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Department of Energy

Richland Operations Office
P.O. Box 550
Richland, Washington 99352

Incoming 9403695

APR 30 1994

94-RPS-191

Mr. J. J. Witczak
Nuclear Waste Management
State of Washington
Department of Ecology
P.O. Box 47600
Olympia, Washington 98504

JUN 1994
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EPIC

Mr. Douglas R. Sherwood
Hanford Project Manager
U. S. Environmental Protection Agency
712 Swift Boulevard, Suite 5
Richland, Washington 99352

Dear Messrs. Witczak and Sherwood:

SUBMITTAL OF VALIDATED DATA FOR THE 300 AREA SOLVENT EVAPORATOR SOIL SAMPLING (T-3-1)

Enclosed is a data validation package for the 300 Area Solvent Evaporator (300 ASE) Soil Samples, submitted by the U.S. Department of Energy, Richland Operations Office (RL) and the Westinghouse Hanford Company (WHC). The 300 ASE is an interim status tank treatment facility, which was located in the 300 Area of the Hanford Site from 1975 to 1986. The 300 ASE is being closed under the Washington Administrative Code 173-303 Dangerous Waste Regulations. The data package includes inorganic and organic analyses on soil samples collected at the 300 ASE in August 1993. The analyses were performed by TMA Laboratory.

The data package included here has been validated by Los Alamos Technical Associates, Incorporated for the WHC. Data validation activities were performed in accordance with Level C as defined in Data Validation Procedures for Chemical Analysis (WHC-SD-EN-SPP-002) and Data Validation Procedures for Radiochemical Analysis (WHC-SD-EN-SPP-001). Level C validation includes evaluation and qualification of results based on analytical holding times, method blank results, matrix spikes and duplicates, surrogate recoveries, and analytical method blanks.

Should you have any questions, please contact Mr. R. N. Krekel of RL on (509) 376-4264 or Mr. F. A. Ruck III of the WHC on (509) 376-9876.

Sincerely,

Steven H. Wisness, Acting Program Manager
Office of Environmental Assurance,
Permits, and Policy
DOE Richland Operations Office

EAP:RNK

for R. E. Lerch, Deputy Director
Restoration and Remediation
Westinghouse Hanford Company

Enclosure:
Validation Package

cc w/encl:
Administrative Records, H6-08
R. Cordts, Ecology
D. Duncan, EPA
S. Price, WHC

cc w/o encl:
D. Nylander, Ecology
J. Remaize, WHC
F. Ruck, WHC

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LATA Los Alamos Technical Associates, Inc.

8633 Gage Blvd. / Kennewick, WA 99336 / Telephone (509) 783-4369 / FAX (509) 783-9661

March 7, 1994

Karl Pool
Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Dear Karl,

Attached is the data validation report for analytical results for 300 Area Solvent Evaporator (SDG B090C3-TMA-549). The package was received by Los Alamos Technical Associates on February 22, 1994. Validation of this package began on February 24, and was completed on March 7, 1994.

If you have any questions, please let me know.

Sincerely,

Donald J. Smith
Senior Environmental Engineer

cc: Chris Haecker, LATA
Joan Kessner, WHC
WH552 file

MAR 1994 RECEIVED TQD

RECEIVED MAR 7 1994 VALIDATION DOCUMENTATION SDLA

APR 1994 RECEIVED EPIC

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DATA VALIDATION REPORT
for
300A SOLVENT EVAPORATOR
SDG: BO9OC3-TMA-549

Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352

March 7, 1994

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300A Solvent Evaporator Data Validation Summary

Introduction

All samples in Sample Delivery Group (SDG) B090C3-TMA-549 were validated at level "C" as defined in the Data Validation Procedures for Radiochemical Analysis (WHC-SD-EN-SPP-001) and the Data Validation Procedures for Chemical Analysis (WHC-SD-EN-SPP-002). The strategy for sampling and analysis of both the soil and the concrete has been based on assessments of potential waste discharges using historical information on the storage of spent solvent on the concrete pad, and on the only known spill (onto the soil). The analyses were performed by TMA Laboratory.

The Soil and Concrete Sampling and Analysis Plan for the 300 Area Solvent Evaporator (300 ASE) has been designed for the assessment of contamination of surface or near-surface soils and an adjacent concrete pad that originated from the 300 ASE and attendant barrel storage operations.

Analyses Requested

Samples B090C3, B090C4, B090C5, B090C6, B090C7, B090C8, B090C9, B090D0, B090D1 and B090D2 were collected on August 10, 1993 by WHC and transferred to TMA for analysis. Volatile organic analyses were determined on all samples. In addition, the following determinations were conducted on samples B090C3-B090C9:

TPH as Naptha	Method 8015
ICP Metals	Method 6010
Lead	Method 7421
Anions - IC	EPA 300.0
Total Uranium	Method EA-01C

Data Quality Objectives

The data quality objectives for the 300A Solvent Evaporator project are specified in the Soil and Concrete Sampling and Analysis Plan (DOE/RL 88-08, Closure Plan 300 ASE, Rev. 3). Precision, accuracy, and detection limit requirements for the project have been derived from the Third Edition of SW-846 (EPA, 1986) and are listed in the Soil and Concrete Sampling and Analysis Plan. Maximum holding times are listed in the 3rd Edition, Final Update I of SW-846 (EPA, 1992).

The primary objective of the data validation effort was to ensure these data quality objectives were met. This was accomplished through a detailed examination of the data package to recreate the analytical process and verify that proper and acceptable analytical techniques had been applied. The data package was checked for correct submission of required deliverables, correct transcription of raw data to the summary forms, and for proper calculation of a number of parameters.

Data quality objective goals were met with the exceptions detailed on the following page. Data qualifiers have been assigned to any results that were determined to be deficient by the validator.

According to DOE/RL 88-08, *Closure Plan for 300A Solvent Evaporator, Rev. 3A*, Ethyl acetate was requested for analyses; however, this constituent was not analyzed by the laboratory.

MAJOR DEFICIENCIES (REJECTED DATA)

The following major deficiencies resulted in the qualification of the results as unusable.

- Method 8015: sample B090C5 exhibited surrogate recovery of 0%; therefore; the data for this sample have been qualified unusable (UR).

MINOR DEFICIENCIES

The following minor deficiencies were discovered. These minor shortcomings are not expected to significantly affect the overall quality of the data.

- Method 8240: acetone, 1,1-dichloroethene, 2-butanone, vinyl acetate, trichloroethene, benzene, 4-methyl-2-pentanone, 2-hexanone, toluene, and chlorobenzene did not meet the CRQL for the volatile analysis. No explanation was given by the laboratory. The data were not qualified since it is not clear that the CRQL is actually a contract requirement for this SDG.

  In addition, methylene chloride and acetone were detected in the blank. Data associated with this blank were raised to the CRQL and qualified non detect (U).

  Finally, siloxane, a common laboratory contaminant was reported as a TIC. These data were qualified unusable (R).

- Method 8015: the MS/MSD recoveries and the surrogate recovery for the MS/MSD were outside the acceptance criteria; therefore, all samples were given a "UJ" qualifier.

  In addition, sample B090C5RE exceeded the required holding time by one day and was qualified "UJ".

  Finally, samples B090C6 and B090C7 exhibited surrogate recoveries >120%. The data are qualified estimated (UJ).

- Method 7421: lead MS/MSD percent recoveries were outside the acceptance criteria; therefore, all associated samples were qualified estimated (J).

- Method 300.0: fluoride and phosphate MS/MSD percent recoveries were outside the acceptance criteria; therefore, all associated samples were qualified estimated (J/UJ).

  In addition, chloride, fluoride and nitrate duplicate RPDs were outside acceptance criteria; therefore, all associated samples were qualified estimated (J/UJ).

  Finally, phosphate, nitrate and nitrite were qualified estimated for exceeding the required holding times (J/UJ).

DATA VALIDATION APPLIED QUALIFIERS

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows.

U- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a QC deficiency identified during data validation, the associated quantitation limit is an estimate.

J- Indicates the compound or analyte was analyzed for and detected. The associated concentration is an estimate, but the data are unusable for decision making purposes.

BJ- Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R- Indicates the compound or analyte was analyzed for, detected, and due to an identified QC deficiency the data are unusable.

UR- Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data are unusable due to an identified QC deficiency.

JN- Indicates a tentatively identified compound (TIC) that has been determined to be valid in terms of identification and quantitation.

UJN- Indicates a tentatively identified compound (TIC) that has been determined to be presumptive and valid (JN) in terms of identification and quantitation and has been qualified as undetected (U) due to associated blank contamination.

NJ- Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific application (i.e., usable for decision making purposes).

N- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision making purposes).

REFERENCES

EPA 1987, *Test Methods for Evaluating Solid Waste (SW-846)*, Third Edition; U.S. Environmental Protection Agency, Washington, D.C.

EPA 1992, *Test Methods for Evaluating Solid Waste (SW-846)*, Third Edition, Final Update I, U.S. Environmental Protection Agency, Washington, D.C.

WHC 1993, *Data Validation Procedures for Radiochemical Analyses*, WHC-SD-EN-SPP-001, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

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

DOE 1992, *Soil and Concrete Sampling and Analysis Plan*, DOE/RL 88-08, Closure Plan for 300 ASE, Rev. 3; Department of Energy, Richland, Washington.

DATA VALIDATION SUMMARY - VOLATILE ANALYSES

Constituent (ug/Kg) Sample Date: HEIS#	8-10-93 B090C3		8-10-93 B090C4		8-10-93 B090C5		8-10-93 B090C6		8-10-93 B090C7		8-10-93 B090C8		8-10-93 B090C9		8-10-93 B090D0	
Matrix: SOIL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride	4	J	4	J	2	BJ	4	J	3	J	4	J	5	J	3	J
Acetone	5	BJ	8	BJ	9	BJ	100	U	5	BJ	100	U	4	J	7	BJ
Carbon Disulfide	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Chloroform	5	U	5	U	1	J	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone	100	U	100	U	100	U	100	U	100	U	100	U	100	U	100	U
1,1,1-Trichloroethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Vinyl Acetate	51	U	51	U	51	U	52	U	51	U	52	U	52	U	52	U
Bromodichloromethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Dibromochloromethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
trans-1,3-Dichloropropene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
2-Chloroethyl Vinyl Ether	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Bromoform	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	51	U	51	U	51	U	52	U	51	U	52	U	52	U	52	U
2-Hexanone	51	U	51	U	51	U	52	U	51	U	52	U	52	U	52	U
Tetrachloroethene	2	J	2	J	5	U	5	U	5	U	4	J	4	J	5	U
1,1,2,2-Tetrachloroethane	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U

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DATA VALIDATION SUMMARY - VOLATILE ANALYSES

Constituent (ug/Kg) Sample Date: HEIS# Matrix: SOIL	8-10-93 B090C3		8-10-93 B090C4		8-10-93 B090C5		8-10-93 B090C6		8-10-93 B090C7		8-10-93 B090C8		8-10-93 B090C9		8-10-93 B090D0	
	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Toluene	5	U	2	J	2	J	1	J	1	J	3	J	3	J	5	U
Chlorobenzene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Ethylbenzene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Styrene	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Xylene (Total)	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U

TENTATIVELY IDENTIFIED COMPOUNDS

HEIS #: Compound (RT)	B090C3		B090C4		B090C5		B090C6		B090C7		B090C8		B090C9		B090D0	
UNKNOWN SILOXANE (23.95)			59	JX			230	JX	10.0	JX	110	JX			68	JX
UNKNOWN HYDROCARBON (25.87)															8.3	J

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DATA VALIDATION SUMMARY - VOLATILE ANALYSES

Constituent (ug/Kg) Sample Date: HEIS# Matrix: SOIL	8-10-93 B090D1		8-10-93 B090D2													
	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloromethane	10	U	10	U												
Bromomethane	10	U	10	U												
Vinyl Chloride	10	U	10	U												
Chloroethane	10	U	10	U												
Methylene Chloride	3	J	3	J												
Acetone	8	BJ	7	BJ												
Carbon Disulfide	5	U	5	U												
1,1-Dichloroethene	5	U	5	U												
1,1-Dichloroethane	5	U	5	U												
1,2-Dichloroethene (total)	5	U	5	U												
Chloroform	5	U	5	U												
1,2-Dichloroethane	5	U	5	U												
2-Butanone	100	U	100	U												
1,1,1-Trichloroethane	5	U	5	U												
Carbon Tetrachloride	5	U	5	U												
Vinyl Acetate	50	U	50	U												
Bromodichloromethane	5	U	5	U												
1,2-Dichloropropane	5	U	5	U												
cis-1,3-Dichloropropene	5	U	5	U												
Trichloroethene	5	U	5	U												
Dibromochloromethane	5	U	5	U												
1,1,2-Trichloroethane	5	U	5	U												
Benzene	5	U	5	U												
trans-1,3-Dichloropropene	5	U	5	U												
2-Chloroethyl Vinyl Ether	10	U	10	U												
Bromoform	5	U	5	U												
4-Methyl-2-pentanone	50	U	50	U												
2-Hexanone	50	U	50	U												
Tetrachloroethene	5	U	5	U												
1,1,2,2-Tetrachloroethane	5	U	5	U												

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DATA VALIDATION SUMMARY - VOLATILE ANALYSES

Constituent (ug/Kg) Sample Date: HEIS# Matrix: SOIL	8-10-93 B090D1		8-10-93 B090D2													
	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Toluene	5	U	5	U												
Chlorobenzene	5	U	5	U												
Ethylbenzene	5	U	5	U												
Styrene	5	U	5	U												
Xylene (Total)	5	U	5	U												

TENTATIVELY IDENTIFIED COMPOUNDS

Compound HEIS #: (RT)	B090D1		B090D2							
UNKNOWN HYDROCARBON (17.92)			5.0	J						
UNKNOWN SILOXANE (24.00)	340	JX	380	JX						
UNKNOWN HYDROCARBON (25.92)	13	J	14	J						

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DATA VALIDATION SUMMARY - VOLATILE FUELS - TPH ANALYSES

Constituent (ug/Kg)	Sample Date: HEIS#	8-10-93 B090C3		8-10-93 B090C4		8-10-93 B090C5		8-10-93 B090C5RE		8-10-93 B090C6		8-10-93 B090C7		8-10-93 B090C8		8-10-93 B090C9	
	Matrix: SOIL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
NAPHTHA		400	UJ	400	UJ	400	R	400	UJ	400	UJ	400	UJ	400	UJ	400	UJ

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DATA VALIDATION SUMMARY - METALS/CYANIDE ANALYSES

Constituent (mg/Kg)	Sample Date: HEIS#	8-10-93 B090C3		8-10-93 B090C4		8-10-93 B090C5		8-10-93 B090C6		8-10-93 B090C7		8-10-93 B090C8		8-10-93 B090C9			
	Matrix: SOIL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Barium		152.		98.2		160.		128.		172.		90.0		105.			
Beryllium		0.37	B	0.22	B	0.19	B	0.27	B	0.26	B	0.25	B	0.21	B		
Cadmium		0.15	U	1.0		0.15	U	0.15	U	0.14	U	0.16	U	0.28	B		
Copper		86.6		109.		121.		26.8		66.2		109.		84.3			
Lead		45.6	J	101.	J	41.4	J	10.4	J	9.4	J	56.2	J	60.9	J		
Silver		0.38	B	0.48	B	0.35	B	0.35	U	0.32	U	0.60	B	0.34	U		
Zirconium		16.8		50.3		45.2		11.0		17.5		26.3		30.2			

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DATA VALIDATION SUMMARY - GENERAL CHEMISTRY ANALYSES

Constituent (mg/Kg)	Sample Date: HEIS#	8-10-93 B090C3		8-10-93 B090C4		8-10-93 B090C5		8-10-93 B090C6		8-10-93 B090C7		8-10-93 B090C8		8-10-93 B090C9			
	Matrix: SOIL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chloride		9	J	5.2	J	3.5	J	3.7	J	4.1	J	4.6	J	5.2	J		
Fluoride		2.9	J	3.7	J	3.7	J	1.4	J	2.1	J	2.3	J	2.8	J		
Phosphate		1.6	UJ	2	J	2.2	J	1.7	J	1.7	J	1.9	J	2	J		
Sulfate		826		21		9		13		45		30		26			
Nitrate Nitrogen		6.7	J	2.	J	1.5	J	2	J	1.2	J	2.6	J	2.3	J		
Nitrite Nitrogen		0.4	UJ	0.4	UJ	0.4	UJ	0.4	UJ	0.4	UJ	0.4	UJ	0.4	UJ		
Bromide		2	U	2	U	2	U	2	U	2	U	2	U	2	U		

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DATA VALIDATION SUMMARY - RADIOCHEMICAL ANALYSES

Constituent (pCi/g) Sample Date: HEIS#	8-10-93 B090C3			8-10-93 B090C4			8-10-93 B090C5			8-10-93 B090C6			8-10-93 B090C7		
Matrix: SOIL	Result	Q	MDA	Result	Q	MDA	Result	Q	MDA	Result	Q	MDA	Result	Q	MDA
Total Uranium (ug/g)	59	X	2	60	X	2	41	X	2	36	X	2	33	X	2

Constituent (pCi/g) Sample Date: HEIS#	8-10-93 B090C8			8-10-93 B090C9											
Matrix: SOIL	Result	Q	MDA	Result	Q	MDA	Result	Q	MDA	Result	Q	MDA	Result	Q	MDA
Total Uranium (ug/g)	71	X	2	70	X	2									

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B090C3

Lab Name: TMA/ARLI . Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R03

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 2 Date Analyzed: 08/19/93

Column: (pack/cap) PACK Dilution Factor: 1.0

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	4	J
67-64-1	Acetone	100 ~~5~~	~~BJ~~ V GM 3/18/94
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	100	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	51	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethyl Vinyl Ether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	51	U
591-78-6	2-Hexanone	51	U
127-18-4	Tetrachloroethene	2	J
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (Total)	5	U

FORM I VOA 1/87 Rev.

1E 9513332.1216

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B090C3

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-01A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R03

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 2 Date Analyzed: 08/19/93

Column (pack/cap) PACK Dilution Factor: 1.0

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 1/87 Rev.

1A 9513332.1217

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B090C4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R04

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 2 Date Analyzed: 08/19/93

Column: (pack/cap) PACK Dilution Factor: 1.0

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	4	J
67-64-1	Acetone	100 8	~~BJ~~ U GK 8/18/94
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	100	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	51	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethyl Vinyl Ether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	51	U
591-78-6	2-Hexanone	51	U
127-18-4	Tetrachloroethene	2	J
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	2	J
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (Total)	5	U

FORM I VOA 1/87 Rev.

1E 9513332.1218

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B090C4

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-02A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R04

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 2 Date Analyzed: 08/19/93

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN SILOXANE	23.95	59	JX

R

FORM I VOA-TIC 1/87 Rev.

1A 9513332.1219

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B090C5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-03A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30824R04

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 2 Date Analyzed: 08/24/93

Column: (pack/cap) PACK Dilution Factor: 1.0

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	~~5~~ 52	~~B~~ U
67-64-1	Acetone	~~9~~ 100	~~B~~ U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	1	J
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	100	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	51	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethyl Vinyl Ether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	51	U
591-78-6	2-Hexanone	51	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	2	J
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (Total)	5	U

JAC 3/18/

FORM I VOA 3/24/94 1/87 Rev.

1E 9513332.1220

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B090C5

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-03A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30824R04

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 2 Date Analyzed: 08/24/93

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

8/24/94

FORM I VOA-TIC 1/87 Rev.

1A 9513332.1221

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B090C6

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-04A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R09

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 3 Date Analyzed: 08/19/93

Column: (pack/cap) PACK Dilution Factor: 1.0

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	4	J
67-64-1	Acetone	100	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	100	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	52	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethyl Vinyl Ether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	52	U
591-78-6	2-Hexanone	52	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	1	J
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (Total)	5	U

FORM I VOA 1/87 Rev.

1E 9513332.1222

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B090C6

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-04A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R09

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 3 Date Analyzed: 08/19/93

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN SILOXANE	24.00	230	JX

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9513332.1223

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B090C7

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-05A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R10

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 2 Date Analyzed: 08/19/93

Column: (pack/cap) PACK Dilution Factor: 1.0

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	3	J
67-64-1	Acetone	100 ~~5~~	~~BJ~~ V
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	100	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	51	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethyl Vinyl Ether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	51	U
591-78-6	2-Hexanone	51	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	1	J
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (Total)	5	U

FORM I VOA 1/87 Rev.

1E 9513332.1224

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B090C7

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-05A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R10

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 2 Date Analyzed: 08/19/93

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN SILOXANE	23.95	10	JX

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1/12/94

1A 9513332.1225

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B090C8

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-06A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R11

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 3 Date Analyzed: 08/19/93

Column: (pack/cap) PACK Dilution Factor: 1.0

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	4	J
67-64-1	Acetone	100	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	100	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	52	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethyl Vinyl Ether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	52	U
591-78-6	2-Hexanone	52	U
127-18-4	Tetrachloroethene	4	J
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	3	J
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (Total)	5	U

FORM I VOA 2/24/94 1/87 Rev.

9513332.1226

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B090C8

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-06A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R11

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 3 Date Analyzed: 08/19/93

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN SILOXANE	24.00	110	JX

R

1A 9513332.1227

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B090C9

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-07A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30820R04

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 3 Date Analyzed: 08/20/93

Column: (pack/cap) PACK Dilution Factor: 1.0

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	5	J
67-64-1	Acetone	4	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	100	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	52	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethyl Vinyl Ether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	52	U
591-78-6	2-Hexanone	52	U
127-18-4	Tetrachloroethene	4	J
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	3	J
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (Total)	5	U

FORM I VOA 1/87 Rev.

9513332.1228

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B090C9

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-07A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30820R04

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 3 Date Analyzed: 08/20/93

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

9/1
8/20/93

1A 9513332.1229

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B090D0

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-08A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R13

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 4 Date Analyzed: 08/19/93

Column: (pack/cap) PACK Dilution Factor: 1.0

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	3	J
67-64-1	Acetone	100	~~BJ~~ U JGA 2/18/9
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	100	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	52	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethyl Vinyl Ether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	52	U
591-78-6	2-Hexanone	52	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (Total)	5	U

FORM I VOA 1/87 Rev.

G000020

1E 9513332.1230

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B090D0

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-08A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R13

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 4 Date Analyzed: 08/19/93

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	25.87	8.3	J
2.	UNKNOWN SILOXANE	24.00	68	JX

FORM I VOA-TIC 1/87 Rev.

1A 9513332.1231

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B090D1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-09A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R14

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 0 Date Analyzed: 08/19/93

Column: (pack/cap) PACK Dilution Factor: 1.0

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	3	J
67-64-1	Acetone	100 ~~8~~	~~B~~ U JGO 3/18/
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	100	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	50	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethyl Vinyl Ether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	50	U
591-78-6	2-Hexanone	50	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (Total)	5	U

FORM I VOA JA 11/24/94 1/87 Rev.

1E 9513332.1232

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B090D1

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-09A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R14

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 0 Date Analyzed: 08/19/93

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	25.92	13	J
2.	UNKNOWN SILOXANE	24.00	340	JX R

1A 9513332.1233

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B090D2

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-10A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R15

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 0 Date Analyzed: 08/19/93

Column: (pack/cap) PACK Dilution Factor: 1.0

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	3	J
67-64-1	Acetone	190	~~B~~ U 3/18/
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	100	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	50	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
110-75-8	2-Chloroethyl Vinyl Ether	10	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	50	U
591-78-6	2-Hexanone	50	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (Total)	5	U

1E 9513332.1234

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B090D2

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 08031 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A308031-10A

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 30819R15

Level: (low/med) LOW Date Received: 08/12/93

% Moisture: not dec. 0 Date Analyzed: 08/19/93

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 3

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	17.92	5.0	J
2.	UNKNOWN HYDROCARBON	25.92	14	J
3.	UNKNOWN SILOXANE	24.04	380	JX R

3/24/94

9513332.1235

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93

Results by Sample

SAMPLE ID 8090C3 FRACTION 01B TEST CODE 8015MV NAME Volatile Fuels-TPH

Date & Time Collected 08/10/93 Category

MODIFIED 8015 - VOLATILE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 08/23/93
Dilution factor: 1.00
Concentration Units: ug/kg

Compound	Sample Result	PQL
NAPHTHA	ND	400 UJ

SURROGATE	Recovery %
Bromofluorobenzene	96

ND = Not detected at the specified limits

JM 2/23/94

Form I

9513332.1236

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93

Results by Sample

SAMPLE ID 8090C4 FRACTION 02D TEST CODE 8015MV NAME Volatile Fuels-TPH

Date & Time Collected 08/10/93 Category

MODIFIED 8015 - VOLATILE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 08/23/93
Dilution factor: 1.00
Concentration Units: ug/kg

Compound	Sample Result	PQL
NAPHTHA	ND	400

UJ

SURROGATE	Recovery %
Bromofluorobenzene	115

ND = Not detected at the specified limits

Form I

JA 1/25/94

9513332.1237

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93 Results by Sample

SAMPLE ID 8090C5 FRACTION 03B TEST CODE 8015MV NAME Volatile Fuels-TPH

Date & Time Collected 08/10/93 Category

MODIFIED 8015 - VOLATILE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 08/23/93
Dilution factor: 1.00
Concentration Units: ug/kg

Compound	Sample Result	PQL
NAPHTHA	ND	400

JA 3/18/94

R UR

SURROGATE	Recovery %
Bromofluorobenzene	0

ND = Not detected at the specified limits

Form I

9513332.1238

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93

Results by Sample

SAMPLE ID B090C5RE FRACTION 03F TEST CODE 8015MV NAME Volatile Fuels-TPH

Date & Time Collected 08/10/93 Category

MODIFIED 8015 - VOLATILE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 08/25/93
Dilution factor: 1.00
Concentration Units: ug/Kg

Compound	Sample Result	PQL
NAPHTHA	ND	400

SURROGATE Recovery %
Bromofluorobenzene 101

ND = Not detected at the specified limits

Form I

9513332.1239

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93

Results by Sample

SAMPLE ID 8090C6 FRACTION 04B TEST CODE 8015MV NAME Volatile Fuels-TPH

Date & Time Collected 08/10/93 Category

MODIFIED 8015 - VOLATILE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 08/23/93
Dilution factor: 1.00
Concentration Units: ug/kg

Compound	Sample Result	PQL
NAPHTHA	ND	400

U J

SURROGATE	Recovery %
Bromofluorobenzene	136

ND = Not detected at the specified limits

Form I

9513332.1240

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93

Results by Sample

SAMPLE ID 8090C7 FRACTION 05B TEST CODE 8015MV NAME Volatile Fuels-TPH

Date & Time Collected 08/10/93 Category

MODIFIED 8015 - VOLATILE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 08/23/93
Dilution factor: 1.00
Concentration Units: ug/kg

Compound	Sample Result	PQL
NAPHTHA	ND	400

UJ

SURROGATE	Recovery %
Bromofluorobenzene	123

ND = Not detected at the specified limits

Form I

JA 8/28/94

9513332.1241

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93

Results by Sample

SAMPLE ID: 8090C8 FRACTION 068 TEST CODE 8015MV NAME Volatile Fuels-TPH

Date & Time Collected 08/10/93 Category

MODIFIED 8015 - VOLATILE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 08/23/93
Dilution factor: 1.00
Concentration Units: ug/kg

Compound	Sample Result	PQL
NAPHTHA	ND	400

UJ

SURROGATE	Recovery %
Bromofluorobenzene	84

ND = Not detected at the specified limits

Form I

JAA 8/27/94

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93 Results by Sample

SAMPLE ID 8080C9 FRACTION 078 TEST CODE 8015MV NAME Volatile Fuels-TPH

Date & Time Collected 08/10/93 Category

MODIFIED 8015 - VOLATILE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 08/24/93
Dilution factor: 1.00
Concentration Units: ug/kg

Compound	Sample Result	PQL
NAPHTHA	ND	400

SURROGATE Recovery %
Bromofluorobenzene 88

ND = Not detected at the specified limits

Form I

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B090C3

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N3-08-046SAS No.: SDG No.: B090C3

Matrix (soil/water): SOIL Lab Sample ID: 08094-01S

Level (low/med): LOW Date Received: 08/14/93

% Solids: 97.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum				NR	
7440-36-0	Antimony				NR	
7440-38-2	Arsenic				NR	
7440-39-3	Barium	152			P	
7440-41-7	Beryllium	0.37	B		P	
7440-43-9	Cadmium	0.15	U		P	
7440-70-2	Calcium				NR	
7440-47-3	Chromium				NR	
7440-48-4	Cobalt				NR	
7440-50-8	Copper	36.6			P	
7439-89-6	Iron				NR	
7439-92-1	Lead	45.6			F	J
7439-95-4	Magnesium				NR	
7439-96-5	Manganese				NR	
7439-97-6	Mercury				NR	
7440-02-0	Nickel				NR	
7440-09-7	Potassium				NR	
7782-49-2	Selenium				NR	
7440-22-4	Silver	0.38	B		P	
7440-23-5	Sodium				NR	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium				NR	
7440-66-6	Zinc				NR	
	Cyanide				NR	
7440-67-7	Zirconium	16.3			P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

ab 3-7-94

1: 002

9513332.1244

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B090C4

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N3-08-046SAS No.: SDG No.: B090C3

Matrix (soil/water): SOIL Lab Sample ID: 08094-02S

Level (low/med): LOW Date Received: 08/14/93

% Solids: 97.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum				NR	
7440-36-0	Antimony				NR	
7440-38-2	Arsenic				NR	
7440-39-3	Barium	98.2			P	
7440-41-7	Beryllium	0.22	B		P	
7440-43-9	Cadmium	1.0			P	
7440-70-2	Calcium				NR	
7440-47-3	Chromium				NR	
7440-48-4	Cobalt				NR	
7440-50-8	Copper	109			P	
7439-89-6	Iron				NR	
7439-92-1	Lead	101			F	J
7439-95-4	Magnesium				NR	
7439-96-5	Manganese				NR	
7439-97-6	Mercury				NR	
7440-02-0	Nickel				NR	
7440-09-7	Potassium				NR	
7782-49-2	Selenium				NR	
7440-22-4	Silver	0.48	B		P	
7440-23-5	Sodium				NR	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium				NR	
7440-66-6	Zinc				NR	
	Cyanide				NR	
7440-67-7	Zirconium	50.3			P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

Rev 3-7-94

003

9513332.1245

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

8090C5

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N3-08-046SAS No.: SDG No.: 8090C3

Matrix (soil/water): SOIL Lab Sample ID: 08094-03S

Level (low/med): LOW Date Received: 08/14/93

% Solids: 97.3

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum				NR	
7440-36-0	Antimony				NR	
7440-38-2	Arsenic				NR	
7440-39-3	Barium	160			P	
7440-41-7	Beryllium	0.19	B		P	
7440-43-9	Cadmium	0.15	U		P	
7440-70-2	Calcium				NR	
7440-47-3	Chromium				NR	
7440-48-4	Cobalt				NR	
7440-50-8	Copper	121			P	
7439-89-6	Iron				NR	
7439-92-1	Lead	41.1			F	J
7439-95-4	Magnesium				NR	
7439-96-5	Manganese				NR	
7439-97-6	Mercury				NR	
7440-02-0	Nickel				NR	
7440-09-7	Potassium				NR	
7782-49-2	Selenium				NR	
7440-22-4	Silver	0.35	B		P	
7440-23-5	Sodium				NR	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium				NR	
7440-66-6	Zinc				NR	
	Cyanide				NR	
7440-67-7	Zirconium	45.2			P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

Rel 8-7-94

004

FORM I - IN ILM02.1

9513332.1246

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

8090C6

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N3-08-046SAS No.: SDG No.: 8090C3

Matrix (soil/water): SOIL Lab Sample ID: 08094-04S

Level (low/med): LOW Date Received: 08/14/93

% Solids: 96.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium	128			P
7440-41-7	Beryllium	0.27	B		P
7440-43-9	Cadmium	0.15	U		P
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper	26.8			P
7439-89-6	Iron				NR
7439-92-1	Lead	10.1			F J
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver	0.35	U		P
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR
7440-67-7	Zirconium	11.0			P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

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005

G000045

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER:

8090C7

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N3-08-046SAS No.: SDG No.: 8090C3

Matrix (soil/water): SOIL Lab Sample ID: 08094-05S

Level (low/med): LOW Date Received: 08/14/93

% Solids: 96.6

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium	172			P
7440-41-7	Beryllium	0.26	B		P
7440-43-9	Cadmium	0.14	U		P
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper	56.2			P
7439-89-6	Iron				NR
7439-92-1	Lead	9.4			F J
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver	0.32	U		P
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR
7440-67-7	Zirconium	17.5			P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

Jd 8-7-94

006

FORM I - IN ILM02.1

000044

9513332.1248

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B090C8

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N3-08-046SAS No.: SDG No.: B090C3

Matrix (soil/water): SOIL Lab Sample ID: 08094-06S

Level (low/med): LOW Date Received: 08/14/93

% Solids: 92.9

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				NR
7440-36-0	Antimony				NR
7440-38-2	Arsenic				NR
7440-39-3	Barium	90.0			P
7440-41-7	Beryllium	0.25	B		P
7440-43-9	Cadmium	0.16	U		P
7440-70-2	Calcium				NR
7440-47-3	Chromium				NR
7440-48-4	Cobalt				NR
7440-50-8	Copper	109			P
7439-89-6	Iron				NR
7439-92-1	Lead	56.2			F J
7439-95-4	Magnesium				NR
7439-96-5	Manganese				NR
7439-97-6	Mercury				NR
7440-02-0	Nickel				NR
7440-09-7	Potassium				NR
7782-49-2	Selenium				NR
7440-22-4	Silver	0.60	B		P
7440-23-5	Sodium				NR
7440-28-0	Thallium				NR
7440-62-2	Vanadium				NR
7440-66-6	Zinc				NR
	Cyanide				NR
7440-67-7	Zirconium	26.3			P

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

Rel 8-7-94

007

FORM I - IN ILM02.1

000043

9513332.1249

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B090C9

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D0-0108

Lab Code: SKINER Case No.: N3-08-046SAS No.: SDG No.: B090C3

Matrix (soil/water): SOIL Lab Sample ID: 08094-07S

Level (low/med): LOW Date Received: 08/14/93

% Solids: 96.0

Concentration Units (ug/L or mg/Kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum				NR	
7440-36-0	Antimony				NR	
7440-38-2	Arsenic				NR	
7440-39-3	Barium	105			P	
7440-41-7	Beryllium	0.21	B		P	
7440-43-9	Cadmium	0.28	B		P	
7440-70-2	Calcium				NR	
7440-47-3	Chromium				NR	
7440-48-4	Cobalt				NR	
7440-50-8	Copper	34.3			P	
7439-89-6	Iron				NR	
7439-92-1	Lead	60.9			F	J
7439-95-4	Magnesium				NR	
7439-96-5	Manganese				NR	
7439-97-6	Mercury				NR	
7440-02-0	Nickel				NR	
7440-09-7	Potassium				NR	
7782-49-2	Selenium				NR	
7440-22-4	Silver	0.34	U		P	
7440-23-5	Sodium				NR	
7440-28-0	Thallium				NR	
7440-62-2	Vanadium				NR	
7440-66-6	Zinc				NR	
	Cyanide				NR	
7440-67-7	Zirconium	30.2			P	

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:
STONES

Rd 3-7-94

008

FORM I - IN ILM02.1

000040

TMA Inc. 9513332.1250 REPORT Work Order # A3-08-031

Received: 08/12/93

Results by Sample

SAMPLE ID 8090C3 FRACTION 01C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 08/10/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	
Chloride	300.0	9.0	mg/kg	0.8	J
Fluoride	300.0	2.9	mg/kg	0.4	J
Phosphate	300.0	<1.6	mg/kg	1.6	UJ
Sulfate	300.0	826	mg/kg	80	
Nitrate Nitrogen	300.0	6.7	mg/kg	0.8	J
Nitrite Nitrogen	300.0	<0.4	mg/kg	0.4	UJ
Bromide	300.0	<2	mg/Kg	2	

FORM I

2-24-94

9513332.1251

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93

Results by Sample

SAMPLE ID B090C4 FRACTION 02E TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 08/10/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	
Chloride	300.0	5.2	mg/kg	0.8	J
Fluoride	300.0	3.7	mg/kg	0.4	J
Phosphate	300.0	2.0	mg/kg	1.6	J
Sulfate	300.0	21	mg/kg	4	
Nitrate Nitrogen	300.0	2.0	mg/kg	0.8	J
Nitrite Nitrogen	300.0	<0.4	mg/kg	0.4	UJ
Bromide	300.0	<2	mg/Kg	2	

FORM I

Ad 2-24-94

9513332.1252

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93

Results by Sample

SAMPLE ID B090C5 FRACTION 03E TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 08/10/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	
Chloride	300.0	3.5	mg/kg	0.8	J
Fluoride	300.0	3.7	mg/kg	0.4	J
Phosphate	300.0	2.2	mg/kg	1.6	J
Sulfate	300.0	9	mg/kg	4	
Nitrate Nitrogen	300.0	1.5	mg/kg	0.8	J
Nitrite Nitrogen	300.0	<0.4	mg/kg	0.4	UJ
Bromide	300.0	<2	mg/Kg	2	

FORM I

Rad 2-24-94

9513332.1253

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93

Results by Sample

SAMPLE ID B090C6 FRACTION 04C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 08/10/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	
Chloride	300.0	3.7	mg/kg	0.8	J
Fluoride	300.0	1.4	mg/kg	0.4	J
Phosphate	300.0	1.7	mg/kg	1.6	J
Sulfate	300.0	13	mg/kg	4	
Nitrate Nitrogen	300.0	2.0	mg/kg	0.8	J
Nitrite Nitrogen	300.0	<0.4	mg/kg	0.4	UJ
Bromide	300.0	<2	mg/Kg	2	

FORM I

Dnf 2-24-94

9513332.1254

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93

Results by Sample

SAMPLE ID B090C7 FRACTION 05C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 08/10/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	
Chloride	300.0	4.1	mg/kg	0.8	J
Fluoride	300.0	2.1	mg/kg	0.4	J
Phosphate	300.0	1.7	mg/kg	1.6	J
Sulfate	300.0	45	mg/kg	4	
Nitrate Nitrogen	300.0	1.2	mg/kg	0.8	J
Nitrite Nitrogen	300.0	<0.4	mg/kg	0.4	UJ
Bromide	300.0	<2	mg/Kg	2	

FORM I

2-29-94

9513332.1255

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93

Results by Sample

SAMPLE ID B090C8 FRACTION 06C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 08/10/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	
Chloride	300.0	4.6	mg/kg	0.8	J
Fluoride	300.0	2.3	mg/kg	0.4	J
Phosphate	300.0	1.9	mg/kg	1.6	J
Sulfate	300.0	30	mg/kg	4	
Nitrate Nitrogen	300.0	2.6	mg/kg	0.8	J
Nitrite Nitrogen	300.0	<0.4	mg/kg	0.4	UJ
Bromide	300.0	<2	mg/Kg	2	

FORM I

DJ 2-29-94

9513332.1256

TMA Inc. REPORT Work Order # A3-08-031

Received: 08/12/93

Results by Sample

SAMPLE ID ~~B08C9 Bcf~~ B09C9 FRACTION 07C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 08/10/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	
Chloride	300.0	5.2	mg/kg	0.8	J
Fluoride	300.0	2.8	mg/kg	0.4	J
Phosphate	300.0	2.0	mg/kg	1.6	J
Sulfate	300.0	26	mg/kg	4	
Nitrate Nitrogen	300.0	2.3	mg/kg	0.8	J
Nitrite Nitrogen	300.0	<0.4	mg/kg	0.4	UJ
Bromide	300.0	<2	mg/Kg	2	

FORM I

2-24-94

9513332.1257

TMA NORCAL

REPORTING GROUP 7224

DATA SHEET

N308048-01

B090C3

SDG	7224	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N308048-01	Client sample id	B090C3
Dept sample id	7224-001	Location/Matrix	300 ASE SOIL SOLID
Received	08/12/93	Collected	08/10/93
% moisture	2.2	Chain of custody id	NONE

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	59	11	2		X	U_T

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N308048-01	U_T	7224-001		0.250 g	09/01/93	09/02/93	DPK

Dol 3-7-94

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	09/13/93

DATA SHEETS
Page 1
SUMMARY DATA SECTION
Page 11

9513332.1258

TMA NORCAL
REPORTING GROUP 7224

N308048-02

DATA SHEET

B090C4

SDG	7224	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N308048-02	Client sample id	B090C4
Dept sample id	7224-002	Location/Matrix	300 ASE SOIL SOLID
Received	08/12/93	Collected	08/10/93
% moisture	2.1	Chain of custody id	NONE

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	60	11	2		X	U_T

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N308048-02	U_T	7224-002		0.250 g	09/01/93	09/02/93	DPK

DS 3-7-94

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	09/13/93

DATA SHEETS
Page 2
SUMMARY DATA SECTION
Page 12

600055

9513332.1259

TMA NORCAL
REPORTING GROUP 7224

N308048-03

DATA SHEET

B090C5

SDG	7224	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N308048-03	Client sample id	B090C5
Dept sample id	7224-003	Location/Matrix	300 ASE SOIL SOLID
Received	08/12/93	Collected	08/10/93
% moisture	2.2	Chain of custody id	NONE

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	41	7.8	2			U_T

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N308048-03	U_T	7224-003		0.250 g	09/01/93	09/02/93	DPK

3-7-94

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	09/13/93

9513332.1260

TMA NORCAL
REPORTING GROUP 7224

N308048-04

DATA SHEET

B090C6

SDG	7224	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N308048-04	Client sample id	B090C6
Dept sample id	7224-004	Location/Matrix	300 ASE SOIL SOLID
Received	08/12/93	Collected	08/10/93
% moisture	2.8	Chain of custody id	NONE

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	36	6.8	2		X	U_T

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N308048-04	U_T	7224-004		0.250 g	09/01/93	09/02/93	DPK

3-7-94

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	09/13/93

DATA SHEETS
Page 4
SUMMARY DATA SECTION
Page 14

000057

9513332.1261

TMA NORCAL
REPORTING GROUP 7224

N308048-05

DATA SHEET

B090C7

SDG	7224	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N308048-05	Client sample id	B090C7
Dept sample id	7224-005	Location/Matrix	300 ASE SOIL SOLID
Received	08/12/93	Collected	08/10/93
% moisture	2.7	Chain of custody id	NONE

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	33	6.2	2		X	U_T

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N308048-05	U_T	7224-005		0.250 g	09/01/93	09/02/93	DPK

Rev 3-7-94

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-OS
Version	2.27
Report date	09/13/93

DATA SHEETS
Page 5
SUMMARY DATA SECTION
Page 15

600050

9513332.1262

TMA NORCAL
REPORTING GROUP 7224

N308048-06

DATA SHEET

B090C8

SDG	7224	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N308048-06	Client sample id	B090C8
Dept sample id	7224-006	Location/Matrix	300 ASE SOIL SOLID
Received	08/12/93	Collected	08/10/93
% moisture	2.8	Chain of custody id	NONE

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	71	13	2		X	U_T

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N308048-06	U_T	7224-006		0.250 g	09/01/93	09/02/93	DPK

Rev 3-7-94

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	09/13/93

TMA NORCAL
REPORTING GROUP 7224

DATA SHEET

N308048-07

B090C9

SDG	7224	Client	Westinghouse Hanford
Contact	Dinkar Kharkar	Contract	MBH-SVV-069262
Lab sample id	N308048-07	Client sample id	B090C9
Dept sample id	7224-007	Location/Matrix	300 ASE SOIL SOLID
Received	08/12/93	Collected	08/10/93
% moisture	10.4	Chain of custody id	NONE

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	70	13	2		X	U_T

LAB SAMPLE	TEST	PLANCHET	SUFFIX	ALIQUOT	ANALYZED	REVIEWED	BY
N308048-07	U_T	7224-007		0.250 g	09/01/93	09/02/93	DPK

QC-14897

3-7-94

Lab id	TMAN
Protocol	WHC-HASM
Version	Ver 1.0
Form	DVD-DS
Version	2.27
Report date	09/13/93

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 300A SALS EIA?	DATA PACKAGE: ~~B09C3~~ VOL
VALIDATOR: JGK LAB: TMA	DATE: 8/22/94
CASE: ~~[illegible]~~ C3-031	SDG: B09C3-TMA-549
QAPP REFERENCE:	SAP REFERENCE:

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

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 B09C3, C4, C5, C6, C7, C8, C9, D0, D1, D2

SOIL

CRCL'S LAW CLP

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:

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: NO ANALYTES DETECTED >IDL
ACETONE DETECTED <IDL

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:

000062

JA 3/13/94

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: ACETONE, 1,1-DICHLOROETHENE, 2-BUTANONE, VINYL ACETATE, TRICHLOROETHENE, BENZENE, 4-METHYL-2-PENTANONE, 2-HEXANONE, TOLUENE, CHLOROBENZENE. CRQLS NOT MET. NO EXPLANATION GIVEN.

00063

JGA 3/18/94

GC/MS ORGANIC DATA VALIDATION CHECKLIST

Comments (attach additional sheets as necessary):

MAJOR DEFICIENCIES: NONE

MINOR DEFICIENCIES: CRQL FOR SEVERAL ANALYTES NOT MET. SEE PAGE 00003

9513332.1268

SDG: _____
VALIDATOR: _____
DATE: _____

DATA PACKAGE COMPLETENESS - VOLATILES

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?: Yes	No	N/A
Case Narrative	✓		
Data Summary	✓		
Chain-of-Custody	✓		
QC Summary			
Surrogate report	✓		
MS/MSD report	✓		
Blank summary report	✓		
GC/MS tuning report	✓		✓
Internal standard summary report			✓
Sample Data			
Sample reports	✓		
TIC reports for each sample	✓		
RIC reports for all samples	✓		
Raw & corrected spectra for all detected results	✓		
Raw & corrected library search data for all reported TIC	✓		
Quantitation and calculation data for all TIC	✓		
Standards Data			
Initial calibration report			✓
RIC and quantitation reports for initial calibration			✓
Continuing calibration reports			✓
RIC and quantitation reports for continuing calibrations			✓
Internal standard summary report			✓
Raw QC Data			
Tuning report, spectra and mass lists	✓		
Blank analysis reports	✓		
TIC reports for all blanks	✓		
RIC and quantitation reports for blanks	✓		
Raw & corrected spectra for all detected results in blanks	✓		
Raw & corrected library search data for all reported TIC	✓		
Quantitation and calculation data for all TIC	✓		
MS/MSD report forms	✓		
RIC and quantitation reports for MS/MSD	✓		
Additional Data			
Moisture/% solids data sheets	✓		
Reduction formulae		✓	
Instrument time logs		✓	
Chemist notebook pages		✓	
Sample preparation sheets	✓		

DDC 65

JA 3/18/94

9513332.1269

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HOLDING TIME SUMMARY

SDG: C090C2 TINA 549 | VALIDATOR: JBF | DATE: 2/24/94 | PAGE ____ OF ____

COMMENTS: VOA

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
C090C2	VOA	8/14/93		8/19/93		5	NA
C4	8245			8/17/93		5	
C5				8/24/93		14	
C6				8/19/93		5	
C7				8/19/93		5	
C8				8/19/93		5	
C9				8/20/93		10	
D0				8/19/93		5	
D1				8/19/93		5	
D2		8/14/93		8/19/93		5	NA

9513332.1270

C090C2

9513332.1271

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 300A SG-1 E1	DATA PACKAGE: 8015 PURGEABLES
VALIDATOR: JDF LAB: TMA	DATE: 3/28/94
CASE: 08-031	SDG: B09C3-TMA-547
QAPP REFERENCE:	SAP REFERENCE:

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

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)
☒ 8015	☐	☐	☐	☐	☐

SAMPLES/MATRIX B09C4, C5, C5RE, C6, C7, C8, C9, C3
SOIL

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: CSRE MISSED 1-C - MISS BY ONE DAY
QUAL AS ESTIMATED JDF 3/28/94

000063

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:

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:

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: [illegible]

[illegible]

MS/MSD [illegible]

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: No Detect

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:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

Comments (attach additional sheets as necessary):

MAJOR DEFICIENCIES: Bromoform SULL REC 62 R

MINOR DEFICIENCIES: Bromoform MSD SULL REC LOW UJ
MS/MSD 2, REC LOW UJ

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HOLDING TIME SUMMARY

SDG: C090C3-TMA-549 | VALIDATOR: JOF | DATE: 2/28/94 | PAGE ____ OF ____

COMMENTS:

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
C090C3	Non-RAD	8/10/93		8/23/93		13	NA
C4	VOA			8/23/93		13	NA
C5	8015			8/23/93		13	NA
C5RE				8/25/93		15	UJ
C6				8/23/93		13	NA
C7				8/23/93		13	NA
C8				8/23/93		13	NA
C9		8/10/93		8/24/93		14	NA

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9513332.1278

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 300A Solvent Evap		DATA PACKAGE:
VALIDATOR: Stroup	LAB: THA	DATE: 2-24-94
CASE:		SDG: B090C3-TMA-549
QAPP REFERENCE:		SAP REFERENCE:

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

☒ CLP/ICP	☒ CLP/GFAA	☐ CLP/Hg	☐ CLP/Cyanide	☐	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☐	☐

SAMPLES/MATRIX: B090C3-B090C4-B090C5-B090C6-B090C7-B090C8-B090C9 Soil

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:

000075

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? . . . . . Yes No N/A

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

Are ICP interference checks acceptable? . . . . . Yes No N/A

Were ICV and CCV checks performed on all instruments? . . . . . Yes No N/A

Are ICV and CCV checks acceptable? . . . . . Yes No N/A

Comments:

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? . . . Yes No N/A

Are ICB and CCB results acceptable? . . . . . Yes No N/A

Were preparation blanks analyzed? . . . . . Yes No N/A

Are preparation 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: Copper Calibration Blank results are > IDL but < CRDL. Sample results are < 5X highest blank concentration.

5. ACCURACY

Were spike samples analyzed? . . . . . Yes No N/A

Are spike sample recoveries acceptable? . . . . . Yes No N/A

Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A

Are LCS recoveries acceptable? . . . . . Yes No N/A

Comments: Lead MS %R = -225.1 MSD = -503.6 J

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? . . . . . Yes No N/A

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

Were ICP serial dilution samples analyzed? . . . . . Yes No N/A

Are ICP serial dilution %D 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: MSD lead

7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . . . Yes No N/A

Are duplicate injection %RSD values acceptable? . . . . . Yes No N/A

Were analytical spikes performed as required? . . . . . Yes No N/A

Are analytical spike recoveries acceptable? . . . . . Yes No N/A

Was MSA performed as required? . . . . . Yes No N/A

Are MSA results acceptable? . . . . . Yes No N/A

Comments:

8. REPORTED RESULTS AND DETECTION LIMITS

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

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

Are results calculated properly? . . . . . Yes No N/A

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

Comments (attach additional sheets as necessary):

MAJOR DEFICIENCIES:

MINOR DEFICIENCIES:

Lead MS %R outside acceptance criteria - qualify data estimated (J).

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GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 300A Solvent Evap		DATA PACKAGE:	
VALIDATOR: Stroup	LAB: THA		DATE: 2-24-94
CASE:		SDG: B090C3-THA-579	
QAPP REFERENCE:		SAP REFERENCE:	

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

☒ Anions/IC	☐ TOC	☐ TOX	☐ TPH-418.1	Oil and Grease	Alkalinity
☐ Ammonia	☐ BOD/COD	☐ Chloride	☐ Chromium-VI	☐ Ph	☐ NO_3/NO_2
☐ Sulfate	☐ TDS	☐ TKN	☐ Phosphate	☐	☐
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX: B090C3-B090C4-B090C5-B090C6-B090C7-B090C8-B090C9 Soil

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: Samples collected 8-10-93 and analyzed 9-1-93. Phosphate, Nitrate, and Nitrite exceeded required 48 hrs holding time.

000030

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

Was initial calibration performed for all applicable analyses? . . . Yes No N/A

Are initial calibration results acceptable? . . . . . Yes No N/A

Was a calibration check performed for all applicable analyses? . . . Yes No N/A

Are calibration check results acceptable? . . . . . Yes No N/A

Comments:

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: Non detects

5. ACCURACY

Were spike samples analyzed at the required frequency? . . . . . Yes No N/A

Are spike recoveries acceptable? . . . . . Yes No N/A

Were LCS analyses performed at the required frequency? . . . . . Yes No N/A

Are LCS recoveries acceptable? . . . . . Yes No N/A

Comments: Fluoride + Phosphate %R low for MS

6. PRECISION

Were laboratory duplicate samples analyzed at the required frequency? . . . . . Yes No N/A

Are laboratory duplicate sample 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: Chloride, Fluoride + Nitrate RPD high.

7. ANALYTE QUANTITATION

Was analyte quantitation performed properly? . . . . . Yes No N/A

Comments:

8. REPORTED RESULTS AND DETECTION LIMITS

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

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

Are results calculated properly? . . . . . Yes No N/A

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

Comments:

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

Comments (attach additional sheets as necessary):

MAJOR DEFICIENCIES: None

MINOR DEFICIENCIES: Fluoride + Phosphate qualified due to low MS recoveries. Chloride, Fluoride, + Nitrate qualified due to high RPDs. Phosphate, Nitrate, + Nitrite qualified for exceeding holding times.

9513332.1287

SDG: B09083-THA-549
VALIDATOR: Stroup
DATE: 2-24-94

DATA PACKAGE COMPLETENESS - GENERAL CHEMISTRY

Review the data package for completeness and check off the items below. If any data review elements are missing contact the laboratory for submittal.

Data Package Item	Present?: Yes	No	N/A
Case Narrative		✓	
Cover Page	✓		
Traffic Reports/Chain-of-Custody	✓		
Sample Analysis Data Report Forms	✓		
Standards Data	✓		
QC Summary			
Blank Summary Report Forms	✓		
Spike Sample Recovery Report Forms	✓		
Duplicate Sample Analysis Report Forms	✓		
Laboratory Control Sample Report Forms	✓		
Raw Data			
Ion Chromatography Raw Data	✓		
TOC and TOX Instrument Printouts			✓
Laboratory Bench Sheets			✓
Additional Data			
Laboratory Sample Preparation Records	✓		
Instrument Run Logs	✓		
Internal Laboratory Chain-of-Custody	✓		
Percent Solids Analysis Records			✓
Reduction Formulae			✓
Chemist Notebook Pages			✓

HOLDING TIME SUMMARY

SDG: B090C3-TMA-549 | VALIDATOR: Stroup | DATE: 2-24-94 | PAGE 1 OF 1

COMMENTS:

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B090C3	IC Anions	8-10-93		9-1-93		22	See Attached Data Sheets
B090C4	"	"		"		"	"
B090C5	"	"		"		"	"
B090C6	"	"		"		"	"
B090C7	"	"		"		"	"
B090C8	"	"		"		"	"
B090C9	"	"		"		"	"

9513332.1200

RADIOCHEMISTRY DATA VALIDATION CHECKLIST

3. Continuing Calibration . . . . . ☐ N/A

Calibration checked within one week of sample analysis?	Yes	No	N/A
Calibration check acceptable?	Yes	No	N/A
Calibration check standards NIST traceable?	Yes	No	N/A
Calibration check standards expired?	Yes	No	N/A

Comments:

4. Blanks . . . . . ☐ N/A

Method blank analyzed?	Yes	No	N/A
Method blank results acceptable?	Yes	No	N/A
Analytes detected in method blank?	Yes	No	N/A
Field blank(s) analyzed?	Yes	No	N/A
Field blank results acceptable?	Yes	No	N/A
Analytes detected in field blank(s)?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:

5. Matrix Spikes . . . . . ☒ N/A

Matrix spike analyzed?	Yes	No	N/A
Spike recoveries acceptable?	Yes	No	N/A
Spike source traceable?	Yes	No	N/A
Spike source expired?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A

Comments:

RADIOCHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 300A Solvent Evap	DATA PACKAGE:	
VALIDATOR:	LAB: TMA	DATE: 2-25-94
CASE:	SDG: B090C3-TMA-549	
QAPP REFERENCE:	SAP REFERENCE:	

If there is no QAPP or SAP reference, contact the WHC Technical Representative.
If the document(s) are not provided, default to the Method acceptance criteria.

ANALYSES PERFORMED

☐ Gross Alpha/Beta	☐ Strontium-90	☐ Technetium-99	☐ Alpha Spectroscopy	☐ Gamma Spectroscopy	☐
☒ Total Uranium	☐ Radium-22	☐ Tritium	☐	☐	☐

SAMPLES/MATRIX: B090C3 - B090C4 - B090C5 - B090C6 - B090C7 - B090C8 - B090C9 Soil

1. Completeness . . . . . ☐ N/A

Technical verification forms present? . . . . . Yes (No) N/A

Comments:

2. Initial Calibration . . . . . ☐ N/A

Instruments/detectors calibrated within one year of sample analysis? . . . . . Yes No (N/A)

Initial calibration acceptable? . . . . . (Yes) No N/A

Standards NIST traceable? . . . . . (Yes) No N/A

Standards Expired? . . . . . Yes (No) N/A

Comments: Collected 8-10-93 & Analyzed 9-1-93.

GUUUOU

RADIOCHEMISTRY DATA VALIDATION CHECKLIST

6. Laboratory Control Samples . . . . . ☐ N/A

LCS analyzed? . . . . . Yes No N/A
LCS recoveries acceptable? . . . . . Yes No N/A
LCS traceable? . . . . . Yes No N/A
Transcription/Calculation Errors? . . . . . Yes No N/A

Comments:

7. Chemical Recovery . . . . . ☐ N/A

Chemical carrier added? . . . . . Yes No N/A
Chemical recovery acceptable? . . . . . Yes No N/A
Chemical carrier traceable? . . . . . Yes No N/A
Chemical carrier expired? . . . . . Yes No N/A
Transcription/Calculation errors? . . . . . Yes No N/A

Comments:

8. Duplicates . . . . . ☐ N/A

Duplicates Analyzed? . . . . . Yes No N/A
RPD Values Acceptable? . . . . . Yes No N/A
Transcription/Calculation Errors? . . . . . Yes No N/A

Comments:

RADIOCHEMISTRY DATA VALIDATION CHECKLIST

9. Field QC Samples . . . . . ☒ N/A

Field duplicate sample(s) analyzed? . . . . . Yes No N/A
Field duplicate RPD values acceptable? . . . . . Yes No N/A
Field split sample(s) analyzed? . . . . . Yes No N/A
Field split RPD values acceptable? . . . . . Yes No N/A
Performance audit sample(s) analyzed? . . . . . Yes No N/A
Performance audit sample results acceptable? . . . . . Yes No N/A

Comments: _____

10. Holding Times

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

Comments: _____

11. Results and Detection Limits (Levels D & E) . . . . . ☐ N/A

Results reported for all required sample analyses? . . . . . Yes No N/A
Results supported in raw data? . . . . . Yes No N/A
Results Acceptable? . . . . . Yes No N/A
Transcription/Calculation errors? . . . . . Yes No N/A
MDA's meet required detection limits? . . . . . Yes No N/A
Transcription/calculation errors? . . . . . Yes No N/A

Comments: _____

RADIOCHEMISTRY DATA VALIDATION CHECKLIST

Comments:

No major or minor discrepancies noted.

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 08-031

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : August 12, 1993

1.0 DESCRIPTION OF CASE :

Ten soil samples were analyzed for TCL Organics- Volatiles and Purgeable Volatile Fuel Hydrocarbons in Naphtha-Range ("N") according to the USEPA SW-846 Methods 8240 and 8015 Modified, respectively.

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B090C3	A3-08-031-01A	V	SOIL
B090C3	A3-08-031-01B	N	SOIL
B090C4	A3-08-031-02A	V	SOIL
B090C4 MS	A3-08-031-02B	V	SOIL
B090C4 MSD	A3-08-031-02C	V	SOIL
B090C4	A3-08-031-02D	N	SOIL
B090C5	A3-08-031-03A	V	SOIL
B090C5	A3-08-031-03B	N	SOIL
B090C5 RE	A3-08-031-03B	N	SOIL
B090C5 MS	A3-08-031-03C	N	SOIL
B090C5 MSD	A3-08-031-03D	N	SOIL
B090C6	A3-08-031-04A	V	SOIL
B090C6	A3-08-031-04B	N	SOIL
B090C7	A3-08-031-05A	V	SOIL
B090C7	A3-08-031-05B	N	SOIL
B090C8	A3-08-031-06A	V	SOIL
B090C8	A3-08-031-06B	N	SOIL
B090C9	A3-08-031-07A	V	SOIL
B090C9	A3-08-031-07B	N	SOIL
B090D0	A3-08-031-08A	V	SOIL
B090D1	A3-08-031-09A	V	SOIL
B090D2	A3-08-031-10A	V	SOIL

3.0 COMMENTS :

3.1 SHIPPING AND DOCUMENTATION :

All of the samples 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 SW-846 holding times.

On the reconstructed ion chromatograms for all of the samples, with the exception of sample B090C9, B090C3, and B090C5, a tentatively identified compound was detected between scans 574 and 576. The reverse library search identified these peaks as an Unknown Siloxane. It appears that the Unknown Siloxane that was detected in the samples was the result of carryover from previous sample analyses. The carryover theory was confirmed by the results of the 3 aforementioned samples (B090C9, B090C3, and B090C5). Each of these samples were analyzed after the Method Blank and did not contain the TIC. The reported analysis of sample B090C5 (file 30824R04) was actually a reanalysis of the sample. The original analysis of B090C5 (file 30819R08) was analyzed on 08/19/93, and contained the TIC "Unknown Siloxane." This analysis was not reported because trace amounts of the matrix spike analytes were detected. The results from the original analysis have been included in the "Additional Raw Data" portion of the package for review. As additional confirmation, sample B090C8 was reanalyzed on 09/02/93 (outside of the holding time) with method blanks analyzed immediately before and after. The analysis of B090C8RE did not contain the TIC, Unknown Siloxane. However, this TIC was detected in the Method Blank analyzed immediately after B090C8RE. This data has also been included in the "Additional Raw Data" portion of the package.

All of the QC results were within the limits specified by the SW-846 Method 8240.

TUNES :

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

3.2.2 PURGEABLE HYDROCARBONS IN NAPHTHA-RANGE :

SEQUENCE NOTES :

The sequence was started on 08/23/93 and was analyzed by purging 5 different levels of the Naphtha standard. Bromofluorobenzene was used as a surrogate and was spiked into all of the standards and samples.

The %RSD was within the 20% limit, but the %D in the continuing calibration exceeded the 15% QC limit. Due to a problem in in sample B090C5, a second sequence was started on

08/25/93. The %RSD on this sequence was below 20%, and the %D for Naphtha was still above the 15% limit.

LOW LEVEL SOIL :

The samples were analyzed within the contract required holding times. One gram of each sample was used with 5 mL of water containing the surrogate. The samples were analyzed by GC/FID using a purge and trap system.

The Bromofluorobenzene surrogate recoveries in the samples ranged from 64% to 136%, with the exception of sample B090C5, which had a 0% recovery. The poor recovery could have been due to a leaking vessel. Sample B090C5 was also spiked with Naphtha. The MS and MSD samples had good surrogate recoveries, although the matrix spike recoveries were 54% and 48%, respectively.

Sample B090C5 was analyzed on another sequence, with good surrogate recovery. Since sample B090C5 was reanalyzed outside of the holding time, both the original and the reanalysis results were included in the data package. No Naphtha pattern was detected in any of the samples.

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

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 11/4/93
Nicole Roth
CLP Program Manager

Widayat 11/4/93
Wida Ang
Organics Supervisor

TMA
Thermo Analytical Inc.

Skinner & Sherman Labs., Inc.
300 Second Avenue
Post Office Box 521
Waltham, MA 02254-0521
(617) 890-7200
FAX (617) 890-3883

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NOV 1993
RECEIVED
SDLA

September 10, 1993

TMA/NORCAL
2030 Wright Avenue
Richmond, CA 94804
Attention: Dan Stuermer

Quality Control Narrative

Scope
Seven (7) soil samples were submitted to TMA/Skinner & Sherman Laboratories, Inc. on August 14, 1993 from TMA/Norcal. The samples were analyzed for barium, beryllium, cadmium, copper, lead, silver, and zirconium. The analysis were performed under TMA/Skinner and Sherman work order S308094.

Methodology
The samples were prepared and analyzed according to SOW 846 and reported in accordance with the USEPA Contract Laboratory Program Statement of Work ILM02.

Discussion
All quality control requirements were met for the samples with no exceptions.

Please feel free to call if there are any questions concerning this package.

Respectfully submitted,

TMA/SKINNER & SHERMAN LABORATORIES, INC.

Steven R. Provencal
Lead Chemist

GENERAL CHEMISTRY RESULTS

CASE NO. 08-031

Soil Sample #:

B090C3	B090C4	B090C5
B090C6	B090C7	B090C8
B090C9		

CASE NARRATIVE

Sample B090C6 yielded percent recoveries of 62.0% for Fluoride, 62.0% for Phosphate, and 78.0% for Sulfate. The low recovery compared to our laboratory control sample indicated the presence of a matrix interference.

Sample B090C7 did not exhibit homogeneity. Therefore, the percent RPD for Chloride, Fluoride, and Nitrate is 121.6, 27.0, and 40.0, respectively.

No other problems were encountered during sample analysis. All QC results were acceptable.

Maureen Parrish

Maureen Parrish

SDG	7224	Client	Westinghouse Hanford
Contact	Dinkar P. Kharkar	Contract	MBH-SVV-069262

CASE NARRATIVE

1.0 GENERAL

TMA/Norcal Sample Delivery Group 7224 is comprised of the samples listed on the chain-of-custody documents below. This sample group was processed under the Westinghouse Hanford Company Statement of Work P.O. MBH-SVV-069262.

1.1 Chains-of-Custody

This report includes data for the seven samples from the 300 ASE soil sampling project delivered under Chain-of-Custody documents EFL-1095.

1.2 Sample Volume

60-mL glass bottles containing the samples were received for the analyses. Adequate volumes of all samples were received for the analyses.

1.3 Missing Samples

There were no missing samples.

1.4 Holding Times

The samples were collected on August 10, 1993 and sample processing was initiated within 180 days of collection.

2.0 QUALITY CONTROL

The internal quality control consisted of one sample each of a laboratory control, a blank, and a replicate. All original analyses were performed with QC samples 7224-8 through 7224-10.

The QC samples were prepared by the Quality Control Department. Copies of the QC notebook pages are included in this data package.

2.1 Laboratory Control Samples

The LCS recovery for total uranium was acceptable. The MDA of the result for the analysis met the RDL.

SDG	7224	Client	Westinghouse Hanford
Contact	Dinkar P. Kharkar	Contract	MBH-SVV-069262

CASE NARRATIVE

2.0 QUALITY CONTROL(cont'd)

2.2 Reagent Blanks

The MDA of the result for the analysis met the RDL.

2.3 Duplicates

Results were satisfactory for the duplicate analysis.

3.0 ANALYSIS NOTES

3.1 Total Uranium Analyses

The average MDA was (2 ± 2) μCi/g. Concentrations of uranium above the MDA were found in all the samples.

 TMA/Portsl CHAIN OF CUSTODY RECORD F30-05-046 000002

RCVD: 08/12/93 DUE: 09/16/93 08/12/93 15:41:10 KEEP: 09/16/94 DISP: S

DASH	SAMPLE IDENTIFICATION		STORED	TESTS for FRACTIONS with work in DEPT: SU and CATEGORY
01A-S	B090C3		ARLI	WH195 WH205A WH232
02A-S	B090C4		ARLI	WH195 WH205A WH232
03A-S	B090C5		ARLI	WH195 WH205A WH232
04A-S	B090C6		ARLI	WH195 WH205A WH232
05A-S	B090C7		ARLI	WH195 WH205A WH232
06A-S	B090C8		ARLI	WH195 WH205A WH232
07A-S	B090C9		ARLI	WH195 WH205A WH232
07C-S	B090C9	MS	ARLI	WH195 WH205A WH232
07D-S	B090C9	MSD	ARLI	WH195 WH205A
07E-S	B090C9	DUP	ARLI	WH232
08A-S	B090D0		ARLI	WH205A
09A-S	B090D1		ARLI	WH205A
10A-S	B090D2		ARLI	WH205A

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
tyamamoto	8/12/93	ARLI	8/12/93	C Harris	8/13/93

9513332.1302

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: Jonathan G. Lucas

Company Contact: Jonathan G. Lucas

Telephone: 509-376-2789

Project Designation/Sampling Locations: 300 ASE Soil Sampling Project - sites 1 thru 6

Collection Date: 8-10-93

Ice Chest No.:

Field Logbook No.: EFL-1095

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment:

Shipped to:

Possible Sample Hazards/Remarks:

Sample Identification

B090C3
B090C4
B090C5
B090C6
B090C7
B090C8
B090C9

Each sample consists of the following: 2-250ml Gs, 1-250ml P, 1-125ml Gs, 1-60ml G

B090D0
B090D1
B090D2

Each sample number consists of 3-250ml Gs SMS 8-10-93

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

Relinquished By	Date	Time	Received By	Date	Time
Jonathan G. Lucas / SMSteele	8-10-93	1410	SMSteele	8-10-93	1410
SMSteele	8-10-93	1410	Kermit Blum / K. Blum	8-12-93	1100

Final Sample Disposition

Disposal Method:

Disposed by:

Date/Time:

Comments:

A-6000-407 (12/92) WEF061

000093

9513332.1303 p1/3

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

Collector S. M. Steele Date 8-10-93

Company Contact Jonathan G. Lucas Telephone (509) 376-2789

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Requested
B090C3	S	8-10-93	1159 ✓	1-250ml Gs / VOA 8240
			1208 ✓	1-250ml Gs / Non-Halogenated VOA / 8015 (Petroleum Naptha
			1208 ✓	1-250ml P / ICP Metals - Barium, Beryllium, Cadmium, Copper, Silver, Zirconium 6010 Lead 7421
			1208 ✓	1-125ml G / Anions - IC Bromide EPA 300.0
			1208 ✓	1-60ml G / Total Uranium EA-01C
B090C4	S	8-10-93	1138 ✓	1-250ml Gs / VOA 8240
			1145 ✓	1-250ml Gs / Non-Halogenated VOA / 8015 (Petroleum Naptha)
			1145 ✓	1-250ml P / ICP Metals - Barium, Beryllium, Cadmium, Copper, Silver, Zirconium 6010 Lead 7421
			1145 ✓	1-125ml G / Anions - IC Bromide EPA 300.0
			1145 ✓	1-60ml G / Total Uranium EA-01C
B090C5	S	8-10-93	1117 ✓	1-250ml Gs / VOA 8240
			1126 ✓	1-250ml Gs / Non-Halogenated VOA 8015 (Petroleum Napth
			1126 ✓	1-250ml P / ICP Metals - Barium, Beryllium, Cadmium Copper, Silver, Zirconium 6010 Lead 7421
			1126 ✓	1-125ml G / Anions - IC Bromide EPA 300.0
			1126 ✓	1-60ml G / Total Uranium EA-01C

*Type of Sample

A = Air	L = Liquid	SE = Sediment	T = Tissue	X = Other
DL = Drum Liquids	O = Oil	SL = Sludge	W = Water	
DS = Drum Solids	S = Soil	SO = Solid	WI = Wipe	

Field Information N/A

Special Handling and/or Storage Store at 4°C

Possible Sample Hazards N/A

600100

A-6000-405 (06/92)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

Collector S.M. Steele Date 8-10-93

Company Contact Jonathan G. Lucas Telephone (509) 376-2789

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Requested
B090C6	S	8-10-93	1100 ✓	1-250mlGS / VOA 8240
			1105 ✓	1-250mlGS / Non-Halogenated VOA / 8015 (Petroleum Naptha)
			1105 ✓	1-250mlP / ICP Metals - Barium, Beryllium, Cadmium
				Copper, Silver, Zirconium 6010 Lead 7421
			1105 ✓	1-125mlG / Anions - IC Bromide EPA 300.00
			1105 ✓	1-60mlG / Total Uranium EA-01C
B090C7	S	8-10-93	1042 ✓	1-250mlGS / VOA 8240
			1049 ✓	1-250mlGS / Non-Halogenated VOA 8015 (Petroleum Naptha)
			1049 ✓	1-250mlP / ICP Metals - Barium, Beryllium, Cadmium
				Copper, Silver, Zirconium 6010 Lead 7421
			1049 ✓	1-125mlG / Anions - IC Bromide EPA 300.00
			1049 ✓	1-60mlG / Total Uranium EA-01C
B090C8	S	8-10-93	1229 ✓	1-250mlGS / VOA 8240
			1239 ✓	1-250mlGS / Non-Halogenated VOA 8015 (Petroleum Naptha)
			1239 ✓	1-250mlP / ICP Metals - Barium, Beryllium, Cadmium
				Copper, Silver, Zirconium, 6010 Lead 7421
			1239 ✓	1-125mlG / Anions - IC Bromide EPA 300.00
			1239 ✓	1-60mlG / Total Uranium EA-01C

*Type of Sample

A = Air	L = Liquid	SE = Sediment	T = Tissue	X = Other
DL = Drum Liquids	O = Oil	SL = Sludge	W = Water	
DS = Drum Solids	S = Soil	SO = Solid	WI = Wipe	

Field Information N/A

Special Handling and/or Storage Store at 4°C

Possible Sample Hazards N/A

9513332.1305 p3/3

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

Collector S.M. Steele Date 8-10-93

Company Contact Jonathan G. Lucas Telephone (509) 376-2789

Sample Number	*	Date Collected	Time Collected	Number and Type of Sample Containers/Analysis Requested
B090C9	S	8-10-93	1229 ✓	1-250mlGS/VOA 8240
			1239 ✓	1-250mlGS/Non-Halogenated VOA 8015 Petroleum Naph
			1239 ✓	1-250mlP/ICP Metals-Barium, Beryllium, Cadmium
				Copper, Silver, Zirconium 6010 Lead 7421
			1239 ✓	1-125mlG/Anions-IC Bromide EPA 300.00
			1239 ✓	1-60mlG/Total Uranium EA-01C
B090D0	S	8-10-93	0700 ✓	1-250mlGS/VOA 8240
B090D1	S	8-10-93	1308 ✓	1-250mlGS/VOA 8240
B090D2	S	8-10-93	0945 ✓	1-250mlGS/VOA 8240

*Type of Sample

A = Air	L = Liquid	SE = Sediment	T = Tissue	X = Other
DL = Drum Liquids	O = Oil	SL = Sludge	W = Water	
DS = Drum Solids	S = Soil	SO = Solid	WI = Wipe	

Field Information N/A

Special Handling and/or Storage Store at 4°C

Possible Sample Hazards N/A

Original

A-6000-406 (06/9

SAMPLE LOG-IN SHEET

LAB NAME : TMA/ARU PAGE : ____ OF ____

RECEIVED BY (PRINT NAME): Philip Hood LOG-IN-DATE : 8/13/93

RECEIVED BY (SIGNATURE): P. Hood

ICE CHEST NO. SML 116.

EPA SAMPLE #	CORRESPONDING SAMPLE TAG #	CORRESPONDING ASSIGNED LAB #	REMARKS: CONDITION OF SAMPLE SHIPMENT, ETC
	B090C5	A308031	
	B090C6	A308031	
	B090C8	A308031	
	B090C7	A308031	
	B090C9	A308031	
	B090C3	A308031	
	B090C4	A308031	
	B090D0	A308031	
	B090D1	A308031	
	B090D2	A308031	

REMARKS:

1. Custody Seal(s) — Present / Absent* — Intact / Broken
2. Custody Seal Nos: ____
3. Chain of Custody Records — Present / Absent*
4. Traffic Reports or Packing List — Present / Absent*
5. Airbill — Airbill / Sticker Present / Absent*
6. Airbill No.: 7290260460
7. Sample Tags — Present / Absent*
8. Sample Tag Numbers — Listed / Not Listed on Chain of Custody
9. Sample Condition: Intact / Broken* / Leaking
10. Does information on custody records, traffic reports, and sample tags agree? — Yes / No*
11. Date Recieved at Lab: 8/13/93
12. Temp of ice chest: 1 °C
13. Time Recieved: 9:00 am

SAMPLE TRANSFER

Fraction: ____ ____

Area #: ____ ____

By: ____ ____

On: ____ ____

* Contact SMO and attach record of resolution

Reviewed By: ____ Logbook No.: ____

Date: ____ Logbook Page No.: ____

FORM DC-1

000004

9513332.1307

FEDERAL EXPRESS

QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 7290260460

7290260460

RECIPIENT'S COPY

1 Date 8/12/93

From (Your Name) Please Print: Sample Control

Your Phone Number (Very Important): (10-) 35-2631

Company

Department/Floor No.

Street Address

City

State

ZIP Required

2 To (Recipient's Name) Please Print: CHAole Harris

Recipient's Phone Number (Very Important): (818) 357-3267

Company: TNA/ARLI

Department/Floor No.

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes): 160 Taylor Street

City: Glendale

State: Ca.

ZIP Required: 91016

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): 2340-6406

3 PAYMENT 1 [X] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [ ] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash/Check

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning)
- 11 [ ] OTHER PACKAGING
- 16 [ ] FEDEX LETTER*
- 12 [ ] FEDEX PAK*
- 13 [ ] FEDEX BOX
- 14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon, No Saturday delivery)
- 51 [ ] OTHER PACKAGING
- 56 [ ] FEDEX LETTER*
- 52 [ ] FEDEX PAK*
- 53 [ ] FEDEX BOX
- 54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day †)
- 30 [ ] ECONOMY*

*Economy Letter rate not available. Minimum charge: One pound economy rate.

Government Overnight (Available for authorized office only)
- 46 [ ] GOVT LETTER
- 41 [ ] GOVT PACKAGE

Freight Service (For packages over 150 lbs.)
- 70 [ ] OVERNIGHT FREIGHT** (Confirmed reservation required)
- 80 [ ] TWO-DAY FREIGHT**

† Delivery commitment may be later in some areas

*Declared Value Limit $500
**Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)
- 1 [ ] HOLD FOR PICK-UP (Fill in Box 11)
- 2 [ ] DELIVER WEEKDAY
- 3 DELIVER SATURDAY (Extra charge) (Not available to all locations) [ ]
- 4 [ ] DANGEROUS GOODS (Extra charge)
- 5 [ ]
- 6 [ ] DRY ICE (Dangerous Goods Shipper's Declaration not required)
- 7 [ ] OTHER SPECIAL SERVICE
- 8 [ ]
- 9 [ ] SATURDAY PICK-UP (Extra charge)
- [ ]
- 12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See rate)
1	112	
Total $	Total 112	Total

DIM SHIPMENT (Chargeable Weight) [ ] lbs

L x W x H

Received At: 1 [X] Regular Stop 2 [ ] On-Call Stop 3 [ ] Drop Box 4 [ ] B.S.C. 5 [ ] Station

7 Release Signature:

Emp. No. Date

[ ] Cash Received
[ ] Return Shipment
[ ] Third Party [ ] Chg. To Del. [ ] Chg. To Hold

Street Address

City State Zip

Received By: X

Date/Time Received FedEx Employee Number

Federal Express Use

Base Charges

Declared Value Charge

Other 1

Other 2

Total Charges

REVISION DATE 11/92
PART #137204 FXEM 3/91
FORMAT #155

155

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THA/ARU
The [illegible] Company Inc.

RADIATION DOSE RATE SURVEY FORM

Date 8/13/93 COMPANY Nore (GHC) OTHER ORD # 7290260460

Surveyor's Name [illegible]

Model No. HP-210 / ESP-1 Model No. AC-3-7 / ESP-1

Serial No. [illegible] / [illegible] Serial No. [illegible] / [illegible]

Calibration Date 4/26/93 Calibration Date 2/16/93

Instrument Calibration Factor 0.250 Instrument Calibration Factor 0.190

Sample	Location	HP-210 GM	HP-210 Probe	HP-210 Date	AC-3-7 GM	AC-3-7 Probe	AC-3-7 Date	Source of Exposure	Activity [illegible]
Background		36.			0				
Contacts		7350	0.2837		4920 4094	0.1809. 0.1565			
Smear GG4		36.0			1.0				
WGS025		44.0			3.0				
SML 116		31.0			3.0				
SML 361		32.0			3.0				
SML 207		36.0			0.0				
363		41.0			4.0				
330		31.0			3.0				
GWS016		32.0			1.0				
Remarks	GHC	25 samples each <50 pCi/[illegible]							

Comments

All OK _____ Approved [illegible]

Date 8/13/93

9513332.1309

CORRESPONDENCE DISTRIBUTION COVERSHEET

Author	Addressee	Correspondence No.
S. H. Wisness, RL R. E. Lerch, WHC (A. L. Prignano, WHC)	J. J. Witczak, Ecology D. R. Sherwood, EPA	Incoming 9403695 Xref 9452244D

Subject: SUBMITTAL OF VALIDATED DATA FOR THE 300 AREA SOLVENT EVAPORATOR SOIL SAMPLING (T-3-1)

INTERNAL DISTRIBUTION

Approval	Date	Name	Location	w/att
		Correspondence Control	A3-01	
		L. D. Arnold	B2-35	
		W. T. Dixon, Assignee	H6-21	
		J. A. Lerch	H4-23	
		P. J. Mackey	B3-15	
		H. E. McGuire, Sr. Staff	B3-63	
		S. M. Price	H6-23	
		A. L. Prignano	H6-23	
		J. A. Remaise	L6-18	
		F. A. Ruck III	H6-23	
		J. L. Waite	B2-35	
		D. J. Watson	X0-41	
		E. A. Weakley	L6-26	
		J. L. Wright	L6-26	
		EPIC	H6-08	
		RCRA FILE/GHL	H6-23	
		LOS/FILE/LB	H6-23	
		ALP/LB	H6-23	