9453549D
~~9452475D~~
ATTACHMENT 75
Page 1 of 32

GENERAL GC DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09345-TMA-621 (923-E418/621GCK.UP2)

9413225.0958

MEMORANDUM

MAR 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record

March 15, 1994

FR: Michael Higgins, Golder Associates Inc.

RE: GENERAL GC DATA VALIDATION SUMMARY FOR DATA PACKAGE B09345-TMA-621 (923-E418/621GCK.UP2)

INTRODUCTION

This memorandum presents the results of data validation on data package B09345-TMA-621 prepared by Thermo Analytical Inc. (TMA). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09345	9/16/93	SOIL	SEE NOTES
B09346	9/16/93	SOIL	
B09349	9/16/93	SOIL	
B09350	9/17/93	SOIL	
B09351	9/17/93	SOIL	
B09352	9/17/93	SOIL	
B09353	9/17/93	SOIL	
B09354	9/17/93	SOIL	

NOTES: 1. All samples were analyzed for extractable fuel hydrocarbons (kerosene range).
2. All samples were 100% validated.

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

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

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

Accuracy. Goals for accuracy were met.

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

9413225.0959

Detection Limits. Detection limit goals were met.

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

MAJOR DEFICIENCIES

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

MINOR DEFICIENCIES

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

REFERENCES

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

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

9413225.0960

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

9410.5225.096

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

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

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

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

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

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

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

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

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

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

94 9225.0962

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9413225.0963

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9413225.0961

Validated Data Summary, Data Package: B09345-TMA-621

	Samp#	B09345		B09346		B09349		B09350		B09351		B09352	
	Date	9-16-93		9-16-93		9-16-93		9-17-93		9-17-93		9-17-93	
	Location	299-W19-95		299-W19-97		299-W19-97		299-W19-97		299-W19-97		299-W19-97	
	Depth	140.00 - 142.50		130.00 - 132.50		165.00 - 167.50		---		146.00 - 148.50		146.00 - 148.50	
	Type	---		---		---		EQTBLK		---		DUPLICATE	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
KEROSENE	MG/KG	5.000	U	5.000	U	5.000	U	5.000	U	5.000	U	5.000	U

Verified

Validated Data Summary, Data Package: B09345-TMA-621

	Samp#	B09353		B09354	
	Date	9-17-93		9-17-93	
	Location	299-W19-97		299-W19-97	
	Depth	---		156.00 - 158.50	
	Type	FLDBLK		---	
	Comments	---		---	
Parameter	Units	Result	Q	Result	Q
KEROSENE	MG/KG	5.000	U	5.000	U

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID 809345 FRACTION 01F TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 09/16/93 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 10/10/93
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL
Kerosene Range	ND	5
C10 - C16 Jet Fuel Range	NA	NA
C9 - C22 Diesel Range	NA	NA
Hydraulic Range	NA	NA

ND = Not detected at the specified limits

Form I

Verified 940309

000676

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID 809346 FRACTION 03G TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 09/16/93 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL

Date Analyzed: 10/10/93

Dilution factor: 1.00

Concentration Units: mg/Kg

Compound	Sample Result	PQL
Kerosene Range	ND	5
C10 - C16 Jet Fuel Range	NA	NA
C9 - C22 Diesel Range	NA	NA
Hydraulic Range	NA	NA

ND = Not detected at the specified limits

Form I

9413225.0968

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID B09349 FRACTION 02E TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 09/16/93 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 10/10/93
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL
Kerosene Range	ND	5
C10 - C16 Jet Fuel Range	NA	NA
C9 - C22 Diesel Range	NA	NA
Hydraulic Range	NA	NA

ND = Not detected at the specified limits

Form I

9113225.0969

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID B09350 FRACTION 04D TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 09/17/93 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 10/10/93
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL
Kerosene Range	ND	5
C10 - C16 Jet Fuel Range	NA	NA
C9 - C22 Diesel Range	NA	NA
Hydraulic Range	NA	NA

ND = Not detected at the specified limits

Form I

Verified 9/10/93

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID B09351 FRACTION OSD TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 09/17/93 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 10/10/93
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL
Kerosene Range	ND	5
C10 - C16 Jet Fuel Range	NA	NA
C9 - C22 Diesel Range	NA	NA
Hydraulic Range	NA	NA

ND = Not detected at the specified limits

Form I

94 4225.097

Verified 9/30/93

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID 809352 FRACTION 06D TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 09/17/93 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 10/10/93
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL
Kerosene Range	ND	5
C10 - C16 Jet Fuel Range	NA	NA
C9 - C22 Diesel Range	NA	NA
Hydraulic Range	NA	NA

ND = Not detected at the specified limits

Form I

9411225.0972

Verified 9/10/93

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID 809353 FRACTION 07D TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 09/17/93 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 10/10/93
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL
Kerosene Range	ND	5
C10 - C16 Jet Fuel Range	NA	NA
C9 - C22 Diesel Range	NA	NA
Hydraulic Range	NA	NA

ND = Not detected at the specified limits

Form I

9413225.0973

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID 809354 FRACTION 08D TEST CODE 8015MS NAME EPA 8015M EXTRACT.

Date & Time Collected 09/17/93 Category

MODIFIED 8015 - EXTRACTABLE FUEL HYDROCARBONS

Matrix: SOIL
Date Analyzed: 10/10/93
Dilution factor: 1.00
Concentration Units: mg/Kg

Compound	Sample Result	PQL
Kerosene Range	ND	5
C10 - C16 Jet Fuel Range	NA	NA
C9 - C22 Diesel Range	NA	NA
Hydraulic Range	NA	NA

ND = Not detected at the specified limits

Form I

94 4225 0874

Verified 10-29

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

94/322F-0975

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 09-054

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : September 21, 1993

1.0 DESCRIPTION OF CASE :

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

9413225.0976

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B09345	A3-09-054-01A	V	SOIL
B09345	A3-09-054-01B	SV	SOIL
B09345 MS	A3-09-054-01C	SV	SOIL
B09345 MSD	A3-09-054-01D	SV	SOIL
B09345	A3-09-054-01F	K	SOIL
B09349	A3-09-054-02A	V	SOIL
B09349	A3-09-054-02B	SV	SOIL
B09349	A3-09-054-02E	K	SOIL
B09349 MS	A3-09-054-02F	K	SOIL
B09349 MSD	A3-09-054-02G	K	SOIL
B09346	A3-09-054-03A	V	SOIL
B09346 MS	A3-09-054-03B	V	SOIL
B09346 MSD	A3-09-054-03C	V	SOIL
B09346	A3-09-054-03D	SV	SOIL
B09346	A3-09-054-03G	K	SOIL
B09350	A3-09-054-04A	V	SOIL
B09350	A3-09-054-04B	SV	SOIL
B09350	A3-09-054-04D	K	SOIL
B09351	A3-09-054-05A	V	SOIL
B09351	A3-09-054-05B	SV	SOIL
B09351	A3-09-054-05D	K	SOIL
B09352	A3-09-054-06A	V	SOIL
B09352	A3-09-054-06B	SV	SOIL
B09352	A3-09-054-06D	K	SOIL
B09353	A3-09-054-07A	V	SOIL
B09353	A3-09-054-07B	SV	SOIL
B09353	A3-09-054-07D	K	SOIL
B09354	A3-09-054-08A	V	SOIL
B09354	A3-09-054-08B	SV	SOIL
B09354	A3-09-054-08D	K	SOIL
B09358	A3-09-054-09A	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 CLP SOW holding times.

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

TUNES :

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

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

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

The Terphenyl-d14 (TPH) surrogate recovery for sample B09353 was slightly above the QC limits. In accordance with the protocol, no further action was required.

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

3.2.3 EXTRACTABLE HYDROCARBONS "KEROSENE RANGE" COMMENTS :

SEQUENCE NOTES :

The sequence was started on 10/05/93 and was analyzed according to the SW-846 Method 8015M. The initial calibration consisted of 5 different levels of the Kerosene standard that ranged from 200ppm to 2000ppm. The continuing calibration at the 1000ppm level was injected amongst a series of samples, in order to verify the instrument stability. The %RSD in the initial calibration and the %D in the continuing calibration were below their 20% and 15% limits, respectively.

9413225.0977

SAMPLE NOTES :

LOW LEVEL SOIL :

The samples were extracted and analyzed for extractable hydrocarbons in the Kerosene range within the required holding times. Approximately 20 g of each sample was extracted and concentrated to 5 mL.

There were no hydrocarbons in the Kerosene ranged detected in any of the samples. Sample B09336 was spiked with Kerosene and the matrix spike recoveries were between 84% and 87%. The blank spike was prepared at the same time, and had a 75% recovery.

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

94/3225.0978

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

Nicole Roth 12/10/93
CLP Program Manager

Maureen Parrish 12/10/93
Project Manager

~~0000002A~~

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-16-93

Ice Chest No.: SML 41

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09345

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

2) B09349

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

3) ER 9-16-93

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

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-20-93 Loren E. Rogers 1105	H. Narcisio TMA/HYDROCAL	9-21-93 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

02

DDDDD2C

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 9-16-93

Ice Chest No.: SML 283 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09346

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

2)

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

LER 9-16-93

3)

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

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

Relinquished by:	Received by:	Date/Time:
9-20-93 Loren E Rogers 1205	H. Hadeis TMA/HORCAC	9-21-93 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

02

DDDDD2E

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-17-93

Ice Chest No.: SML 372

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09350 EB

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

2) B09351

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

3) B09352

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

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

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. NARCISO TMA/NORCAL	9-21-92 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

02

DDDD26

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 9-17-93

Ice Chest No.: SML 283 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09353

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

2) B09354

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

3)

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

JER 9-17-93

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

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. Narcus TMA/HORCAL	9-21-93 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

02

~~UUUCI~~

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 9-20-93

Ice Chest No.: SML 283 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) 809358

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

SER 9-20-93

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

3)

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

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

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. NARCISO TMA/NORCH	9-21-93 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

94173225.0984

GENERAL GC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2	DATA PACKAGE: B09345-TMA-621	
VALIDATOR: M HIGGINS	LAB: TMA	DATE: 940309
CASE: NA	SDG: NA	

ANALYSES PERFORMED

☐ 8010	☒ 8015	☐ 8020	☐ 8021	8140	8141
☐ 8150	☐ 8151	☐ WTPH-HCID	☐ WTPH-G	☐ WTPH-D	☐
☐	☐	☐	☐	☐	☐

SAMPLES/MATRIX: 8 - SOIL	
B09345	B09352
B09346	B09353
B09349	B09354
B09350	
B09351	

9413225.0985

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:

-02

GENERAL GC DATA VALIDATION CHECKLIST

3. INSTRUMENT CALIBRATION

3.1 INITIAL CALIBRATION

Was an initial calibration performed? . . . . . Yes No N/A

Are %RSD values for calibration or response factors acceptable? . . . . . Yes No N/A

Comments: _____

3.2 CONTINUING CALIBRATION

Was a continuing calibration check performed? . . . . . Yes No N/A

Are %D values for calibration or response factors 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 analyzed? . . . . . Yes No N/A

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

Were MS/MSD samples analyzed? . . . . . Yes No N/A SEE NOTE

Are MS/MSD recoveries acceptable? . . . . . Yes No N/A

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

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

9413225.0986

GENERAL GC DATA VALIDATION CHECKLIST

Comments: SURROGATE AND LABORATORY CONTROL SAMPLES WERE NOT ANALYZED, BUT NO ACTION WAS TAKEN. MS/MSD SPIKE RECOVERIES (%R WERE 84% + 87%) WERE CONSIDERED ACCEPTABLE. HOWEVER THE LABORATORY DID NOT PROVIDE CONTROL LIMITS FOR EVALUATION.

6. PRECISION

Are MS/MSD 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: RPD WAS CONSIDERED ACCEPTABLE (RPD WAS 4%), HOWEVER THE LABORATORY DID NOT PROVIDE CONTROL LIMITS FOR EVALUATION. CONTROL LIMITS HAVE BEEN REQUESTED FOR BOTH ACCURACY + PRECISION

7. COMPOUND IDENTIFICATION AND QUANTITATION

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

Is compound quantitation 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

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

Comments:

9414225.0987

030

HOLDING TIME SUMMARY

SDG: NA	VALIDATOR: M Higgins	DATE 941030	PAGE 1 OF 1
COMMENTS: B09345 · TMA · 621 — GENERAL GC (8015M)			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09345	(8015M)	9/16/93	9/29/93	10/6/93	≤ 14 days	≤ 14 days	NONE
B09346	↓	↓	↓	↓	↓	↓	↓
B09349							
B09350		9/17/93					
B09351							
B09352							
B09353							
B09354							

GENERAL CHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09345-TMA-621 (923-E418/621GEN.UP2)

9413225.0989

MEMORANDUM

TO: 200-UP-2 Project QA Record April 19, 1994

FR: Michael Higgins, Golder Associates Inc.

RE: GENERAL CHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE B09345-TMA-621 (923-E418/621GEN.UP2)

INTRODUCTION

This memorandum presents the results of data validation on data package B09345-TMA-621 prepared by Thermo Analytical Inc. (TMA). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09345	9/16/93	SOIL	SEE NOTES
B09346	9/16/93	SOIL	
B09349	9/16/93	SOIL	
B09350	9/17/93	SOIL	
B09351	9/17/93	SOIL	
B09352	9/17/93	SOIL	
B09353	9/17/93	SOIL	
B09354	9/17/93	SOIL	

Notes: 1 All samples were analyzed for anions (chloride, flouride, sulfate), by ion chromatography (IC) and nitrate/nitrite.
2 All samples were 100% validated.

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

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

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

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

Reviewed 04/19/94

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

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

Completeness. The data package was complete for all requested analyses. A total of eight (8) samples were validated in this data package with a total of 32 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives.

MAJOR DEFICIENCIES

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

MINOR DEFICIENCIES

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

Holding Time

- The maximum holding times (MHT) for nitrate/nitrite were exceeded. Attachments 2 and 5 provides a summary of the sample affected, data qualifications and supporting documentation.

Matrix Spike

- Matrix spike recovery for fluoride was unacceptable. Attachment 2 provides a summary of the samples and data qualification applied.

REFERENCES

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

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

9413225.0991

Revised 04/19/94

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

9413225.0992

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

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

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

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

9414225.0993

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9411225.0991

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: B09345	VALIDATOR: MCH	DATE: 940314	PAGE 1 OF 1
COMMENTS: B09345-TMA-621: GENERAL CHEMISTRY			
PARAMETER	QUALIFIER	SAMPLES AFFECTED	REASON
NITRATE/NITRITE	UJ	ALL	MHT > 28 DAYS
FLUORIDE	J	ALL	MATRIX SPIKE SAMPLE < 75% RECOVERY

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ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9413227.0808

Validated Data Summary, Data Package: B09345-TMA-621

	Samp#	B09345		B09346		B09349		B09350		B09351		B09352	
	Date	9-16-93		9-16-93		9-16-93		9-17-93		9-17-93		9-17-93	
	Location	299-W19-95		299-W19-97		299-W19-97		299-W19-97		299-W19-97		299-W19-97	
	Depth	140.00 - 142.50		130.00 - 132.50		165.00 - 167.50		0.00 - 0.00		146.00 - 148.50		146.00 - 148.50	
	Type	---		---		---		EQTBLK		---		DUPLICATE	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
CHLORIDE	MG/KG	9.400		6.100		5.200		6.000		5.600		5.300	
FLUORIDE	MG/KG	1.800	J	1.100	J	3.200	J	0.600	J	1.000	J	0.900	J
SULFATE	MG/KG	13.000		9.000		33.000		8.000		9.000		10.000	
NITRATE+NITRITE	MG-N/KG	2.470	UJ	2.500	UJ	2.440	UJ	2.480	UJ	2.440	UJ	2.460	UJ

Verified 9/30/94

9413225.1000

Validated Data Summary, Data Package: B09345-TMA-621

	Samp#	B09353		B09354	
	Date	9-17-93		9-17-93	
	Location	299-W19-97		299-W19-97	
	Depth	0.00 - 0.00		156.00 - 158.50	
	Type	FLDBLK		---	
	Comments	---		---	
Parameter	Units	Result	Q	Result	Q
CHLORIDE	MG/KG	6.600		6.700	
FLUORIDE	MG/KG	0.600	J	1.400	J
SULFATE	MG/KG	8.000		11.000	
NITRATE+NITRITE	MG-N/KG	2.500	UJ	2.490	UJ

Verified 9/30/94

.01

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID B09345 FRACTION 01E TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 09/16/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	
Chloride	300.0	9.4	mg/kg	1.0	
Fluoride	300.0	1.8	mg/kg	0.5	J
Sulfate	300.0	13	mg/kg	5	

FORM I

9113225.001

Verified 9/30/93

-0

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID B09346 FRACTION 03E TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 09/16/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Q
Chloride	300.0	6.1	mg/kg	1.0	
Fluoride	300.0	1.1	mg/kg	0.5	J
Sulfate	300.0	9	mg/kg	5	

FORM I

9413225.002

Validated 540304 MM

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID B09349 FRACTION 02C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 09/16/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	5.2	mg/kg	1.0
Fluoride	300.0	3.2	mg/kg	0.5
Sulfate	300.0	33	mg/kg	5

62

J

FORM I

000025.003

Verified 9403030

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID B09350 FRACTION 04C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 09/17/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	6.0	mg/kg	1.0
Fluoride	300.0	0.6	mg/kg	0.5
Sulfate	300.0	8	mg/kg	5

6

J

FORM I

9413225.0004

Verified 9/30/93

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID 809351 FRACTION 05C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 09/17/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	
Chloride	300.0	5.6	mg/kg	1.0	Q
Fluoride	300.0	1.0	mg/kg	0.5	J
Sulfate	300.0	9	mg/kg	5	

FORM I

9413225.1005

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID 809352 FRACTION 06C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 09/17/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	5.3	mg/kg	1.0
Fluoride	300.0	0.9	mg/kg	0.5
Sulfate	300.0	10	mg/kg	5

FORM I

9417225.006

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID B09353 FRACTION 07C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 09/17/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT
Chloride	300.0	6.6	mg/kg	1.0
Fluoride	300.0	0.6	mg/kg	0.5
Sulfate	300.0	8	mg/kg	5

G

J

FORM I

94/3225.007

Verified 940304

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID B09354 FRACTION 08C TEST CODE WCCLPS NAME Anions in Solids

Date & Time Collected 09/17/93 Category

ANIONS AND WET CHEMISTRY - SOLIDS

ANALYSIS	METHOD	RESULT	UNITS	LIMIT	Q
Chloride	300.0	6.7	mg/kg	1.0	
Fluoride	300.0	1.4	mg/kg	0.5	J
Sulfate	300.0	11	mg/kg	5	

FORM I

000 322 5 4 4 4

Verified 5.46304

Received: 09/22/93

Results by Sample

G

SAMPLE ID B09345 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 09/16/93 Category SOIL

NITR_S <2.47 mg N/kg UJ

SAMPLE ID B09346 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 09/16/93 Category SOIL

NITR_S <2.50 mg N/kg UJ

SAMPLE ID B09349 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 09/16/93 Category SOIL

NITR_S <2.44 mg N/kg UJ

SAMPLE ID B09350 SAMPLE # 04 FRACTIONS: A
Date & Time Collected 09/17/93 Category SOIL

NITR_S <2.48 mg N/kg UJ

SAMPLE ID B09351 SAMPLE # 05 FRACTIONS: A
Date & Time Collected 09/17/93 Category SOIL

NITR_S <2.44 mg N/kg UJ

SAMPLE ID B09352 SAMPLE # 06 FRACTIONS: A
Date & Time Collected 09/17/93 Category SOIL

NITR_S <2.46 mg N/kg UJ

SAMPLE ID B09353 SAMPLE # 07 FRACTIONS: A
Date & Time Collected 09/19/93 Category SOIL

NITR_S <2.50 mg N/kg UJ

Verified 9/30/93

-020

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc., retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Samples are not analyzed in accordance with New York State protocol unless indicated. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc., will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc.
300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4 LAB TEST FAX (617) 890-3883

9411225.009

Received: 09/22/93 Results by Sample

Q

SAMPLE ID B09354 SAMPLE # 08 FRACTIONS: A
Date & Time Collected 09/19/93 Category SOIL

NITR_S <2.49
mg N/kg

U5

SAMPLE ID B09354D SAMPLE # 08 FRACTIONS: B
Date & Time Collected 09/19/93 Category SOIL

NITR_S 3.71
mg N/kg

SAMPLE ID B09354S SAMPLE # 08 FRACTIONS: C
Date & Time Collected 09/19/93 Category SOIL

NITR_S 20.9
mg N/kg

SAMPLE ID LCSS SAMPLE # 09 FRACTIONS: A
Date & Time Collected not specified Category SOIL

NITR_S 1.97
mg N/L

-021

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc., retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Samples are not analyzed in accordance with New York State protocol unless indicated. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc., will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc. 300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4LAB TEST FAX (617) 890-3883

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9413225.001

Received: 09/22/93

Test Methodology

TEST CODE NITR S NAME Nitrate/Nitrite in Soils

The sample was extracted with deionized water and analyzed in accordance with Method for Chemical Analysis of Water and Wastes EPA-600/4-79-020, March 1979, Method 353.2 (modified)

9W3225.012

-023

This report is rendered upon all of the following conditions: Skinner & Sherman Laboratories, Inc., retains ownership of this report until associated submitted invoice is satisfied. Expert witness services shall be available in conjunction with this report only if prior notification of this potential requirement was made and accepted, before the analysis. Client will be responsible for Skinner & Sherman costs and consulting fees if our services are required by subpoena or otherwise in legal proceedings. Total liability is limited to the invoice amount. The results listed refer only to tested samples and applicable parameters. Samples are not analyzed in accordance with New York State protocol unless indicated. Product endorsement is neither inferred nor implied. Skinner & Sherman Laboratories, Inc., will exercise due diligence but will not be responsible for lost or destroyed samples or evidence unless client makes appropriate insurance coverage arrangements. Samples are held for thirty days following issuance of report. Samples will be stored at client's expense, if authorized in writing.

TMA
Thermo Analytical Inc.
Skinner & Sherman Laboratories Inc. 300 Second Avenue, P.O. Box 521, Waltham, Massachusetts 02254-0521 (617) 890-7200
1-800-4LAB TEST FAX (617) 890-3883

9413225.1013

GENERAL CHEMISTRY RESULTS

CASE NO. 09-054

Soil Sample #:

B09345	B09346
B09349	B09350
B09351	B09352
B09353	B09354

CASE NARRATIVE

The Fluoride Matrix Spike recovery for sample B09349 (A3-09-054-02D) was 71.0%. The low Fluoride recovery compared to our Laboratory Control Sample indicates the presence of matrix interferences.

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

Maureen Parrish 12-10-93

Maureen Parrish

~~0C0CC2A~~

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 9-16-93

Ice Chest No.: SML 41 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09345

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

2) B09349

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

3)

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

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

Relinquished by:	Received by:	Date/Time:
9-20-93 Leon E. Rogers 1205	H. NARCISO TMA/HORCAL	9-21-93 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

DDDDD2 CA

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-16-93

Ice Chest No.: SML 283

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09346

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

2)

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

SER 9-16-93

3)

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

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

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. HARRIS TMA/HORCAC	9-21-93 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

DDDDD2E

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-17-93

Ice Chest No.: SML 372

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09350 EB

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

2) B09351

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

3) B09352

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

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. NARCISO TMA/NORCAL	9-21-92 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

DDDDD26

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-17-93

Ice Chest No.: SML283

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09353

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

2) B09354

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

3)

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

SER 9-17-93

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. MARCUS TMA/HORCAL	9-21-93 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

9413225.018

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2	DATA PACKAGE:	
VALIDATOR: M. HIGGINS	LAB: TMA	DATE: 940304
CASE: B0945-TMA-621	SDG: NA	

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	8. SOILS
B09345	B09352
B09346	B09353
B09349	B09354
B09350	
B09351	

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: NO2/NO3 ANALYZED PAST MHT OF 28 DAYS BUT LESS THAN 2X MHT. RESULTS WERE QUALIFIED AS ESTIMATED (UJ).

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: FIELD QC, INCLUDING FIELD/TRIP BLANKS, ~~WE~~ IDENTIFICA WAS NO PROVIDED AT THE TIME OF THIS REVIEW. FIELD QC DATA HAS BEEN REQUESTED ~~AND~~ WILL BE INCLUDED IN FINAL DATA SUMMARY.

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 SPIKE RECOVERY <75% >30%. FLUORIDE QUALIFIED ESTIMATED (J/UJ).

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)

GENERAL CHEMISTRY DATA VALIDATION CHECKLIST

Comments: SEE FIELD QC COMMENTS UNDER BLANKS

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:

9413225.1021

94/3225.1022

HOLDING TIME SUMMARY

SDG: NA	VALIDATOR: M. HIGGINS	DATE: 940304	PAGE 1 OF 1
COMMENTS: B09345 · TMA 621 - GENERAL CHEMISTRY			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09345	Cl IONS	9/16/93	10/4/93	10/5/93	≤28 days	≤28 days	None
B09346	Cl, F, SO4	↓	↓	↓	↓	↓	↓
B09349	↓	↓	↓	↓	↓	↓	↓
B09350	↓	9/17/93	↓	↓	↓	↓	↓
B09351	↓	↓	↓	↓	↓	↓	↓
B09352	↓	↓	↓	↓	↓	↓	↓
B09353	↓	↓	↓	↓	↓	↓	↓
B09354	↓	↓	↓	↓	↓	↓	↓
SDG	NO3/NO2	9/16-17/93	10/18/93	10/19/93	>28 days	<2X	J/UJ

000019

TMA Inc. REPORT Work Order # A3-09-054

Received: 09/21/93

Results by Sample

SAMPLE ID B09349 MS FRACTION OZD TEST CODE UCQCS NAME Quality Control Summary

Date & Time Collected 09/16/93 Category

SPIKE QC SUMMARY

ANALYSIS	SAMPLE ID	SAMPLE RESULT	SPIKE RESULT	AMOUNT ADDED	% R
Chloride	B09349 MS	5.2	55.1	48.3	103
Fluoride	B09349 MS	3.2	37.3	48.3	71
Sulfate	B09349 MS	33	128	97.0	98

FORM V

9413225.1023

FLOURIDE TRUE BLOW 175%

940304

031

ACCURACY DATA SUMMARY

SDG: NA	VALIDATOR: M. HIGGINS	DATE: 940304		PAGE 1 OF 1
COMMENTS: B0945 · TMA · 621 · GENERAL CHEMISTRY				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B09349 MS	FLUORIDE	71	ALL	J/UJ

METALS AND CYANIDE DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09345-TMA-621 (923-E418/621MTL.UP2)

9413225.1025

MEMORANDUM

TO: 200-UP-2 Project QA Record April 20, 1994

FR: Michael Higgins, Golder Associates Inc.

RE: METALS AND CYANIDE DATA VALIDATION SUMMARY FOR DATA PACKAGE B09345-TMA-621 (923-E418/621MTL.UP2)

INTRODUCTION

This memorandum presents the results of data validation on data package B09345-TMA-621 prepared by Thermo Analytical Inc. (TMA). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09345	9/16/93	SOIL	SEE NOTES
B09346	9/16/93	SOIL	
B09349	9/16/93	SOIL	
B09350	9/17/93	SOIL	
B09351	9/17/93	SOIL	
B09352	9/17/93	SOIL	
B09353	9/17/93	SOIL	
B09354	9/17/93	SOIL	

Notes: 1 All samples were analyzed for Target Analyte List (TAL) metals/cyanide, and titanium.
2 All samples were 100% valdated.

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

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

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met.

Revised Page 940420

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

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

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

Completeness. The data package was complete for all requested analyses. A total of eight (8) samples were validated in this data package with a total of 200 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives.

9413225.027

MAJOR DEFICIENCIES

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

MINOR DEFICIENCIES

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

Laboratory blanks

Positive Blanks. Positive results were reported in the calibration or preparation blank(s). Attachment 2 provides a summary of the samples and data qualification applied.

Negative Blanks. Negative results were reported for the calibration or preparation blanks. Attachment 2 provides a summary of the samples and data qualification applied.

Matrix Spike Recovery

- Matrix spike recoveries were unacceptable for antimony, arsenic, and selenium. Attachment 2 provides a summary of the samples and data qualification applied.

Analytical Spike Recovery

- Analytical spike recoveries were unacceptable for lead, selenium, and thallium. Attachment 2 provides a summary of the samples and data qualification applied.

Method of Standard Additions

- The method of standard additions (MSA) correlation coefficient was unacceptable for arsenic and selenium. Attachment 2 provides a summary of the samples and data qualification applied.

Revised 9/10/94 Page 002

REFERENCES

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

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

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ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

94Y3225.1029

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9413225.1030

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: NA	VALIDATOR: MCH	DATE: 940420	PAGE 1 OF 2
COMMENTS: B09345-TMA-621 METALS/CYANIDE			
PARAMETER	QUALIFIER	SAMPLES AFFECTED	REASON
BARIUM	U	B09350, B09353	PRESENT IN CALIBRATION BLANK
BERYLLIUM	U	B09345, B09346, B09349, B09351, B09352, B09354	PRESENT IN CALIBRATION BLANK
CALCIUM	BJ/UJ	B09350, B09353	NEGATIVE VALUE REPORTED IN CALIBRATION BLANK
CHROMIUM	U	B09350, B09353	PRESENT IN CALIBRATION BLANK
COPPER	U	B09350, B09353	PRESENT IN CALIBRATION BLANK
MAGNESIUM	U	B09350, B09353	PRESENT IN CALIBRATION BLANK
MANGANESE	U	B09350, B09353	PRESENT IN CALIBRATION BLANK
POTASSIUM	U	B09350, B09353	PRESENT IN CALIBRATION BLANK
SELENIUM	U	B09353	PRESENT IN CALIBRATION BLANK
SODIUM	U	ALL	PRESENT IN PREPARATION BLANK
TITANIUM	U	B09350, B09353	PRESENT IN CALIBRATION BLANK
ANTIMONY	J/BJ/UJ	ALL	MATRIX SPIKE RECOVERY < 75% >30%
ARSENIC	J/BJ/UJ	ALL	MATRIX SPIKE RECOVERY < 75% >30%
SELENIUM	J/UJ	ALL	MATRIX SPIKE RECOVERY < 75% >30%
LEAD	UJ	B09353	ANALYTICAL SPIKE RECOVERY < 85% OR > 115%
SELENIUM	UJ	B09345, B09349, B09350, B09351, B09352, B09354	ANALYTICAL SPIKE RECOVERY < 85% OR > 115%

Revised Page 940420 MMC 007

SDG: NA	VALIDATOR: MCH	DATE: 940315	PAGE 2 OF 2
COMMENTS: B09345-TMA-621 METALS/CYANIDE			
PARAMETER	QUALIFIER	SAMPLES AFFECTED	REASON
THALLIUM	UJ	B09345, B09346, B09351	ANALYTICAL SPIKE RECOVERY < 85% OR > 115%
ARSENIC	J	B09352	MSA CORR COEFF < 0.995
SELENIUM	J	B09346	MSA CORR COEFF < 0.995

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ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

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Validated Data Summary, Data Package: B09345-TMA-621

	Samp#	B09345		B09346		B09349		B09350		B09351		B09352	
	Date	9-16-93		9-16-93		9-16-93		9-17-93		9-17-93		9-17-93	
	Location	299-W19-95		299-W19-97		299-W19-95		299-W19-97		299-W19-97		299-W19-97	
	Depth	140.00 - 142.50		130.00 - 132.50		165.00 - 167.50		0.00 - 0.00		146.00 - 148.50		146.00 - 148.50	
	Type	---		---		---		EQTBLK		---		DUPLICATE	
	Comments	---		---		---		---		---		---	
Parameter	Units	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
ALUMINUM	MG/KG	6800.000		6720.000		9070.000		54.300		7720.000		6740.000	
ANTIMONY	MG/KG	3.500	BJ	2.600	UJ	3.000	UJ	2.300	UJ	3.300	BJ	2.600	UJ
ARSENIC	MG/KG	3.400	J	3.600	J	4.700	J	0.690	BJ	3.600	J	2.700	J
BARIUM	MG/KG	76.900		58.400		100.000		0.350	U	79.200		74.700	
BERYLLIUM	MG/KG	0.360	U	0.290	U	0.420	U	0.040	U	0.330	U	0.320	U
CADMIUM	MG/KG	0.270	U	0.260	U	0.300	U	0.240	U	0.280	U	0.260	U
CALCIUM	MG/KG	9260.000		8860.000		134000.000		55.600	BJ	10100.000		9040.000	
CHROMIUM	MG/KG	12.000		13.700		8.800		0.680	U	12.500		10.800	
COBALT	MG/KG	7.400	B	6.900	B	7.500	B	0.470	U	7.800	B	6.900	B
COPPER	MG/KG	14.100		13.400		20.100		1.200	U	13.100		11.000	
IRON	MG/KG	14600.000		14100.000		14700.000		132.000		15100.000		13400.000	
LEAD	MG/KG	5.200		4.700		4.400		0.440	B	5.200		5.200	
MAGNESIUM	MG/KG	5130.000		5220.000		6390.000		9.600	U	5260.000		4790.000	
MANGANESE	MG/KG	338.000		265.000		569.000		0.750	U	286.000		281.000	
MERCURY	MG/KG	0.050	U	0.050	U	0.050	U	0.040	U	0.050	U	0.050	U
NICKEL	MG/KG	10.900		12.200		10.000		0.620	U	10.200		8.500	
POTASSIUM	MG/KG	1640.000		1410.000		1100.000	B	30.800	U	1920.000		1770.000	
SELENIUM	MG/KG	2.400	UJ	2.600	J	0.550	UJ	0.460	UJ	0.470	UJ	0.470	UJ
SILVER	MG/KG	0.540	U	0.520	U	0.600	U	0.470	U	0.550	U	0.520	U
SODIUM	MG/KG	180.000	U	159.000	U	235.000	U	49.700	U	195.000	U	176.000	U
THALLIUM	MG/KG	0.220	UJ	0.220	UJ	0.250	U	0.210	U	0.220	UJ	0.220	U
VANADIUM	MG/KG	33.800		30.000		46.100		1.000	U	32.900		29.400	
ZINC	MG/KG	34.100		31.500		28.700		0.800	U	34.500		31.500	
CYANIDE	MG/KG	0.500	U	0.500	U	0.550	U	0.500	U	0.530	U	0.490	U
TITANIUM	MG/KG	918.000		736.000		1000.000		2.000	U	912.000		852.000	

Verified
Robert Ridge
5/18/94

010

9413225.1055

Validated Data Summary, Data Package: B09345-TMA-621

	Samp#	B09353		B09354	
	Date	9-17-93		9-17-93	
	Location	299-W19-97		299-W19-97	
	Depth	0.00 - 0.00		156.00 - 158.50	
	Type	FLDBLK		---	
	Comments	---		---	
Parameter	Units	Result	Q	Result	Q
ALUMINUM	MG/KG	60.200		9490.000	
ANTIMONY	MG/KG	2.600	UJ	2.800	UJ
ARSENIC	MG/KG	0.400	UJ	7.700	J
BARIUM	MG/KG	0.250	U	96.500	
BERYLLIUM	MG/KG	0.040	U	0.460	U
CADMIUM	MG/KG	0.260	U	0.280	U
CALCIUM	MG/KG	11.700	UJ	12500.000	
CHROMIUM	MG/KG	0.620	U	15.000	
COBALT	MG/KG	0.510	U	9.200	B
COPPER	MG/KG	0.710	U	18.600	
IRON	MG/KG	137.000		17200.000	
LEAD	MG/KG	0.360	UJ	9.500	
MAGNESIUM	MG/KG	10.100	U	6790.000	
MANGANESE	MG/KG	0.630	U	317.000	
MERCURY	MG/KG	0.050	U	0.060	U
NICKEL	MG/KG	0.670	U	13.500	
POTASSIUM	MG/KG	23.500	U	2290.000	
SELENIUM	MG/KG	0.870	UJ	0.540	UJ
SILVER	MG/KG	0.510	U	0.570	U
SODIUM	MG/KG	54.500	U	195.000	U
THALLIUM	MG/KG	0.210	U	0.250	U
VANADIUM	MG/KG	1.100	U	35.300	
ZINC	MG/KG	0.870	U	45.700	
CYANIDE	MG/KG	0.480	U	0.550	U
TITANIUM	MG/KG	2.100	U	948.000	

Verified
revised page
5/11/94

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B09345

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

Lab Code: SKINER Case No.: N3-09-085SAS No.: SDG No.: B09345

Matrix (soil/water): SOIL Lab Sample ID: S309177-01 S

Level (low/med): LOW Date Received: 09/22/93

% Solids: 95.7

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6800			P	
7440-36-0	Antimony	3.5	~~B~~	N	P	BJ
7440-38-2	Arsenic	3.4		SN	F	J
7440-39-3	Barium	76.9			P	
7440-41-7	Beryllium	0.36	~~B~~		P	U
7440-43-9	Cadmium	0.27	U		P	
7440-70-2	Calcium	9260			P	
7440-47-3	Chromium	12.0			P	
7440-48-4	Cobalt	7.4	B		P	
7440-50-8	Copper	14.1			P	
7439-89-6	Iron	14600			P	
7439-92-1	Lead	5.2		S	F	
7439-95-4	Magnesium	5130			P	
7439-96-5	Manganese	338			P	
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	10.9			P	
7440-09-7	Potassium	1640			P	
7782-49-2	Selenium	2.4	~~U~~	WN	F	UJ
7440-22-4	Silver	0.54	U		P	
7440-23-5	Sodium	180	~~B~~		P	U
7440-28-0	Thallium	0.22	~~U~~	W	F	UJ
7440-62-2	Vanadium	33.8			P	
7440-66-6	Zinc	34.1			P	
	Cyanide	0.50	U		CA	
7440-32-6	Titanium	918			P	~~J~~

Verified 9/10/10

9/16/94

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

Verified 9/18/94

L012

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B09346

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

Lab Code: SKINER Case No.: N3-09-085SAS No.: SDG No.: B09345

Matrix (soil/water): SOIL Lab Sample ID: S309177-02 S

Level (low/med): LOW Date Received: 09/22/93

% Solids: 93.5

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6720			P	
7440-36-0	Antimony	2.6	~~U~~	N	P	uJ
7440-38-2	Arsenic	3.6		N	F	J
7440-39-3	Barium	58.4			P	
7440-41-7	Beryllium	0.29	~~B~~		P	u
7440-43-9	Cadmium	0.26	U		P	
7440-70-2	Calcium	8860			P	
7440-47-3	Chromium	13.7			P	
7440-48-4	Cobalt	6.9	B		P	
7440-50-8	Copper	13.4			P	
7439-89-6	Iron	14100			P	
7439-92-1	Lead	4.7		S	F	
7439-95-4	Magnesium	5220			P	
7439-96-5	Manganese	265			P	
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	12.2			P	
7440-09-7	Potassium	1410			P	
7782-49-2	Selenium	2.6		+N	F	J
7440-22-4	Silver	0.52	U		P	
7440-23-5	Sodium	159	~~B~~		P	u
7440-28-0	Thallium	0.22	~~U~~	W	F	uJ
7440-62-2	Vanadium	30.0			P	
7440-66-6	Zinc	31.5			P	
	Cyanide	0.50	U		CA	
7440-32-6	Titanium	736	✓		P	~~J~~

Verified 9/10/94

j 4/18/94

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

Revised ILM02.1 4/18/94

FORM I - IN

ILM02.1

9413225.0037

WESTINGHOUSE/HANFORD
1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B09349

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

Lab Code: SKINER Case No.: N3-09-085SAS No.: SDG No.: B09345

Matrix (soil/water): SOIL Lab Sample ID: S309177-03 S

Level (low/med): LOW Date Received: 09/22/93

% Solids: 84.7

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	9070			P	
7440-36-0	Antimony	3.0	~~U~~	N	P	UJ
7440-38-2	Arsenic	4.7		SN	F	J
7440-39-3	Barium	100			P	
7440-41-7	Beryllium	0.42	~~B~~		P	U
7440-43-9	Cadmium	0.30	U		P	
7440-70-2	Calcium	134000			P	
7440-47-3	Chromium	8.8			P	
7440-48-4	Cobalt	7.5	B		P	
7440-50-8	Copper	20.1			P	
7439-89-6	Iron	14700			P	
7439-92-1	Lead	4.4			F	
7439-95-4	Magnesium	6390			P	
7439-96-5	Manganese	569			P	
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	10.0			P	
7440-09-7	Potassium	1100	B		P	
7782-49-2	Selenium	0.55	~~U~~	WN	F	UJ
7440-22-4	Silver	0.60	U		P	
7440-23-5	Sodium	235	~~B~~		P	U
7440-28-0	Thallium	0.25	U		F	
7440-62-2	Vanadium	46.1			P	
7440-66-6	Zinc	28.7			P	
	Cyanide	0.55	U		CA	
7440-32-6	Titanium	1000			P	J

Verified 9/10/94

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: Artifacts:

Comments:

Verified 10/18/94

FORM I - IN ILM02.1

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WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B09350

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

Lab Code: SKINER Case No.: N3-09-085SAS No.: SDG No.: B09345

Matrix (soil/water): SOIL Lab Sample ID: S309177-04 S

Level (low/med): LOW Date Received: 09/22/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	54.3			P	
7440-36-0	Antimony	2.3	~~U~~	N	P	UJ
7440-38-2	Arsenic	0.69	~~B~~	N	F	BJ
7440-39-3	Barium	0.35	~~B~~		P	U
7440-41-7	Beryllium	0.04	U		P	
7440-43-9	Cadmium	0.24	U		P	
7440-70-2	Calcium	55.6	~~B~~		P	~~U~~ BJ
7440-47-3	Chromium	0.68	~~B~~		P	U
7440-48-4	Cobalt	0.47	U		P	
7440-50-8	Copper	1.2	~~B~~		P	U
7439-89-6	Iron	132			P	
7439-92-1	Lead	0.44	B		F	
7439-95-4	Magnesium	9.6	~~B~~		P	U
7439-96-5	Manganese	0.75	~~B~~		P	U
7439-97-6	Mercury	0.04	U		CV	
7440-02-0	Nickel	0.62	U		P	
7440-09-7	Potassium	30.8	~~B~~		P	U
7782-49-2	Selenium	0.46	~~U~~	WN	F	UJ
7440-22-4	Silver	0.47	U		P	
7440-23-5	Sodium	49.7	~~B~~		P	U
7440-28-0	Thallium	0.21	U		F	
7440-62-2	Vanadium	1.0	U		P	
7440-66-6	Zinc	0.80	U		P	
	Cyanide	0.50	U		CA	
7440-32-6	Titanium	2.0	~~B~~		P	U

Color Before: WHITE Clarity Before: Texture: FINE

Color After: WHITE Clarity After: Artifacts:

Comments:

FORM I - IN

ILM02.1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B09351

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

Lab Code: SKINER Case No.: N3-09-085SAS No.: SDG No.: B09345

Matrix (soil/water): SOIL Lab Sample ID: S309177-05 S

Level (low/med): LOW Date Received: 09/22/93

% Solids: 93.1

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	7720			P	
7440-36-0	Antimony	3.3	B ~~U~~	N	P	BJ
7440-38-2	Arsenic	3.6		SN	F	J
7440-39-3	Barium	79.2			P	
7440-41-7	Beryllium	0.33	~~B~~		P	U
7440-43-9	Cadmium	0.28	U		P	
7440-70-2	Calcium	10100			P	
7440-47-3	Chromium	12.5			P	
7440-48-4	Cobalt	7.8	B		P	
7440-50-8	Copper	13.1			P	
7439-89-6	Iron	15100			P	
7439-92-1	Lead	5.2		S	F	
7439-95-4	Magnesium	5260			P	
7439-96-5	Manganese	286			P	
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	10.2			P	
7440-09-7	Potassium	1920			P	
7782-49-2	Selenium	0.47	~~U~~	WN	F	UJ
7440-22-4	Silver	0.55	U		P	
7440-23-5	Sodium	195	~~B~~		P	U
7440-28-0	Thallium	0.22	~~U~~	W	F	UJ
7440-62-2	Vanadium	32.9			P	
7440-66-6	Zinc	34.5			P	
	Cyanide	0.53	U		CA	
7440-32-6	Titanium	912	~~J~~		P	~~J~~

Verified 4/18/94

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

Revised page 4/18/1994

94/3225.1040

WESTINGHOUSE/HANFORD
1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B09352

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

Lab Code: SKINER Case No.: N3-09-085SAS No.: SDG No.: B09345

Matrix (soil/water): SOIL Lab Sample ID: S309177-06 S

Level (low/med): LOW Date Received: 09/22/93

% Solids: 94.7

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	6740			P	
7440-36-0	Antimony	2.6	~~U~~	N	P	uJ
7440-38-2	Arsenic	2.7		+N	F	J
7440-39-3	Barium	74.7			P	
7440-41-7	Beryllium	0.32	~~B~~		P	u
7440-43-9	Cadmium	0.26	U		P	
7440-70-2	Calcium	9040			P	
7440-47-3	Chromium	10.8			P	
7440-48-4	Cobalt	6.9	B		P	
7440-50-8	Copper	11.0			P	
7439-89-6	Iron	13400			P	
7439-92-1	Lead	5.2			F	
7439-95-4	Magnesium	4790			P	
7439-96-5	Manganese	281			P	
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	8.5			P	
7440-09-7	Potassium	1770			P	
7782-49-2	Selenium	0.47	~~U~~	WN	F	uJ
7440-22-4	Silver	0.52	U		P	
7440-23-5	Sodium	176	~~B~~		P	u
7440-28-0	Thallium	0.22	U		F	
7440-62-2	Vanadium	29.4			P	
7440-66-6	Zinc	31.5			P	
	Cyanide	0.49	U		CA	
7440-32-6	Titanium	852	✓		P	J 5/4/18/94

Verified 5/4/18/94

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

revised page 5/11/94

FORM I - IN ILM02.1

007

017

WESTINGHOUSE/HANFORD

1

SAMPLE NUMBER:

INORGANIC ANALYSIS DATA SHEET

B09353

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

Lab Code: SKINER Case No.: N3-09-085SAS No.: SDG No.: B09345

Matrix (soil/water): SOIL Lab Sample ID: S309177-07 S

Level (low/med): LOW Date Received: 09/22/93

% Solids: 100.0

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	60.2			P	
7440-36-0	Antimony	2.6	~~UJ~~	N	P	UJ
7440-38-2	Arsenic	0.40	~~UJ~~	N	F	UJ
7440-39-3	Barium	0.25	~~B~~		P	U
7440-41-7	Beryllium	0.04	U		P	
7440-43-9	Cadmium	0.26	U		P	
7440-70-2	Calcium	11.7	~~UJ~~		P	UJ
7440-47-3	Chromium	0.62	~~B~~		P	U
7440-48-4	Cobalt	0.51	U		P	
7440-50-8	Copper	0.71	~~B~~		P	U
7439-89-6	Iron	137			P	
7439-92-1	Lead	0.36	~~UJ~~		F	UJ
7439-95-4	Magnesium	10.1	~~B~~		P	U
7439-96-5	Manganese	0.63	~~B~~		P	U
7439-97-6	Mercury	0.05	U		CV	
7440-02-0	Nickel	0.67	U		P	
7440-09-7	Potassium	23.5	~~B~~		P	U
7782-49-2	Selenium	0.87	~~B~~	N	F	UJ
7440-22-4	Silver	0.51	U		P	
7440-23-5	Sodium	54.5	~~B~~		P	U
7440-28-0	Thallium	0.21	U		F	
7440-62-2	Vanadium	1.1	U		P	
7440-66-6	Zinc	0.87	U		P	
	Cyanide	0.48	U		CA	
7440-32-6	Titanium	2.1	~~B~~		P	U

Color Before: WHITE Clarity Before: Texture: FINE

Color After: WHITE Clarity After: Artifacts:

Comments:

WESTINGHOUSE/HANFORD

1

INORGANIC ANALYSIS DATA SHEET

SAMPLE NUMBER: B09354

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

Lab Code: SKINER Case No.: N3-09-085SAS No.: SDG No.: B09345

Matrix (soil/water): SOIL Lab Sample ID: S309177-08 S

Level (low/med): LOW Date Received: 09/22/93

% Solids: 85.7

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

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	9490			P	
7440-36-0	Antimony	2.8	~~U~~	N	P	UJ
7440-38-2	Arsenic	7.7		SN	F	J
7440-39-3	Barium	96.5			P	
7440-41-7	Beryllium	0.46	~~B~~		P	U
7440-43-9	Cadmium	0.28	U		P	
7440-70-2	Calcium	12500			P	
7440-47-3	Chromium	15.0			P	
7440-48-4	Cobalt	9.2	B		P	
7440-50-8	Copper	18.6			P	
7439-89-6	Iron	17200			P	
7439-92-1	Lead	9.5			F	
7439-95-4	Magnesium	6790			P	
7439-96-5	Manganese	317			P	
7439-97-6	Mercury	0.06	U		CV	
7440-02-0	Nickel	13.5			P	
7440-09-7	Potassium	2290			P	
7782-49-2	Selenium	0.54	~~U~~	WN	F	UJ
7440-22-4	Silver	0.57	U		P	
7440-23-5	Sodium	195	~~B~~		P	U
7440-28-0	Thallium	0.25	U		F	
7440-62-2	Vanadium	35.3			P	
7440-66-6	Zinc	45.7			P	
	Cyanide	0.55	U		CA	
7440-32-6	Titanium	948			P	~~J~~ 5/4/18/94

Verified 9/30/01

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts:

Comments:

Revised page 5/4/18/94

FORM I - IN

ILM02.1

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

0W3225.DOW

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

RECORD COPY

DEC 1993
RECEIVED
SDLA

November 1, 1993

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

Quality Control Narrative

Scope
Eight (8) soil samples were submitted to TMA/Skinner & Sherman Laboratories, Inc. on September 22, 1993 from TMA/Norcal. The samples were analyzed for the USEPA CLP Target Analyte List metals, titanium, and cyanide. The analyses were performed under TMA/Skinner and Sherman work order S309177.

Methodology
The samples were prepared, analyzed 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 the following exceptions;

The digestion spike recovery for antimony, arsenic, and selenium exceeded control limit requirements.

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

Respectfully submitted,

TMA/SKINNER & SHERMAN LABORATORIES, INC.

Steven Provencal

Steven R. Provencal
Lead Chemist

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-16-93

Ice Chest No.: SML 41

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09345

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

2) B09349

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

3)

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

ER 9-16-93

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

Relinquished by:	Received by:	Date/Time:
9-20-93 Loren E. Rogers 1205	H. Narcisio TMA/HOPCAL	9-21-93 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

9414225.1046

DDDDD2C

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-16-93

Ice Chest No.: SML 283

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09346

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

2)

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

JER 9-16-93

3)

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

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. MADELS TMA/HORCAL	9-21-93 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

~~000002E~~

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-17-93

Ice Chest No.: SML 372

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09350 EB

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

2) B09351

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

3) B09352

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

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. NARCISO TMA/NORCAL	9-21-92 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

DDDD026

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-17-93

Ice Chest No.: SML 283

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1)

B09353

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

B09354

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

3)

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

LER 9-17-93

[] Field Transfer of Custody

Chain of Possession (Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. NARCUS TMA/HORCAL	9-21-93 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

9413225.1050

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200 U.P. 2		DATA PACKAGE: B09345-TMA-621
VALIDATOR: M. HIGGINS	LAB: TMA	DATE: 3/01/94
CASE: NA		SDG: NA

ANALYSES PERFORMED

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

SAMPLES/MATRIX	8-SOILS
B09345	B09352
B09346	B09353
B09349	B09354
B09350	
B09351	

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:

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: ANALYTES DETECTED IN CALIBRATION & PREPARATION BLANK CCRDL SEE BLANK SUMMARY.

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: low SPIKE RECOVERIES for Sb, As, Se
~~HIGH~~ " " " " " 4/18/90

ANISH PATEL
4/18/94

9413225.052

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:

9413225.1053

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: See Qualification Summary. Initial %RSD Review indicated duplicate injection was outside control limit. Subsequent calculation established that the result was not greater than the CRDL and qualification was not required, validation checklist has been corrected.

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:

-029

HOLDING TIME SUMMARY

SDG: NA	VALIDATOR: M. HIGGINS	DATE: 03/01/94	PAGE 1 OF 1
COMMENTS: B09345.TMA.621 - METAL/CYANIDE			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09345	CN	9/16/93	9/28/93	9/~~28~~ 29/93	≤ 14 days	≤ 14 days	NONE
B09346							
B09349							
B09350		9/17/93					
B09351							
B09352							
B09353							
B09354							
SDG	Hg/CV	9/16-17/93	10/11/93	10/12/93	≤ 28 days	≤ 28 days	NONE
SDG	MTL/GFAA	9/16-17/93	10/21/93	10/25-29/93	≤ 180 days	≤ 180 days	NONE
SDG	MTL/ICP	9/16-17/93	10/21/93	10/22/93	≤ 180 days	≤ 180 days	NONE

BLANK AND SAMPLE DATA SUMMARY

SDG: NA | VALIDATOR: K. HEGINS | DATE: 940301 | PAGE 1 OF 1

COMMENTS: B09345-VMA-621 METALS/CYANIDE - FROM RAW DATA

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS (ppm)	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
CCB2	Barium	.00195	B			.00975		B09353 B09350	U
CCB2	Beryllium	.0047	B			.0235		B09345, B09346 B09349, B09351	
"	"	"	"			"		B09352 B09354	
ICB	Calcium	0.1677	B			2x = 0.3354		B09350, B09353	J
CCB2	Chromium	.00250	B			0.0125		B09350 B09353	U
CCB1	Copper	.01031	B			0.05155		B09350 B09353	
CCB1	Magnesium	.03683	B			0.18415		B09350 B09353	
CCB1	Manganese	.00171	B			.00855		B09350 B09353	
CCB2	Potassium	.007169	B			.35845		B09350 B09353	
PBLK.	Sodium	0.22106	B			1.1053		B09345 B09346 B09349 B09350 B09351 B09352 B09353 B09354	U
CCB2	Titanium	.00281	B			0.01405		B09350 B09353	
ICB	Selenium	2.4780	B			12.3900		B09353	

ACCURACY DATA SUMMARY

SDG: B09345	VALIDATOR: M. HIGGINS	DATE: 930314	PAGE 1 OF 1
COMMENTS: B09345.TMA.C21 - METALS/CYANIDE			

SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
B093545	ANTIMONY	48.1	ALL	J/BJ/UJ
	ARSENIC	67.7		J/BJ/UJ
	SELENIUM	47.9		J/UJ
	~~TITANIUM~~	~~139.2~~		~~J~~
B09353	LEAD	>115	B09353	UJ
B09345,49,50,51,52,54	SELIUM	<85	B09345, B09349, B09350, B09351, B09352, B09354	UJ
B09345,46,51	THALLIUM	115/<85	B09345, B09346, B09351	UJ
B09352	ARSENIC	R<0.995	B09352	J
B09346	SELENIUM	R<0.995	B09346	J

4/18/94

Revised page 4/18/94

WESTINGHOUSE/HANFORD

5A

SPIKE SAMPLE RECOVERY

SAMPLE NUMBER: B09354S

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

Lab Code: SKINER Case No.: N3-09-085SAS No.: SDG No.: B09345

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 85.7

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	53.9965		2.8136	U	112.20	48.1	N	P
Arsenic	75-125	13.5659		7.6582		8.72	67.7	N	F
Barium	75-125	527.8925		96.4678		448.79	96.1		P
Beryllium	75-125	11.0717		0.4558	B	11.22	94.6		P
Cadmium	75-125	9.6760		0.2835	U	11.22	86.2		P
Calcium									NR
Chromium	75-125	57.4791		14.9991		44.88	94.7		P
Cobalt	75-125	110.2302		9.1669	B	112.20	90.1		P
Copper	75-125	72.2691		18.6371		56.10	95.6		P
Iron									NR
Lead	75-125	14.0990		9.4570		4.36	106.5		F
Magnesium									NR
Manganese	75-125	425.3882		317.[illegible]080		112.20	96.2		P
Mercury	75-125	0.5946		0.0556	U	0.58	102.5		CV
Nickel	75-125	115.8020		13.[illegible]702		112.20	91.2		P
Potassium									NR
Selenium	75-125	1.0449	B	0.[illegible]438	U	2.18	47.9	N	F
Silver	75-125	10.6678		0.[illegible]671	U	11.22	95.1		P
Sodium									NR
Thallium	75-125	11.9313		0.[illegible]92	U	10.91	109.4		F
Vanadium	75-125	141.0174		35.[illegible]17		112.20	94.2		P
Zinc	75-125	150.0830		45.[illegible]03		112.20	93.1		P
Cyanide	75-125	29.0739		0.[illegible]53	U	29.17	99.7		CA
Titanium		1104.6360		948.4[illegible]9		112.20	139.2		P

Comments:

SPIKE RECOVERY Sb, As, Se J/UJ

~~Ti DETECTS J~~ 4/18/94

940302

FORM V (Part 1) - IN ILM02.1

no qualifier for Ti, results x4 spike added

revised 4/18/94

WESTINGHOUSE/HANFORD

8

STANDARD ADDITION RESULTS

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

Lab Code: SKINER Case No.: N3-09-085SAS No.: SDG No.: B09345

Concentration Units: ug/L

EPA Sample No.	An	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q
B09345	AS	0.056	10.00	0.092	20.00	0.123	30.00	0.157	17.0	0.9996	
B09349	AS	0.062	10.00	0.100	20.00	0.119	30.00	0.157	21.0	0.9923	+
B09349	AS	0.068	10.00	0.094	20.00	0.126	30.00	0.164	20.3	0.9965	
B09351	AS	0.060	10.00	0.096	20.00	0.120	30.00	0.162	18.2	0.9951	
B09352	AS	0.063	10.00	0.085	20.00	0.130	30.00	0.161	17.4	0.9924	+
B09352	AS	0.053	10.00	0.091	20.00	0.118	30.00	0.168	13.9	0.9933	+
B09354	AS	0.120	10.00	0.151	20.00	0.190	30.00	0.224	33.8	0.9991	
B09354D	AS	0.127	10.00	0.165	20.00	0.197	30.00	0.224	40.2	0.9971	
B09345	PB	0.162	10.00	0.227	20.00	0.289	30.00	0.349	26.2	0.9998	
B09346	PB	0.151	10.00	0.217	20.00	0.288	30.00	0.343	23.6	0.9988	
B09351	PB	0.159	10.00	0.226	20.00	0.283	30.00	0.343	26.5	0.9994	
B09346	SE	0.023	5.00	0.026	10.00	0.041	15.00	0.061	7.1	0.9579	+
B09346	SE	0.022	5.00	0.029	10.00	0.034	15.00	0.047	13.1	0.9788	+

Systematical (J) MSA < 0.995

940302

FORM VIII - IN

ILM02.1

WESTINGHOUSE/HANFORD

3
BLANKS

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

Lab Code: SKINER Case No.: N3-09-085SAS No.: SDG No.: B09345

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	10.6	U	28.2	B	26.3	B	23.8	B	6.588	B	P
Antimony	12.9	U	12.9	U	12.9	U	14.6	B	2.580	U	P
Arsenic	2.1	U	2.1	U	2.1	U	2.1	U	0.420	U	F
Barium	1.2	U	1.8	B	1.9	B	1.8	B	0.240	U	P
Beryllium	0.2	U	0.5	B	0.5	B	0.5	B	0.040	U	P
Cadmium	1.3	U	1.3	B	2.0	B	1.9	B	0.260	U	P
Calcium	-167.7	B	-79.5	B	59.0	U	-138.3	B	-14.126	B	P
Chromium	2.1	U	2.1	U	2.5	B	2.1	U	0.420	U	P
Cobalt	2.6	U	2.6	U	2.6	U	2.6	U	0.520	U	P
Copper	9.5	B	10.3	B	6.3	B	6.5	B	3.180	B	P
Iron	5.3	U	17.1	B	17.4	B	9.3	B	9.504	B	P
Lead	1.9	U	1.9	U	1.9	U	1.9	U	0.380	U	F
Magnesium	22.9	U	36.8	B	23.6	B	22.9	U	7.218	B	P
Manganese	0.8	U	1.7	B	1.4	B	1.8	B	0.300	B	P
Mercury	0.1	U	0.1	U	0.1	U	0.1	U	0.050	U	CV
Nickel	3.4	U	3.4	U	3.4	U	3.4	U	0.680	U	P
Potassium	68.5	U	68.5	U	71.7	B	68.5	U	13.946	B	P
Selenium	2.5	B	2.4	U	2.4	U	2.4	U	0.480	U	F
Silver	2.6	U	2.6	U	2.6	U	2.6	U	0.520	U	P
Sodium	114.4	U	114.4	U	114.4	U	114.4	U	44.212	B	P
Thallium	1.1	U	1.1	U	1.1	U	1.1	U	0.220	U	F
Vanadium	5.5	U	5.5	U	5.5	U	5.5	U	1.100	U	P
Zinc	4.4	U	4.4	U	4.4	U	4.4	U	0.880	U	P
Cyanide	10.0	U	10.0	U	10.0	U	10.0	U	0.500	U	CA
Titanium	1.1	U	2.0	B	2.8	B	1.5	B	0.220	U	P

ICP B# 9345
9346
9349
9350
9351
9352
9353

B09354
+ QC

SEMIVOLATILE ORGANIC DATA VALIDATION SUMMARY FOR DATA PACKAGE:
B09345-TMA-621 (923-E418/621SVOA.UP2)

9413225.1060

MEMORANDUM

MAR 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record

February 11, 1994

FR: Michael Higgins, Golder Associates Inc.

RE: SEMIVOLATILE ORGANIC ANALYSIS DATA VALIDATION SUMMARY FOR DATA PACKAGE B09345-TMA-621 (923-E418/621SVOA.UP2)

INTRODUCTION

This memo presents the results of data validation on data package B09345-TMA-621 prepared by Thermo Analytical, Inc (TMA). A list of samples validated along with the analyses reported and the method(s) of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B09345	9/16/93	SOIL	SEE NOTES
B09346	9/16/93	SOIL	
B09349	9/16/93	SOIL	
B09350	9/17/93	SOIL	
B09351	9/17/93	SOIL	
B09352	9/17/93	SOIL	
B09353	9/17/93	SOIL	
B09354	9/17/93	SOIL	

Notes: 1 All samples were analyzed for Target Compound List Semivolatile Organics.
2 All samples were 100% validated.

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

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

DATA QUALITY OBJECTIVES

Precision. Goals for precision were met.

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

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

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

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

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

Completeness. The data package was complete for all requested analyses. A total of eight (8) samples were validated in this data package with a total of 512 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives of 90%.

94 4225 1062

MAJOR DEFICIENCIES

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

MINOR DEFICIENCIES

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

Laboratory Blanks

- Bis (2-ethylhexyl) phthalate, and di-n-butylphthalate were detected in the method blank. Attachments 2 and 5 provide a summary of the samples affected, data qualification applied and supporting documentation.

TENTATIVELY IDENTIFIED COMPOUND EVALUATION

Tentatively identified compounds (TICs) reported by the laboratory were evaluated during validation and qualified as follows:

- TICs were detected in the sample(s) and associated laboratory blank and were common laboratory contaminants, resulting in qualification of the TICs as unusable (UR) as shown in Attachment 3.

- TICs were detected in the sample(s) and associated laboratory blank and have been qualified due to associated blank contamination and have been determined to be presumptive and valid (UJN).

- TICs were detected in the sample(s) and determined to be valid, resulting in qualification of the results as presumptive and valid (JN).

Revised 6/4/94 002

REFERENCES

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

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

9413225.1063

ATTACHMENT 1

GLOSSARY OF DATA REPORTING QUALIFIERS

9417225.064

GLOSSARY OF ORGANIC DATA REPORTING QUALIFIERS

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

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

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

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

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

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

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

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.

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

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

REVISED
4/21/94

9413225.065

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

9417225.1066

DATA QUALIFICATION SUMMARY - FORM B-7

SDG: NA	REVIEWER: M. HIGGINS	DATE: 940419	PAGE 1 OF 2
COMMENTS: SVOA B09345-TMA-621			
PARAMETER	QUALIFIER	SAMPLES AFFECTED	REASON
BIS (2-ETHYLHEXYL) PHTHALATE	U	B09350 B09352 B09353	PRESENT IN BLANK
DI-N-BUTYLPHTHALATE	U	B09345 B09346 B09349 B09351 B09354	PRESENT IN BLANK

9413225.1067

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90/322.1068

Validated Data Summary, Data Package: B09345-TMA-621

Samp#	B09345	B09346	B09349	B09350	B09351	B09352
Date	9-16-93	9-16-93	9-16-93	9-17-93	9-17-93	9-17-93
Location	299-W19-95	299-W19-97	299-W19-97	299-W19-97	299-W19-97	299-W19-97
Depth	140.00 - 142.50	130.00 - 132.50	165.00 - 167.50	0.00 - 0.00	146.00 - 148.50	146.00 - 148.50

ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

9W4322S.1069

-008

Validated Data Summary, Data Package: B09345-THA-621

	Samp#	B09353		B09354	
	Date	9-17-93		9-17-93	
	Location	299-W19-97		299-W19-97	
	Depth	0.00 - 0.00		156.00 - 158.50	
	Type	FLDBLK		---	
	Comments	---		---	
Parameter	Units	Result	Q	Result	Q
PHENOL	UG/KG	330.000	U	390.000	U
BIS(2-CHLOROETHYL)ETHER	UG/KG	330.000	U	390.000	U
2-CHLOROPHENOL	UG/KG	330.000	U	390.000	U
1,3-DICHLOROBENZENE	UG/KG	330.000	U	390.000	U
1,4-DICHLOROBENZENE	UG/KG	330.000	U	390.000	U
1,2-DICHLOROBENZENE	UG/KG	330.000	U	390.000	U
2-METHYLPHENOL	UG/KG	330.000	U	390.000	U
2,2'-OXYBIS(1-CHLOROPROPANE)	UG/KG	330.000	U	390.000	U
4-METHYLPHENOL	UG/KG	330.000	U	390.000	U
N-NITROSO-DI-N-PROPYLAMINE	UG/KG	330.000	U	390.000	U
HEXACHLOROETHANE	UG/KG	330.000	U	390.000	U
NITROBENZENE	UG/KG	330.000	U	390.000	U
ISOPHORONE	UG/KG	330.000	U	390.000	U
2-NITROPHENOL	UG/KG	330.000	U	390.000	U
2,4-DIMETHYLPHENOL	UG/KG	330.000	U	390.000	U
BIS(2-CHLOROETHOXY)METHANE	UG/KG	330.000	U	390.000	U
2,4-DICHLOROPHENOL	UG/KG	330.000	U	390.000	U
1,2,4-TRICHLOROBENZENE	UG/KG	330.000	U	390.000	U
NAPHTHALENE	UG/KG	330.000	U	390.000	U
4-CHLOROANILINE	UG/KG	330.000	U	390.000	U
HEXACHLOROBUTADIENE	UG/KG	330.000	U	390.000	U
4-CHLORO-3-METHYLPHENOL	UG/KG	330.000	U	390.000	U
2-METHYLNAPHTHALENE	UG/KG	330.000	U	390.000	U
HEXACHLOROCYCLOPENTADIENE	UG/KG	330.000	U	390.000	U
2,4,6-TRICHLOROPHENOL	UG/KG	330.000	U	390.000	U
2,4,5-TRICHLOROPHENOL	UG/KG	790.000	U	940.000	U
2-CHLORONAPHTHALENE	UG/KG	330.000	U	390.000	U
2-NITROANILINE	UG/KG	790.000	U	940.000	U
DIMETHYLPHTHALATE	UG/KG	330.000	U	390.000	U
ACENAPHTHYLENE	UG/KG	330.000	U	390.000	U
3-NITROANILINE	UG/KG	790.000	U	940.000	U
ACENAPHTHENE	UG/KG	330.000	U	390.000	U

Verified 5/10/10

9W4225.1070

Validated Data Summary, Data Package: B09345-TMA-621

	Samp#	B09353		B09354	
	Date	9-17-93		9-17-93	
	Location	299-W19-97		299-W19-97	
	Depth	0.00 - 0.00		156.00 - 158.50	
	Type	FLDBLK		---	
	Comments	---		---	
Parameter	Units	Result	Q	Result	Q
2,4-DINITROPHENOL	UG/KG	790.000	U	940.000	U
4-NITROPHENOL	UG/KG	790.000	U	940.000	U
DIBENZOFURAN	UG/KG	330.000	U	390.000	U
2,4-DINITROTOLUENE	UG/KG	330.000	U	390.000	U
2,6-DINITROTOLUENE	UG/KG	330.000	U	390.000	U
DIETHYLPHTHALATE	UG/KG	330.000	U	390.000	U
4-CHLOROPHENYL-PHENYLETHER	UG/KG	330.000	U	390.000	U
FLUORENE	UG/KG	330.000	U	390.000	U
4-NITROANILINE	UG/KG	790.000	U	940.000	U
4,6-DINITRO-2-METHYLPHENOL	UG/KG	790.000	U	940.000	U
N-NITROSODIPHENYLAMINE	UG/KG	330.000	U	390.000	U
4-BROMOPHENYL-PHENYLETHER	UG/KG	330.000	U	390.000	U
HEXACHLOROBENZENE	UG/KG	330.000	U	390.000	U
PENTACHLOROPHENOL	UG/KG	790.000	U	940.000	U
PHENANTHRENE	UG/KG	330.000	U	390.000	U
ANTHRACENE	UG/KG	330.000	U	390.000	U
CARBAZOLE	UG/KG	330.000	U	390.000	U
DI-N-BUTYLPHTHALATE	UG/KG	110.000	J	390.000	U
FLUORANTHENE	UG/KG	330.000	U	390.000	U
PYRENE	UG/KG	330.000	U	390.000	U
BUTYLBENZYLPHTHALATE	UG/KG	330.000	U	390.000	U
3,3'-DICHLOROBENZIDINE	UG/KG	330.000	U	390.000	U
BENZO(A)ANTHRACENE	UG/KG	330.000	U	390.000	U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/KG	330.000	U	390.000	U
CHRYSENE	UG/KG	330.000	U	390.000	U
DI-N-OCTYLPHTHALATE	UG/KG	330.000	U	390.000	U
BENZO(B)FLUORANTHENE	UG/KG	330.000	U	390.000	U
BENZO(K)FLUORANTHENE	UG/KG	330.000	U	390.000	U
BENZO(A)PYRENE	UG/KG	330.000	U	390.000	U
INDENO(1,2,3-CD)PYRENE	UG/KG	330.000	U	390.000	U
DIBENZ(A,H)ANTHRACENE	UG/KG	330.000	U	390.000	U
BENZO(G,H,I)PERYLENE	UG/KG	330.000	U	390.000	U

Verified 9/20/93

9413225.1071

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09345

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-01B

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 30929S05

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 12 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	370	U
111-44-4	bis(2-Chloroethyl)Ether	370	U
95-57-8	2-Chlorophenol	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
95-48-7	2-Methylphenol	370	U
108-60-1	2,2'-oxybis(1-Chloropropane)	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-Di-n-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
88-75-5	2-Nitrophenol	370	U
105-67-9	2,4-Dimethylphenol	370	U
111-91-1	bis(2-Chloroethoxy)Methane	370	U
120-83-2	2,4-Dichlorophenol	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
59-50-7	4-Chloro-3-Methylphenol	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
88-06-2	2,4,6-Trichlorophenol	370	U
95-95-4	2,4,5-Trichlorophenol	900	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	900	U
131-11-3	Dimethylphthalate	370	U
208-96-8	Acenaphthylene	370	U
99-09-2	3-Nitroaniline	900	U
83-32-9	Acenaphthene	370	U
51-28-5	2,4-Dinitrophenol	900	U

000350

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09345

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-01B

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 30929S05

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 12 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	900	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-phenylether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	900	U
534-52-1	4,6-Dinitro-2-methylphenol	900	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
87-86-5	Pentachlorophenol	900	U
85-01-8	Phenanthrene	370	U
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
84-74-2	Di-n-Butylphthalate	370 ~~41~~	~~J~~
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(a)Anthracene	370	U
117-81-7	bis(2-Ethylhexyl)Phthalate	370	U
218-01-9	Chrysene	370	U
117-84-0	Di-n-Octyl Phthalate	370	U
205-99-2	Benzo(b)Fluoranthene	370	U
207-08-9	Benzo(k)Fluoranthene	370	U
50-32-8	Benzo(a)Pyrene	370	U
193-39-5	Indeno(1,2,3-cd)Pyrene	370	U
53-70-3	Dibenz(a,h)Anthracene	370	U
191-24-2	Benzo(g,h,i)Perylene	370	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

3/90

~~000351~~

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09345

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-01B

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 30929S05

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 12 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

Number TICs found: 6

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	G
1. 123-42-2	4-HYDROXY-4-METHYL-2-PENTANO	6.13	61000	~~BAJN~~	UR
2.	UNKNOWN HYDROCARBON	6.28	110	~~BJ~~	UJN
3.	UNKNOWN HYDROCARBON	6.77	75	~~BJ~~	UJN
4.	UNKNOWN HYDROCARBON	7.37	1100	~~BJ~~	UJN
5.	UNKNOWN HYDROCARBON	8.70	110	~~J~~	UJN
6.	HEXANEDIOIC ACID ESTER ISOME	26.23	18000	~~BJ~~	UJN

Revised 04/19/94

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09346

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-03D

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30930S02

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 7 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/30/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	350	U
111-44-4	bis(2-Chloroethyl)Ether	350	U
95-57-8	2-Chlorophenol	350	U
541-73-1	1,3-Dichlorobenzene	350	U
106-46-7	1,4-Dichlorobenzene	350	U
95-50-1	1,2-Dichlorobenzene	350	U
95-48-7	2-Methylphenol	350	U
108-60-1	2,2'-oxybis(1-Chloropropane)	350	U
106-44-5	4-Methylphenol	350	U
621-64-7	N-Nitroso-Di-n-Propylamine	350	U
67-72-1	Hexachloroethane	350	U
98-95-3	Nitrobenzene	350	U
78-59-1	Isophorone	350	U
88-75-5	2-Nitrophenol	350	U
105-67-9	2,4-Dimethylphenol	350	U
111-91-1	bis(2-Chloroethoxy)Methane	350	U
120-83-2	2,4-Dichlorophenol	350	U
120-82-1	1,2,4-Trichlorobenzene	350	U
91-20-3	Naphthalene	350	U
106-47-8	4-Chloroaniline	350	U
87-68-3	Hexachlorobutadiene	350	U
59-50-7	4-Chloro-3-Methylphenol	350	U
91-57-6	2-Methylnaphthalene	350	U
77-47-4	Hexachlorocyclopentadiene	350	U
88-06-2	2,4,6-Trichlorophenol	350	U
95-95-4	2,4,5-Trichlorophenol	850	U
91-58-7	2-Chloronaphthalene	350	U
88-74-4	2-Nitroaniline	850	U
131-11-3	Dimethylphthalate	350	U
208-96-8	Acenaphthylene	350	U
99-09-2	3-Nitroaniline	850	U
83-32-9	Acenaphthene	350	U
51-28-5	2,4-Dinitrophenol	850	U

Verified 9/30/93

~~000372~~

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09346

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-03D

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30930S02

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 7 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/30/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.3

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	850	U
132-64-9	Dibenzofuran	350	U
121-14-2	2,4-Dinitrotoluene	350	U
606-20-2	2,6-Dinitrotoluene	350	U
84-66-2	Diethylphthalate	350	U
7005-72-3	4-Chlorophenyl-phenylether	350	U
86-73-7	Fluorene	350	U
100-01-6	4-Nitroaniline	850	U
534-52-1	4,6-Dinitro-2-methylphenol	850	U
86-30-6	N-Nitrosodiphenylamine (1)	350	U
101-55-3	4-Bromophenyl-phenylether	350	U
118-74-1	Hexachlorobenzene	350	U
87-86-5	Pentachlorophenol	850	U
85-01-8	Phenanthrene	350	U
120-12-7	Anthracene	350	U
86-74-8	Carbazole	350	U
84-74-2	Di-n-Butylphthalate	350 ~~58~~	~~J~~ U
206-44-0	Fluoranthene	350	U
129-00-0	Pyrene	350	U
85-68-7	Butylbenzylphthalate	350	U
91-94-1	3,3'-Dichlorobenzidine	350	U
56-55-3	Benzo(a)Anthracene	350	U
117-81-7	bis(2-Ethylhexyl)Phthalate	350	U
218-01-9	Chrysene	350	U
117-84-0	Di-n-Octyl Phthalate	350	U
205-99-2	Benzo(b)Fluoranthene	350	U
207-08-9	Benzo(k)Fluoranthene	350	U
50-32-8	Benzo(a)Pyrene	350	U
193-39-5	Indeno(1,2,3-cd)Pyrene	350	U
53-70-3	Dibenz(a,h)Anthracene	350	U
191-24-2	Benzo(g,h,i)Perylene	350	U

(1) - Cannot be separated from Diphenylamine

Verified 10/30/93

-01

~~000373~~

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09346

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-03D

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30930S02

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 7 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/30/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.3

Number TICs found: 8

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1. 123-42-2	4-HYDROXY-4-METHYL-2-PENTANO	6.12	54000	~~BAJ~~N	UR
2.	UNKNOWN HYDROCARBON	6.28	110	~~BJ~~	UJN
3.	UNKNOWN HYDROCARBON	6.77	110	~~BJ~~	UJN
4.	UNKNOWN HYDROCARBON	7.35	1000	~~BJ~~	UJN
5.	UNKNOWN HYDROCARBON	8.70	110	~~BJ~~	UJN
6.	UNKNOWN HYDROCARBON	9.08	71	~~J~~	JN
7.	UNKNOWN HYDROCARBON	23.63	71	~~J~~	JN
8.	HEXANEDIOIC ACID ESTER ISOME	26.22	13000	~~BJ~~	UJN

Reviewed 9/4/1994

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09349

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-02B

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 30929S08

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 20 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	410	U
111-44-4	bis(2-Chloroethyl)Ether	410	U
95-57-8	2-Chlorophenol	410	U
541-73-1	1,3-Dichlorobenzene	410	U
106-46-7	1,4-Dichlorobenzene	410	U
95-50-1	1,2-Dichlorobenzene	410	U
95-48-7	2-Methylphenol	410	U
108-60-1	2,2'-oxybis(1-Chloropropane)	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-Di-n-Propylamine	410	U
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
88-75-5	2-Nitrophenol	410	U
105-67-9	2,4-Dimethylphenol	410	U
111-91-1	bis(2-Chloroethoxy)Methane	410	U
120-83-2	2,4-Dichlorophenol	410	U
120-82-1	1,2,4-Trichlorobenzene	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
59-50-7	4-Chloro-3-Methylphenol	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	410	U
95-95-4	2,4,5-Trichlorophenol	990	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	990	U
131-11-3	Dimethylphthalate	410	U
208-96-8	Acenaphthylene	410	U
99-09-2	3-Nitroaniline	990	U
83-32-9	Acenaphthene	410	U
51-28-5	2,4-Dinitrophenol	990	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09349

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-02B

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 30929S08

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 20 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	990	U
132-64-9	Dibenzofuran	410	U
121-14-2	2,4-Dinitrotoluene	410	U
606-20-2	2,6-Dinitrotoluene	410	U
84-66-2	Diethylphthalate	410	U
7005-72-3	4-Chlorophenyl-phenylether	410	U
86-73-7	Fluorene	410	U
100-01-6	4-Nitroaniline	990	U
534-52-1	4,6-Dinitro-2-methylphenol	990	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
101-55-3	4-Bromophenyl-phenylether	410	U
118-74-1	Hexachlorobenzene	410	U
87-86-5	Pentachlorophenol	990	U
85-01-8	Phenanthrene	410	U
120-12-7	Anthracene	410	U
86-74-8	Carbazole	410	U
84-74-2	Di-n-Butylphthalate	410 ~~240~~	~~J~~ U
206-44-0	Fluoranthene	410	U
129-00-0	Pyrene	410	U
85-68-7	Butylbenzylphthalate	410	U
91-94-1	3,3'-Dichlorobenzidine	410	U
56-55-3	Benzo(a)Anthracene	410	U
117-81-7	bis(2-Ethylhexyl)Phthalate	410	U
218-01-9	Chrysene	410	U
117-84-0	Di-n-Octyl Phthalate	410	U
205-99-2	Benzo(b)Fluoranthene	410	U
207-08-9	Benzo(k)Fluoranthene	410	U
50-32-8	Benzo(a)Pyrene	410	U
193-39-5	Indeno(1,2,3-cd)Pyrene	410	U
53-70-3	Dibenz(a,h)Anthracene	410	U
191-24-2	Benzo(g,h,i)Perylene	410	U

(1) - Cannot be separated from Diphenylamine

Verified 10/30

000397

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09349

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-02B

Sample wt/vol: 30.4 (g/mL) G Lab File ID: 30929S08

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 20 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.8

Number TICs found: 11

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1. 123-42-2	4-HYDROXY-4-METHYL-2-PENTANO	6.15	72000	~~BAJN~~	UR
2.	UNKNOWN HYDROCARBON	6.30	82	~~BJ~~	UJN
3.	UNKNOWN HYDROCARBON	6.78	82	~~BJ~~	UJN
4.	UNKNOWN HYDROCARBON	7.37	1300	~~BJ~~	UJN
5.	UNKNOWN HYDROCARBON	8.72	120	~~BJ~~	UJN
6.	PROPANOIC ACID ESTER ISOMER	18.10	160	~~J~~	JN
7.	UNKNOWN CARBOXYLIC ACID ESTE	21.32	82	~~J~~	JN
8.	UNKNOWN HYDROCARBON	23.65	120	~~J~~	JN
9.	UNKNOWN HYDROCARBON	24.15	82	~~J~~	JN
10.	UNKNOWN HYDROCARBON	24.23	120	~~J~~	JN
11.	HEXANEDIOIC ACID ESTER ISOME	26.22	2900	~~BJ~~	UJN

HAVE 9/30/93

Reviewed 9/30/93

Verified 9/30/93

~~000423~~

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09350

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-04B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30929S10

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 0 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	790	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	790	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
99-09-2	3-Nitroaniline	790	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	790	U

Verified 10/30/93

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09350

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-04B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30929S10

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 0 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

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

CAS NO.	COMPOUND		Q
100-02-7	4-Nitrophenol	790	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	790	U
534-52-1	4,6-Dinitro-2-methylphenol	790	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	790	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	240	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330 ~~36~~	~~BJ~~ LL
218-01-9	Chrysene	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

Verified 9/30/93

~~000425~~

EPA SAMPLE NO.

B09350

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-04B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30929S10

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 0 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1. 123-42-2	4-HYDROXY-4-METHYL-2-PENTANO	6.18	74000	~~BAJN~~	UR
2.	UNKNOWN HYDROCARBON	6.32	66	~~BJ~~	UIN
3.	UNKNOWN HYDROCARBON	6.80	99	~~BJ~~	UIN
4.	UNKNOWN HYDROCARBON	7.38	1300	~~BJ~~	UIN
5.	UNKNOWN HYDROCARBON	8.72	130	~~BJ~~	UIN

1/40419

0004462

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09351

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-05B

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 30929S11

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.2

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	830	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	830	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
99-09-2	3-Nitroaniline	830	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	830	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09351

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-05B

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 30929S11

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.2

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

CAS NO.	COMPOUND	UG/KG	Q
100-02-7	4-Nitrophenol	830	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	830	U
534-52-1	4,6-Dinitro-2-methylphenol	830	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	830	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	340 ~~230~~	~~J~~ U
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340	U
218-01-9	Chrysene	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

000448

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09351

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-05B

Sample wt/vol: 30.6 (g/mL) G Lab File ID: 30929S11

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.2

Number TICs found: 11

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	
1. 123-42-2	4-HYDROXY-4-METHYL-2-PENTANO	6.13	66000	~~BAJN~~	UR
2.	UNKNOWN HYDROCARBON	6.27	170	~~BJ~~	UJN
3.	UNKNOWN HYDROCARBON	6.75	100	~~BJ~~	UJN
4.	UNKNOWN HYDROCARBON	7.33	1300	~~BJ~~	UJN
5.	UNKNOWN HYDROCARBON	8.67	140	~~BJ~~	UJN
6.	UNKNOWN HYDROCARBON	9.05	70	~~JN~~	JN
7.	UNKNOWN HYDROCARBON	12.27	70	~~J~~	JN
8.	PROPANOIC ACID ESTER ISOMER	18.07	170	~~J~~	JN
9.	UNKNOWN CARBOXYLIC ACID ESTE	21.27	100	~~J~~	JN
10.	UNKNOWN HYDROCARBON	24.20	70	~~J~~	JN
11.	HEXANEDIOIC ACID ESTER ISOME	26.18	590	~~BJ~~	UJN

Revised 9/24/94

~~000473~~

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09352

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-06B

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 30929S12

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/30/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	340	U
111-44-4	bis(2-Chloroethyl)Ether	340	U
95-57-8	2-Chlorophenol	340	U
541-73-1	1,3-Dichlorobenzene	340	U
106-46-7	1,4-Dichlorobenzene	340	U
95-50-1	1,2-Dichlorobenzene	340	U
95-48-7	2-Methylphenol	340	U
108-60-1	2,2'-oxybis(1-Chloropropane)	340	U
106-44-5	4-Methylphenol	340	U
621-64-7	N-Nitroso-Di-n-Propylamine	340	U
67-72-1	Hexachloroethane	340	U
98-95-3	Nitrobenzene	340	U
78-59-1	Isophorone	340	U
88-75-5	2-Nitrophenol	340	U
105-67-9	2,4-Dimethylphenol	340	U
111-91-1	bis(2-Chloroethoxy)Methane	340	U
120-83-2	2,4-Dichlorophenol	340	U
120-82-1	1,2,4-Trichlorobenzene	340	U
91-20-3	Naphthalene	340	U
106-47-8	4-Chloroaniline	340	U
87-68-3	Hexachlorobutadiene	340	U
59-50-7	4-Chloro-3-Methylphenol	340	U
91-57-6	2-Methylnaphthalene	340	U
77-47-4	Hexachlorocyclopentadiene	340	U
88-06-2	2,4,6-Trichlorophenol	340	U
95-95-4	2,4,5-Trichlorophenol	830	U
91-58-7	2-Chloronaphthalene	340	U
88-74-4	2-Nitroaniline	830	U
131-11-3	Dimethylphthalate	340	U
208-96-8	Acenaphthylene	340	U
99-09-2	3-Nitroaniline	830	U
83-32-9	Acenaphthene	340	U
51-28-5	2,4-Dinitrophenol	830	U

Verified in 40310 [illegible]

02

~~000474~~

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09352

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-06B

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 30929S12

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/30/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

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

CAS NO.	COMPOUND		Q
100-02-7	4-Nitrophenol	830	U
132-64-9	Dibenzofuran	340	U
121-14-2	2,4-Dinitrotoluene	340	U
606-20-2	2,6-Dinitrotoluene	340	U
84-66-2	Diethylphthalate	340	U
7005-72-3	4-Chlorophenyl-phenylether	340	U
86-73-7	Fluorene	340	U
100-01-6	4-Nitroaniline	830	U
534-52-1	4,6-Dinitro-2-methylphenol	830	U
86-30-6	N-Nitrosodiphenylamine (1)	340	U
101-55-3	4-Bromophenyl-phenylether	340	U
118-74-1	Hexachlorobenzene	340	U
87-86-5	Pentachlorophenol	830	U
85-01-8	Phenanthrene	340	U
120-12-7	Anthracene	340	U
86-74-8	Carbazole	340	U
84-74-2	Di-n-Butylphthalate	230	J
206-44-0	Fluoranthene	340	U
129-00-0	Pyrene	340	U
85-68-7	Butylbenzylphthalate	340	U
91-94-1	3,3'-Dichlorobenzidine	340	U
56-55-3	Benzo(a)Anthracene	340	U
117-81-7	bis(2-Ethylhexyl)Phthalate	340 ~~39~~	~~BJ~~
218-01-9	Chrysene	340	U
117-84-0	Di-n-Octyl Phthalate	340	U
205-99-2	Benzo(b)Fluoranthene	340	U
207-08-9	Benzo(k)Fluoranthene	340	U
50-32-8	Benzo(a)Pyrene	340	U
193-39-5	Indeno(1,2,3-cd)Pyrene	340	U
53-70-3	Dibenz(a,h)Anthracene	340	U
191-24-2	Benzo(g,h,i)Perylene	340	U

(1) - Cannot be separated from Diphenylamine

Q

Verified 10/30 [illegible]

FORM I SV-2

3/90

02

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09352

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-06B

Sample wt/vol: 30.7 (g/mL) G Lab File ID: 30929S12

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 6 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/30/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

Number TICs found: 9

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	4-HYDROXY-4-METHYL-2-PENTANO	6.17	74000	BAJN
2.	UNKNOWN HYDROCARBON	6.30	69	BJ
3.	UNKNOWN HYDROCARBON	6.80	100	BJ
4.	UNKNOWN HYDROCARBON	7.37	1300	BJ
5.	UNKNOWN HYDROCARBON	8.72	140	BJ
6.	UNKNOWN HYDROCARBON	12.32	69	J
7.	PROPANOIC ACID ESTER ISOMER	18.10	240	J
8.	UNKNOWN CARBOXYLIC ACID ESTE	21.32	100	J
9.	HEXANEDIOIC ACID ESTER ISOME	26.22	310	BJ

000500

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09353

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-07B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30929S13

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 0 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/30/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	330	U
111-44-4	bis(2-Chloroethyl)Ether	330	U
95-57-8	2-Chlorophenol	330	U
541-73-1	1,3-Dichlorobenzene	330	U
106-46-7	1,4-Dichlorobenzene	330	U
95-50-1	1,2-Dichlorobenzene	330	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2'-oxybis(1-Chloropropane)	330	U
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-Di-n-Propylamine	330	U
67-72-1	Hexachloroethane	330	U
98-95-3	Nitrobenzene	330	U
78-59-1	Isophorone	330	U
88-75-5	2-Nitrophenol	330	U
105-67-9	2,4-Dimethylphenol	330	U
111-91-1	bis(2-Chloroethoxy)Methane	330	U
120-83-2	2,4-Dichlorophenol	330	U
120-82-1	1,2,4-Trichlorobenzene	330	U
91-20-3	Naphthalene	330	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	330	U
59-50-7	4-Chloro-3-Methylphenol	330	U
91-57-6	2-Methylnaphthalene	330	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	330	U
95-95-4	2,4,5-Trichlorophenol	790	U
91-58-7	2-Chloronaphthalene	330	U
88-74-4	2-Nitroaniline	790	U
131-11-3	Dimethylphthalate	330	U
208-96-8	Acenaphthylene	330	U
99-09-2	3-Nitroaniline	790	U
83-32-9	Acenaphthene	330	U
51-28-5	2,4-Dinitrophenol	790	U

Verified 10/4/93

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09353

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-07B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30929S13

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 0 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/30/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	790	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	790	U
534-52-1	4,6-Dinitro-2-methylphenol	790	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	790	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	110	J
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	330 ~~48~~	~~BJ~~ U
218-01-9	Chrysene	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

000502

EPA SAMPLE NO.

B09353

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-07B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30929S13

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 0 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/30/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 9.1

Number TICs found: 12

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1. 123-42-2	4-HYDROXY-4-METHYL-2-PENTANO	6.15	67000	BAJN	UC
2.	UNKNOWN HYDROCARBON	6.27	66	BJ	UJN
3.	UNKNOWN HYDROCARBON	6.77	99	BJ	UJN
4.	UNKNOWN HYDROCARBON	7.37	1300	BJ	UJN
5.	UNKNOWN HYDROCARBON	8.68	130	BJ	UJN
6.	UNKNOWN ALCOHOL	9.07	66	J	JN
7.	UNKNOWN HYDROCARBON	12.28	66	J	JN
8.	PROPANOIC ACID ESTER ISOMER	18.08	99	J	JN
9.	UNKNOWN HYDROCARBON	23.62	130	J	JN
10.	UNKNOWN HYDROCARBON	24.00	99	J	JN
11.	UNKNOWN HYDROCARBON	24.13	99	J	JN
12.	HEXANEDIOIC ACID ESTER ISOME	26.22	7600	BJ	UJN

New Q 94047

Reviewed 9/14/94

000530

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09354

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-08B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30929S14

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 15 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/30/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

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

CAS NO.	COMPOUND		Q
108-95-2	Phenol	390	U
111-44-4	bis(2-Chloroethyl)Ether	390	U
95-57-8	2-Chlorophenol	390	U
541-73-1	1,3-Dichlorobenzene	390	U
106-46-7	1,4-Dichlorobenzene	390	U
95-50-1	1,2-Dichlorobenzene	390	U
95-48-7	2-Methylphenol	390	U
108-60-1	2,2'-oxybis(1-Chloropropane)	390	U
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitroso-Di-n-Propylamine	390	U
67-72-1	Hexachloroethane	390	U
98-95-3	Nitrobenzene	390	U
78-59-1	Isophorone	390	U
88-75-5	2-Nitrophenol	390	U
105-67-9	2,4-Dimethylphenol	390	U
111-91-1	bis(2-Chloroethoxy)Methane	390	U
120-83-2	2,4-Dichlorophenol	390	U
120-82-1	1,2,4-Trichlorobenzene	390	U
91-20-3	Naphthalene	390	U
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	390	U
59-50-7	4-Chloro-3-Methylphenol	390	U
91-57-6	2-Methylnaphthalene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	390	U
95-95-4	2,4,5-Trichlorophenol	940	U
91-58-7	2-Chloronaphthalene	390	U
88-74-4	2-Nitroaniline	940	U
131-11-3	Dimethylphthalate	390	U
208-96-8	Acenaphthylene	390	U
99-09-2	3-Nitroaniline	940	U
83-32-9	Acenaphthene	390	U
51-28-5	2,4-Dinitrophenol	940	U

~~000531~~

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B09354

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-08B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30929S14

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 15 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/30/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	940	U
132-64-9	Dibenzofuran	390	U
121-14-2	2,4-Dinitrotoluene	390	U
606-20-2	2,6-Dinitrotoluene	390	U
84-66-2	Diethylphthalate	390	U
7005-72-3	4-Chlorophenyl-phenylether	390	U
86-73-7	Fluorene	390	U
100-01-6	4-Nitroaniline	940	U
534-52-1	4,6-Dinitro-2-methylphenol	940	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
101-55-3	4-Bromophenyl-phenylether	390	U
118-74-1	Hexachlorobenzene	390	U
87-86-5	Pentachlorophenol	940	U
85-01-8	Phenanthrene	390	U
120-12-7	Anthracene	390	U
86-74-8	Carbazole	390	U
84-74-2	Di-n-Butylphthalate	390 ~~180~~	~~J~~
206-44-0	Fluoranthene	390	U
129-00-0	Pyrene	390	U
85-68-7	Butylbenzylphthalate	390	U
91-94-1	3,3'-Dichlorobenzidine	390	U
56-55-3	Benzo(a)Anthracene	390	U
117-81-7	bis(2-Ethylhexyl)Phthalate	390	U
218-01-9	Chrysene	390	U
117-84-0	Di-n-Octyl Phthalate	390	U
205-99-2	Benzo(b)Fluoranthene	390	U
207-08-9	Benzo(k)Fluoranthene	390	U
50-32-8	Benzo(a)Pyrene	390	U
193-39-5	Indeno(1,2,3-cd)Pyrene	390	U
53-70-3	Dibenz(a,h)Anthracene	390	U
191-24-2	Benzo(g,h,i)Perylene	390	U

G2

u

(1) - Cannot be separated from Diphenylamine

03

~~000532~~

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B09354

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-08B

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30929S14

Level: (low/med) LOW Date Received: 09/21/93

% Moisture: 15 decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/30/93

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 8.5

Number TICs found: 8

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q	Q
1. 123-42-2	4-HYDROXY-4-METHYL-2-PENTANO	6.12	63000	~~BAJN~~	UR
2.	UNKNOWN HYDROCARBON	6.27	78	~~BJ~~	UJN
3.	UNKNOWN HYDROCARBON	6.75	78	~~BJ~~	UJN
4.	UNKNOWN HYDROCARBON	7.33	1200	~~BJ~~	UJN
5.	UNKNOWN HYDROCARBON	8.67	120	~~BJ~~	UJN
6.	PROPANOIC ACID ESTER ISOMER	18.07	230	~~J~~	JN
7.	HEXANEDIOIC ACID ESTER ISOME	26.18	350	~~BJ~~	UJN
8.	UNKNOWN ALKANE	31.78	120	~~J~~	JN

New Q
9/04/1

Certified 9/04/9

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9117225.1096

CASE NARRATIVE

LABORATORY : TMA/ARLI

CASE : 09-054

CONTRACT ID : WESTINGHOUSE HANFORD COMPANY

SDG RECEIPT DATE : September 21, 1993

1.0 DESCRIPTION OF CASE :

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

9413225.1097

2.0 SAMPLE LIST :

WESTINGHOUSE ID	LAB ID	ANALYSIS REQUESTED	MATRIX
B09345	A3-09-054-01A	V	SOIL
B09345	A3-09-054-01B	SV	SOIL
B09345 MS	A3-09-054-01C	SV	SOIL
B09345 MSD	A3-09-054-01D	SV	SOIL
B09345	A3-09-054-01F	K	SOIL
B09349	A3-09-054-02A	V	SOIL
B09349	A3-09-054-02B	SV	SOIL
B09349	A3-09-054-02E	K	SOIL
B09349 MS	A3-09-054-02F	K	SOIL
B09349 MSD	A3-09-054-02G	K	SOIL
B09346	A3-09-054-03A	V	SOIL
B09346 MS	A3-09-054-03B	V	SOIL
B09346 MSD	A3-09-054-03C	V	SOIL
B09346	A3-09-054-03D	SV	SOIL
B09346	A3-09-054-03G	K	SOIL
B09350	A3-09-054-04A	V	SOIL
B09350	A3-09-054-04B	SV	SOIL
B09350	A3-09-054-04D	K	SOIL
B09351	A3-09-054-05A	V	SOIL
B09351	A3-09-054-05B	SV	SOIL
B09351	A3-09-054-05D	K	SOIL
B09352	A3-09-054-06A	V	SOIL
B09352	A3-09-054-06B	SV	SOIL
B09352	A3-09-054-06D	K	SOIL
B09353	A3-09-054-07A	V	SOIL
B09353	A3-09-054-07B	SV	SOIL
B09353	A3-09-054-07D	K	SOIL
B09354	A3-09-054-08A	V	SOIL
B09354	A3-09-054-08B	SV	SOIL
B09354	A3-09-054-08D	K	SOIL
B09358	A3-09-054-09A	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 CLP SOW holding times.

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

TUNES :

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

3.2.2 SEMIVOLATILE ANALYSIS COMMENTS :

LOW LEVEL SOIL :

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

The Terphenyl-d14 (TPH) surrogate recovery for sample B09353 was slightly above the QC limits. In accordance with the protocol, no further action was required.

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

3.2.3 EXTRACTABLE HYDROCARBONS "KEROSENE RANGE" COMMENTS :

SEQUENCE NOTES :

The sequence was started on 10/05/93 and was analyzed according to the SW-846 Method 8015M. The initial calibration consisted of 5 different levels of the Kerosene standard that ranged from 200ppm to 2000ppm. The continuing calibration at the 1000ppm level was injected amongst a series of samples, in order to verify the instrument stability. The %RSD in the initial calibration and the %D in the continuing calibration were below their 20% and 15% limits, respectively.

94/3225.1098

SAMPLE NOTES :

LOW LEVEL SOIL :

The samples were extracted and analyzed for extractable hydrocarbons in the Kerosene range within the required holding times. Approximately 20 g of each sample was extracted and concentrated to 5 mL.

There were no hydrocarbons in the Kerosene ranged detected in any of the samples. Sample B09336 was spiked with Kerosene and the matrix spike recoveries were between 84% and 87%. The blank spike was prepared at the same time, and had a 75% recovery.

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

9413225.1099

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

Nicole Roth 12/10/93
Nicole Roth
CLP Program Manager

Maureen Parrish 12/10/93
Maureen Parrish
Project Manager

~~DDDDD2C~~

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-16-93

Ice Chest No.: SML 283

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09346

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

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

SER 9-16-93

3)

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

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

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. Harris TMA/HORCAL	9-21-93 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

042

DDDDD2E

Westinghouse Hanford Company

CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS

Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2

Collection Date: 9-17-93

Ice Chest No.: SML 372

Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.:

Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09350 EB

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

2) B09351

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

3) B09352

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

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

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. NARCUSO TMA/NORCAL	9-21-92 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

04

DDDDD26

Westinghouse Hanford Company	CHAIN OF CUSTODY

Custody Form Initiator: L E ROGERS

Company Contact: L E ROGERS — Telephone: 376-7690

Project Designation/Sampling Locations: 200-UP-2 — Collection Date: 9-17-93

Ice Chest No.: SML 283 — Field Logbook No.: EFL-1091

Bill of Lading/Airbill No.: — Offsite Property No.:

Method of Shipment: OVERNIGHT AIR SERVICE

Shipped to: TMA

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

Sample Identification

1) B09353

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

2) B09354

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

3)

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

HER 9-17-93

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

Relinquished by:	Received by:	Date/Time:
9-20-93 1205	H. Narcisa TMA/HORCAL	9-21-93 12:35
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

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

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

9413225.1103

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	(E)

PROJECT: 200-UP-2		DATA PACKAGE: B09345.TMA-621
VALIDATOR: M. HIGGINS	LAB: TMA	DATE: 940304
CASE: NA		SDG: B09345

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 8 SOILS	
B09345	B09352
B09346	B09353
B09349	B09354
B09350	
B09351	

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: FIELD BLANK CONTAINED ADDITIONAL TICs NOT PRESENT IN BLANK. LABORATORY BLANK Field QC will be evaluated in the final summary report. TICs were detected in sample and associated laboratory blank and were common lab contaminants tagged UR

GA90419

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: TERPHENYL-D14 WAS 1% ABOVE THE QC UPPER LIMIT. NO QUALIFICATION WAS APPLIED.

9413225.1105

Revised 9/10/94

047

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: FIELD QC IDENTIFICATION WAS NOT AVAILABLE AT THE TIME OF VALIDATION. FIELD QC ID HAS BEEN REQUESTED AND WILL BE INCLUDE IN FINAL DATA SUMMARY.

7. SYSTEM PERFORMANCE

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

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

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

Comments:

8. COMPOUND IDENTIFICATION AND QUANTITATION

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

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

Comments:

9. REPORTED RESULTS AND QUANTITATION LIMITS

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

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

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

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

Comments:

9413225.1106

HOLDING TIME SUMMARY

SDG: NA	VALIDATOR: M. HIGGINS	DATE: 940307	PAGE 1 OF 1
COMMENTS: B09345 - TMA - 621			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B09345	SVO	9/16/93	9/24/93	9/29/93	≤14 days	≤40 days	None
B09346				9/30/93			
B09349				9/29/93			
B09350		9/17/93					
B09351							
B09352				9/30/93			
B09353							
B09354							

BLANK AND SAMPLE DATA SUMMARY

SDG: NA | VALIDATOR: M. HIGGINS | DATE: 940307 | PAGE 1 OF 1

COMMENTS: B09345 · TMA · 62.1 – SVO

SAMPLE ID	COMPOUND	RESULT	Q	RT	UNITS	5X RESULT	10X RESULT	SAMPLES AFFECTED	QUALIFIER
A309054BLK	4-HYDROXY-4-METHYL 2 PENTANONE	65,000	~~P~~ AJN	6.17	µg/kg	325,000	NA	ALL	UR
	UNKN HC	66	J	6.30		330			UJN
	UKNN HC	99	J	6.78		495			UJN
	UKNOWN HC	1100	J	7.37		5,500			UJN
	UKN HC	66	J	8.70		330			UJN
	HEXANEDIOIC ACID ESTER	16000	J	26.23		80,000		ALL, EXCEPT B09350	UJN
	Bis(2-Ethylhexyl)Phthalate	110	J	—		NA	1100	B09350, B09352 B09353	U
	Di-n-butyl phthalate	30.2	J	—			302	B09345 B09346 B09349 B09351	U
								B09354	U

Revised 940417

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLK0924S

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-BLK

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30929S04

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

% Moisture: _____ decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
100-02-7	4-Nitrophenol	790	U
132-64-9	Dibenzofuran	330	U
121-14-2	2,4-Dinitrotoluene	330	U
606-20-2	2,6-Dinitrotoluene	330	U
84-66-2	Diethylphthalate	330	U
7005-72-3	4-Chlorophenyl-phenylether	330	U
86-73-7	Fluorene	330	U
100-01-6	4-Nitroaniline	790	U
534-52-1	4,6-Dinitro-2-methylphenol	790	U
86-30-6	N-Nitrosodiphenylamine (1)	330	U
101-55-3	4-Bromophenyl-phenylether	330	U
118-74-1	Hexachlorobenzene	330	U
87-86-5	Pentachlorophenol	790	U
85-01-8	Phenanthrene	330	U
120-12-7	Anthracene	330	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-Butylphthalate	330	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	330	U
85-68-7	Butylbenzylphthalate	330	U
91-94-1	3,3'-Dichlorobenzidine	330	U
56-55-3	Benzo(a)Anthracene	330	U
117-81-7	bis(2-Ethylhexyl)Phthalate	110	J
218-01-9	Chrysene	330	U
117-84-0	Di-n-Octyl Phthalate	330	U
205-99-2	Benzo(b)Fluoranthene	330	U
207-08-9	Benzo(k)Fluoranthene	330	U
50-32-8	Benzo(a)Pyrene	330	U
193-39-5	Indeno(1,2,3-cd)Pyrene	330	U
53-70-3	Dibenz(a,h)Anthracene	330	U
191-24-2	Benzo(g,h,i)Perylene	330	U

(1) - Cannot be separated from Diphenylamine

TCL ANALYTE PRESENT IN BLANK 94 0307 X-U

FORM I SV-2

~~000622~~ 12/10/93

EPA SAMPLE NO.

SBLK0924S

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Matrix: (soil/water) SOIL Lab Sample ID: A309054-BLK

Sample wt/vol: 30.2 (g/mL) G Lab File ID: 30929S04

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

% Moisture: _____ decanted: (Y/N) N Date Extracted: 09/24/93

Concentrated Extract Volume: 500.0 (uL) Date Analyzed: 09/29/93

Injection Volume: 2.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

Number TICs found: 6

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123=42=2	4=HYDROXY=4=METHYL=2=PENTANO	6.17	65000	AJN
2.	UNKNOWN HYDROCARBON	6.30	66	JN
3.	UNKNOWN HYDROCARBON	6.78	99	JN
4.	UNKNOWN HYDROCARBON	7.37	1100	JN
5.	UNKNOWN HYDROCARBON	8.70	66	JN
6.	HEXANEDIOIC ACID ESTER ISOME	26.23	16000	JN

94041

5X QUAL IN SAMPLES UP

TICS PRESENT IN BLANK

Revised 940419

940307

FORM I SV-TIC 3/90

05

2D
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: TMA/ARLI Contract: WHC

Lab Code: TMALA Case No.: 09054 SAS No.: NA SDG No.: NA

Level: (low/med) LOW

	EPA SAMPLE NO.	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	S7 (2CP) #	S8 (DCB) #	TOT OUT
01	B09345	86	92	127	91	96	101	86	83	0
02	B09346	82	85	121	87	93	86	86	84	0
03	B09349	89	96	131	93	99	96	88	88	0
04	B09350	94	93	129	96	103	105	92	91	0
05	B09351	89	92	123	91	102	103	88	89	0
06	B09352	89	95	120	91	98	93	88	88	0
07	B09353	95	98	138 *	95	102	105	91	91	1
08	~~B09354~~	76	79	109	76	83	89	73	74	0
09	B09345MS	76	76	107	78	83	85	75	72	0
10	B09345MSD	83	86	122	85	93	95	83	80	0
11	SBLK0924S	83	87	114	84	91	87	81	82	0

		QC LIMITS	
S1 (NBZ)	= Nitrobenzene-d5	(23-120)	
S2 (FBP)	= 2-Fluorobiphenyl	(30-115)	
S3 (TPH)	= Terphenyl-d14	(18-137)	
S4 (PHL)	= Phenol-d5	(24-113)	
S5 (2FP)	= 2-Fluorophenol	(25-121)	
S6 (TBP)	= 2,4,6-Tribromophenol	(19-122)	
S7 (2CP)	= 2-Chlorophenol-d4	(20-130)	(advisory)
S8 (DCB)	= 1,2-Dichlorobenzene-d4	(20-130)	(advisory)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

High Surrogate Recovery
One compound
No Qualification
940307
[illegible]

FORM II SV-2 3/90

No	m/z	Scan	Time	Ref	RRT	Meth	Area(Hght)	Amount	%Tot
64	NOT FOUND								
65	NOT FOUND								
66	~~149~~	~~1766~~	~~22:18~~	~~4~~	~~1.072~~	~~A BB~~	~~7480.~~	~~0.913 NG/UL~~	~~0.16~~
67	NOT FOUND								
68	~~202~~	~~1935~~	~~24:26~~	~~5~~	~~0.889~~	~~A BB~~	~~522.~~	~~0.094 NG/UL~~	~~0.02~~
69	NOT FOUND								
70	NOT FOUND								
71	NOT FOUND								
72	NOT FOUND								
73	149	2178	27:30	5	1.000	A BB	13180.	3.239 NG/UL	0.57
74	NOT FOUND								
75	NOT FOUND								
76	NOT FOUND								
77	NOT FOUND								
78	NOT FOUND								
79	NOT FOUND								
80	NOT FOUND								

DI-N-BUTYL PHTHALATE IN BLANK

= 30.2 µg/kg

F.H. 9/30/93

No	Ret(L)	Ratio	RRT(L)	Ratio	Amnt	Amnt(L)	R. Fac	R. Fac(L)	Ratio
51	17:28		1.032						
52	16:24		0.969						
53	18:06		1.069						
54	17:27		1.031						
55	18:22		1.085						
56	18:23		1.086						
57	18:26		1.089						
58	18:30		0.890						
59	18:42		0.899						
60	19:39		0.945						
61	19:47		0.951						
62	20:17		0.976						
63	20:51		1.003						
64	20:59		1.009						
65	21:24		1.029						
66	22:18	1.00	1.072	1.00	0.91	25.00	0.048	1.321	0.04
67	23:51		1.147						
68	24:25	1.00	0.889	1.00	0.09	25.00	0.005	1.444	0.00
69	26:01		0.947						
70	27:21		0.996						
71	27:27		0.999						
72	27:33		1.003						
73	27:29	1.00	1.000	1.00	3.24	25.00	0.138	1.063	0.13
74	29:33		0.903						
75	31:03		0.948						
76	31:10		0.952						
77	32:28		0.992						
78	38:58		1.191						
79	39:10		1.197						
80	40:54		1.250						

10/01/93

DI-N-BUTYL PHTHALATE IN BLANK

940307