VOLATILE ORGANICS DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09355-TMA-615 (923-E418)

9413225.2320

MEMORANDUM

FEB 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record

February 16, 1994

FR: Michael Higgins, Golder Associates Inc.

RE: VOLATILE ORGANICS DATA VALIDATION SUMMARY FOR DATA PACKAGE B09355-TMA-615 (923-E418)

INTRODUCTION

This memorandum presents the results of data validation on data package B09355-TMA-615 prepared by Thermo Analytical Inc. (TMA). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09355	09/20/93	SOIL	SEE NOTE 1
B09356	09/20/93	SOIL	
B09357	09/20/93	SOIL	
B09359	09/20/93	SOIL	
B09360	09/20/93	SOIL	
B09361	09/20/93	SOIL	
B09362	09/20/93	SOIL	
B098Y6	09/20/93	SOIL	

Notes: 1 All samples were analyzed for volatile target compound list (TCL) organics.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met, with the exception of the deficiencies identified below.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the referenced analytical method.

Completeness. The data package was complete for all requested analyses. A total of eight (8) samples were validated in this data package with a total of 264 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives.

MAJOR DEFICIENCIES

No deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

Blanks

Methylene chloride and toluene were detected in the method blank. Attachments 2 and 5 provide a summary of the samples affected, data qualification applied and supporting documentation.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

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ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

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GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.

NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

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ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

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DATA QUALIFICATION SUMMARY - FORM B-7

SDG:	REVIEWER: MCH	DATE: 940217	PAGE 1 OF 1
COMMENTS: B093555-TMA-615			
PARAMETER	QUALIFIER	SAMPLES AFFECTED	REASON
METHYLENE CHLORIDE	U	B098Y6	PRESENT IN BLANK, DETECT < CRDL RAISED TO CRDL
TOLUENE	U	B09361,B09362	PRESENT IN BLANK, DETECT < CRDL RAISED TO CRDL
UNKNOWN KETONE	JN	B09361	TIC @ RT = 21.20
UNKNOWN HYDROCARBON	JN	B09359, B09360, B09361	TIC @ RT = 21.78
UNKNOWN HYDROCARBON	JN	B09361	TIC @ RT = 24.08
UNKNOWN HYDROCARBON	JN	B09359, B09360, B09361, B09362	TIC @ RT = 26.28

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ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9U1225-2327

9413225.2328

Validated Data Summary, Data Package: B09355-TMA-615

	Samp#	B09355		B09356		B09357		B09359		B09360		B09361	
	Date	9-20-93		9-20-93		9-20-93		9-20-93		9-20-93		9-20-93	
	Location	219-W19-97		219-W19-95		219-W19-95		219-W19-95		219-W19-95		219-W19-95	
	Depth	167.5 - 170		169 - 171.5		169 - 171.5		---		---		181 - 182	
	Type	---		---		DUPLICATE		FLD BLANK		EQ BLANK		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
BROMOMETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
VINYL CHLORIDE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
CHLOROETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
METHYLENE CHLORIDE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
ACETONE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	7.000	J
CARBON DISULFIDE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,1-DICHLOROETHENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,1-DICHLOROETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,2-DICHLOROETHENE (TOTAL)	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
CHLOROFORM	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,2-DICHLOROETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
2-BUTANONE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,1,1-TRICHLOROETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
CARBON TETRACHLORIDE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
BROMODICHLOROMETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,2-DICHLOROPROPANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
CIS-1,3-DICHLOROPROPENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
TRICHLOROETHENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
DIBROMOCHLOROMETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,1,2-TRICHLOROETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
BENZENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
TRANS-1,3-DICHLOROPROPENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
BROMOFORM	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
4-METHYL-2-PENTANONE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
2-HEXANONE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
TETRACHLOROETHENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,1,2,2-TETRACHLOROETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
TOLUENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
CHLOROBENZENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
ETHYLBENZENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
STYRENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
XYLENES (TOTAL)	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U

Verified 5/20/97

9413225.2329

Validated Data Summary, Data Package: B09355-TMA-615

	Samp#	B09362		B098Y6	
	Date	9-21-93		9-21-93	
	Location	219-W19-97		299-W19-97	
	Depth	175.7 - 177		---	
	Type	---		TRIP	
Parameter	Units	Result	Q	Result	Q
CHLOROMETHANE	MG/KG	11.000	U	10.000	U
BROMOMETHANE	MG/KG	11.000	U	10.000	U
VINYL CHLORIDE	MG/KG	11.000	U	10.000	U
CHLOROETHANE	MG/KG	11.000	U	10.000	U
METHYLENE CHLORIDE	MG/KG	11.000	U	10.000	U
ACETONE	MG/KG	11.000	U	10.000	U
CARBON DISULFIDE	MG/KG	11.000	U	10.000	U
1,1-DICHLOROETHENE	MG/KG	11.000	U	10.000	U
1,1-DICHLOROETHANE	MG/KG	11.000	U	10.000	U
1,2-DICHLOROETHENE (TOTAL)	MG/KG	11.000	U	10.000	U
CHLOROFORM	MG/KG	11.000	U	10.000	U
1,2-DICHLOROETHANE	MG/KG	11.000	U	10.000	U
2-BUTANONE	MG/KG	11.000	U	10.000	U
1,1,1-TRICHLOROETHANE	MG/KG	11.000	U	10.000	U
CARBON TETRACHLORIDE	MG/KG	11.000	U	10.000	U
BROMODICHLOROMETHANE	MG/KG	11.000	U	10.000	U
1,2-DICHLOROPROPANE	MG/KG	11.000	U	10.000	U
CIS-1,3-DICHLOROPROPENE	MG/KG	11.000	U	10.000	U
TRICHLOROETHENE	MG/KG	11.000	U	10.000	U
DIBROMOCHLOROMETHANE	MG/KG	11.000	U	10.000	U
1,1,2-TRICHLOROETHANE	MG/KG	11.000	U	10.000	U
BENZENE	MG/KG	11.000	U	10.000	U
TRANS-1,3-DICHLOROPROPENE	MG/KG	11.000	U	10.000	U
BROMOFORM	MG/KG	11.000	U	10.000	U
4-METHYL-2-PENTANONE	MG/KG	11.000	U	10.000	U
2-HEXANONE	MG/KG	11.000	U	10.000	U
TETRACHLOROETHENE	MG/KG	11.000	U	10.000	U
1,1,2,2-TETRACHLOROETHANE	MG/KG	11.000	U	10.000	U
TOLUENE	MG/KG	11.000	U	10.000	U
CHLOROBENZENE	MG/KG	11.000	U	10.000	U
ETHYLBENZENE	MG/KG	11.000	U	10.000	U
STYRENE	MG/KG	11.000	U	10.000	U
XYLENES (TOTAL)	MG/KG	11.000	U	10.000	U

60

000109

EPA SAMPLE NO.

B09361

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-08D

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R25

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 2 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	7	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	~~UJ~~
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	2	~~J~~
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

FORM I VOA 3/90

EPA SAMPLE NO.

B09361

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-08D

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R25

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 2 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 5 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 66-25-1	HEXANAL	18.17	13	JN
2.	UNKNOWN KETONE	21.20	7	JN
3.	UNKNOWN HYDROCARBON	21.78	18	JN
4.	UNKNOWN HYDROCARBON	24.08	9	JN
5.	UNKNOWN HYDROCARBON	26.28	87	JN

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09355

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R05

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 17 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

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CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	12	U
67-64-1	Acetone	12	U
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	~~UJ~~ U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

u
JJ 2/7/94

Verified 6/10/94 [illegible]

000128

EPA SAMPLE NO.

B09355

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R05

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 17 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09356

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R10

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 3 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	~~U J~~ U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

U 3/2/17/94

FORM I VOA 3/90

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09356

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R10

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 3 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

Verified 9/30/10 [illegible]

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09357

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-04A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R07

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 9 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	11	U
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	~~U J~~
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

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[illegible]

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09357

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-04A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R07

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 9 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

Verified 10/02/93

000151
EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

B09359

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-06A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R09

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 0 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	~~U~~ 5 u
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09359

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-06A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R09

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 0 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 66-25-1	HEXANAL	18.20	11	JN
2.	UNKNOWN HYDROCARBON	21.83	7	JN
3.	UNKNOWN HYDROCARBON	26.37	9	JN

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Verified 5/10/10 WWA

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09360

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-07A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R11

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 0 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	~~U~~
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

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Verified 9/20/10

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1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09360

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-07A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R11

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 0 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 66-25-1	HEXANAL	18.20	19	JN
2.	UNKNOWN HYDROCARBON	21.83	10	JN
3.	UNKNOWN HYDROCARBON	26.37	10	JN

Verified 2/10/10

FORM I VOA-TIC 3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09362

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-05A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R08

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 5 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	11	U
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	~~UJ~~ U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	~~2~~	~~BJ~~
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

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Verified

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09362

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-05A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R08

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 5 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	26.37	8	JN

Verified 9/4/94

FORM I VOA-TIC 3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B098Y6

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-03A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R23

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 0 Date Analyzed: 09/30/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	~~BJ~~
67-64-1	Acetone	10	~~U~~
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B098Y6

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-03A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R23

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 0 Date Analyzed: 09/30/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

Verified 4/02/94

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9113225.2346

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 09-078

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : September 27, 1993

1.0 DESCRIPTION OF CASE :

Eight soil samples were analyzed for TCL Organics- Volatiles and Semivolatiles according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision OLM01.8. The Total Petroleum Hydrocarbons in the Kerosene range (K) were analyzed according to the SW-846 Method 8015M.

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B09355	A3-09-078-01A	V	SOIL
B09355	A3-09-078-01B	SV	SOIL
B09355 MS	A3-09-078-01C	SV	SOIL
B09355 MSD	A3-09-078-01D	SV	SOIL
B09355	A3-09-078-01G	K	SOIL
B09356	A3-09-078-02A	V	SOIL
B09356 MS	A3-09-078-02B	V	SOIL
B09356 MSD	A3-09-078-02C	V	SOIL
B09356	A3-09-078-02D	SV	SOIL
B09356	A3-09-078-02G	K	SOIL
B098Y6	A3-09-078-03A	V	SOIL
B09357	A3-09-078-04A	V	SOIL
B09357	A3-09-078-04B	SV	SOIL
B09357	A3-09-078-04D	K	SOIL
B09357 MS	A3-09-078-04E	K	SOIL
B09357 MSD	A3-09-078-04F	K	SOIL
B09362	A3-09-078-05A	V	SOIL
B09362	A3-09-078-05B	SV	SOIL
B09362	A3-09-078-05D	K	SOIL
B09359	A3-09-078-06A	V	SOIL
B09359	A3-09-078-06B	SV	SOIL
B09359	A3-09-078-06D	K	SOIL
B09360	A3-09-078-07A	V	SOIL
B09360	A3-09-078-07B	SV	SOIL
B09360	A3-09-078-07D	K	SOIL
B09361	A3-09-078-08B	SV,K	SOIL
B09361	A3-09-078-08D	V	SOIL

3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

A 250 mL Volatile container for sample B09361 was broken at TMA/ARLI. As per WHC ROD-93-0215, TMA/ARLI was instructed to use the Kerosene aliquot of that sample for the Volatile analysis. Both Kerosene and Semivolatiles will be analyzed for by utilizing the 250 mL bottle designated for the Semivolatiles analysis.

All of the other sample containers were received intact and properly documented.

3.2 ANALYSIS

3.2.1 VOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were analyzed by heated purge within the CLP SOW holding times.

All of the QC results were within the limits specified by the EPA CLP SOW.

TUNES :

All BFB tunes were injected directly into the GC/MS instrument.

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the contract required holding times.

No TCL analytes were detected in the samples, with the exception of trace amounts of Di-n-butylphthalate ranging from 290 to 410 ppb.

All of the QC results were within the limits specified by the EPA CLP SOW.

3.2.3 TOTAL PETROLEUM HYDROCARBONS "KEROSENE RANGE" COMMENTS :

SEQUENCE NOTES :

The sequence was started on 10/05/93 and was analyzed according to the SW-846 Method 8015M. The initial calibration consisted of 5 different levels of the Kerosene standard that ranged from 200ppm to 2000ppm. The continuing calibration at the 1000ppm level was injected amongst a series of samples, in

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order to verify the instrument stability. The %RSD in the initial calibration and the %D in the continuing calibration were below their 20% and 15% limits, respectively.

SAMPLE NOTES :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the SW-846 holding time. Approximately 20g of each sample was extracted and concentrated to a final volume of 5 mL. The samples were then analyzed by GC/FID for total petroleum hydrocarbons in the Kerosene range by Method 8015M. There were no total petroleum hydrocarbons detected in the samples.

Sample B09357 was spiked with approximately 245 ug/Kg of Kerosene. The spike recoveries were between 90% and 92%, whereas the blank spike had a recovery of 82%.

All of the QC results were within the limits specified by the SW-846 Method 8015M.

We certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data in this hardcopy data package and in the computer-readable data submitted on diskette is authorized by the Laboratory Manager or his designee, as verified by the following signatures.

Nicole Roth 12/2/93
CLP Program Manager

for Wida Ang 12/2/93
Organics Supervisor

N3-09-139

Westinghouse Hanford Company

CHAIN OF CUSTODY

000002A

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-20-93

Ice Chest No.: 580

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 9973328836

Offsite Property No.: W93-0-0764-23

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09355

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09356

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

SER 9-21-93

[] Field Transfer of Custody — Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-23-93 Karen E. Rogers 1440	K. Blum Kermit Blum	9-27-93 *
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

* Received at TMA / Issued on 9-25-93 opened 9-27-93 KB

A-6000-407 (12/90) (Ef) WEF061
Chain of Custody

000006D

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-20-93

Ice Chest No.: 580

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.: 493-0-0764-23

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B098Y6

~~1,250ml P:CLP;TAL Metals,Hg,Ti~~
~~1,250ml Gs:VOA CLP~~
~~1,250ml aG:Semi-VOA CLP~~
~~1,125ml G:Anions F,Cl,SO4 (EPA 300.0)~~
~~1,125ml P/G:Anions NO2,NO3 (EPA 353.2)~~
~~1,125ml G:Cyanide CLP~~
~~1,125ml Gw:Kerosene (8015M)~~
~~1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152,Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79~~

JER 9-23-93

2)
1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)
1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-23-93 1440 Jerome E. Rogers	K. Blum Kermit Blum	9-27-93 *
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

* Received @ TMA/Hanford 9-27-93, opened 9-27-93 - KB

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-20-93

Ice Chest No.: 161

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 9973332836

Offsite Property No.: 4293-0-0764-23

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09359

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09360

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3) B09361

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

[] Field Transfer of Custody — Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-23-93 Laurie Rogers NA 1440	K. Blum Kimit Blum	9-27-93 *
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

* Received @ TMA / Necco 9-25-93 ; opened 9-27-93 - KB

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-20-93

Ice Chest No.: 630

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 997332836

Offsite Property No.: W93-0-0764-23

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09357

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09362

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

JER 9-21-93

[] Field Transfer of Custody — Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Jerome S. Rogers 9-23-93 1440	Kermit K. Blum	9-27-93 *
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

* Received @ TMA/Norcal on 9-25-93; opened 9-27-93 KB

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

9413225.2354

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP.2		DATA PACKAGE: B09355-TMA.0615	
VALIDATOR: M. HIGGINS	LAB: TMA		DATE: 940210
CASE: ~~WA~~ 09.078		SDG: NA	

ANALYSES PERFORMED

☐ CLP Volatiles	☐ SW-846 8240 (cap column)	☐ SW-846 8260 (packed column)	☐ CLP Semivolatiles	☐ SW-846 8270 (cap column)	☐ SW-846 (packed column)
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX	EIGHT (8) / SOIL
B09355	B09361
B09356	B09362
B09357	B09846
B09359	
B09360	

9413225.2355

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION

Is the GC/MS tuning/performance check acceptable? . . . . . (Yes) No N/A

Are initial calibrations acceptable? . . . . . (Yes) No N/A

Are continuing calibrations acceptable? . . . . . Yes (No) N/A

Comments: ~~CCV for acetone >25% D CCV on 9/30/93~~ 02/17/94
CCV for ~~1,2-DICHLOROETHANE~~ >25% D CCV ON 10/01/93 02/17/94
BUT NOT QUALIFIED BECAUSE LISTED AS
ERATIC CMPD AND % D < 40%

4. BLANKS

Were laboratory blanks analyzed? . . . . . (Yes) No N/A

Are laboratory blank results acceptable? . . . . . (Yes) No N/A

Were field/trip blanks analyzed? . . . . . Yes No (N/A)

Are field/trip blank results acceptable? . . . . . Yes No (N/A)

Comments: 2J METHYLENE CHLORIDE DETECTED IN
BLANK ASSOCIATED WITH SAMPLE B0986 (ONLY).
1J TOLUENE DETECTED IN BLANK
ASSOCIATED WITH ALL OTHER SAMPLES

5. ACCURACY

Were surrogates/System Monitoring Compounds analyzed? . . . . . (Yes) No N/A

Are surrogate/System Monitoring Compound recoveries acceptable? (Yes) No N/A

Were MS/MSD samples analyzed? . . . . . (Yes) No N/A

Are MS/MSD results acceptable? . . . . . (Yes) No N/A

Comments:

9413275.2356

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION

Are MS/MSD RPD values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments:

7. SYSTEM PERFORMANCE

Were internal standards analyzed? . . . . . Yes No N/A

Are internal standard areas acceptable? . . . . . Yes No N/A

Are internal standard retention times acceptable? . . . . . Yes No N/A

Comments:

8. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . Yes No N/A

Is compound quantitation acceptable? . . . . . Yes No N/A

Comments:

9. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Do results meet the CRQLs? . . . . . Yes No N/A

Has the laboratory properly identified and coded all TIC? . . . Yes No N/A

Comments:

9413275.2357

HOLDING TIME SUMMARY

SDG: NA	VALIDATOR: M. HIGGINS	DATE: 940210	PAGE 1 OF 1
COMMENTS: B09355-TM4·0615			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09355	VOC	9.20.93	10/01/93	10/01/93	≤14 DAYS	≤14 DAYS	NONE
B09356	↓	↓	↓	↓	↓	↓	↓
B09357	↓	↓	↓	↓	↓	↓	↓
B09359	↓	↓	↓	↓	↓	↓	↓
B09360	↓	↓	↓	↓	↓	↓	↓
B09361	↓	↓	↓	↓	↓	↓	↓
B09362	↓	↓	↓	↓	↓	↓	↓
B098Y6	↓	↓	9/30/93	9/30/93	↓	↓	↓

BLANK AND SAMPLE DATA SUMMARY

SDG: NA	VALIDATOR: M. HIGGINS	DATE: 940210	PAGE 1 OF 1
COMMENTS: B09355.TMA.0615			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
SBLK0930A	METHYLENECHLORIDE	2	J		UG/KG		20	B09876	UJ
	UNKNOWN HC	7	J	8.28		35		NA	NONE
SBLK1001	TOLUENE	1	J		UG/KG	5	10	B09361 B09362	10U
						5/2/17/94			

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK093031

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0930A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R11

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Date Analyzed: 09/30/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	J
67-64-1	Acetone	10	~~U~~
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	~~U~~
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

ASSOCIATED WITH B0984L6 (ONLY)

FORM I VOA 3/90

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1001R

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: SBLK1001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R03

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	1	J
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

FORM I VOA Associated with ~~B09876~~ All except B09876 3/90

VOLATILE ORGANICS DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09355-TMA-615 (923-E418)

9413225.2362

MEMORANDUM

FEB 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record

February 16, 1994

FR: Michael Higgins, Golder Associates Inc.

RE: VOLATILE ORGANICS DATA VALIDATION SUMMARY FOR DATA PACKAGE B09355-TMA-615 (923-E418)

INTRODUCTION

This memorandum presents the results of data validation on data package B09355-TMA-615 prepared by Thermo Analytical Inc. (TMA). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09355	09/20/93	SOIL	SEE NOTE 1
B09356	09/20/93	SOIL	
B09357	09/20/93	SOIL	
B09359	09/20/93	SOIL	
B09360	09/20/93	SOIL	
B09361	09/20/93	SOIL	
B09362	09/20/93	SOIL	
B098Y6	09/20/93	SOIL	

Notes: 1 All samples were analyzed for volatile target compound list (TCL) organics.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met, with the exception of the deficiencies identified below.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the referenced analytical method.

Completeness. The data package was complete for all requested analyses. A total of eight (8) samples were validated in this data package with a total of 264 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives.

MAJOR DEFICIENCIES

No deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

Blanks

Methylene chloride and toluene were detected in the method blank. Attachments 2 and 5 provide a summary of the samples affected, data qualification applied and supporting documentation.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2, 1993. Westinghouse Hanford Company, Richland, Washington.

9413225.2364

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

94/3225.2365

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected in the associated laboratory blank. This qualifier is applied by the laboratory. During the process of data validation this qualifier may be replaced by other appropriate qualifiers as defined by the validation procedures. The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample quantitation limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration reported may not accurately reflect the sample quantitation limit. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. This qualifier may be applied by the laboratory to indicate a concentration which is less than the contract required quantitation limit (CRQL) but greater than the instrument detection limit (IDL). During data validation this qualifier may be applied to indicate a minor quality control deficiency. However in either case, the associated data should be considered usable for decision making purposes.

NJ - Indicates presumptive evidence of a constituent at an estimated value. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

N - Indicates presumptive evidence of a constituent. This qualifier is normally applied to GC analysis data (such as organochlorine pesticide and PCB data). The associated data should be considered usable for decision making purposes.

JN - Indicates a tentatively identified compound (TIC) whose concentration and identification have been determined to be valid as a result of data validation. The associated data should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported has been qualified as unusable due to a major quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9413225.2367

DATA QUALIFICATION SUMMARY - FORM B-7

SDG:	REVIEWER: MCH	DATE: 940217	PAGE 1 OF 1
COMMENTS: B093555-TMA-615			
PARAMETER	QUALIFIER	SAMPLES AFFECTED	REASON
METHYLENE CHLORIDE	U	B098Y6	PRESENT IN BLANK, DETECT < CRDL RAISED TO CRDL
TOLUENE	U	B09361,B09362	PRESENT IN BLANK, DETECT < CRDL RAISED TO CRDL
UNKNOWN KETONE	JN	B09361	TIC @ RT = 21.20
UNKNOWN HYDROCARBON	JN	B09359, B09360, B09361	TIC @ RT = 21.78
UNKNOWN HYDROCARBON	JN	B09361	TIC @ RT = 24.08
UNKNOWN HYDROCARBON	JN	B09359, B09360, B09361, B09362	TIC @ RT = 26.28

9413225.2368

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9413225.2369

Validated Data Summary, Data Package: B09355-TMA-615

	Samp#	B09355		B09356		B09357		B09359		B09360		B09361	
	Date	9-20-93		9-20-93		9-20-93		9-20-93		9-20-93		9-20-93	
	Location	219-W19-97		219-W19-95		219-W19-95		219-W19-95		219-W19-95		219-W19-95	
	Depth	167.5 - 170		169 - 171.5		169 - 171.5		---		---		181 - 182	
	Type	---		---		DUPLICATE		FLD BLANK		EQ BLANK		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLOROMETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
BROMOMETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
VINYL CHLORIDE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
CHLOROETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
METHYLENE CHLORIDE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
ACETONE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	7.000	J
CARBON DISULFIDE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,1-DICHLOROETHENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,1-DICHLOROETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,2-DICHLOROETHENE (TOTAL)	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
CHLOROFORM	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,2-DICHLOROETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
2-BUTANONE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,1,1-TRICHLOROETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
CARBON TETRACHLORIDE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
BROMODICHLOROMETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,2-DICHLOROPROPANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
CIS-1,3-DICHLOROPROPENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
TRICHLOROETHENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
DIBROMOCHLOROMETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,1,2-TRICHLOROETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
BENZENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
TRANS-1,3-DICHLOROPROPENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
BROMOFORM	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
4-METHYL-2-PENTANONE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
2-HEXANONE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
TETRACHLOROETHENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
1,1,2,2-TETRACHLOROETHANE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
TOLUENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
CHLOROBENZENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
ETHYLBENZENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
STYRENE	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U
XYLENES (TOTAL)	MG/KG	12.000	U	10.000	U	11.000	U	10.000	U	10.000	U	10.000	U

9413225.2371

Validated Data Summary, Data Package: B09355-TMA-615

	Samp#	B09362		B09BY6	
	Date	9-21-93		9-21-93	
	Location	219-W19-97		299-W19-97	
	Depth	175.7 - 177		---	
	Type	---		TRIP	
Parameter	Units	Result	Q	Result	Q
CHLOROMETHANE	MG/KG	11.000	U	10.000	U
BROMOMETHANE	MG/KG	11.000	U	10.000	U
VINYL CHLORIDE	MG/KG	11.000	U	10.000	U
CHLOROETHANE	MG/KG	11.000	U	10.000	U
METHYLENE CHLORIDE	MG/KG	11.000	U	10.000	U
ACETONE	MG/KG	11.000	U	10.000	U
CARBON DISULFIDE	MG/KG	11.000	U	10.000	U
1,1-DICHLOROETHENE	MG/KG	11.000	U	10.000	U
1,1-DICHLOROETHANE	MG/KG	11.000	U	10.000	U
1,2-DICHLOROETHENE (TOTAL)	MG/KG	11.000	U	10.000	U
CHLOROFORM	MG/KG	11.000	U	10.000	U
1,2-DICHLOROETHANE	MG/KG	11.000	U	10.000	U
2-BUTANONE	MG/KG	11.000	U	10.000	U
1,1,1-TRICHLOROETHANE	MG/KG	11.000	U	10.000	U
CARBON TETRACHLORIDE	MG/KG	11.000	U	10.000	U
BROMODICHLOROMETHANE	MG/KG	11.000	U	10.000	U
1,2-DICHLOROPROPANE	MG/KG	11.000	U	10.000	U
CIS-1,3 DICHLOROPROPENE	MG/KG	11.000	U	10.000	U
TRICHLOROETHENE	MG/KG	11.000	U	10.000	U
DIBROMOCHLOROMETHANE	MG/KG	11.000	U	10.000	U
1,1,2-TRICHLOROETHANE	MG/KG	11.000	U	10.000	U
BENZENE	MG/KG	11.000	U	10.000	U
TRANS-1,3-DICHLOROPROPENE	MG/KG	11.000	U	10.000	U
BROMOFORM	MG/KG	11.000	U	10.000	U
4-METHYL-2-PENTANONE	MG/KG	11.000	U	10.000	U
2-HEXANONE	MG/KG	11.000	U	10.000	U
TETRACHLOROETHENE	MG/KG	11.000	U	10.000	U
1,1,2,2-TETRACHLOROETHANE	MG/KG	11.000	U	10.000	U
TOLUENE	MG/KG	11.000	U	10.000	U
CHLOROBENZENE	MG/KG	11.000	U	10.000	U
ETHYLBENZENE	MG/KG	11.000	U	10.000	U
STYRENE	MG/KG	11.000	U	10.000	U
XYLENES (TOTAL)	MG/KG	11.000	U	10.000	U

0 9

000109

EPA SAMPLE NO.

B09361

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-08D

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R25

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 2 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	7	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	~~U~~
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	2	~~J~~
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

U
qualifier

10u

FORM I VOA 3/90

EPA SAMPLE NO.

B09361

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-08D

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R25

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 2 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 66-25-1	HEXANAL	18.17	13	JN
2.	UNKNOWN KETONE	21.20	7	JN
3.	UNKNOWN HYDROCARBON	21.78	18	JN
4.	UNKNOWN HYDROCARBON	24.08	9	JN
5.	UNKNOWN HYDROCARBON	26.28	87	JN

Verified 12/2/10

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09355

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R05

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 17 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	12	U
67-64-1	Acetone	12	U
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene (total)	12	U
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Xylene (total)	12	U

LL
JJ 2/17/94

Verified 6/02/10 [illegible]

000128

EPA SAMPLE NO.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B09355

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R05

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 17 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

FORM I VOA-TIC

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09356

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R10

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 3 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	~~U~~
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

U
5/2/17/94

FORM I VOA 3/90

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09356

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R10

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 3 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

Verified 9/30/10 [illegible]

000143

EPA SAMPLE NO.

B09357

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-04A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R07

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 9 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	11	U
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	~~U~~
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

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Verified 5/12/10

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09357

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-04A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R07

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 9 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

000151

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09359

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-06A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R09

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 0 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	~~U~~ U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

FORM I VOA 3/90

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09359

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-06A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R09

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 0 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 66-25-1	HEXANAL	18.20	11	JN
2.	UNKNOWN HYDROCARBON	21.83	7	JN
3.	UNKNOWN HYDROCARBON	26.37	9	JN

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Certified 5/10/10 WLM

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09360

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-07A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R11

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 0 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

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CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	~~U~~ U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U 9/21/94
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

Verified 9/20/10

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09360

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-07A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R11

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 0 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 66-25-1	HEXANAL	18.20	19	JN
2.	UNKNOWN HYDROCARBON	21.83	10	JN
3.	UNKNOWN HYDROCARBON	26.37	10	JN

Verified 10/10

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09362

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-05A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R08

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 5 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	11	U
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene (total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	~~UJ~~ U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	~~3~~	~~BJ~~
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Xylene (total)	11	U

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11U ~~10U~~

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Verified 5/2/10

-022

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09362

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-05A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R08

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 5 Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	26.37	8	JN

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Verified 9/26/94

FORM I VOA-TIC 3/90

-023

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B098Y6

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-03A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R23

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 0 Date Analyzed: 09/30/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	~~B~~
67-64-1	Acetone	10	~~U~~
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

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-02

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B098Y6

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309078-03A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R23

Level: (low/med) LOW Date Received: 09/27/93

% Moisture: not dec. 0 Date Analyzed: 09/30/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

Verified 3/30/94

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9W8225.2388

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 09-078

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : September 27, 1993

1.0 DESCRIPTION OF CASE :

Eight soil samples were analyzed for TCL Organics- Volatiles and Semivolatiles according to the USEPA Contract Laboratory Program (CLP) Statement of Work for Organic Analysis, Revision OLM01.8. The Total Petroleum Hydrocarbons in the Kerosene range (K) were analyzed according to the SW-846 Method 8015M.

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B09355	A3-09-078-01A	V	SOIL
B09355	A3-09-078-01B	SV	SOIL
B09355 MS	A3-09-078-01C	SV	SOIL
B09355 MSD	A3-09-078-01D	SV	SOIL
B09355	A3-09-078-01G	K	SOIL
B09356	A3-09-078-02A	V	SOIL
B09356 MS	A3-09-078-02B	V	SOIL
B09356 MSD	A3-09-078-02C	V	SOIL
B09356	A3-09-078-02D	SV	SOIL
B09356	A3-09-078-02G	K	SOIL
B098Y6	A3-09-078-03A	V	SOIL
B09357	A3-09-078-04A	V	SOIL
B09357	A3-09-078-04B	SV	SOIL
B09357	A3-09-078-04D	K	SOIL
B09357 MS	A3-09-078-04E	K	SOIL
B09357 MSD	A3-09-078-04F	K	SOIL
B09362	A3-09-078-05A	V	SOIL
B09362	A3-09-078-05B	SV	SOIL
B09362	A3-09-078-05D	K	SOIL
B09359	A3-09-078-06A	V	SOIL
B09359	A3-09-078-06B	SV	SOIL
B09359	A3-09-078-06D	K	SOIL
B09360	A3-09-078-07A	V	SOIL
B09360	A3-09-078-07B	SV	SOIL
B09360	A3-09-078-07D	K	SOIL
B09361	A3-09-078-08B	SV,K	SOIL
B09361	A3-09-078-08D	V	SOIL

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3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

A 250 mL Volatile container for sample B09361 was broken at TMA/ARLI. As per WHC ROD-93-0215, TMA/ARLI was instructed to use the Kerosene aliquot of that sample for the Volatile analysis. Both Kerosene and Semivolatiles will be analyzed for by utilizing the 250 mL bottle designated for the Semivolatiles analysis.

All of the other sample containers were received intact and properly documented.

3.2 ANALYSIS

3.2.1 VOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were analyzed by heated purge within the CLP SOW holding times.

All of the QC results were within the limits specified by the EPA CLP SOW.

TUNES :

All BFB tunes were injected directly into the GC/MS instrument.

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the contract required holding times.

No TCL analytes were detected in the samples, with the exception of trace amounts of Di-n-butylphthalate ranging from 290 to 410 ppb.

All of the QC results were within the limits specified by the EPA CLP SOW.

3.2.3 TOTAL PETROLEUM HYDROCARBONS "KEROSENE RANGE" COMMENTS :

SEQUENCE NOTES :

The sequence was started on 10/05/93 and was analyzed according to the SW-846 Method 8015M. The initial calibration consisted of 5 different levels of the Kerosene standard that ranged from 200ppm to 2000ppm. The continuing calibration at the 1000ppm level was injected amongst a series of samples, in

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order to verify the instrument stability. The %RSD in the initial calibration and the %D in the continuing calibration were below their 20% and 15% limits, respectively.

SAMPLE NOTES :

LOW LEVEL SOIL :

The samples were extracted and analyzed within the SW-846 holding time. Approximately 20g of each sample was extracted and concentrated to a final volume of 5 mL. The samples were then analyzed by GC/FID for total petroleum hydrocarbons in the Kerosene range by Method 8015M. There were no total petroleum hydrocarbons detected in the samples.

Sample B09357 was spiked with approximately 245 ug/Kg of Kerosene. The spike recoveries were between 90% and 92%, whereas the blank spike had a recovery of 82%.

All of the QC results were within the limits specified by the SW-846 Method 8015M.

9413225.2391

We certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data in this hardcopy data package and in the computer-readable data submitted on diskette is authorized by the Laboratory Manager or his designee, as verified by the following signatures.

Nicole Roth 12/2/93
CLP Program Manager

for Wida Ang 12/2/93
Organics Supervisor

U3-09-156

Westinghouse Hanford Company

CHAIN OF CUSTODY

0000024

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-20-93

Ice Chest No.: 580

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 9973332836

Offsite Property No.: W93-0-0764-23

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09355

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml GW:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09356

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml GW:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml GW:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-23-93 Gene E. Rogers 1440	K. Blum Kermit Blum	9-27-93 *
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

* Received at TMA 1420 on 9-25-93 opened 9-27-93 KB

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

0000026

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-20-93

Ice Chest No.: 580

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.: W93-0-0764-23

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1)

~~1,250ml P:CLP;TAL Metals,Hg,Ti~~ B098Y6

~~1,250ml Gs:VOA CLP~~

~~1,250ml aG:Semi-VOA CLP~~

~~1,125ml G:Anions F,Cl,SO4 (EPA 300.0)~~

~~1,125ml P/G:Anions NO2,NO3 (EPA 353.2)~~

~~1,125ml G:Cyanide CLP~~

~~1,125ml GW:Kerosene (8015M)~~

JER 9-23-93

~~1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79~~

9413225.2393

2)

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml GW:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml GW:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-23-93 Yvonne Rogers 1440	K. Blum Kermit Blum	9-27-93 *
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

* Received on TMA/Hood 9-23-93 Opened 9-27-93 KB

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-20-93

Ice Chest No.: 161

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 9973332836

Offsite Property No.: 4293-0-0764-23

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09359

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30); Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

2) B09360

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30); Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3) B09361

- 1,250ml P:CLP;TAL Metals,Hg,Ti
- 1,250ml Gs:VOA CLP
- 1,250ml aG:Semi-VOA CLP
- 1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
- 1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
- 1,125ml G:Cyanide CLP
- 1,125ml Gw:Kerosene (8015M)
- 1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30); Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-23-93	K Blum	9-27-93 *
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

* Received @ TMA 9-25-93, Opened 9-27-93 - KB

A-6000-407 (12/90) (ET) WEF061
Chain of Custody

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-20-93

Ice Chest No.: 630

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: 9973332836

Offsite Property No.: W93-0-0764-23

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

Possible Sample Hazards/Remarks: Keep samples at 4C (SOIL) NONE NOTED

Sample Identification

1) B09357

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

9413225.2395

2) B09362

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

3)

1,250ml P:CLP;TAL Metals,Hg,Ti
1,250ml Gs:VOA CLP
1,250ml aG:Semi-VOA CLP
1,125ml G:Anions F,Cl,SO4 (EPA 300.0)
1,125ml P/G:Anions NO2,NO3 (EPA 353.2)
1,125ml G:Cyanide CLP
1,125ml Gw:Kerosene (8015M)
1,1000ml P/G:Gross alpha/beta (EP-10), Gamma Spec to include,Cs-134,Cs-137,Co-60,Eu-152, Eu-154,Eu-155,K-40,Ru-106,Na-22 (RC-30), Total Uranium (EA-01C) U-235,U-234,U-238 (EP-70, EP-71, EP-5) Np-237,(RC-101A, RC-622, EP-5) Pu-238,Pu-239/240 (EP-80, EP-81, EP-5) I-129 (RC-25, RC-605) Sr-90 (RC-306, RC-303, RC-309, RC-304) Tc-99 (RC-24, RC-604) Am-241,Cm-244 (EP-80, EP-90, EP-91, EP-92, EP-93, EP-5) Se-79

JER 9-21-93

[] Field Transfer of Custody — Chain of Possession — (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
Leon S. Rogers 9-23-93 1440	K Blum Kermit Blum	9-27-93 *
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

* Received @ TMA/NORCH on 9-25-93; opened 9-27-93 KB

A-6000-407 (12/90) (EF) WEF061
Chain of Custody

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

9413225.2396

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2		DATA PACKAGE: B09355-TMA-0615	
VALIDATOR: M. HIGGINS	LAB: TMA		DATE: 940210
CASE: ~~NA~~ 09.078		SDG: NA	

ANALYSES PERFORMED

☐ CLP Volatiles	☐ SW-846 8240 (cap column)	☐ SW-846 8260 (packed column)	☐ CLP Semivolatiles	☐ SW-846 8270 (cap column)	☐ SW-846 (packed column)
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX	EIGHT (8) / SOIL
B09355	B09361
B09356	B09362
B09357	B09846
B09359	
B09360	

9413225.2397

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments:

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . (Yes) No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. INSTRUMENT TUNING AND CALIBRATION

Is the GC/MS tuning/performance check acceptable? . . . . . (Yes) No N/A

Are initial calibrations acceptable? . . . . . (Yes) No N/A

Are continuing calibrations acceptable? . . . . . Yes (No) N/A

Comments: ~~CCV for acetone >25% D CCV on 9/30/93~~ 2/17/94

~~CCV for 1,2-DICHLOROETHANE~~ >25% D CCV on 10/01/93 2/17/9

BUT NOT QUALIFIED BECAUSE LISTED AS

ERATIC CMPD AND % D < 40%

4. BLANKS

Were laboratory blanks analyzed? . . . . . (Yes) No N/A

Are laboratory blank results acceptable? . . . . . (Yes) No N/A

Were field/trip blanks analyzed? . . . . . Yes No (N/A)

Are field/trip blank results acceptable? . . . . . Yes No (N/A)

Comments: 2J METHYLENE CHLORIDE DETECTED IN

BLANK ASSOCIATED WITH SAMPLE B09BY6 (ONLY).

1J TOLUENE DETECTED IN BLANK

ASSOCIATES WITH ALL OTHER SAMPLES

5. ACCURACY

Were surrogates/System Monitoring Compounds analyzed? . . . . . (Yes) No N/A

Are surrogate/System Monitoring Compound recoveries acceptable? (Yes) No N/A

Were MS/MSD samples analyzed? . . . . . (Yes) No N/A

Are MS/MSD results acceptable? . . . . . (Yes) No N/A

Comments:

9413225.2398

GC/MS ORGANIC DATA VALIDATION CHECKLIST

6. PRECISION

Are MS/MSD RPD values acceptable? . . . . . Yes No N/A

Are field duplicate RPD values acceptable? . . . . . Yes No N/A

Are field split RPD values acceptable? . . . . . Yes No N/A

Comments:

7. SYSTEM PERFORMANCE

Were internal standards analyzed? . . . . . Yes No N/A

Are internal standard areas acceptable? . . . . . Yes No N/A

Are internal standard retention times acceptable? . . . . . Yes No N/A

Comments:

8. COMPOUND IDENTIFICATION AND QUANTITATION

Is compound identification acceptable? . . . . . Yes No N/A

Is compound quantitation acceptable? . . . . . Yes No N/A

Comments:

9. REPORTED RESULTS AND QUANTITATION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A

Are all results supported in the raw data? . . . . . Yes No N/A

Do results meet the CRQLs? . . . . . Yes No N/A

Has the laboratory properly identified and coded all TIC? . . . Yes No N/A

Comments:

9413225.2399

HOLDING TIME SUMMARY

SDG: NA	VALIDATOR: M. HUGGINS	DATE: 940210	PAGE 1 OF 1
COMMENTS: B09355-TMA-0615			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09355	VOC	9.20.93	10/01/93	10/01/93	≤14 DAYS	≤14 DAYS	NONE
B09356	↓	↓	↓	↓	↓	↓	↓
B09357	↓	↓	↓	↓	↓	↓	↓
B09359	↓	↓	↓	↓	↓	↓	↓
B09360	↓	↓	↓	↓	↓	↓	↓
B09361	↓	↓	↓	↓	↓	↓	↓
B09362	↓	↓	↓	↓	↓	↓	↓
B09876	↓	↓	9/30/93	9/30/93	↓	↓	↓

BLANK AND SAMPLE DATA SUMMARY

SDG: NA	VALIDATOR: M. HIGGINS	DATE: 940210	PAGE 1 OF 1
COMMENTS: B09355.TMA.0615			

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
SBLK0930A	METHYLENE CHLORIDE	2	J		UG/KG		20	B09876	UJ
	UNKNOWN HC	7	J	B2B		35		NA	NONE
SBLK1001	TOLUENE	1	J		UG/KG	~~8~~ 5	10	B09361 B09362	10U
						5/2/17/94			

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK0930R1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: SBLK0930A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30930R11

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Date Analyzed: 09/30/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	2	J
67-64-1	Acetone	10	~~U~~
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	~~U~~
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

FORM I VOA

ASSOCIATED WITH B0989 (ONLY)

3/90

940210

-040

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK1001R

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09078 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: SBLK1001

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 31001R03

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Date Analyzed: 10/01/93

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

9413225.2403

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	1	J
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (total)	10	U

FORM I VOA Associated with ~~309876~~ All except 309876 3/90