oil and Grease, mg/kg		1.7 U	1.7 U

*) Results to be forwarded at a later date.
**) Not Performed.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-05-51 Client: Rocky Flats

Sample Information	Customer ID:	BH058708BR	BH05870005	BH058705CT	BH058705CT MS
	RFW#:	-13	-14	-15	-15MS
	Matrix:	Soil	Soil	Soil	Soil
Analyte:					
% Solids		79.6	83.3	82.3	
Cyanide, mg/kg		1.2 U	1.3 U	1.1 U	97 %
Sulfide, mg/kg		200 U	200 U	200 U	
Corrosivity, pH		7.38	8.18	7.18	
Ignitability, F		230 U	230 U	230 U	
Oil and Grease, mg/kg		1.7 U	1.7 U	1.7 U	

*) Results to be forwarded at a later date.
**) Not performed.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-05-59 Client: Rocky Flats

Sample Information			
	Customer ID:	BH128702CT	BH128705BR
	RFW#:	-02	-04
	Matrix:	Soil	Soil
Analyte:			
% Solids		86.6	86.0
Cyanide, mg/kg		2.0	1.1 U
Sulfide, mg/kg		187 U	194 U
Corrosivity, pH		7.08	8.68
Ignitability*			
Oil and Grease, mg/kg		1.7 U	1.7 U

*) Results to be forwarded at a later date.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-05-57 Client: Rocky Flats

Sample Information	Customer ID:	BH07870BR	BH078710WS	BH078710WS DUP	BH07870510
	RFW#:	-02	-04	-04 DUP	-06
	Matrix:	Soil	Soil	Soil	Soil
Analyte:					
% Solids		83.3	83.5		82.8
Cyanide, mg/kg		1.3 U	1.1 U	1.3 U	1.2 U
Sulfide, mg/kg		187 U	200 U		198 U
Corrosivity, pH		8.35	8.30		8.49
Ignitability*					
Oil and Grease, mg/kg		1.7 U	1.7 U		1.7 U

*) Results to be forwarded at a later date.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-05-57 Client: Rocky Flats

Sample Information	Customer ID: / RFW#: / Matrix:	BH078705CT -08 Soil	BH07871013 -09 Soil	BH02871420 -12 Soil	BH02871420 -12 DUP Soil
Analyte:					
% Solids		83.5	84.8	82.7	
Cyanide, mg/kg		1.2 U	1.3 U	1.3 U	
Sulfide, mg/kg		196 U	192 U	189 U	183 U
Corrosivity, pH		8.23	8.84	8.98	
Ignitability*					
Oil and Grease, mg/kg		1.7 U	1.7 U	1.7 U	

*) Results to be forwarded at a later date.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-05-57 Client: Rocky Flats

Sample Information			
	Customer ID:	BH02871420 MS	BH028714CT
	RFW#:	-12 MS	-14
	Matrix:	Soil	Soil
Analyte:			
% Solids			87.9
Cyanide, mg/kg			1.2 U
Sulfide, mg/kg		108 %	194 U
Corrosivity, pH			9.04
Ignitability*			
Oil and Grease, mg/kg			1.7 U

*) Results to be forwarded at a later date.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-06-02 Client: Rocky Flats

Sample Information	Customer ID:	BH098714BR	BH098714BR	BH098706WT	BH09870010
	RFW#:	-02	-02 DUP	-04	-06
	Matrix:	Soil	Soil	Soil	Soil
Analyte:					
% Solids		85.2		80.8	82.5
Cyanide, mg/kg		1.3 U		1.3 U	1.1 U
Sulfide, mg/kg		213 U	194 U	183 U	180 U
Corrosivity, pH		6.55		6.78	7.37
Ignitability, F		***		***	***
Oil and Grease, mg/kg		1.7 U		1.7 U	1.7 U

*) Results to be forwarded at a later date.
**) Not performed.
***) No flash point to 230 F.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-06-04 Client: Rocky Flats

Sample Information			
	Customer ID:	BH13870010	BH138714BR
	RFW#:	-02	-04
	Matrix:	Soil	Soil
Analyte:			
% Solids		81.1	85.8
Cyanide, mg/kg		1.3	1.1 U
Sulfide, mg/kg		192 U	200 U
Corrosivity, pH		8.65	8.01
Ignitability, F		***	***
Oil and Grease, mg/kg		1.7 U	1.7 U

***) No flash point to 230 F.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-06-05 Client: Rocky Flats

Sample Information	Customer ID:	BH108723BR	BH10871020	BH10870010	BH108720CT
	RFW#:	-02	-04	-06	-08
	Matrix:	Soil	Soil	Soil	Soil
Analyte:					
% Solids		84.5	80.4	87.7	83.2
Cyanide, mg/kg		1.2 U	1.2 U	1.2 U	1.2 U
Sulfide, mg/kg		190 U	194 U	187 U	189 U
Corrosivity, pH		8.3	8.46	8.39	7.72
Ignitability, F		***	***	***	***
Oil and Grease, mg/kg		1.7 U	1.7 U	1.7 U	1.7 U

***) No flash point to 230 F.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-06-10 Client: Rocky Flats

Sample Information	Customer ID:	BH118711CT	BH118714WT	BH11870010	BH168706BR
	RFW#:	-02	-04	-06	-08
	Matrix:	Soil	Soil	Soil	Soil
Analyte:					
% Solids		82.6	86.1	86.1	84.0
Cyanide, mg/kg		1.2 U	1.3 U	1.1 U	1.1 U
Sulfide, mg/kg		204 U	190 U	202 U	189 U
Corrosivity, pH		5.65	8.16	8.65	7.49
Ignitability, °F		***	***	***	***
Oil and Grease, mg/kg		1.7 U	1.7 U	1.7 U	1.7 U

***) No flash point to 230°F.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-06-10 Client: Rocky Flats

Sample Information			
	Customer ID:	BH168702CT	BH16870206
	RFW#:	-10	-12
	Matrix:	Soil	Soil
Analyte:			
% Solids		86.6	81.4
Cyanide, mg/kg		1.0 U	1.2 U
Sulfide, mg/kg		196 U	204 U
Corrosivity, pH		7.66	7.04
Ignitability, °F		***	***
Oil and Grease, mg/kg		1.7 U	1.7 U

***) No flash point to 230°F.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-06-14 Client: Rocky Flats

Sample Information			
	Customer ID:	BH088710BR	BH15870510
	RFW#:	-16	-18
	Matrix:	Soil	Soil
Analyte:			
% Solids		82.4	85.4
Cyanide, mg/kg		1.2 U	1.2 U
Sulfide, mg/kg		200 U	200 U
Corrosivity, pH		8.55	9.00
Ignitability, °F		***	***
Oil and Grease, mg/kg		1.7 U	1.7 U

**) Not performed.
***) No flash point to 230°F.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-06-14 Client: Rocky Flats

Sample Information	Customer ID:	BH088707CT	BH17870005	BH158726BR	BH15870005
	RFW#:	-08	-10	-12	-14
	Matrix:	Soil	Soil	Soil	Soil
Analyte:					
% Solids		84.7	85.6	83.9	86.0
Cyanide, mg/kg		1.2 U	1.2 U	1.2 U	1.2 U
Sulfide, mg/kg		200 U	200 U	200 U	200 U
Corrosivity, pH		9.10	8.50	8.60	8.80
Ignitability, °F		***	***	***	***
Oil and Grease, mg/kg		1.7 U	1.7 U	1.7 U	1.7 U

**) Not performed.
***) No flash point to 230°F.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-06-14 Client: Rocky Flats

Sample Information	Customer ID:	BH178708BR	BH08870007	BH178705CT	BH178705CT
	RFW#:	-02	-04	-06	-06 DUP
	Matrix:	Soil	Soil	Soil	Soil
Analyte:					
% Solids		86.0	87.1	81.4	86.0
Cyanide, mg/kg		1.2 U	1.2 U	1.2 U	**
Sulfide, mg/kg		200 U	200 U	200 U	**
Corrosivity, pH		8.45	8.10	8.40	**
Ignitability, °F		***	***	***	***
Oil and Grease, mg/kg		1.7 U	1.7 U	1.7 U	1.7 U

**) Not performed.
***) No flash point to 230°F.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-06-22 Client: Rocky Flats

Sample Information				
	Customer ID:	BH018701WT	BH018704WS	BH018710WS
	RFW#:	-02	-04	-06
	Matrix:	Soil	Soil	Soil
Analyte:				
% Solids		89.2	84.0	86.1
Cyanide, mg/kg		1.2 U	1.2 U	1.2 U
Sulfide, mg/kg		200 U	200 U	200 U
Corrosivity, pH		8.85	8.70	8.80
Ignitability, °F		***	***	***
Oil and Grease, mg/kg		1.7 U	1.7 U	1.7 U

**) Not performed.
***) No flash point to 230°F.

WESTON ANALYTICS
SUMMARY OF OTHER PARAMETERS

RFW Batch Number: 87-06-24 Client: Rocky Flats

Sample Information	Customer ID:	BH048719BR	BH048715CT	BH04870010	BH048710WT
	RFW#:	-02	-04	-06	-08
	Matrix:	Soil	Soil	Soil	Soil
Analyte:					
% Solids		78.2	91.1	88.9	81.7
Cyanide, mg/kg		1.2 U	1.2 U	1.2 U	1.2 U
Sulfide, mg/kg		200 U	200 U	200 U	200 U
Corrosivity, pH		8.1 U	8.45	8.35	9.20
Ignitability, °F		***	***	***	***
Oil and Grease, mg/kg		1.7 U	1.7 U	4.6	1.7 U

**) Not performed.
***) No ignitability to °230 F.

APPENDIX E-6

ON-SITE LABORATORY RESULTS FOR VOLATILE ORGANICS, RADIONUCLIDES, INORGANICS

REMEDIAL INVESTIGATION

881 HILLSIDE

J. A. BLAIR

E87-3279, E87-3651, E87-3673

June 23, 1987

GENERAL LABORATORY

AUTHOR: _____

ROCKWELL INTERNATIONAL
NASO
ROCKY FLATS PLANT
P.O. BOX 464
GOLDEN, COLORADO 80402-0464

DISTRIBUTION:
T. C. Greengard
B. R. Lewis
J. A. Blair
J. Zarret

APPROVED BY: _____ for TEE
T. H. Elmont

Three sets of water samples are being reported for the 881 Hillside Remedial Investigation. These are eleven pre-1987 first quarter ground water wells (E87-3279), five new ground water wells (E87-3651), and nine surface water samples (E87-3673). All of these sampling sites are located within 881 Hillside area.

The parameters analyzed for each sample are listed in the data tables. Sample ID along with the date sampled are listed in the tables as Sample ID/Date Sampled (i.e., 4-87/5-20-87).

The required detection limit (RDL) is listed for each parameter. When a sample parameter is reported below the RDL it appears in the table as a less than symbol (<). The parameters of Pu-239, Am-241, and U-234, 235, and 238 do not have RDL values. When the standard deviation is greater than the actual value, this represents a non-minimum detectable activity value meaning the value is essentially zero.

The parameters of Gross Alpha and Beta do not have RDL values, the uncertainty is reported along with the value.

The * symbol is used in reporting the alkalinity parameters as carbonate. The pH of the sample is below the required pH to analyze for carbonate for these samples. Therefore, alkalinity as carbonate was not analyzed for and is not reported.

The @ symbol is used to show that the parameter was not requested for this sample.

TABLE 1 - E87-3651

Analysis by Water Lab and Special Chemical Analysis

Analy//Samp.ID-date	RDL	4-87/5-20-87	2-87/5-29-87	5-87/6-12-87
Cl^- (mg/L)	1.0	200	66.0	166
NO^-_3 as N (mg/L)	0.20	5.80	<0.20	9.50
$SO_4^=$ (mg/L)	1.0	310	99.0	345
Total Dissolved Solids (mg/L)	1	1318	547	1314
Alkalinity as:				
HCO_3^- (mg/L)	1.0	309	275	389
$CO_3^=$ (mg/L)	1.0	*	*	*
CN^- (ug/ml)	1.0	<	<	<
Oil and Grease (mg/L)	5.0	6.7	12.9	204
Cr^{+6} (mg/l)	1.0	<	<	<

Analysis by Radiochemistry

Gross Alpha (pCi/L)	N/A	220 ± 10	130 ± 17	64 ± 9
Gross Beta (pCi/L)	N/A	134 ± 15	100 ± 12	80 ± 41
U-234 (pCi/L)	N/A	$(2.3 \pm 0.3) \times 10^1$	$(1.0 \pm 0.3) \times 10^1$	$(1.5 \pm 0.3) \times 10^1$
U-235 (pCi/L)	N/A	$(9.5 \pm 6.6) \times 10^{-1}$	$(8.4 \pm 7.1) \times 10^{-1}$	$(7.2 \pm 6.1) \times 10^{-1}$
U-238 (pCi/L)	N/A	$(0.5 \pm 0.3) \times 10^1$	6.6 ± 1.9	9.4 ± 2.2
Sr-90 (pCi/L)	0.6	4.50	0.74	3.4
Pu-239 (pCi/L)	N/A	0.0 ± 0.0	1.3 ± 0.9	0.0 ± 0.0
Am-241 (pCi/L)	N/A	0.0 ± 2.4	0.0 ± 5.9	0.0 ± 2.7
Tritium (pCi/L)	1.1×10^2	<	1.2 ± 10^2	<
Cs-137 (pCi/L)	0.3	3.1	1.4	2.0

TABLE 1 - E87-3651

Analysis by Water Lab and Special Chemical Analysis

Analy//Samp.ID-date	RDL	8-87/6-15-87	3-87/6-16-87
Cl^- (mg/L)	1.0	40.1	93.9
NO^-_3 as N (mg/L)	0.20	<	0.32
$SO_4^=$ (mg/L)	1.0	770	210
Total Dissolved Solids (mg/L)	1	1232	470
Alkalinity as:			
HCO_3^- (mg/L)	1.0	266	192
$CO_3^=$ (mg/L)	1.0	*	*
CN^- (ug/ml)	1.0	<	<
Oil & Grease (mg/L)	5.0	117	76.9
Cr^+6	1.0	<	<

Analysis by Radiochemistry

Gross Alpha (pCi/L)	N/A	87 ± 86	811 ± 76
Gross Beta (pCi/L)	N/A	117 ± 4	177 ± 60
U-234 (pCi/L)	N/A	4.7 ± 1.5	$(1.2 \pm 0.2) \times 10^1$
U-235 (pCi/L)	N/A	$(5.4 \pm 4.8) \times 10^{-1}$	$(3.2 \pm 3.9) \times 10^{-1}$
U-238 (pCi/L)	N/A	5.1 ± 1.5	$(1.2 \pm 0.2) \times 10^1$
Sr-90 (pCi/L)	0.6	15.9	1.4
Pu-239 (pCi/L)	N/A	2.1 ± 1.8	0.6 ± 1.0
Am-241 (pCi/L)	N/A	0.0 ± 1.0	0.0 ± 4.0
Tritium (pCi/L)	1.1×10^2	<	<
Cs-137 (pCi/L)	0.3	0.3	2.2

TABLE 2 - E87-3651

INDUCTIVELY COUPLED PLASMA EMISSION RESULTS

SAMPLE	CLASS	AG	AL	BA	BE
2-87	06-02	< 0.0100	< 0.2000	< 0.2000	< 0.0050
3-87	06-16	< 0.0100	< 0.2000	< 0.2000	< 0.0050
4-87	05-20	< 0.0100	0.3094	< 0.2000	< 0.0050
5-87	06-12	< 0.0100	< 0.2000	< 0.2000	< 0.0050
8-87	06-15	< 0.0100	< 0.2000	< 0.2000	< 0.0050

SAMPLE	CLASS	CA4318	CO	CR
2-87	06-02	64.5134	< 0.0500	< 0.0100
3-87	06-16	24.3791	< 0.0500	< 0.0100
4-87	05-20	183.2242	< 0.0500	< 0.0100
5-87	06-12	196.3071	< 0.0500	< 0.0100
8-87	06-15	123.3876	< 0.0500	< 0.0100

SAMPLE	CLASS	CU	FE	MG	MN
2-87	06-02	< 0.0250	< 0.1000	19.2336	0.2189
3-87	06-16	< 0.0250	< 0.1000	6.4645	< 0.0150
4-87	05-20	< 0.0250	0.1961	39.1300	0.1229
5-87	06-12	< 0.0250	< 0.1000	55.5163	0.0983
8-87	06-15	< 0.0250	< 0.1000	35.7582	0.0496

SAMPLE	CLASS	MO	NA	NI	SR
2-87	06-02	< 0.0400	124.7582	< 0.0400	0.6149
3-87	06-16	< 0.0400	143.4496	< 0.0400	0.4566
4-87	05-20	< 0.0400	228.1759	< 0.0400	1.2858
5-87	06-12	< 0.0400	124.5953	< 0.0400	2.2566
8-87	06-15	< 0.0400	258.5658	< 0.0400	1.9978

SAMPLE	CLASS	V
2-87	06-02	< 0.0500
3-87	06-16	< 0.0500
4-87	05-20	< 0.0500
5-87	06-12	< 0.0500
8-87	06-15	< 0.0500

TABLE 3 - E87-3651

Volatiles by Gas Chromatography

Analy//Samp.ID-date	RDL	4-87/5-20-87	2-87/5-29-87	5-87/6-12-87
Chloroform (ppb)	4	<	@	<
Carbon Tetrachloride (ppb)	4	5	@	<
1,1-Dichloroethene (ppb)	4	8	@	<
1,2-Dichloroethane (ppb)	4	32	@	6
1,1,1-Trichloroethane (ppb)	4	<	@	<
1,1,2-Trichloroethane (ppb)	4	<	@	<
Trichlorethene (ppb)	4	525	@	<
Tetrachloroethene (ppb)	4	84	@	<
Trans- (ppb) 1,2-Dichloroethene	4	<	@	<

Dissolved Metal by Atomic Absorption (all units are ug/ml)

Arsenic (As)	0.01	<	<	<
Lead (Pb)	0.005	<	<	<
Mercury (Hg)	0.0002	<	0.0003	<
Potassium (K)	5.0	<	<	11
Selenium (Se)	0.005	0.193	<	0.052
Thallium (Tl)	0.01	<	<	<
Cesium (Cs)	0.2	<	<	<
Lithium (Li)	0.01	0.02	0.02	0.35
Antimony (Sb)	0.06	<	<	<
Cadmium (Cd)	0.005	<	<	0.008
Zinc (Zn)	0.02	0.16	0.02	0.07

TABLE 3 - E87-3651

Volatiles by Gas Chromatography

Analy//Samp.ID-date	RDL	8-87/6-15-87	3-87/6-16-87
Chloroform (ppb)	4	<	<
Carbon Tetrachloride (ppb)	4	<	<
1,1-Dichloroethene (ppb)	4	<	<
1,2-Dichloroethane (ppb)	4	<	<
1,1,1-Trichloroethane (ppb)	4	<	<
1,1,2-Trichloroethane (ppb)	4	<	<
Trichlorethene (ppb)	4	<	<
Tetrachloroethene (ppb)	4	<	<
Trans- (ppb) 1,2-Dichloroethene	4	<	<

Dissolved Metal by Atomic Absorption (all units are ug/ml)

Arsenic (As)	0.01	<	<
Lead (Pb)	0.005	<	0.008
Mercury (Hg)	0.0002	0.0003	<
Potassium (K)	5.0	20	13
Selenium (Se)	0.005	<	<
Thallium (Tl)	0.01	<	<
Cesium (Cs)	0.2	<	<
Lithium (Li)	0.01	0.12	0.06
Antimony (Sb)	0.06	<	<
Cadmium (Cd)	0.005	<	<
Zinc (Zn)	0.02	<	<

TABLE 1 - E87-3673

Analysis by Water Lab and Special Chemical Analysis

Analy//Samp.ID-date	RDL	SW-29/5-26-87	SW-30/5-26-87	SW-31/5-26-87
Cl^- (mg/L)	1.0	11.9	33.8	37.5
NO^-_3 as N (mg/L)	0.20	<	1.29	2.10
$SO_4^=$ (mg/L)	1.0	8.0	68.0	53.0
Total Dissolved Solids (mg/L)	1	232	310	300
Alkalinity as:				
HCO_3^- (mg/L)	1.0	160	165	143
$CO_3^=$ (mg/L)	1.0	*	*	*
CN^- (ug/ml)	1.0	<	<	<
Oil & Grease (mg/L)	5.0	20.5	22.5	11.8
Cr^{+6} (mg/L)	1.0	<	<	<
Susp. Solids (mg/L)	1	10	22	497

Analysis by Radiochemistry

Gross Alpha (pCi/L)	N/A	0 ± 0	18 ± 14	77 ± 24
Gross Beta (pCi/L)	N/A	33 ± 11	13 ± 14	59 ± 2
U-234 (pCi/L)	N/A	1.2 ± 0.8	3.0 ± 1.1	6.0 ± 1.2
U-235 (pCi/L)	N/A	$(2.9 \pm 4.1) \times 10^{-1}$	$(9.8 \pm 5.1) \times 10^{-1}$	$(6.0 \pm 3.7) \times 10^{-1}$
U-238 (pCi/L)	N/A	1.5 ± 1.0	$(1.3 \pm 0.2) \times 10^{1}$	$(1.4 \pm 0.2) \times 10^{1}$
Sr-90 (pCi/L)	0.6	1.80	2.03	3.43
Pu-239 (pCi/L)	N/A	$(0.0 \pm 5.0) \times 10^{-1}$	$(4.5 \pm 3.9) \times 10^{-1}$	$(8.0 \pm 6.3) \times 10^{-1}$
Am-241 (pCi/L)	N/A	$(0.0 \pm 6.4) \times 10^{-1}$	0.8 ± 1.5	$(5.2 \pm 4.6) \times 10^{-1}$
Tritium (pCi/L)	1.1×10^{2}	<	<	<
Cs-137 (pCi/L)	0.3	<	<	<

TABLE 1 - E87-3673

Analysis by Water Lab and Special Chemical Analysis

Analy//Samp.ID-date	RDL	SW-32/5-26-87	SW-35/5-26-87	SW-40/5-26-87
Cl^- (mg/L)	1.0	10.5	23.4	47.8
NO^-_3 as N (mg/L)	0.20	<	1.90	3.80
$SO_4^=$ (mg/L)	1.0	20.0	49.0	64.0
Total Dissolved Solids (mg/L)	1	226	281	239
Alkalinity as:				
HCO_3^- (mg/L)	1.0	160	144	168
$CO_3^=$ (mg/L)	1.0	*	*	*
CN^- (ug/ml)	1.0	<	<	<
Oil & Grease (mg/L)	5.0	24.9	13.1	5.7
Cr^{+6} (mg/L)	1.0	<	<	<
Susp. Solids (mg/L)	1	5	29	115

Analysis by Radiochemistry

Gross Alpha (pCi/L)	N/A	8 ± 4	20 ± 10	21 ± 7
Gross Beta (pCi/L)	N/A	10 ± 5	11 ± 11	59 ± 5
U-234 (pCi/L)	N/A	3.4 ± 1.8	4.1 ± 1.0	7.7 ± 1.8
U-235 (pCi/L)	N/A	$(2.2 \pm 4.2) \times 10^{-1}$	$(6.3 \pm 4.1) \times 10^{-1}$	$(4.2 \pm 4.3) \times 10^{-1}$
U-238 (pCi/L)	N/A	1.5 ± 1.3	$(1.4 \pm 0.2) \times 10^{1}$	8.8 ± 1.8
Sr-90 (pCi/L)	0.6	3.15	2.95	<
Pu-239 (pCi/L)	N/A	$(6.6 \pm 6.1) \times 10^{-1}$	$(5.7 \pm 4.1) \times 10^{-1}$	$(3.1 \pm 4.5) \times 10^{-1}$
Am-241 (pCi/L)	N/A	$(0.6 \pm 2.2) \times 10^{-1}$	$(1.3 \pm 2.5) \times 10^{-1}$	$(0.7 \pm 1.3) \times 10^{-1}$
Tritium (pCi/L)	1.1×10^{2}	<	<	<
Cs-137 (pCi/L)	0.3	<	0.8	<

TABLE 1 - E87-3673

Analysis by Water Lab and Special Chemical Analysis

Analy//Samp.ID-date	RDL	SW-41/5-26-87	SW-42/5-26-87	SW-881HS/5-28-87
Cl^- (mg/L)	1.0	74.1	10.8	16.3
NO^-_3 as N (mg/L)	0.20	8.50	<	<
$SO_4^=$ (mg/L)	1.0	44.0	27.0	95.0
Total Dissolved Solids (mg/L)	1	456	160	629
Alkalinity as:				
HCO_3^- (mg/L)	1.0	216	86.9	318
$CO_3^=$ (mg/L)	1.0	*	*	*
CN^- (ug/ml)	1.0	<	<	<
Oil & Grease (mg/L)	5.0	15.2	10.7	224
Cr^{+6} (mg/L)	1.0	<	<	<
Susp. Solids (mg/L)	1	11	37	896

Analysis by Radiochemistry

Gross Alpha (pCi/L)	N/A	13 ± 18	-9 ± 6	32 ± 9
Gross Beta (pCi/L)	N/A	14 ± 31	-5 ± 7	61 ± 12
U-234 (pCi/L)	N/A	6.1 ± 1.9	8.1 ± 3.4	2.8 ± 1.8
U-235 (pCi/L)	N/A	$(1.3 \pm 2.6) \times 10^{-1}$	0.0 ± 1.4	0.0 ± 0.0
U-238 (pCi/L)	N/A	5.0 ± 1.7	1.2 ± 2.3	3.0 ± 1.9
Sr-90 (pCi/L)	0.6	1.78	0.65	0.88
Pu-239 (pCi/L)	N/A	0.0 ± 0.0	$(6.9 \pm 4.9) \times 10^{-1}$	$(2.8 \pm 3.8) \times 10^{-1}$
Am-241 (pCi/L)	N/A	0.0 ± 0.0	$(1.8 \pm 5.5) \times 10^{-1}$	$(5.1 \pm 3.8) \times 10^{-1}$
Tritium (pCi/L)	1.1×10^2	<	<	3.2×10^2
Cs-137 (pCi/L)	0.3	<	<	<

TABLE 2 - E87-3673

INDUCTIVELY COUPLED PLASMA EMISSION RESULTS

SAMPLE	CLASS		AG		AL		BA		BE
881HS	05-26	<	0.0100	<	0.2000	<	0.2000	<	0.0050
REABLK	REABLK	<	0.0100	<	0.2000	<	0.2000	<	0.0050
SW-29	05-26	<	0.0100	<	0.2000	<	0.2000	<	0.0050
SW-29T	05-26	<	0.0100		0.3583	<	0.2000	<	0.0050
SW-30	05-26	<	0.0100	<	0.2000	<	0.2000	<	0.0050
SW-30T	05-26	<	0.0100		1.1967	<	0.2000	<	0.0050
SW-31	05-26	<	0.0100	<	0.2000	<	0.2000	<	0.0050
SW-31T	05-26	<	0.0100		13.6304	<	0.2000	<	0.0050
SW-32	05-26	<	0.0100	<	0.2000	<	0.2000	<	0.0050
SW-32T	05-26	<	0.0100		0.2812	<	0.2000	<	0.0050
SW-35	05-26	<	0.0100	<	0.2000	<	0.2000	<	0.0050
SW-35D	05-26	<	0.0100	<	0.2000	<	0.2000	<	0.0050
SW-35T	05-26	<	0.0100		2.5063	<	0.2000	<	0.0050
SW-40	05-26	<	0.0100	<	0.2000	<	0.2000	<	0.0050
SW-40T	05-26	<	0.0100		3.7568	<	0.2000		0.0067
SW-41	05-26	<	0.0100	<	0.2000	<	0.2000	<	0.0050
SW-41T	05-26	<	0.0100	<	0.2000	<	0.2000	<	0.0050
SW-42	05-26	<	0.0100	<	0.2000	<	0.2000	<	0.0050
SW-42T	05-26	<	0.0100		1.1313	<	0.2000	<	0.0050
SW32DT	05-26	<	0.0100		0.2362	<	0.2000	<	0.0050
SW881T	05-26	<	0.0100		100.5963		0.6199	<	0.0050

SAMPLE	CLASS		CA4318		CO		CR
881HS	05-26		115.2074	<	0.0500	<	0.0100
REABLK	REABLK	<	5.0000	<	0.0500	<	0.0100
SW-29	05-26		51.3373	<	0.0500	<	0.0100
SW-29T	05-26		46.9457	<	0.0500	<	0.0100
SW-30	05-26		66.4170	<	0.0500	<	0.0100
SW-30T	05-26		62.4515	<	0.0500	<	0.0100
SW-31	05-26		60.2945	<	0.0500	<	0.0100
SW-31T	05-26		67.4288	<	0.0500		0.0863
SW-32	05-26		47.9529	<	0.0500	<	0.0100
SW-32T	05-26		45.0537	<	0.0500	<	0.0100
SW-35	05-26		60.3433	<	0.0500	<	0.0100
SW-35D	05-26		53.1660	<	0.0500	<	0.0100
SW-35T	05-26		59.7366	<	0.0500	<	0.0100
SW-40	05-26		68.4692	<	0.0500	<	0.0100
SW-40T	05-26		67.9215	<	0.0500		0.0432
SW-41	05-26		95.0564	<	0.0500	<	0.0100
SW-41T	05-26		86.8900	<	0.0500	<	0.0100
SW-42	05-26		28.9458	<	0.0500	<	0.0100
SW-42T	05-26		24.0438	<	0.0500	<	0.0100
SW32DT	05-26		44.3567	<	0.0500	<	0.0100
SW881T	05-26		162.7838	<	0.0500		0.0796

TABLE 2 - E87-3673

SAMPLE	CLASS		CU		FE		MG		MN
881HS	05-26	<	0.0250	<	0.1000		25.8323		0.0296
REABLK	REABLK	<	0.0250	<	0.1000	<	5.0000	<	0.0150
SW-29	05-26	<	0.0250	<	0.1000		8.8935		0.0513
SW-29T	05-26	<	0.0250		0.7045		9.2585		0.1064
SW-30	05-26	<	0.0250	<	0.1000		14.7056	<	0.0150
SW-30T	05-26	<	0.0250		0.9694		15.7846		0.0214
SW-31	05-26	<	0.0250	<	0.1000		13.7267		0.0163
SW-31T	05-26		0.0376		8.6107		16.0140		0.1400
SW-32	05-26	<	0.0250	<	0.1000		8.8736	<	0.0150
SW-32T	05-26	<	0.0250		0.3920		9.1378		0.0295
SW-35	05-26	<	0.0250	<	0.1000		10.9063		0.1124
SW-35D	05-26	<	0.0250	<	0.1000		10.6417		0.1106
SW-35T	05-26		0.0251		1.7325		12.1691		0.1554
SW-40	05-26	<	0.0250	<	0.1000		15.2873	<	0.0150
SW-40T	05-26		0.0334		2.5595		16.8176		0.0549
SW-41	05-26	<	0.0250	<	0.1000		19.3204	<	0.0150
SW-41T	05-26	<	0.0250		0.1314		20.4685	<	0.0150
SW-42	05-26	<	0.0250		0.2132		6.1442	<	0.0150
SW-42T	05-26	<	0.0250		1.5818		5.9101		0.1121
SW32DT	05-26	<	0.0250		0.3847		8.6974		0.0314
SW881T	05-26		0.0789		64.1750		42.3780		0.7341

SAMPLE	CLASS		MO		NA		NI		SR
881HS	05-26	<	0.0400		90.1678	<	0.0400		0.7612
REABLK	REABLK	<	0.0400	<	5.0000	<	0.0400	<	0.2000
SW-29	05-26	<	0.0400		24.3218	<	0.0400		0.2389
SW-29T	05-26	<	0.0400		22.9596	<	0.0400		0.2420
SW-30	05-26	<	0.0400		35.6108	<	0.0400		0.3933
SW-30T	05-26	<	0.0400		32.9388	<	0.0400		0.4072
SW-31	05-26	<	0.0400		36.6239	<	0.0400		0.3706
SW-31T	05-26	<	0.0400		35.6878	<	0.0400		0.4136
SW-32	05-26	<	0.0400		22.3560	<	0.0400		0.2412
SW-32T	05-26	<	0.0400		23.4118	<	0.0400		0.2441
SW-35	05-26	<	0.0400		23.6891	<	0.0400		0.2920
SW-35D	05-26	<	0.0400		20.1562	<	0.0400		0.2754
SW-35T	05-26	<	0.0400		21.8851	<	0.0400		0.3120
SW-40	05-26	<	0.0400		40.6702	<	0.0400		0.4355
SW-40T	05-26	<	0.0400		36.7262	<	0.0400		0.4575
SW-41	05-26	<	0.0400		51.9213	<	0.0400		0.5961
SW-41T	05-26	<	0.0400		44.8466		0.0434		0.6041
SW-42	05-26	<	0.0400		22.4779	<	0.0400	<	0.2000
SW-42T	05-26	<	0.0400		19.8008	<	0.0400	<	0.2000
SW32DT	05-26	<	0.0400		21.3427	<	0.0400		0.2385
SW881T	05-26	<	0.0400		89.1046		0.0490		0.9348

TABLE 2 - E87-3673

SAMPLE	CLASS		V
881HS	05-26	<	0.0500
REABLK	REABLK	<	0.0500
SW-29	05-26	<	0.0500
SW-29T	05-26	<	0.0500
SW-30	05-26	<	0.0500
SW-30T	05-26	<	0.0500
SW-31	05-26	<	0.0500
SW-31T	05-26	<	0.0500
SW-32	05-26	<	0.0500
SW-32T	05-26	<	0.0500
SW-35	05-26	<	0.0500
SW-35D	05-26	<	0.0500
SW-35T	05-26	<	0.0500
SW-40	05-26	<	0.0500
SW-40T	05-26	<	0.0500
SW-41	05-26	<	0.0500
SW-41T	05-26	<	0.0500
SW-42	05-26	<	0.0500
SW-42T	05-26	<	0.0500
SW32DT	05-26	<	0.0500
SW881T	05-26		0.1854

TABLE 3 - E87-3673

Volatiles by Gas Chromatography

Analy//Samp.ID-date	RDL	SW-29/5-27-87	SW-30/5-26-87	SW-31/5-26-87
Chloroform (ppb)	4	<	<	<
Carbon Tetrachloride (ppb)	4	<	<	<
1,1-Dichloroethene (ppb)	4	<	<	<
1,2-Dichloroethane (ppb)	4	<	<	<
1,1,1-Trichloroethane (ppb)	4	<	<	<
1,1,2-Trichloroethane (ppb)	4	<	<	<
Trichlorethene (ppb)	4	<	<	<
Tetrachloroethene (ppb)	4	<	<	<
Trans- (ppb) 1,2-Dichloroethene	4	<	<	<

Dissolved Metal by Atomic Absorption (all units are ug/ml)

Arsenic (As)	0.01	<	<	<
Lead (Pb)	0.005	<	<	<
Mercury (Hg)	0.0002	<	<	<
Potassium (K)	5.0	<	<	<
Selenium (Se)	0.005	<	<	<
Thallium (Tl)	0.01	<	<	<
Cesium (Cs)	0.2	<	<	<
Lithium (Li)	0.01	<	0.01	0.01
Antimony (Sb)	0.06	<	<	<
Cadmium (Cd)	0.005	<	<	0.006
Zinc (Zn)	0.02	<	0.02	<

TABLE 3 - E87-3673

Total Metal by Atomic Absorption (all units are ug/ml)

Analy//Sampp.ID-date	RDL	SW-29/5-27-87	SW-30/5-26-87	SW-31-5-26-87
Arsenic (As)	0.01	<	<	0.01
Lead (Pb)	0.005	<	<	<
Mercury (Hg)	0.0002	<	<	<
Potassium (K)	5.0	<	<	<
Selenium (Se)	0.005	<	<	0.07
Thallium (Tl)	0.01	<	<	<
Cesium (Cs)	0.2	<	<	<
Lithium (Li)	0.01	<	0.01	0.02
Antimony (Sb)	0.06	<	<	<
Cadmium (Cd)	0.005	<	<	<
Zinc (Zn)	0.02	<	<	0.09

TABLE 3 - E87-3673

Volatiles by Gas Chromatography

Analy//Samp.ID-date	RDL	SW-32/5-26-87	SW-35/5-26-87	SW-40/5-26-87
Chloroform (ppb)	4	<	<	<
Carbon Tetrachloride (ppb)	4	<	<	<
1,1-Dichloroethene (ppb)	4	<	<	<
1,2-Dichloroethane (ppb)	4	<	<	<
1,1,1-Trichloroethane (ppb)	4	<	6	<
1,1,2-Trichloroethane (ppb)	4	<	<	<
Trichlorethene (ppb)	4	<	<	<
Tetrachloroethene (ppb)	4	<	<	4
Trans- (ppb) 1,2-Dichloroethene	4	<	<	<

Dissolved Metal by Atomic Absorption (all units are ug/ml)

Arsenic (As)	0.01	<	<	<
Lead (Pb)	0.005	<	<	<
Mercury (Hg)	0.0002	<	<	<
Potassium (K)	5.0	<	<	<
Selenium (Se)	0.005	<	<	<
Thallium (Tl)	0.01	<	<	<
Cesium (Cs)	0.2	<	<	<
Lithium (Li)	0.01	<	0.01	0.01
Antimony (Sb)	0.06	<	<	<
Cadmium (Cd)	0.005	<	<	<
Zinc (Zn)	0.02	<	<	0.02

TABLE 3 - E87-3673

Total Metal by Atomic Absorption (all units are ug/ml)

Analy//Samp.ID-date	RDL	SW-32/5-26-87	SW-35/5-26-87	SW-40/5-26-87
Arsenic (As)	0.01	<	<	<
Lead (Pb)	0.005	<	<	<
Mercury (Hg)	0.0002	<	<	<
Potassium (K)	5.0	<	<	<
Selenium (Se)	0.005	<	<	<
Thallium (Tl)	0.01	<	<	<
Cesium (Cs)	0.2	<	<	<
Lithium (Li)	0.01	<	0.01	0.01
Antimony (Sb)	0.06	<	<	<
Cadmium (Cd)	0.005	<	<	<
Zinc (Zn)	0.02	<	<	<

TABLE 3 - E87-3673

Volatiles by Gas Chromatography

Analy//Samp.ID-date	RDL	SW-41/5-26-87	SW-42/5-26-87	SW-881HS/5-28-87
Chloroform (ppb)	4	<	<	<
Carbon Tetrachloride (ppb)	4	<	<	<
1,1-Dichloroethene (ppb)	4	<	<	<
1,2-Dichloroethane (ppb)	4	<	<	<
1,1,1-Trichloroethane (ppb)	4	<	<	<
1,1,2-Trichloroethane (ppb)	4	<	<	<
Trichlorethene (ppb)	4	14	<	<
Tetrachloroethene (ppb)	4	128	<	<
Trans- (ppb) 1,2-Dichloroethene	4	<	<	<

Dissolved Metal by Atomic Absorption (all units are ug/ml)

Arsenic (As)	0.01	<	<	<
Lead (Pb)	0.005	<	<	<
Mercury (Hg)	0.0002	<	<	<
Potassium (K)	5.0	<	<	<
Selenium (Se)	0.005	<	<	<
Thallium (Tl)	0.01	<	<	<
Cesium (Cs)	0.2	<	<	<
Lithium (Li)	0.01	0.01	<	0.01
Antimony (Sb)	0.06	<	<	<
Cadmium (Cd)	0.005	<	<	<
Zinc (Zn)	0.02	0.05	<	<

TABLE 3 - E87-3673

Total Metal by Atomic Absorption (all units are ug/ml)

Analy//Samp.ID-date	RDL	SW-41/5-26-87	SW-42/5-26-87	SW-881HS/5-28-87
Arsenic (As)	0.01	<	<	0.06
Lead (Pb)	0.005	<	<	0.10
Mercury (Hg)	0.0002	<	<	<
Potassium (K)	5.0	<	<	15
Selenium (Se)	0.005	0.005	<	<
Thallium (Tl)	0.01	<	<	<
Cesium (Cs)	0.2	<	<	<
Lithium (Li)	0.01	0.01	<	0.06
Antimony (Sb)	0.06	<	<	<
Cadmium (Cd)	0.005	<	<	<
Zinc (Zn)	0.02	0.04	<	0.28

TABLE 1 - E87-3279

Analysis by Water Lab and Special Chemical Analysis

Analy//Samp.ID-date	RDL	1-71/3-9/87	1-71/5-1-87	59-86/4-9-87
Cl^- (mg/L)	1.0	21.2	21.5	66.7
NO^-_3 as N (mg/L)	0.20	7.30	4.40	1.28
$SO_4^=$ (mg/L)	1.0	24.0	18.0	150
Total Dissolved Solids (mg/L)	1	311	276	874
Alkalinity as:				
HCO_3^- (mg/L)	1.0	203	212	329
$CO_3^=$ (mg/L)	1.0	*	*	*
CN^- (ug/ml)	1.0	<	<	<

Analysis by Radiochemistry

Gross Alpha (pCi/L)	N/A	20 ± 5	29 ± 28	33 ± 7
Gross Beta (pCi/L)	N/A	14 ± 1	0 ± 22	37 ± 13
U-234 (pCi/L)	N/A	6.0 ± 1.1	2.6 ± 1.0	$(1.1 \pm 0.3) \times 10^1$
U-235 (pCi/L)	N/A	$(3.9 \pm 3.0) \times 10^{-1}$	$(5.0 \pm 4.1) \times 10^{-1}$	0.7 ± 1.3
U-238 (pCi/L)	N/A	3.6 ± 0.8	2.3 ± 1.0	5.6 ± 2.9
Sr-90 (pCi/L)	0.6	1.0	<	<
Pu-239 (pCi/L)	N/A	1.2 ± 0.4	0.5 ± 1.4	$(0.0 \pm 6.4) \times 10^{-1}$
Am-241 (pCi/L)	N/A	0.0 ± 1.3	0.0 ± 2.4	0.0 ± 1.0
Tritium (pCi/L)	1.1×10^2	<	2.9×10^2	4.5×10^2

TABLE 1 - E87-3279

Analysis by Water Lab and Special Chemical Analysis

Analy//Samp.ID-date	RDL	59-86/4-30-87	61-86/3-11-87	61-86/5-5-87
Cl^- (mg/L)	1.0	78.5	9.25	3.58
NO^-_3 as N (mg/L)	0.20	1.40	1.10	1.70
$SO_4^=$ (mg/L)	1.0	175	36.0	21.0
Total Dissolved Solids (mg/L)	1	812	234	236
Alkalinity as:				
HCO_3^- (mg/L)	1.0	493	171	177
$CO_3^=$ (mg/L)	1.0	*	*	*
CN^- (ug/ml)	1.0	<	<	<

Analysis by Radiochemistry

Gross Alpha (pCi/L)	N/A	45 ± 17	1 ± 10	18 ± 15
Gross Beta (pCi/L)	N/A	58 ± 14	16 ± 9	46 ± 13
U-234 (pCi/L)	N/A	$(1.5 \pm 0.2) \times 10^1$	4.2 ± 1.2	3.9 ± 1.2
U-235 (pCi/L)	N/A	$(8.8 \pm 5.8) \times 10^{-1}$	$(6.5 \pm 0.3) \times 10^2$	$(0.8 \pm 3.5) \times 10^{-1}$
U-238 (pCi/L)	N/A	$(1.1 \pm 0.2) \times 10^1$	2.7 ± 0.9	2.1 ± 0.9
Sr-90 (pCi/L)	0.6	2.41	<	1.90
Pu-239 (pCi/L)	N/A	1.3 ± 1.0	$(6.6 \pm 5.3) \times 10^{-1}$	$(7.0 \pm 6.6) \times 10^{-1}$
Am-241 (pCi/L)	N/A	$(0.0 \pm 5.5) \times 10^{-1}$	$(0.0 \pm 7.4) \times 10^{-1}$	$(4.3 \pm 4.3) \times 10^{-1}$
Tritium (pCi/L)	1.1×10^2	<	<	2.0×10^2

TABLE 1 - E87-3279

Analysis by Water Lab and Special Chemical Analysis

Analy//Samp.ID-date	RDL	62-86/4-10-87	62-86/4-30-87	64-86/4-29-87
Cl^- (mg/L)	1.0	28.0	26.9	38.0
NO^-_3 as N (mg/L)	0.20	2.30	2.60	1.28
$SO_4^=$ (mg/L)	1.0	60.0	90.0	168
Total Dissolved Solids (mg/L)	1	274	286	438
Alkalinity as:				
HCO_3^- (mg/L)	1.0	67.5	124	162
$CO_3^=$ (mg/L)	1.0	*	*	*
CN^- (ug/ml)	1.0	<	<	<

Analysis by Radiochemistry

Gross Alpha (pCi/L)	N/A	36 ± 27	30 ± 12	5 ± 14
Gross Beta (pCi/L)	N/A	3 ± 9	8 ± 37	-8 ± 2
U-234 (pCi/L)	N/A	1.5 ± 1.6	5.5 ± 1.3	2.2 ± 0.9
U-235 (pCi/L)	N/A	$(2.5 \pm 6.0) \times 10^{-1}$	$(8.9 \pm 4.7) \times 10^{-1}$	$(2.7 \pm 3.0) \times 10^{-1}$
U-238 (pCi/L)	N/A	2.1 ± 1.6	3.9 ± 1.1	2.4 ± 1.0
Sr-90 (pCi/L)	0.6	<	<	<
Pu-239 (pCi/L)	N/A	$(3.1 \pm 9.5) \times 10^{-1}$	0.2 ± 1.2	$(6.3 \pm 9.8) \times 10^{-1}$
Am-241 (pCi/L)	N/A	0.0 ± 0.6	$(0.0 \pm 7.7) \times 10^{-1}$	$(5.5 \pm 7.8) \times 10^{-1}$
Tritium (pCi/L)	1.1×10^2	<	<	<

TABLE 1 - E87-3279

Analysis by Water Lab and Special Chemical Analysis

Analy//Samp.ID-date	RDL	68-86/4-29-87	69-86/4-29-87
Cl^- (mg/L)	1.0	18.0	114
NO^-_3 as N (mg/L)	0.20	0.50	2.30
$SO_4^=$ (mg/L)	1.0	94.0	270
Total Dissolved Solids (mg/L)	1	166	1017
Alkalinity as:			
HCO_3^- (mg/L)	1.0	56.8	385
$CO_3^=$ (mg/L)	1.0	*	*
CN^- (ug/ml)	1.0	<	<

Analysis by Radiochemistry

Gross Alpha (pCi/L)	N/A	26 ± 14	40 ± 7
Gross Beta (pCi/L)	N/A	42 ± 12	49 ± 75
U-234 (pCi/L)	N/A	4.8 ± 2.1	$(1.2 \pm 0.2) \times 10^1$
U-235 (pCi/L)	N/A	$(6.0 \pm 6.8) \times 10^{-1}$	$(8.0 \pm 5.6) \times 10^{-1}$
U-238 (pCi/L)	N/A	5.6 ± 2.2	$(3.3 \pm 0.5) \times 10^1$
Sr-90 (pCi/L)	0.6	4.59	0.83
Pu-239 (pCi/L)	N/A	$(0.0 \pm 6.5) \times 10^{-1}$	0.3 ± 2.0
Am-241 (pCi/L)	N/A	3.2 ± 2.7	$(4.0 \pm 5.6) \times 10^{-1}$
Tritium (pCi/L)	1.1×10^2	<	3×10^2

TABLE 2 - E87-3279

INDUCTIVELY COUPLED PLASMA EMISSION RESULTS

SAMPLE	CLASS	AG	AL	BA	BE
1-71	03-09	< 0.0100	< 0.2000	0.3006	< 0.0050
1-71	05-01	< 0.0100	< 0.2000	0.2387	< 0.0050
1-71FB	03-09	< 0.0100	< 0.2000	< 0.2000	< 0.0050
59-86	4-30	< 0.0100	< 0.2000	< 0.2000	< 0.0050
59-86	4/9	< 0.0100	< 0.2000	< 0.2000	< 0.0050
61-86	05-05	< 0.0100	< 0.2000	< 0.2000	< 0.0050
61-86	3-11-8	< 0.0100	< 0.2000	< 0.2000	< 0.0050
62-86	04-10	< 0.0100	< 0.2000	< 0.2000	< 0.0050
62-86	04-30	< 0.0100	< 0.2000	< 0.2000	< 0.0050
64-86	04-29	< 0.0100	< 0.2000	< 0.2000	< 0.0050
68-86	04-29	< 0.0100	< 0.2000	< 0.2000	< 0.0050
69-86	4-29	< 0.0100	< 0.2000	< 0.2000	< 0.0050

SAMPLE	CLASS	CA4318	CO	CR
1-71	03-09	74.2379	< 0.0500	< 0.0100
1-71	05-01	71.7187	< 0.0500	< 0.0100
1-71FB	03-09	< 5.0000	< 0.0500	< 0.0100
59-86	4-30	124.0025	< 0.0500	< 0.0100
59-86	4/9	130.7961	< 0.0500	< 0.0100
61-86	05-05	63.1671	< 0.0500	< 0.0100
61-86	3-11-8	56.1719	< 0.0500	< 0.0100
62-86	04-10	37.1320	< 0.0500	0.0128
62-86	04-30	32.5061	< 0.0500	< 0.0100
64-86	04-29	52.1962	< 0.0500	< 0.0100
68-86	04-29	14.0693	< 0.0500	< 0.0100
69-86	4-29	148.0271	< 0.0500	< 0.0100

SAMPLE	CLASS	CU	FE	MG	MN
1-71	03-09	< 0.0250	0.4360	14.5046	0.1243
1-71	05-01	< 0.0250	0.2571	16.2021	0.1025
1-71FB	03-09	< 0.0250	< 0.1000	< 5.0000	< 0.0150
59-86	4-30	< 0.0250	< 0.1000	40.1383	0.0485
59-86	4/9	< 0.0250	< 0.1000	41.3597	0.0362
61-86	05-05	< 0.0250	< 0.1000	10.5831	< 0.0150
61-86	3-11-8	< 0.0250	< 0.1000	10.4133	< 0.0150
62-86	04-10	< 0.0250	< 0.1000	< 5.0000	< 0.0150
62-86	04-30	< 0.0250	< 0.1000	< 5.0000	< 0.0150
64-86	04-29	< 0.0250	< 0.1000	16.1115	0.2782
68-86	04-29	< 0.0250	0.1043	< 5.0000	0.1490
69-86	4-29	< 0.0250	< 0.1000	41.1264	0.0274

TABLE 2 - E87-3279

SAMPLE	CLASS		MO		NA		NI		SR
1-71	03-09	<	0.0400		16.5882	<	0.0400		0.4816
1-71	05-01	<	0.0400		18.9527	<	0.0400		0.5248
1-71FB	03-09	<	0.0400	<	5.0000	<	0.0400	<	0.2000
59-86	4-30	<	0.0400		145.1149		0.1112		1.2411
59-86	4/9	<	0.0400		145.5361		0.0463		1.2964
61-86	05-05	<	0.0400		8.0287	<	0.0400		0.3327
61-86	3-11-8	<	0.0400		12.6492	<	0.0400		0.3441
62-86	04-10	<	0.0400		53.4960	<	0.0400		0.4131
62-86	04-30	<	0.0400		58.5839	<	0.0400		0.3812
64-86	04-29	<	0.0400		88.4763		0.4380		0.4237
68-86	04-29	<	0.0400		20.4775	<	0.0400	<	0.2000
69-86	4-29	<	0.0400		142.8058	<	0.0400		1.1452

SAMPLE	CLASS		V
1-71	03-09	<	0.0500
1-71	05-01	<	0.0500
1-71FB	03-09	<	0.0500
59-86	4-30	<	0.0500
59-86	4/9	<	0.0500
61-86	05-05	<	0.0500
61-86	3-11-8	<	0.0500
62-86	04-10	<	0.0500
62-86	04-30	<	0.0500
64-86	04-29	<	0.0500
68-86	04-29	<	0.0500
69-86	4-29	<	0.0500

TABLE 3 - E87-3279

Volatiles by Gas Chromatography

Analy//Samp.ID-date	RDL	1-71/3-9-87	1-71/5-1-87	59-86/4-9-87
Chloroform (ppb)	4	220	18	<
Carbon Tetrachloride (ppb)	4	4800	2300	<
1,1-Dichloroethene (ppb)	4	12	22	<
1,2-Dichloroethane (ppb)	4	<	24	<
1,1,1-Trichloroethane (ppb)	4	4	<	<
1,1,2-Trichloroethane (ppb)	4	<	<	<
Trichlorethene (ppb)	4	1120	1200	<
Tetrachloroethene (ppb)	4	50	108	<
Trans- (ppb) 1,2-Dichloroethene	4	38	<	<

Dissolved Metal by Atomic Absorption (all units are ug/ml)

Arsenic (As)	0.01	<	<	<
Lead (Pb)	0.005	<	<	<
Mercury (Hg)	0.0002	<	<	<
Potassium (K)	5.0	<	<	<
Selenium (Se)	0.005	<	<	0.06
Thallium (Tl)	0.01	<	<	<
Cesium (Cs)	0.2	<	<	<
Lithium (Li)	0.01	@	@	@
Antimony (Sb)	0.06	<	<	<
Cadmium (Cd)	0.005	<	<	<
Zinc (Zn)	0.02	<	<	<

TABLE 3 - E87-3279

Volatiles by Gas Chromatography

Analy//Samp.ID-date	RDL	59-86/4-30-87	61-86/3-11-87	61-86/5-5-87
Chloroform (ppb)	4	<	<	<
Carbon Tetrachloride (ppb)	4	<	<	<
1,1-Dichloroethene (ppb)	4	<	<	<
1,2-Dichloroethane (ppb)	4	<	<	<
1,1,1-Trichloroethane (ppb)	4	<	<	<
1,1,2-Trichloroethane (ppb)	4	<	<	<
Trichlorethene (ppb)	4	<	5	<
Tetrachloroethene (ppb)	4	<	<	<
Trans- (ppb) 1,2-Dichloroethene	4	<	<	<

Dissolved Metal by Atomic Absorption (all units are ug/ml)

Arsenic (As)	0.01	<	<	<
Lead (Pb)	0.005	<	<	<
Mercury (Hg)	0.0002	<	<	<
Potassium (K)	5.0	<	<	<
Selenium (Se)	0.005	0.044	<	<
Thallium (Tl)	0.01	<	<	<
Cesium (Cs)	0.2	<	<	<
Lithium (Li)	0.01	@	@	@
Antimony (Sb)	0.06	<	<	<
Cadmium (Cd)	0.005	<	<	<
Zinc (Zn)	0.02	0.02	<	<

TABLE 3 - E87-3279

Volatiles by Gas Chromatography

Analy//Samp.ID-date	RDL	62-86/4-10-87	62-86/4-30-87	64-86/4-29-87
Chloroform (ppb)	4	<	<	<
Carbon Tetrachloride (ppb)	4	<	<	<
1,1-Dichloroethene (ppb)	4	<	<	<
1,2-Dichloroethane (ppb)	4	<	<	<
1,1,1-Trichloroethane (ppb)	4	<	<	<
1,1,2-Trichloroethane (ppb)	4	<	<	<
Trichlorethene (ppb)	4	<	<	<
Tetrachloroethene (ppb)	4	<	<	<
Trans- (ppb) 1,2-Dichloroethene	4	<	<	<

Dissolved Metal by Atomic Absorption (all units are ug/ml)

Arsenic (As)	0.01	<	<	<
Lead (Pb)	0.005	<	<	<
Mercury (Hg)	0.0002	<	<	<
Potassium (K)	5.0	13	10	<
Selenium (Se)	0.005	0.057	0.044	<
Thallium (Tl)	0.01	<	<	<
Cesium (Cs)	0.2	<	<	<
Lithium (Li)	0.01	@	@	@
Antimony (Sb)	0.06	<	<	<
Cadmium (Cd)	0.005	<	<	<
Zinc (Zn)	0.02	0.05	<	0.02

TABLE 3 - E87-3279

Volatiles by Gas Chromatography

Analy//Samp.ID-date	RDL	68-86/4-29-87	69-86/4-29-87
Chloroform (ppb)	4	<	<
Carbon Tetrachloride (ppb)	4	<	<
1,1-Dichloroethene (ppb)	4	<	<
1,2-Dichloroethane (ppb)	4	<	<
1,1,1-Trichloroethane (ppb)	4	<	<
1,1,2-Trichloroethane (ppb)	4	<	<
Trichlorethene (ppb)	4	<	<
Tetrachloroethene (ppb)	4	<	<
Trans- (ppb) 1,2-Dichloroethene	4	<	<

Dissolved Metal by Atomic Absorption (all units are ug/ml)

Arsenic (As)	0.01	<	<
Lead (Pb)	0.005	<	<
Mercury (Hg)	0.0002	<	<
Potassium (K)	5.0	<	<
Selenium (Se)	0.005	<	0.242
Thallium (Tl)	0.01	<	<
Cesium (Cs)	0.2	<	<
Lithium (Li)	0.01	@	@
Antimony (Sb)	0.06	<	<
Cadmium (Cd)	0.005	0.007	<
Zinc (Zn)	0.02	0.03	<

TABLE 1

Analysis by Water Lab and Special Chemical Analysis

Analy//Samp.ID-date	RDL	9-74
Cl^- (mg/L)	1.0	378
NO^-_3 as N (mg/L)	0.20	34.0
$SO_4^=$ (mg/L)	1.0	173
Total Dissolved Solids (mg/L)	1	1536
Alkalinity as:		
HCO_3^- (mg/L)	1.0	231
$CO_3^=$ (mg/L)	1.0	*
CN^- (ug/ml)	1.0	<

Analysis by Radiochemistry

Gross Alpha (pCi/L)	N/A	100 ± 27
Gross Beta (pCi/L)	N/A	121 ± 21
U-234 (pCi/L)	N/A	6.7 ± 1.2
U-235 (pCi/L)	N/A	$(4.1 \pm 3.6) \times 10^{-1}$
U-238 (pCi/L)	N/A	5.4 ± 1.1
Sr-90 (pCi/L)	0.6	<
Pu-239 (pCi/L)	N/A	$(5.5 \pm 3.9) \times 10^{-1}$
Am-241 (pCi/L)	N/A	6.6 ± 3.9
Tritium (pCi/L)	1.1×10^2	<

TABLE 3

Volatiles by Gas Chromatography

Analy//Samp.ID-date	RDL	9-74
Chloroform (ppb)	4	<
Carbon Tetrachloride (ppb)	4	<
1,1-Dichloroethene (ppb)	4	12400
1,2-Dichloroethane (ppb)	4	75
1,1,1-Trichloroethane (ppb)	4	13800
1,1,2-Trichloroethane (ppb)	4	96
Trichlorethene (ppb)	4	20000
Tetrachloroethene (ppb)	4	6400
Trans- (ppb) 1,2-Dichloroethene	4	48

Dissolved Metal by Atomic Absorption (all units are ug/ml)

Arsenic (As)	0.01	>
Lead (Pb)	0.005	>
Mercury (Hg)	0.0002	>
Potassium (K)	5.0	>
Selenium (Se)	0.005	>
Thallium (Tl)	0.01	>
Cesium (Cs)	0.2	>
Lithium (Li)	0.01	>
Antimony (Sb)	0.06	>
Cadmium (Cd)	0.005	>
Zinc (Zn)	0.02	>

">" - data not available at this time

APPENDIX E-7

GROUNDWATER ANALYTICAL DATA
1986

Volatile Organic Concentrations in Groundwater Monitoring Wells, 1986

Station	1,1 DCE (ug/l)	1,1 DCA (ug/l)	t,1,2-DCE (ug/l)	CHCl3 (ug/l)	1,2 DCA (ug/l)	MEK (ug/l)	1,1,1 TCA (ug/l)	CCl4 (ug/l)	TCE (ug/l)	1,1,2 TCA (ug/l)	PCE (ug/l)
2-60	ND[a]	ND	ND	10	ND	ND	ND	ND	ND	ND	ND
4-60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-71	5	ND	13	180	ND	ND	ND	1,600	350	ND	65
2-71	ND	ND	79	79	ND	ND	ND	ND	4,500	ND	15
6-71	ND	ND	ND	24	ND	ND	ND	14	30	ND	ND
1-74	ND	ND	38	ND	ND	ND	ND	ND	7,000 2,400[b]	ND	120,000 25,000[b]
3-74	ND	ND	ND	ND	ND	ND	ND	280	240	ND	450
9-74	7,200	35	42	5	38	22	14,000		11,000	91	4,800
10-74	Dry										
14-74	Dry										
16-74	Dry										
22-74	ND	ND	ND	ND	ND	ND	ND	23	7	ND	6
1-81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-81	Dry										
6-81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7-81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8-81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9-81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10-81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-82	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
5-82	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-82	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7-82	Dry										
1-86	Dry										
2-86	Dry										
3-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-86	Dry										
5-86	Dry										
6-86	Dry										
7-86	Dry										
8-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
9-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
10-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
12-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
13-86	Dry										
14-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
15-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
16-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
17-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18-86	Dry										
19-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
20-86	Dry										

a. ND = Not Detected.

b. NS = Not sampled due to late well completion date.

Volatile Organic Concentrations in Groundwater Monitoring Wells, 1986 (Continued)

Station	1,1 DCE (ug/l)	1,1 DCA (ug/l)	t,1,2-DCE (ug/l)	CHCl3 (ug/l)	1,2 DCA (ug/l)	MEK (ug/l)	1,1,1 TCA (ug/l)	CCl4 (ug/l)	TCE (ug/l)	1,1,2 TCA (ug/l)	PCE (ug/l)
21-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
22-86	ND	ND	36	147	ND	ND	ND	350	410	ND	ND
23-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
24-86	Dry										
25-86	ND	ND	ND	ND	ND	15	ND	ND	ND	ND	ND
26-86	ND	ND	ND	ND	ND	ND	ND	ND	6	ND	ND
27-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
28-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
29-86	Dry										
30-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31-86	Dry										
32-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33-86	Dry										
34-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
35-86	28	54	1,070	ND	ND	ND	17	ND	ND	ND	ND
36-86	Dry										
37-86	Dry										
38-86	Dry										
39-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
40-86	Dry										
41-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
42-86	ND	ND	53	159	ND	ND	ND	1,560	260	ND	320
43-86	Dry										
44-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	17
45-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
46-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
47-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
48-86	NS[b]										
49-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
50-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
51-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
52-86	NS										
53-86	Dry										
54-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
55-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
56-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
57-86	Dry										
58-86	Dry										
59-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
62-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
61-86	NS										
63-86	Dry										
64-86	Dry										
65-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

a. ND = Not Detected.

b. NS = Not sampled due to late well completion date.

Volatile Organic Concentrations in Groundwater Monitoring Wells, 1986 (Continued)

Station	1,1 DCE (ug/l)	1,1 DCA (ug/l)	t,1,2-DCE (ug/l)	CHCl3 (ug/l)	1,2 DCA (ug/l)	MEK (ug/l)	1,1,1 TCA (ug/l)	CCl4 (ug/l)	TCE (ug/l)	1,1,2 TCA (ug/l)	PCE (ug/l)
66-86	Dry										
67-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
68-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
69-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
70-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WS-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
WS-2	Dry										

a. ND = Not Detected.
b. NS = Not sampled due to late well completion date.

Legend

1,1 DCE	1,1-Dichloroethene	1,1 DCA	1,1-Dichloroethane
t,1,2-DCE	trans-1,2-Dichloroethene	CHCl3	Chloroform
1,2 DCA	1,2-Dichloroethane	1,2 DCA	1,2-Dichlorethane
MEK	2-Butanone	1,1,1 TCA	1,1,1-Trichloroethane
CCl4	Carbon Tetrachloride	TCE	Trichloroethene
1,1,2 TCA	1,1,2-Trichloroethane	PCE	Tetrachloroethene

Metal Concentrations in Groundwater Monitoring Wells, 1986

Station	Al ug/l	Sb ug/l	As ug/l	Ba ug/l	Be ug/l	Cd ug/l	Cs ug/l	Cr ug/l	Co ug/l	Cu ug/l	Fe ug/l	Pb ug/l	Mn ug/l	Hg ug/l	Mo ug/l	Ni ug/l	Se ug/l	Ag ug/l	Sr ug/l	Tl ug/l	V ug/l	Zn ug/l
2-60	ND[a]	ND	ND	ND	ND	ND	ND	ND	52	ND	480	ND	410	ND	ND	ND	ND	ND	12,900	290	89	4,330
4-60	ND	ND	ND	ND	ND	ND	ND	ND	120	ND	84	ND	52	1.2	ND	ND	19	14	1,250	ND	ND	250
1-71	ND	ND	ND	ND	ND	ND	ND	ND	170	ND	270	ND	143	ND	ND	ND	15	20	580	ND	ND	ND
2-71	ND	ND	ND	ND	ND	ND	ND	ND	110	ND	54,300	88	800	0.24	192	ND	18	20	570	ND	ND	ND
6-71	ND	ND	ND	ND	10	ND	ND	ND	ND	20	500	ND	30	ND	300	ND	ND	ND	3,750	ND	ND	ND
1-74	ND	ND	ND	ND	9.7	ND	ND	ND	ND	ND	ND	ND	340	ND	ND	ND	ND	ND	830	ND	ND	ND
3-74	ND	ND	ND	ND	9.7	ND	ND	ND	ND	ND	ND	16	ND	ND	ND	ND	ND	ND	360	ND	ND	25
9-74	2,380	ND	ND	ND	ND	ND	ND	ND	140	ND	1,310	ND	84	2.3	ND	ND	21	31	1,960	ND	ND	ND
10-74	Dry																					
14-74	Dry																					
16-74	Dry																					
22-74	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	65	ND	190	ND	17	14	1,110	ND	ND	ND
1-81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	220	ND	570	ND	ND	ND	ND	ND	1,080	ND	ND	28
4-81	Dry																					
6-81	180	ND	ND	ND	ND	ND	ND	ND	220	ND	590	ND	1,480	0.88	ND	ND	15	20	350	ND	ND	ND
7-81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	520	ND	ND	ND	3.4	ND	235	ND	ND	54
8-81	ND	ND	ND	ND	80	ND	ND	13	ND	30	ND	ND	ND	ND	ND	ND	8.2	ND	250	ND	ND	ND
9-81	ND	ND	ND	ND	ND	ND	ND	7.5	ND	ND	6	ND	0.22	ND	ND	ND	ND	ND	350	19	ND	90
10-81	680	ND	ND	ND	37	ND	360	ND	100	ND	270	ND	ND	0.7	510	77	ND	ND	68	7	850	20
3-82	ND	ND	ND	280	40	ND	ND	16	ND	20	ND	ND	80	ND	ND	ND	17	ND	110	ND	ND	75
5-82	ND	ND	ND	150	ND	ND	ND	ND	ND	ND	ND	ND	30	1.2	ND	ND	ND	180	14	ND	ND	1,580
6-82	ND	ND	ND	290	40	ND	ND	22	ND	ND	180	16	140	ND	ND	60	ND	ND	ND	ND	ND	102
7-82	Dry																					
1-86	Dry																					
2-86	Dry																					
3-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	38	0.24	ND	ND	15	ND	1,580	ND	ND	34
4-86	Dry																					
5-86	Dry																					
6-86	Dry																					
7-86	Dry																					
8-86	380	ND	156	ND	ND	ND	ND	ND	ND	94	ND	16	ND	133	ND	10	ND	ND	1,310	ND	ND	29
9-86	ND	ND	ND	160	ND	ND	ND	ND	ND	ND	ND	25	28	ND	ND	ND	ND	ND	175	ND	ND	ND
10-86	36,600	ND	ND	340	26	ND	ND	10	ND	24	28,200	ND	634	0.56	ND	ND	19	238	ND	ND	57	55
11-86	8,400	ND	ND	170	ND	ND	ND	ND	ND	ND	3,590	ND	128	ND	ND	ND	ND	ND	590	ND	ND	27
12-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	20	ND	190	ND	ND	ND	828	ND	ND	25
13-86	Dry																					
14-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	42	ND	ND	ND	ND	ND	1,370	ND	ND	ND
15-86	ND	ND	ND	120	ND	ND	ND	ND	65	ND	ND	ND	26	ND	ND	ND	ND	ND	1,700	24	ND	42
16-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	63	0.30	ND	ND	4.5	ND	1,880	ND	ND	ND
17-86	ND	ND	ND	160	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3,950	120	ND	ND
18-86	Dry																					
19-86	ND	ND	ND	170	ND	ND	ND	ND	ND	ND	ND	ND	2,230	ND	ND	ND	ND	ND	1,240	30	ND	ND
20-86	Dry																					
21-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	77	ND	ND	ND	ND	10	324	ND	ND	ND
22-86	ND	62	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	15	0.67	ND	ND	7.6	ND	320	ND	ND	ND
23-86	IW[b]																					
24-86	Dry																					
25-86	610	ND	ND	ND	ND	ND	ND	ND	25	ND	ND	ND	237	ND	313	965	ND	9	2,850	ND	ND	59
26-86	ND	ND	ND	150	ND	ND	ND	ND	ND	ND	ND	ND	117	0.26	ND	ND	ND	ND	2,130	44	ND	ND
27-86	IW																					

a. ND = Not Detected.

b. IW = Insufficient amount of water available for analysis.

c. NS = Not sampled due to late well completion date.

Metal Concentrations in Groundwater Monitoring Wells, 1986 (Continued)

Station	Al ug/l	Sb ug/l	As ug/l	Ba ug/l	Be ug/l	Cd ug/l	Cs ug/l	Cr ug/l	Co ug/l	Cu ug/l	Fe ug/l	Pb ug/l	Mn ug/l	Hg ug/l	Mo ug/l	Ni ug/l	Se ug/l	Ag ug/l	Sr ug/l	Tl ug/l	V ug/l	Zn ug/l
28-86	IW																					
29-86	Dry																					
30-86	170	ND	ND	580	ND	ND	ND	ND	ND	ND	478	ND	631	1.1	ND	ND	10	30	21,500	544	ND	23
31-86	Dry																					
32-86	ND	ND	ND	100	ND	ND	ND	ND	ND	ND	ND	12	23	ND	ND	ND	ND	10	580	ND	ND	77
33-86	Dry																					
34-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	82	ND	190	ND	8.3	ND	3,240	39	ND	42
35-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,100	ND	ND	ND	2.8	ND	959	ND	ND	31
36-86	Dry																					
37-86	Dry																					
38-86	Dry																					
39-86	ND	ND	ND	280	ND	ND	ND	ND	ND	ND	ND	ND	35	ND	ND	ND	ND	ND	523	ND	ND	ND
40-86	Dry																					
41-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	854	ND	ND	ND	ND	ND	420	ND	ND	ND
42-86	ND	ND	ND	150	5	ND	ND	ND	ND	ND	ND	ND	578	ND	ND	ND	ND	ND	308	ND	ND	ND
43-86	Dry																					
44-86	4,300	ND	ND	280	ND	ND	ND	ND	ND	ND	2840	ND	173	ND	ND	ND	ND	ND	285	ND	ND	57
45-86	480	ND	ND	160	11	ND	ND	ND	ND	ND	252	ND	79	0.21	ND	ND	ND	ND	190	ND	ND	6
46-86	350	ND	ND	144	ND	ND	ND	ND	ND	132	ND	13	ND	ND	ND	9	ND	117	ND	ND	ND	ND
47-86	ND	ND	ND	100	ND	7	ND	ND	ND	ND	ND	ND	86	ND	ND	ND	ND	ND	ND	ND	47	ND
48-86	NS[c]																					
49-86	ND	ND	ND	116	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	205	ND	ND	ND
50-86	190	ND	ND	190	ND	ND	ND	ND	ND	ND	181	54	347	ND	ND	ND	ND	ND	164	ND	ND	63
51-86	ND	ND	ND	110	ND	6	ND	27	ND	23	ND	ND	71	ND	ND	29	ND	ND	ND	ND	ND	39
52-86	NS																					
53-86	Dry																					
54-86	150	ND	ND	ND	ND	ND	ND	15	ND	ND	110	ND	100	ND	ND	ND	ND	ND	326	ND	ND	ND
55-86	740	58	ND	140	11	ND	ND	ND	ND	ND	537	ND	547	ND	ND	ND	ND	ND	154	ND	ND	7
56-86	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	340	ND	ND	ND	ND	ND	ND	ND	ND	ND
57-86	Dry																					
58-86	Dry																					
59-86	230	185	ND	100	29	ND	ND	ND	ND	ND	ND	24	107	1.2	ND	ND	ND	ND	1,110	ND	ND	12
61-86	NS																					
62-86	4,750	58	ND	130	9	ND	ND	39	ND	ND	2,900	ND	52	0.28	ND	ND	ND	ND	305	ND	ND	23
63-86	Dry																					
64-86	Dry																					
65-86	ND	78	ND	ND	10	ND	ND	ND	ND	ND	103	ND	127	1.9	ND	ND	8.9	ND	630	ND	ND	28
66-86	Dry																					
67-86	ND	ND	ND	243	ND	ND	ND	ND	ND	ND	ND	ND	161	ND	ND	ND	ND	16	719	ND	ND	30
68-86	ND	95	ND	100	6	ND	ND	ND	ND	ND	76	ND	1,050	ND	ND	ND	ND	ND	137	ND	ND	ND
69-86	110	208	ND	160	6	ND	ND	ND	ND	ND	ND	37	58	ND	ND	ND	ND	ND	1,190	16	ND	5
70-86	ND	ND	ND	ND	7	ND	ND	ND	ND	ND	ND	ND	72	0.50	ND	ND	ND	ND	656	ND	ND	ND
WS-1	ND	ND	ND	ND	30	ND	ND	ND	ND	ND	ND	ND	70	ND	100	ND	ND	ND	120	ND	ND	78
WS-2	Dry																					

a. ND = Not Detected.
b. IW =Insufficient amount of water available for analysis.
c. NS = Not sampled due to late well completion date.

Radioactivity Concentrations in Groundwater Monitoring Wells, 1986

Station	Gross Alpha ($X 10^{-9}$ uCi/ml)[a]	Gross Beta ($X 10^{-9}$ uCi/ml)	Plutonium -239,-240 ($X 10^{-9}$ uCi/ml)	Americium -241 ($X 10^{-9}$ uCi/ml)	Uranium -233,234 ($X 10^{-9}$ uCi/ml)	Uranium -238 ($X 10^{-9}$ uCi/ml)	Tritium ($X 10^{-9}$ uCi/
2-60	22 ± 51	68 ± 44	-0.05 ± 0.06	-0.01 ± 0.02	4.4 ± 0.6	3.4 ± 0.5	670 ± 0.23
4-60	28 ± 10	27 ± 9	0.03 ± 0.46	0.02 ± 0.06	30 ± 1	9.3 ± 0.7	210 ± 0.22
1-71	6 ± 3	6 ± 3	-0.01 ± 0.07	0.4 ± 0.07	3.9 ± 0.5	2.5 ± 0.4	250 ± 0.23
2-71	350 ± 500	1000 ± 900	32 ± 3	4.4 ± 2.3	30 ± 5	33 ± 5	-20 ± 0.22
6-71	36 ± 29	2 ± 2	0.04 ± 0.08	0.05 ± 0.05	16 ± 1	11 ± 1	1500 ± 0.3
1-74	9 ± 5	3 ± 3	0.03 ± 0.10	0.04 ± 0.50	3.2 ± 0.7	2.7 ± 0.7	260 ± 0.23
3-74	13 ± 7	10 ± 5	-0.16 ± 0.31	-0.01 ± 0.09	-0.04 ± 0.11	-0.03 ± 0.08	250 ± 0.22
9-74	28 ± 16	28 ± 11	-0.02 ± 0.07	0.01 ± 0.08	11 ± 2	8.2 ± 1.4	110 ± 0.22
10-74	Dry						
14-74	Dry						
16-74	Dry						
22-74	13 ± 7	12 ± 4	0.13 ± 0.16	0.05 ± 0.06	6.0 ± 0.6	2.4 ± 0.4	70 ± 0.22
1-81	22 ± 16	32 ± 12	0.05 ± 0.32	0.01 ± 0.03	3.3 ± 0.4	1.8 ± 0.3	100 ± 0.22
2-81	43 ± 18	27 ± 11	0.15 ± 0.12	-0.06 ± 0.08	1.3 ± 0.3	1.0 ± 0.3	-20 ± 0.21
4-81	Dry						
6-81	13 ± 6	8 ± 5	0.02 ± 0.09	-0.03 ± 0.06	0.59 ± 0.20	0.48 ± 0.18	-40 ± 0.22
7-81	47 ± 17	24 ± 6	-0.06 ± 0.09	0.01 ± 0.04	2.1 ± 0.4	2.0 ± 0.4	100 ± 0.21
8-81	5 ± 4	2 ± 3	0.16 ± 0.10	0.00 ± 0.04	3.2 ± 0.4	1.7 ± 0.3	0.20 ± 0.22
9-81	4 ± 5	4 ± 3	-0.03 ± 0.04	0.04 ± 0.04	0.57 ± 0.17	0.25 ± 0.11	0 ± 0.22
10-81	22 ± 7	22 ± 3	0.03 ± 0.06	0.03 ± 0.04	0.96 ± 0.24	0.59 ± 0.19	33 ± 0.23
3-82	10 ± 7	17 ± 6	-0.07 ± 0.10	0.00 ± 0.04	0.54 ± 0.29	0.44 ± 0.27	140 ± 0.22
5-82	2 ± 3	3 ± 2	-0.03 ± 0.04	0.05 ± 0.05	-0.01 ± 0.04	0.00 ± 0.01	-30 ± 0.22
6-82	79 ± 39	110 ± 30	0.05 ± 0.17	0.03 ± 0.07	4.0 ± 0.6	3.7 ± 0.6	-10 ± 0.22
7-82	Dry						
1-86	Dry						
2-86	Dry						
3-86	170 ± 80	220 ± 40	0.01 ± 0.07	0.02 ± 0.13	7.0 ± 0.7	5.0 ± 0.6	160 ± 0.23
4-86	Dry						
5-86	Dry						
6-86	Dry						
7-86	Dry						
8-86	160 ± 100	220 ± 60	-1.0 ± 1.6	-0.44 ± 0.79	-0.09 ± 0.44	-0.3 ± 1.8	0.01 ± 0.23
9-86	0 ± 100	0 ± 2.0	-0.03 ± 0.05	0.02 ± 0.05	-0.01 ± 0.04	-0.04 ± 0.07	0.10 ± 0.22
10-86	IW[b]						
11-86	IW						
12-86	82 ± 28	86 ± 12	-0.05 ± 0.06	0.00 ± 0.03	8.8 ± 0.8	7.0 ± 0.7	240 ± 0.22
13-86	Dry						
14-86	54 ± 24	36 ± 12	-0.04 ± 0.07	0.01 ± 0.03	7.4 ± 0.7	2.8 ± 0.4	-90 ± 0.22
15-86	200 ± 80	220 ± 50	-0.03 ± 0.04	0.08 ± 0.21	24 ± 2	24 ± 2	280 ± 0.22
16-86	22 ± 20	33 ± 21	-0.48 ± 0.67	0.01 ± 0.25	3.0 ± 1.0	2.1 ± 0.8	110 ± 0.23
17-86	160 ± 80	77 ± 40	0.21 ± 0.26	-0.03 ± 0.09	33 ± 1	27 ± 1	690 ± 0.24

a. To obtain proper concentration, multiply the numbers in the table by 10^{-9} uCi/ml. For example Uranium-233,-234 in well 55-86 is 5.4 X 10^{-9} uCi/ml.

b. Insufficient amount of water available for analysis.

c. NA = Not Available.

d. NS = Not sampled due to late well completion date.

Radioactivity Concentrations in Groundwater Monitoring Wells, 1986 (Continued)

Station	Gross Alpha ($X 10^{-9}$ uCi/ml)	Gross Beta ($X 10^{-9}$ uCi/ml)	Plutonium -239,-240 ($X 10^{-9}$ uCi/ml)	Americium -241 ($X 10^{-9}$ uCi/ml)	Uranium -233,234 ($X 10^{-9}$ uCi/ml)	Uranium -238 ($X 10^{-9}$ uCi/ml)	Tritium ($X 10^{-9}$ uCi/
18-86	NA	NA	NA	NA	NA	NA	NA
19-86	170 ± 240	470 ± 130	0.01 ± 0.08	0.00 ± 0.13	23 ± 2	22 ± 2	140 ± 0.22
20-86	Dry						
21-86	68 ± 27	72 ± 27	-0.01 ± 0.19	-0.03 ± 0.08	6.1 ± 1.5	3.3 ± 1.4	-0.13 ± 0.24
22-86	300 ± 160	240 ± 60	0.95 ± 0.39	0.12 ± 0.14	24 ± 3	21 ± 3	580 ± 0.23
23-86	IW						
24-86	Dry						
25-86	IW						
26-86	IW						
27-86	IW						
28-86	IW						
29-86	Dry						
30-86	IW						
31-86	Dry						
32-86	Dry						
33-86	Dry						
34-86	17 ± 25	35 ± 18	-0.05 ± 0.07	0.06 ± 0.11	2.6 ± 0.4	2.7 ± 0.4	-150 ± 0.22
35-86	25 ± 19	34 ± 10	-0.03 ± 0.07	-0.01 ± 0.02	13 ± 1	5.7 ± 0.6	140 ± 0.23
36-86	Dry						
37-86	Dry						
38-86	Dry						
39-86	44 ± 21	39 ± 13	0.00 ± 0.09	-0.01 ± 0.03	3.7 ± 0.4	3.5 ± 0.4	180 ± 0.22
40-86	Dry						
41-86	140 ± 40	94 ± 18	0.01 ± 0.08	-0.03 ± 0.10	6.6 ± 0.7	6.5 ± 0.7	130 ± 0.22
42-86	130 ± 70	180 ± 40	0.50 ± 0.16	0.07 ± 0.16	9.8 ± 1.1	11 ± 1	210 ± 0.23
43-86	Dry						
44-86	NA	NA	NA	NA	NA	NA	NA
45-86	200 ± 80	140 ± 30	0.13 ± 0.21	0.03 ± 0.07	11 ± 1	10 ± 1	100 ± 0.22
46-86	NA	NA	NA	NA	NA	NA	NA
47-86	NA[b]	NA	NA	NA	NA	NA	NA
48-86	NS[c]						
49-86	NA	NA	NA	NA	NA	NA	NA
50-86	NA	NA	NA	NA	NA	NA	NA
51-86	NA	NA	NA	NA	NA	NA	NA
52-86	NS						
53-86	Dry						
54-86	NA	NA	NA	NA	NA	NA	NA
55-86	170 ± 70	130 ± 30	-0.05 ± 0.07	-0.02 ± 0.04	5.4 ± 0.5	6.7 ± 0.6	200 ± 0.22

a. To obtain proper concentration, multiply the numbers in the table by 10^{-9} uCi/ml. For example Uranium-233,-234 in well 55-86 is 5.4 X 10^{-9} uCi/ml.

b. Insufficient amount of water available for analysis.

c. NA = Not Available.

d. NS = Not sampled due to late well completion date.

Radioactivity Concentrations in Groundwater Monitoring Wells, 1986 (Continued)

Station	Gross Alpha ($X 10^{-9}$ uCi/ml)	Gross Beta ($X 10^{-9}$ uCi/ml)	Plutonium -239,-240 ($X 10^{-9}$ uCi/ml)	Americium -241 ($X 10^{-9}$ uCi/ml)	Uranium -233,234 ($X 10^{-9}$ uCi/ml)	Uranium -238 ($X 10^{-9}$ uCi/ml)	Tritium ($X 10^{-9}$ uCi/
56-86	14 ± 11	24 ± 5	0.09 ± 0.06	0.01 ± 0.06	1.5 ± 0.3	1.5 ± 0.3	60 ± 0.22
57-86	Dry						
58-86	Dry						
59-86	NA	NA	NA	NA	NA	NA	NA
61-86	NS						
62-86	NA	NA	NA	NA	NA	NA	NA
63-86	Dry						
64-86	Dry						
65-86	29 ± 12	21 ± 6	0.02 ± 0.10	0.01 ± 0.03	7.9 ± 0.7	6.5 ± 0.7	70 ± 0.23
66-86	Dry						
67-86	NA	NA	NA	NA	NA	NA	NA
68-86	20 ± 11	27 ± 9	-0.02 ± 0.08	0.00 ± 0.03	2.4 ± 0.4	2.2 ± 0.4	20 ± 0.21
69-86	200 ± 60	130 ± 30	-0.01 ± 0.08	0.01 ± 0.04	14 ± 1	11 ± 1	20 ± 0.21
70-86	210 ± 70	170 ± 30	0.07 ± 0.11	0.04 ± 0.14	9.3 ± 1.0	10 ± 1	-60 ± 0.22
WS-1	8 ± 5	10 ± 3	0.08 ± 0.16	0.02 ± 0.04	0.53 ± 0.20	0.30 ± 0.15	-40 ± 0.24
WS-2	Dry						

a. To obtain proper concentration, multiply the numbers in the table by 10^{-9} uCi/ml. For example Uranium-233,-234 in well 55-86 is 5.4 X 10^{-9} uCi/ml.

b. Insufficient amount of water available for analysis.

c. NA = Not Available.

d. NS = Not sampled due to late well completion date.

Other Inorganic Concentrations in Groundwater Monitoring Wells, 1986

Station	Calcium ug/l	Magnesium ug/l	Potassium ug/l	Sodium ug/l	Bicarbonate mg/l	Carbonate mg/l	Chloride mg/l	Cyanide mg/l	Phosphate mg/l	Sulfate mg/l	Nitrate mg/l
2-60	1,500,000	270,000	72,400	540,00	17	80	730	0.014	1.4	400	5060
4-60	171,000	49,000	3,300	127,000	26	350	40	ND	0.52	91	22.0
1-71	84,000	15,000	1,660	11,200	37	240	17	ND	1.6	22	19.9
2-71	84,000	12,500	2,200	135,000	108	35	320	0.016	ND	97	<5.0
6-71	635,000	6,000	6,000	24,000	50	270	95	ND	1.8	100	2120
1-74	105,000	32,000	3,800	106,000	62	250	23	ND	1.8	37	44.8
3-74	25,500	14,000	920	15,500	18	290	40	ND	1.6	30	25.2
9-74	314,000	51,000	2,100	116,000	18	301	400	ND	3.7	320	91.2
10-74	Dry										
14-74	Dry										
16-74	Dry										
22-74	1,420	22,500	4,100	22,400	ND	250	57	ND	1.9	22	23.6
1-81	210	ND	90	76	75	330	37	ND	2.0	250	<5.0
2-81	84,000	41,000	4,250	117,000	108	430	29	ND	2.3	200	<5.0
4-81	Dry										
6-81	84,000	12,500	1,730	4,500	30	210	10	ND	4.4	ND	7.2
7-81	56,000	42,000	980	12,000	26	210	3.1	ND	1.4	9	<5.0
8-81	73,300	5,780	ND	13,800	4.9	130	8.6	0.005	ND	17	<5.0
9-81	28,200	1,480	5,880	15,900	NA	NA	NA	NA	NA	NA	<5.0
10-81	18,000	6,600	560	11,000	19	21	5.7	0.0016	1.3	ND	<5.0
3-82	22,000	3,680	ND	13,800	10	19	15	ND	1.8	28	74.7
5-82	36,200	4,130	15,500	23,300	56	ND	55	ND	0.92	77	32.4
6-82	8,700	1,200	ND	5,100	15	22	3.3	ND	1.5	20	<5.0
7-82	Dry										
1-86	Dry										
2-86	Dry										
3-86	88,000	32,000	2,630	26,600	13	330	58	ND	2.6	66	5.7
4-86	Dry										
5-86	Dry										
6-86	Dry										
7-86	Dry										
8-86	91,500	ND	41,100	177,000	ND	442	NA	NA	4.0	NA	41.0
9-86	21,100	5,250	3,620	60,700	220	ND	11	ND	1.8	15	<5.0
10-86	22,100	7,880	12,900	12,200	16	66	4.3	ND	4.4	17	<5.0
11-86	77,400	24,500	6,840	112,000	NA	NA	NA	NA	NA	NA	NA
12-86	170,000	264,000	1,920	167,000	33	420	47	ND	2.9	240	9.6
13-86	Dry										
14-86	95,100	29,200	7,920	267,000	13	180	160	ND	1.5	310	<5.0
15-86	324,000	61,500	2,600	88,000	35	410	63	0.040	11	170	243
16-86	142,000	45,500	6,260	297,000	22	450	220	ND	ND	510	<5.0
17-86	193,000	142,000	8,800	322,000	53	320	140	ND	2.1	330	2320
18-86	Dry										
19-86	148,000	45,400	5,500	232,000	NA	NA	NA	NA	NA	NA	<5.0
20-86	Dry										

a. ND = Not Detected.
b. NA = Not Available.
c. NR = Not Requested.
d. IW = Insufficient amount of water available.
e. NS = Not sampled due to late well completion date.

Other Inorganic Concentrations in Groundwater Monitoring Wells, 1986 (Continued)

Station	Calcium ug/l	Magnesium ug/l	Potassium ug/l	Sodium ug/l	Bicarbonate mg/l	Carbonate mg/l	Chloride mg/l	Cyanide mg/l	Phosphate mg/l	Sulfate mg/l	Nitrate mg/l
21-86	44,200	9,960	8.030	37,600	4.4	259	5.2	ND	4.7	56	<5.0
22-86	57,000	9,180	4,040	99,700	23	340	37	ND	3	75	22.6
24-86	Dry										
25-86	224,000	80,500	35,000	33,800	NA	NA	NA	NA	NA	NA	NA
26-86	97,000	106,000	3,300	338,000	41	730	77	NR[c]	ND	500	300
27-86	IW[e]										
28-86	IW										
29-86	Dry										
30-86	193,000	165,000	38,600	1,440,000	46	240	430	ND	1.3	100	9640
31-86	Dry										
32-86	31,100	7,660	8,350	118,000	ND	199	122	ND	9.5	101	60.2
33-86	Dry										
34-86	388,000	30,000	7,800	170,000	14	400	47	ND	2.2	1,000	<5.0
35-86	170,000	68,000	2,310	182,000	61	720	110	ND	2.6	200	<5.0
36-86	Dry										
37-86	Dry										
38-86	Dry										
39-86	110,000	9,570	1,780	17,300	6	270	36	ND	2.2	74	<5.0
40-86	Dry										
41-86	96,900	15,600	3,720	51,300	15	360	34	ND	12	100	<5.0
42-86	122,000	11,900	1,730	13,400	27	350	50	ND	2.6	22	30.2
43-86	Dry										
44-86	54,500	6,470	3,600	22,000	NR	NR	12	NR	NR	NR	24.8
45-86	26,200	5,900	623	13,400	12	110	6.1	ND	4.7	14	<5.0
46-86	13,900	1,190	7,200	31,400	NA	NA	NA	NA	NA	NA	NA
47-86	15,400	2,230	ND[a]	16,4000	5.4	88	2.9	ND	8.7	20	<5.0
48-86	NS[e]										
49-86	35,200	7,640	ND	29,500	7.0	45	30	ND	4.4	29	14.8
50-86	30,000	5,430	1,490	12,100	130	ND	7.6	ND	2.0	16	37.4
51-86	12,300	1,920	1,070	21,400	ND	42	7.3	ND	4.7	31	18.4
52-86	NS										
53-86	Dry										
54-86	43,300	10,400	6,030	36,800	8.8	257	15	ND	4.7	31	18.4
55-86	22,800	4,280	4,700	8,770	17	76	7.4	ND	3.3	22	<5.0
56-86	26,300	6,210	1,600	17,800	16	120	15	ND	ND	15	<5.0
57-86	Dry										
58-86	Dry										
59-86	112,000	36,100	41,300	156,000	30	510	92	NR	1.2	190	<5.0
61-86	NS										
62-86	26,200	3,620	44,500	62,200	ND	200	26	ND	2.8	58	<5.0
d63-86	Dry										
64-86	Dry										
65-86	93,100	24,200	1,840	98,300	25	370	70	ND	0.9	220	<5.0

a. ND = Not Detected
b. NA = Not Available
c. NR = Not Requested
d. IW = Insufficient amount of water available.
e. NS = Not sampled due to late well completion date.

Other Inorganic Concentrations in Groundwater Monitoring Wells, 1986 (Continued)

Station	Calcium ug/l	Magnesium ug/l	Potassium ug/l	Sodium ug/l	Bicarbonate mg/l	Carbonate mg/l	Chloride mg/l	Cyanide mg/l	Phosphate mg/l	Sulfate mg/l	Nitrate mg/l
66-86	Dry										
67-86	49,800	23,200	ND	63,400	9.7	345	35	ND	ND	65	<5.0
68-86	28,500	7,380	1,700	56,300	31	210	16	ND	4.7	37	55
69-86	144,000	40,400	54,800	163,000	38	410	130	ND	2.2	320	<5.0
70-86	42,900	8,680	13,700	41,800	ND	340	13	ND	1.2	72	<5.0
WS-1	26,000	8,880	ND	8,000	61	38	4.3	ND	1.8	39	23
WS-2	Dry										

a. ND = Not Detected
b. NA = Not Available
c. NR = Not Requested
d. IW = Insufficient amount of water available.
e. NS = Not sampled due to late well completion date.

APPENDIX E-8

AIR QUALITY DATA
1986

Plutonium 239 and 240 Activity Concentrations in Community Ambient Air, 1986

Station	Number of Analyses	Volume (X 1000 m^3)	Concentration[b] (X 10^{-9} uCi/m^3) C_{min} LCL	C_{min} Point Estimate	C_{min} UCL	C_{max} LCL	C_{max} Point Estimate	C_{max} UCL	C_{mean} LCL	C_{mean} Point Estimate	C_{mean} UCL	Percent[a] of DCG
Marshall	12	288	-0.003	-0.001	0.001	0.008	0.011	0.014	0.001	0.003	0.005	0.02
Jeffco Airport	11	269	-0.002	0.000	0.002	0.004	0.007	0.010	0.001	0.003	0.005	0.02
Superior	12	304	-0.003	-0.001	0.001	0.005	0.008	0.011	-0.001	0.001	0.003	0.01
Boulder	12	355	-0.002	0.000	0.002	0.002	0.003	0.004	-0.001	0.001	0.002	0.01
Lafayette	12	365	-0.002	0.000	0.002	0.004	0.006	0.008	0.001	0.002	0.004	0.01
Broomfield	11	296	-0.002	0.000	0.002	0.003	0.005	0.008	0.000	0.002	0.003	0.01
Walnut Creek	12	358	-0.002	0.000	0.002	0.006	0.008	0.010	0.002	0.003	0.005	0.02
Wagner	12	310	-0.002	0.000	0.002	0.002	0.004	0.006	0.001	0.002	0.004	0.01
Leyden	12	382	-0.001	0.000	0.001	0.006	0.008	0.010	0.000	0.002	0.003	0.01
Westminster	12	290	-0.003	0.000	0.003	0.008	0.010	0.012	0.002	0.004	0.006	0.02
Denver	12	353	-0.003	-0.001	0.001	0.001	0.002	0.003	-0.001	0.000	0.002	0.00
Golden	12	341	-0.002	-0.001	0.000	0.203	0.232	0.261	0.016	0.020	0.024	0.10
Lakeview Pointe	11	319	-0.002	0.000	0.002	0.004	0.007	0.010	0.001	0.002	0.004	0.01
Cotton Creek	11	318	-0.004	-0.001	0.002	0.001	0.002	0.004	-0.001	0.000	0.002	0.00
Summary	164	-	-	-0.001	-	-	0.232	-	-	-	-	-
Mean Concentration	-	-	-	-	-	-	-	-	-	0.003	-	0.02

a. The interim standard calculated Derived Concentration Guide (DCG) for inhalation of class W plutonium is 20 X 10^{-15} uCi/ml. (See Appendix A.)

APPENDIX E-9

GROUNDWATER QUALITY DATA

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta 2-87

Sampling Method (include details of purging): Sample ID _____

Date 5/29/87

Time 14:20

Bailed

FIELD MEASUREMENTS

Depth to Water _____ + 2.15' Feet

Temperature _____ 12.2 Degrees C

pH _____ 7.2 Standard Units

Salinity _____ — %

Conductivity _____ x 8.30 micromhos/cm

@ _____ 12 Degrees C

Dissolved Oxygen _____ — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

JABlair
Field Operations Manager Date

Valdez/Martinez
Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta 3-87

Sampling Method (include details of purging): Sample ID _____

Date 6/16/87

Time 7:58

Bailed

FIELD MEASUREMENTS

Depth to Water _____ + 76.2 Feet

Temperature 14.1 ~~8.~~ JB Degrees C

pH 8.1 Standard Units

Salinity — %

Conductivity _____ x 740 micromhos/cm

@ 14 ~~[illegible]~~ JB Degrees C

Dissolved Oxygen — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

[signature] Field Operations Manager Date

Valdez/[signature] Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta 4-87

Sampling Method (include details of purging): Sample ID _____

Date 5/26/87

Time 8:46

Bailed

FIELD MEASUREMENTS

Depth to Water _____ + 7.2 Feet

Temperature _____ 13.1 Degrees C

pH _____ 7.7 Standard Units

Salinity _____ — %

Conductivity _____ x 1970 micromhos/cm

@ _____ 13 Degrees C

Dissolved Oxygen _____ — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

JA Blair
Field Operations Manager Date

Valdez/Montano
Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta 1-71

Sampling Method (include details of purging): Sample ID _____

Date 5/1/87

Time 7:55

FIELD MEASUREMENTS

Depth to Water _____ + 8' 11½" Feet

Temperature 12 ~~7.3~~ Degrees C

pH 7.3 Standard Units

Salinity — %

Conductivity _____ x 550 micromhos/cm

@ 12 Degrees C

Dissolved Oxygen — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

JA Blair

Field Operations Manager Date

Leitner / Crocker

Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta 42-86

Sampling Method (include details of purging): Sample ID _____

Date 6/[illegible]/87

Time 18:30

Bailed

FIELD MEASUREMENTS

Depth to Water _____ + 5.2 Feet

Temperature 19.6 Degrees C

pH 6.3 Standard Units

Salinity — %

Conductivity _____ x 2470 micromhos/cm

@ 19.6 Degrees C

Dissolved Oxygen — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

S A Blair

Field Operations Manager Date

Valdez / Martinez

Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____

Sampling Method (include details of purging): Bailed

Sta 59-86

Sample ID _____

Date 4/30/86

Time 15:34

FIELD MEASUREMENTS

Depth to Water _____ + 24.3 Feet

Temperature _____ 12 Degrees C

pH _____ 7.1 Standard Units

Salinity _____ — %

Conductivity _____ x 1330 micromhos/cm

@ _____ 12 Degrees C

Dissolved Oxygen _____ — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

J.A. Blair
Field Operations Manager Date

Crocker / Leitner
Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____

Sampling Method (include details of purging): bailed

Sta 59-86

Sample ID _____

Date 4/9/87

Time 9:31 am

FIELD MEASUREMENTS

Depth to Water _____ + 24' 4¼" Feet

Temperature _____ 10 Degrees C

pH _____ 7.0 Standard Units

Salinity _____ — %

Conductivity _____ x 1350 micromhos/cm

@ _____ 11 Degrees C

Dissolved Oxygen _____ — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

J.A. Blair 6/24/87 EPA/NEIC

Field Operations Manager / Date / Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta 61-86

Sampling Method (include details of purging): Sample ID _____

Date 3-12-87

Time 8:54

Bailed

FIELD MEASUREMENTS

Depth to Water _____ + 12.2 Feet

Temperature _____ 10°C Degrees C

pH _____ 7.4 Standard Units

Salinity _____ — %

Conductivity _____ x 420 micromhos/cm

@ _____ 10 Degrees C

Dissolved Oxygen _____ — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

SA Blair
Field Operations Manager Date

Valdez / McCarthy
Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta 6/86
Sampling Method (include details of purging): Sample ID _____
Date 5/4/87
Time 16:30

Bailed

FIELD MEASUREMENTS

Depth to Water _____ + 8.2 Feet
Temperature 9 Degrees C
pH 7.1 Standard Units
Salinity — %
Conductivity _____ x 430 micromhos/cm
@ 9 Degrees C
Dissolved Oxygen — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

JA Blair
Field Operations Manager Date

Crocker / Leitner
Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta 62-86

Sampling Method (include details of purging): Sample ID _____

Date 4-10-87

Time 8:35

Bailed

FIELD MEASUREMENTS

Depth to Water _____ + 28.1 Feet

Temperature _____ 13 Degrees C

pH _____ 9.4 Standard Units

Salinity _____ — %

Conductivity _____ x 510 micromhos/cm

@ _____ 13 Degrees C

Dissolved Oxygen _____ — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

TA Blair
Field Operations Manager Date

Valdez / Leitner
Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____

Sampling Method (include details of purging): Bailed

Sta 6286

Sample ID _____

Date 4/30/88

Time 8:24

FIELD MEASUREMENTS

Depth to Water _____ + 27.9 Feet

Temperature 13 Degrees C

pH 9.3 Standard Units

Salinity — %

Conductivity _____ x 500 micromhos/cm

@ 13 Degrees C

Dissolved Oxygen — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

JA Blair
Field Operations Manager Date

Leither/Cooker
Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta 64-86

Sampling Method (include details of purging): Sample ID _____

Date 4/29/87

Time 1131

Bailed

FIELD MEASUREMENTS

Depth to Water _____ + 6.6 Feet

Temperature _____ 12 Degrees C

pH _____ 7.3 Standard Units

Salinity _____ — %

Conductivity _____ x 1000 micromhos/cm

@ _____ 12 Degrees C

Dissolved Oxygen _____ — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

JA Blair
Field Operations Manager Date

Crocker / Le. Tre
Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta 68-86

Sampling Method (include details of purging): Sample ID _____

Date 4/29/88

Time 10:21

Bailed

FIELD MEASUREMENTS

Depth to Water _____ + 2.5 Feet

Temperature 9 Degrees C

pH 6.8 Standard Units

Salinity — %

Conductivity _____ x 210 micromhos/cm

@ 9 Degrees C

Dissolved Oxygen — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

JA Blair
Field Operations Manager Date

Leitner/Gorter
Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta 6986

Sampling Method (include details of purging): Sample ID _____

Date 4/24/89

Time 8:15

Bailed

FIELD MEASUREMENTS

Depth to Water _____ + 21'1" Feet

Temperature _____ 10 Degrees C

pH _____ 7.0 Standard Units

Salinity _____ — %

Conductivity _____ x 1500 micromhos/cm

@ _____ 10 Degrees C

Dissolved Oxygen _____ — ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

J A Blair
Field Operations Manager Date

Crozier / Leitner
Sampler

APPENDIX E-10

SURFACE WATER QUALITY DATA

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta SW-29

Sampling Method (include details of purging): Sample ID _____

Date 5/26/87

Time 11:07

FIELD MEASUREMENTS

Depth to Water	+ X	Feet
Temperature	15.9	Degrees C
pH	8.2	Standard Units
Salinity	—	%
Conductivity	x 380	micromhos/cm
@	15.9	Degrees C
Dissolved Oxygen	7.0	ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

[signature] Field Operations Manager Date

[signature] Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta SW-30

Sampling Method (include details of purging): Sample ID _____

Date 6/26/97

Time 9:23

FIELD MEASUREMENTS

Depth to Water _____ + X Feet

Temperature 13.6 Degrees C

pH 7.8 Standard Units

Salinity — %

Conductivity _____ x 531 micromhos/cm

@ 13.6 Degrees C

Dissolved Oxygen 6.5 ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

JABlair

Field Operations Manager Date

Valdez/Martinez

Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta SW-31

Sampling Method (include details of purging): _____ Sample ID _____

Date 5-26-87

Time 1511

FIELD MEASUREMENTS

Depth to Water _____ + X Feet

Temperature 23.5 Degrees C

pH 8.3 Standard Units

Salinity — %

Conductivity _____ x 515 micromhos/cm

@ 23.5 Degrees C

Dissolved Oxygen 19.5 ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

SA Blair

Field Operations Manager Date

Valdez / Montana

Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta SW-32

Sampling Method (include details of purging): _____ Sample ID _____

Date 6-26-87

Time 14:37

FIELD MEASUREMENTS

Depth to Water _____ + X Feet

Temperature 19.2 Degrees C

pH 8.1 Standard Units

Salinity _____ %

Conductivity _____ x 397 micromhos/cm

@ 19.2 Degrees C

Dissolved Oxygen 6.2 ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

SA Blair

Field Operations Manager Date

Valdez / Martinez

Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta SW-35

Sampling Method (include details of purging): Sample ID ~~5/26/87~~ /15

Date 5/26/87

Time 13:55

FIELD MEASUREMENTS

Depth to Water _____ + X Feet

Temperature 19.9 Degrees C

pH 8.1 Standard Units

Salinity — %

Conductivity _____ x 475 micromhos/cm

@ 19.9 Degrees C

Dissolved Oxygen 10.4 ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

PA Blair

Field Operations Manager Date

Valdez

Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta SW-~~XX~~ 44 HP

Sampling Method (include details of purging): Sample ID _____

Date 6/26/87

Time ~~15:20~~

FIELD MEASUREMENTS

Depth to Water _____ + X Feet

Temperature 22.2 Degrees C

pH 8.4 Standard Units

Salinity X %

Conductivity _____ x 478 micromhos/cm

@ 22.2 Degrees C

Dissolved Oxygen 13.4 ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

JABlair

Field Operations Manager Date

Valdez/Martinez

Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta SW-~~44~~ 45 ~~44~~P

Sampling Method (include details of purging): Sample ID _____

Date 6/26/87

Time 16:12

FIELD MEASUREMENTS

Depth to Water	+ X	Feet
Temperature	17.0	Degrees C
pH	8.3	Standard Units
Salinity	—	%
Conductivity	x 900	micromhos/cm
@	17.0	Degrees C
Dissolved Oxygen	13.0	ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

J A Blair
Field Operations Manager Date

Valdez/Montano
Sampler

FIELD WATER QUALITY AND ANALYSIS

SAMPLE DATA

Sample Type _____ Sta SW-~~12~~ 46 JAP

Sampling Method (include details of purging): Sample ID _____

Date 5/26/87

Time 16:03

FIELD MEASUREMENTS

Depth to Water _____ + X Feet

Temperature 22.0 Degrees C

pH 10.1 Standard Units

Salinity — %

Conductivity _____ x 262 micromhos/cm

@ 22.0 Degrees C

Dissolved Oxygen 720 ppm

Flow Rate Data:

COMMENTS AND SAMPLE DESCRIPTION (color, turbidity, odor, weather, etc.)

BOTTLES FILLED

[signature] Field Operations Manager Date

Valdez/Montano Sampler