40-40-TMA/RECRA

RECRA ENVIRONMENTAL INC.

Chemical and Environmental Measurement Information

Recra LabNet Philadelphia
Analytical Report 0052643
****REVISION****

Client : TNU-HANFORD B99-078
RFW # : 9910L501
SDG/SAF #: H0590/B99-078

W.O. #: 10985-001-001-9999-00
Date Received: 10-23-99

RECEIVED
FEB 28 2000
EDMC

SEMIVOLATILE

This narrative was corrected to add the TIC search for Tributylphosphate.

Eight (8) soil samples were collected on 10-21-99.

The samples and their associated QC samples were extracted on 10-28-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 11-03,04,05-99.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperatures upon receipt have been recorded on the chain-of-custody.
2. The required holding times for extraction and analysis were met.
3. Non-target compounds were detected in the samples.
4. Sample B0WMD4 required a 5-fold dilution due to high levels of both target and non-target compounds.
5. All surrogate recoveries were within EPA QC limits.
6. All matrix spike recoveries were within EPA QC limits.
7. All blank spike recoveries were within EPA QC limits.
8. The sample was spectrally searched for Butylated Hydroxytoluene and Tributylphosphate; however, they were not identified in the samples.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

01-17-00
Date

som\gorup\data\bna\tnu10501.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 21 pages.

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208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

GLOSSARY OF BNA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
B	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	=	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
A	=	Indicates that a TIC is a suspected aldol-condensation product.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
X	=	This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.

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GLOSSARY OF BNA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.

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Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

RFW Batch Number: **9910L501** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Report Date: 12/15/99 10:37 Page: 1a

C4

	Cust ID:	BOWMD1		BOWMD1		BOWMD1		BOWMD2		BOWMD3		BOWMD4	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		5.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	66	%	65	%	72	%	65	%	70	%	58	%
	2-Fluorobiphenyl	72	%	71	%	81	%	75	%	78	%	67	%
	Terphenyl-d14	75	%	77	%	88	%	79	%	78	%	71	%
	Phenol-d5	55	%	57	%	63	%	57	%	56	%	46	%
	2-Fluorophenol	59	%	60	%	66	%	61	%	62	%	53	%
	2,4,6-Tribromophenol	68	%	72	%	82	%	70	%	66	%	48	%
			fl		fl		fl		fl		fl		fl
Phenol		360	U	56	%	61	%	360	U	360	U	1900	U
bis(2-Chloroethyl)ether		360	U	360	U	360	U	360	U	360	U	1900	U
2-Chlorophenol		360	U	64	%	69	%	360	U	360	U	1900	U
1,3-Dichlorobenzene		360	U	360	U	360	U	360	U	360	U	1900	U
1,4-Dichlorobenzene		360	U	63	%	67	%	360	U	360	U	1900	U
1,2-Dichlorobenzene		360	U	360	U	360	U	360	U	360	U	1900	U
2-Methylphenol		360	U	360	U	360	U	360	U	360	U	1900	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	360	U	360	U	1900	U
4-Methylphenol		360	U	360	U	360	U	360	U	360	U	1900	U
N-Nitroso-di-n-propylamine		360	U	70	%	74	%	360	U	360	U	1900	U
Hexachloroethane		360	U	360	U	360	U	360	U	360	U	1900	U
Nitrobenzene		360	U	360	U	360	U	360	U	360	U	1900	U
Isophorone		360	U	360	U	360	U	360	U	360	U	1900	U
2-Nitrophenol		360	U	360	U	360	U	360	U	360	U	1900	U
2,4-Dimethylphenol		360	U	360	U	360	U	360	U	360	U	1900	U
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	360	U	360	U	1900	U
2,4-Dichlorophenol		360	U	360	U	360	U	360	U	360	U	1900	U
1,2,4-Trichlorobenzene		360	U	74	%	79	%	360	U	360	U	1900	U
Naphthalene		360	U	360	U	360	U	360	U	360	U	1900	U
4-Chloroaniline		360	U	360	U	360	U	360	U	360	U	1900	U
Hexachlorobutadiene		360	U	360	U	360	U	360	U	360	U	1900	U
4-Chloro-3-methylphenol		360	U	70	%	75	%	360	U	360	U	1900	U
2-Methylnaphthalene		360	U	360	U	360	U	360	U	360	U	1900	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	360	U	360	U	1900	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	360	U	360	U	1900	U
2,4,5-Trichlorophenol		900	U	900	U	900	U	900	U	900	U	4600	U

*= Outside of EPA CLP QC limits.

RFW Batch Number: 9910L501 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

Cust ID:	BOWMD1		BOWMD1		BOWMD1		BOWMD2		BOWMD3		BOWMD4	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	360	U	360	U	360	U	360	U	360	U	1900	U
2-Nitroaniline	900	U	900	U	900	U	900	U	900	U	4600	U
Dimethylphthalate	360	U	360	U	360	U	360	U	360	U	1900	U
Acenaphthylene	360	U	360	U	360	U	360	U	360	U	1900	U
2,6-Dinitrotoluene	360	U	360	U	360	U	360	U	360	U	1900	U
3-Nitroaniline	900	U	900	U	900	U	900	U	900	U	4600	U
Acenaphthene	360	U	76	%	83	%	360	U	360	U	1900	U
2,4-Dinitrophenol	900	U	900	U	900	U	900	U	900	U	4600	U
4-Nitrophenol	900	U	71	%	77	%	900	U	900	U	4600	U
Dibenzofuran	360	U	360	U	360	U	360	U	360	U	1900	U
2,4-Dinitrotoluene	360	U	71	%	79	%	360	U	360	U	1900	U
Diethylphthalate	360	U	360	U	360	U	360	U	360	U	1900	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	360	U	360	U	1900	U
Fluorene	360	U	360	U	360	U	360	U	360	U	1900	U
4-Nitroaniline	900	U	900	U	900	U	900	U	900	U	4600	U
4,6-Dinitro-2-methylphenol	900	U	900	U	900	U	900	U	900	U	4600	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	360	U	360	U	1900	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	360	U	360	U	1900	U
Hexachlorobenzene	360	U	360	U	360	U	360	U	360	U	1900	U
Pentachlorophenol	900	U	66	%	76	%	900	U	900	U	4600	U
Phenanthrene	92	J	70	J	88	J	81	J	360	U	1900	U
Anthracene	360	U	360	U	360	U	360	U	360	U	1900	U
Carbazole	360	U	360	U	360	U	360	U	360	U	1900	U
Di-n-butylphthalate	68	J	57	J	56	J	55	J	360	U	1900	U
Fluoranthene	190	J	140	J	170	J	180	J	360	U	1900	U
Pyrene	190	J	80	%	92	%	180	J	360	U	1900	U
Butylbenzylphthalate	360	U	360	U	360	U	360	U	360	U	1900	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	360	U	360	U	1900	U
Benzo(a)anthracene	64	J	44	J	58	J	63	J	360	U	1900	U
Chrysene	120	J	100	J	110	J	120	J	360	U	1900	U
bis(2-Ethylhexyl)phthalate	71	J	97	J	130	J	53	J	72	J	2000	
Di-n-octyl phthalate	360	U	360	U	360	U	360	U	360	U	1900	U
Benzo(b)fluoranthene	110	J	92	J	95	J	74	J	360	U	1900	U
Benzo(k)fluoranthene	120	J	82	J	100	J	82	J	360	U	1900	U
Benzo(a)pyrene	91	J	100	J	88	J	80	J	360	U	1900	U
Indeno(1,2,3-cd)pyrene	61	J	69	J	59	J	60	J	360	U	1900	U
Dibenz(a,h)anthracene	22	J	28	J	22	J	360	U	360	U	1900	U
Benzo(g,h,i)perylene	75	J	83	J	64	J	61	J	360	U	1900	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory
Semivolatiles by GC/MS, HSL List

RFW Batch Number: **9910L501** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Report Date: 12/15/99 10:37 Page: 2a

	Cust ID:	BOWMD5		BOWMD6		BOWMD7		BOWMD8		SBLKFK		SBLKFK BS	
Sample Information	RFW#:	005		006		007		008		99LE1313-MB1		99LE1313-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate Recovery	Nitrobenzene-d5	68	%	72	%	76	%	78	%	71	%	67	%
	2-Fluorobiphenyl	75	%	76	%	80	%	82	%	78	%	74	%
	Terphenyl-d14	75	%	82	%	83	%	86	%	77	%	71	%
	Phenol-d5	59	%	57	%	56	%	61	%	56	%	49	%
	2-Fluorophenol	63	%	60	%	60	%	65	%	59	%	55	%
	2,4,6-Tribromophenol	60	%	51	%	47	%	60	%	62	%	54	%
Phenol		350	U	360	U	350	U	350	U	330	U	49	%
bis(2-Chloroethyl)ether		350	U	360	U	350	U	350	U	330	U	330	U
2-Chlorophenol		350	U	360	U	350	U	350	U	330	U	56	%
1,3-Dichlorobenzene		350	U	360	U	350	U	350	U	330	U	330	U
1,4-Dichlorobenzene		350	U	360	U	350	U	350	U	330	U	68	%
1,2-Dichlorobenzene		350	U	360	U	350	U	350	U	330	U	330	U
2-Methylphenol		350	U	360	U	350	U	350	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		350	U	360	U	350	U	350	U	330	U	330	U
4-Methylphenol		350	U	360	U	350	U	350	U	330	U	330	U
N-Nitroso-di-n-propylamine		350	U	360	U	350	U	350	U	330	U	61	%
Hexachloroethane		350	U	360	U	350	U	350	U	330	U	330	U
Nitrobenzene		350	U	360	U	350	U	350	U	330	U	330	U
Isophorone		350	U	360	U	350	U	350	U	330	U	330	U
2-Nitrophenol		350	U	360	U	350	U	350	U	330	U	330	U
2,4-Dimethylphenol		350	U	360	U	350	U	350	U	330	U	330	U
bis(2-Chloroethoxy)methane		350	U	360	U	350	U	350	U	330	U	330	U
2,4-Dichlorophenol		350	U	360	U	350	U	350	U	330	U	330	U
1,2,4-Trichlorobenzene		350	U	360	U	350	U	350	U	330	U	81	%
Naphthalene		350	U	360	U	350	U	350	U	330	U	330	U
4-Chloroaniline		350	U	360	U	350	U	350	U	330	U	330	U
Hexachlorobutadiene		350	U	360	U	350	U	350	U	330	U	330	U
4-Chloro-3-methylphenol		350	U	360	U	350	U	350	U	330	U	49	%
2-Methylnaphthalene		350	U	360	U	350	U	350	U	330	U	330	U
Hexachlorocyclopentadiene		350	U	360	U	350	U	350	U	330	U	330	U
2,4,6-Trichlorophenol		350	U	360	U	350	U	350	U	330	U	330	U
2,4,5-Trichlorophenol		880	U	900	U	860	U	870	U	840	U	840	U

*= Outside of EPA CLP QC limits.

Cust ID:	BOWMD5		BOWMD6		BOWMD7		BOWMD8		SBLKFK		SBLKFK BS	
RFW#:	005		006		007		008		99LE1313-MB1		99LE1313-MB1	
2-Chloronaphthalene	350	U	360	U	350	U	350	U	330	U	330	U
2-Nitroaniline	880	U	900	U	860	U	870	U	840	U	840	U
Dimethylphthalate	350	U	360	U	350	U	350	U	330	U	330	U
Acenaphthylene	350	U	360	U	350	U	350	U	330	U	330	U
2,6-Dinitrotoluene	350	U	360	U	350	U	350	U	330	U	330	U
3-Nitroaniline	880	U	900	U	860	U	870	U	840	U	840	U
Acenaphthene	350	U	360	U	350	U	350	U	330	U	71	%
2,4-Dinitrophenol	880	U	900	U	860	U	870	U	840	U	840	U
4-Nitrophenol	880	U	900	U	860	U	870	U	840	U	50	%
Dibenzofuran	350	U	360	U	350	U	350	U	330	U	330	U
2,4-Dinitrotoluene	350	U	360	U	350	U	350	U	330	U	58	%
Diethylphthalate	350	U	360	U	350	U	350	U	330	U	330	U
4-Chlorophenyl-phenylether	350	U	360	U	350	U	350	U	330	U	330	U
Fluorene	350	U	360	U	350	U	350	U	330	U	330	U
4-Nitroaniline	880	U	900	U	860	U	870	U	840	U	840	U
4,6-Dinitro-2-methylphenol	880	U	900	U	860	U	870	U	840	U	840	U
N-Nitrosodiphenylamine (1)	350	U	360	U	350	U	350	U	330	U	330	U
4-Bromophenyl-phenylether	350	U	360	U	350	U	350	U	330	U	330	U
Hexachlorobenzene	350	U	360	U	350	U	350	U	330	U	330	U
Pentachlorophenol	880	U	900	U	860	U	870	U	840	U	60	%
Phenanthrene	33	J	360	U	350	U	350	U	330	U	330	U
Anthracene	350	U	360	U	350	U	350	U	330	U	330	U
Carbazole	350	U	360	U	350	U	350	U	330	U	330	U
Di-n-butylphthalate	350	U	360	U	350	U	350	U	330	U	330	U
Fluoranthene	89	J	360	U	350	U	350	U	330	U	330	U
Pyrene	92	J	360	U	350	U	350	U	330	U	71	%
Butylbenzylphthalate	350	U	360	U	350	U	350	U	330	U	330	U
3,3'-Dichlorobenzidine	350	U	360	U	350	U	350	U	330	U	330	U
Benzo(a)anthracene	44	J	360	U	350	U	350	U	330	U	330	U
Chrysene	62	J	360	U	350	U	350	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	110	J	360	U	350	U	350	U	330	U	330	U
Di-n-octyl phthalate	350	U	360	U	350	U	350	U	330	U	330	U
Benzo(b)fluoranthene	37	J	360	U	350	U	350	U	330	U	330	U
Benzo(k)fluoranthene	51	J	360	U	350	U	350	U	330	U	330	U
Benzo(a)pyrene	56	J	360	U	350	U	350	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	34	J	360	U	350	U	350	U	330	U	330	U
Dibenz(a,h)anthracene	350	U	360	U	350	U	350	U	330	U	330	U
Benzo(g,h,i)perylene	38	J	360	U	350	U	350	U	330	U	330	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOWMD1

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L501-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D110508

Level: (low/med) LOW Date Received: 10/23/99

% Moisture: 8 decanted: (Y/N) __ Date Extracted: 10/28/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/05/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 7

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	HEXACHLOROBIPHENYL	23.48	700	J
2.	HEXACHLOROBIPHENYL	23.79	600	J
3.	HEXACHLOROBIPHENYL	24.28	600	J
4.	HEPTACHLOROBIPHENYL	24.54	600	J
5.	HEPTACHLOROBIPHENYL	25.01	400	J
6.	HEPTACHLOROBIPHENYL	25.51	900	J
7.	OCTACHLOROBIPHENYL	27.88	500	J

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOWMD2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L501-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D110511

Level: (low/med) LOW Date Received: 10/23/99

% Moisture: 7 decanted: (Y/N) __ Date Extracted: 10/28/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/05/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 7 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	HEXACHLOROBIPHENYL	23.31	400	J
2.	HEXACHLOROBIPHENYL	23.49	900	J
3.	HEXACHLOROBIPHENYL	23.80	800	J
4.	HEXACHLOROBIPHENYL	24.28	800	J
5.	HEPTACHLOROBIPHENYL	24.55	700	J
6.	HEPTACHLOROBIPHENYL	25.01	400	J
7.	HEPTACHLOROBIPHENYL	25.51	1000	J

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOWMD3

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L501-003

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D110312

Level: (low/med) LOW Date Received: 10/23/99

% Moisture: 8 decanted: (Y/N) __ Date Extracted: 10/28/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/03/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 3 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.98	90	JB
2.	ALDOL CONDENSATE	8.53	100	JA
3.	HEPTACHLOROBIPHENYL	24.56	100	J

FORM 1 SV-TIC RFW (v3.3)

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOWMD4

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L501-004

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D110413

Level: (low/med) LOW Date Received: 10/23/99

% Moisture: 10 decanted: (Y/N) __ Date Extracted: 10/28/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/05/99

Injection Volume: 2.0(uL) Dilution Factor: 5.00

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

Number TICs found: 7 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	HEXACHLOROBIPHENYL	23.48	1000	J
2.	HEXACHLOROBIPHENYL	23.79	1000	J
3.	HEXACHLOROBIPHENYL	24.27	1000	J
4.	HEPTACHLOROBIPHENYL	24.54	1000	J
5.	HEPTACHLOROBIPHENYL	25.01	800	J
6.	HEPTACHLOROBIPHENYL	25.50	1000	J
7.	HEPTACHLOROBIPHENYL	26.23	700	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOWMD5

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L501-005

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D110313

Level: (low/med) LOW Date Received: 10/23/99

% Moisture: 5 decanted: (Y/N) __ Date Extracted: 10/28/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/03/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.98	90	JB
2.	ALDOL CONDENSATE	8.53	200	JA
3.	HEXACHLOROBIPHENYL	23.49	100	J
4.	HEXACHLOROBIPHENYL	23.81	90	J
5.	HEPTACHLOROBIPHENYL	24.56	100	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOWMD6

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L501-006

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D110403

Level: (low/med) LOW Date Received: 10/23/99

% Moisture: 8 decanted: (Y/N) __ Date Extracted: 10/28/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/04/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.95	100	JB
2.	ALDOL CONDENSATE	8.51	200	JA

FORM 1 SV-TIC RFW (v3.3)

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOWMD7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L501-007

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D110404

Level: (low/med) LOW Date Received: 10/23/99

% Moisture: 4 decanted: (Y/N) __ Date Extracted: 10/28/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/04/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 2 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.96	100	JB
2.	ALDOL CONDENSATE	8.51	200	JA

FORM 1 SV-TIC RFW (v3.3)

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

BOWMD8

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L501-008

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D110405

Level: (low/med) LOW Date Received: 10/23/99

% Moisture: 4 decanted: (Y/N) __ Date Extracted: 10/28/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/04/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.95	90	JB
2.	ALDOL CONDENSATE	8.51	90	JA

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKFK

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1313-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D110303

Level: (low/med) LOW Date Received: 10/28/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 10/28/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/03/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

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

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	8.00	80	J

FORM 1 SV-TIC RFW (v3.3)

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 10/23/99 RFW LOT # :9910L501

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BOWMD1	001	S	99LE1313	10/21/99	10/28/99	11/05/99
BOWMD1	001 MS	S	99LE1313	10/21/99	10/28/99	11/05/99
BOWMD1	001 MSD	S	99LE1313	10/21/99	10/28/99	11/05/99
BOWMD2	002	S	99LE1313	10/21/99	10/28/99	11/05/99
BOWMD3	003	S	99LE1313	10/21/99	10/28/99	11/03/99
BOWMD4	004	S	99LE1313	10/21/99	10/28/99	11/05/99
BOWMD5	005	S	99LE1313	10/21/99	10/28/99	11/03/99
BOWMD6	006	S	99LE1313	10/21/99	10/28/99	11/04/99
BOWMD7	007	S	99LE1313	10/21/99	10/28/99	11/04/99
BOWMD8	008	S	99LE1313	10/21/99	10/28/99	11/04/99

LAB QC:

SBLKFK	MB1	S	99LE1313	N/A	10/28/99	11/03/99
SBLKFK	MB1 BS	S	99LE1313	N/A	10/28/99	11/03/99

RECRA LabNet Use Only

9910L501

Custody Transfer Record/Lab Work Request

Page 1 of 1

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) ~~personal~~ ~~wet lab~~ metals

RECRA LabNet

Client: TNU-HANFORD B99-078

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: OT

QC: spec Del: std TAT: 30 day

Date Rec'd: 10/23/99 Date Due: 11/22/99

Account #:

Refrigerator #		1	2													
#/Type Container	Liquid															
	Solid	1AG	1AG							1AG		1AG				1AG
Volume	Liquid															
	Solid	250	500							500		1CT				250
Preservatives		—	—							—		—				—
ANALYSES REQUESTED		ORGANIC								INORG						
		VOA	BNA	Pest/PCB	Herb					Hg Metal	CN	TC Pu, Sr				pH

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	8624H	8025H	8250	OPCB				7470	ICN	1N3N2	1NH3N	1CCL	1CFL	1CSO4	1CNO2	1CNO3	1CPO4	1CPB	1SED	1PH
001	BOWMD 1			S	10-21-99	1012	1	1	✓					1	✓	1	✓	✓	✓	✓	✓	✓	✓	1
002	2					1017	1	1	✓					1	✓	1	✓	✓	✓	✓	✓	✓	✓	1
003	3					1047	1	1	✓					1	✓	1	✓	✓	✓	✓	✓	✓	✓	1
004	4					1102	1	1	✓					1	✓	1	✓	✓	✓	✓	✓	✓	✓	1
005	5					1118	1	1	✓					1	✓	1	✓	✓	✓	✓	✓	✓	✓	1
006	6					1130	1	1	✓					1	✓	1	✓	✓	✓	✓	✓	✓	✓	1
007	7					1140	1	1	✓					1	✓	1	✓	✓	✓	✓	✓	✓	✓	1
008	8					1150	1	1	✓					1	✓	1	✓	✓	✓	✓	✓	✓	✓	1

RECRA LabNet Use Only

11/3/99
SB and TL added to all metals samples per client

Special Instructions:

Saf# B99-078
met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, Ag, V, Zn, Hg.

COMPOSITE WASTE

DATE/REVISIONS:

005 1. Samples Rec'd on Original COC that
2. were crossed off. Recd COC for
3. ID BOWMD5 for Isotopic
4. uranium but not the sample.
5. Run Matrix QC
10/27/99 6. CN added to COC unit review

RECRA LabNet Use Only

Samples were: 1) Shipped ✓ or Hand Delivered ___
Airbill ~~Fed Ex~~ Belford
2) Ambient or ~~Chilled~~
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times Y or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 31 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
8146 1372 4170

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	10-23-99	1000

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

423579530966

2.9

MPS 8125 9553 5317

3.4

2)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-144	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond		SAF No.: B99-078
Ice Chest No.: CTRC 99 012 / CTRC99 023	Field Logbook No.: EL-1511		Method of Shipment: FED EX
Shipped To: ~~TMA~~/RECRA OB 10-21-99	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A
			COA: B20CW1671C

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None				
Type of Container	aG	aG	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1	1				
Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL				
SAMPLE ANALYSIS	Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.				

	Sample No.	Matrix *	Sample Date	Sample Time									
eok	BOWMD1	Soil	10-21-99	1012		X	X	X	X	X		BOW9T9	
82k	BOWMD2	Soil	10-21-99	1017		X	X	X	X	X		BOW9T9	
14h	BOWMD3	Soil	10-21-99	1047		X	X	X	X	X		BOW9W0	
7h	BOWMD4	Soil	10-21-99	1102		X	X	X	X	X		BOW9W0	
1800	~~BOWMD5~~	~~Soil~~	~~10-21-99~~	~~1118~~	RE	X	X	X	X	X		~~BOW9T9~~	Rec'd Samples

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Sign/Print Names	Date/Time
Relinquished By / Received By	Doug Bowers	10-21-99 1400	Ref 3C	10-21-99 1400
Relinquished By / Received By	Ref 3C	10-22-99 0800	[illegible]	10-22-99 0800
Relinquished By / Received By	[illegible]	10-22-99 1330	Fed Ex	
Relinquished By / Received By	Fed Ex	10/23/99 1000	[illegible]	10-23-99 1000

10-22-99

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 -- Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-145	Page 1 of 1 20

Collector Bowers/Trice	Company Contact Chris Cearlock	Telephone No. 372-9574	Project Coordinator TRENT, SJ	Price Code 8N Data Turnaround 45 Days
Project Designation 200 Area Source characterization - 200-CW-1 OU	Sampling Location 200 B pond		SAF No. B99-078	
Ice Chest No. ERC 96.025	Field Logbook No. EL-1511		Method of Shipment FED EX	
Shipped To TMA/RECRA DTB 10-21-99	Offsite Property No. A00 0005		Bill of Lading/Air Bill No. 42357953 0966	
			COA B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	None	None	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1	1
Special Handling and/or Storage	Volume	60mL	60mL	60mL	120mL	250mL	250mL	500mL	500mL	1000mL	1000mL
SAMPLE ANALYSIS		Isotopic Uranium	Nickel-63	Technetium-99	Tritium - H3	VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol}	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.

-pm	Sample No.	Matrix *	Sample Date	Sample Time										
595	Bow M D6	Soil	10-21-99	1130					X	X	X	X	X	
179	Bow M D7	Soil	10-21-99	1140					X	X	X	X	X	
160	Bow M D8	Soil	10-21-99	1150					X	X	X	X	X	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By Doug Bowers Doug Bowers 10-21-99/1400	Date/Time	Received By Ref 3C 10-21-99/1400	Date/Time
Relinquished By Ref 3C 10-22-99/0800	Date/Time	Received By R. Thoren/Rikki Thoren 10-22-99/0800	Date/Time
Relinquished By Rikki Thoren R. Thoren 10-22-99 1430	Date/Time	Received By FED EX	Date/Time
Relinquished By Fed Ex 10-23-99 1000	Date/Time	Received By [illegible] 10-23-99 1000	Date/Time

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 – Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

use BOW8C1 as TA to ship

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
		9910L501	
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-078-144	Page 1 of 1

Collector: Bowers/Trice	Company Contact: Chris Cearlock	Telephone No.: 372-9574	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days		
Project Designation: 200 Area Source characterization - 200-CW-1 OU	Sampling Location: 200 B pond	SAF No.: B99-078	
Ice Chest No.: ERC 96-025	Field Logbook No.: EL-1511	Method of Shipment: FED EX	
Shipped To: TMA/REPRA	Offsite Property No.: A00 0005	Bill of Lading/Air Bill No.: 42357953 09466	
		COA: B20CW1 671C	

POSSIBLE SAMPLE HAZARDS/REMARKS											
	Preservation	None	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	None			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
Special Handling and/or Storage	Volume	60mL	250mL	250mL	500mL	500mL	1000mL	1000mL			
SAMPLE ANALYSIS		Isotopic Uranium	VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Propanol, Ethanol)	pH (Soil) - 9045	See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D, PCBs - 8082	See item (2) in Special Instructions.	See item (3) in Special Instructions.			

	Sample No.	Matrix *	Sample Date	Sample Time									
CPM 00h	BOWMD1	Soil	10-21-99	1012	X					X	BOW9T9		
82h	BOWMD2	Soil	10-21-99	1017	X					X	BOW9T9		
14h	BOWMD3	Soil	10-21-99	1047	X					X	BOW9W0		
7h	BOWMD4	Soil	10-21-99	1102	X					X	BOW9W0		
1900	BOWMD5	Soil	10-21-99	1118	X					X	BOWMD9		

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: Doug Bowers	Date/Time: 10-21-99/1400	Received By: Ref 3C	Date/Time: 10-21-99/1400
Relinquished By: Ref 3C	Date/Time: 10-22-99/0800	Received By: Rikki Thorer	Date/Time: 10-22-99/0800
Relinquished By: Rikki Thorer	Date/Time: 10-22-99/1430	Received By: FEDEX	Date/Time:
Relinquished By: FedEx	Date/Time: 10-23-99 1000	Received By: Sandy Cox	Date/Time: 10-23-99 1000

SPECIAL INSTRUCTIONS

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); ICP Metals - 6010A (Supertrace Add-On) (Beryllium, Copper, Nickel, Vanadium, Zinc); Mercury - 7471 - (CV); Chromium Hex - 7196
(2) NO2/NO3 - 353.1; IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate); Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010
(3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Americium-241); Strontium-89,90 -- Total Sr; Total Uranium (Uranium); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time