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0051489

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-036
RFW# : 9903L508
SDG/SAF# : H0361/B99-036

W.O.# : 10985-001-001-0001-00
Date Received: 03-22-99

AUG 1999 RECEIVED ECMC

METALS CASE NARRATIVE

1. This narrative covers the analyses of 6 TCLP leachate samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. Due to limited sample volume, samples B0TJT0 and B0TJT3 were prepped at 100 fold dilutions for Mercury. Samples B0TJR8 and B0TJR7 required dilutions during sample preparation because the purple color was not maintained for 15 minutes after the addition of potassium permanganate.

3. All analyses were performed within the required holding times.

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value} with the exception of Arsenic, Lead, and Selenium for MB1, MB2 and MB3 and Cadmium for MB1. The Arsenic and Selenium MB results are above 5% of the RCRA limit, however, all method blanks are non-detect. This is a result of the samples being prepped at a 100 fold dilution. All samples, except B0TJT3 for Arsenic, were non-detect for both Arsenic and Selenium. This sample was well below the RCRA limit, thus there is no significant impact. For Cadmium and Lead, the associated sample results are well below the RCRA limit with the exception of sample B0TJT3. This sample is well above the RCRA limit, therefore, there is no significant bias to the result. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

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 22 pages.

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9. The laboratory control sample (LCS) was within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The TCLP extract from sample B0TJR8 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria with the exception of Silver at 17.8%. The recovery in the TCLP Leachate was below 80-120% of the action level so standard addition was not required per Federal Register, Vol.57, No.227, Nov. 24, 1992, page 55117. Refer to the Inorganics Accuracy Report.

11. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

4-26-94
Date

mld/m03-508

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9903L508

Leaching Procedure: __1310 ✓1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A ✓3010A __3015 __3020A __3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846		EPA		STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B		__200.7				__99
Antimony	__6010B	__7041 [5]	__200.7	__204.2			__99
Arsenic	✓6010B	__7060A [5]	__200.7	__206.2	__3113B		__99
Barium	✓6010B		__200.7				__99
Beryllium	__6010B		__200.7				__99
Bismuth	__6010B [1]		__200.7 [1]			__1620	__99
Boron	__6010B		__200.7				__99
Cadmium	✓6010B	__7131A [5]	__200.7	__213.2			__99
Calcium	__6010B		__200.7				__99
Chromium	✓6010B	__7191 [5]	__200.7	__218.2			__SS17
Cobalt	__6010B		__200.7				__99
Copper	__6010B	__7211 [5]	__200.7	__220.2			__99
Iron	__6010B		__200.7				__99
Lead	✓6010B	__7421 [5]	__200.7	__239.2	__3113B		__99
Lithium	__6010B	__7430 [4]	__200.7			__1620	__99
Magnesium	__6010B		__200.7				__99
Manganese	__6010B		__200.7				__99
Mercury	✓7470A [3]	__7471A [3]	__245.1 [2]	__245.5 [2]			__99
Molybdenum	__6010B		__200.7				__99
Nickel	__6010B		__200.7				__99
Potassium	__6010B	__7610 [4]	__200.7	__258.1 [4]			__99
Rare Earths	__6010B [1]		__200.7 [1]			__1620	__99
Selenium	✓6010B	__7740 [5]	__200.7	__270.2	__3113B		__99
Silicon	__6010B [1]		__200.7			__1620	__99
Silica	__6010B		__200.7			__1620	__99
Silver	✓6010B	__7761 [5]	__200.7	__272.2			__99
Sodium	__6010B	__7770 [4]	__200.7	__273.1 [4]			__99
Strontium	__6010B		__200.7				__99
Thallium	__6010B	__7841 [5]	__200.7	__279.2	__200.9		__99
Tin	__6010B		__200.7				__99
Titanium	__6010B		__200.7				__99
Uranium	__6010B [1]		__200.7 [1]			__1620	__99
Vanadium	__6010B		__200.7				__99
Zinc	__6010B		__200.7				__99
Zirconium	__6010B [1]		__200.7 [1]			__1620	__99

Other:_____ Method:_____

L-WI-033/M-03/98

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

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INORGANICS DATA SUMMARY REPORT 04/22/99

CLIENT: TNU-HANFORD B99-036 RECRA LOT #: 9903L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	B0TJT2	Silver, TCLP Leachate	90.0	u	UG/L	90.0	1.0
		Arsenic, TCLP Leachate	330	u	UG/L	330	1.0
		Barium, TCLP Leachate	1030		UG/L	10.0	1.0
		Cadmium, TCLP Leachate	40.0	u	UG/L	40.0	1.0
		Chromium, TCLP Leachate	147		UG/L	60.0	1.0
		Mercury, TCLP Leachate	0.14		UG/L	0.10	1.0
		Lead, TCLP Leachate	248		UG/L	180	1.0
		Selenium, TCLP Leachate	360	u	UG/L	360	1.0
-009	B0TJR8	Silver, TCLP Leachate	90.0	u	UG/L	90.0	1.0
		Arsenic, TCLP Leachate	330	u	UG/L	330	1.0
		Barium, TCLP Leachate	262		UG/L	10.0	1.0
		Cadmium, TCLP Leachate	40.0	u	UG/L	40.0	1.0
		Chromium, TCLP Leachate	126		UG/L	60.0	1.0
		Mercury, TCLP Leachate	10.0	u	UG/L	10.0	100
		Lead, TCLP Leachate	298		UG/L	180	1.0
		Selenium, TCLP Leachate	360	u	UG/L	360	1.0
-010	B0TJT0	Silver, TCLP Leachate	90.0	u	UG/L	90.0	1.0
		Arsenic, TCLP Leachate	330	u	UG/L	330	1.0
		Barium, TCLP Leachate	1700		UG/L	10.0	1.0
		Cadmium, TCLP Leachate	50.0		UG/L	40.0	1.0
		Chromium, TCLP Leachate	135		UG/L	60.0	1.0
		Mercury, TCLP Leachate	33.0		UG/L	10.0	100
		Lead, TCLP Leachate	344		UG/L	180	1.0
		Selenium, TCLP Leachate	360	u	UG/L	360	1.0
-011	B0TJR9	Silver, TCLP Leachate	90.0	u	UG/L	90.0	1.0
		Arsenic, TCLP Leachate	330	u	UG/L	330	1.0
		Barium, TCLP Leachate	601		UG/L	10.0	1.0
		Cadmium, TCLP Leachate	41.0		UG/L	40.0	1.0
		Chromium, TCLP Leachate	1090		UG/L	60.0	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Lead, TCLP Leachate	408		UG/L	180	1.0
		Selenium, TCLP Leachate	360	u	UG/L	360	1.0

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INORGANICS DATA SUMMARY REPORT 04/22/99

CLIENT: TNU-HANFORD B99-036 RECRA LOT #: 9903L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-012	B0TJT3	Silver, TCLP Leachate	159		UG/L	90.0	1.0
		Arsenic, TCLP Leachate	522		UG/L	330	1.0
		Barium, TCLP Leachate	2700		UG/L	10.0	1.0
		Cadmium, TCLP Leachate	2770		UG/L	40.0	1.0
		Chromium, TCLP Leachate	570		UG/L	60.0	1.0
		Mercury, TCLP Leachate	18700		UG/L	1000	10000
		Lead, TCLP Leachate	44400		UG/L	180	1.0
		Selenium, TCLP Leachate	360	u	UG/L	360	1.0
-013	B0TJR7	Silver, TCLP Leachate	100		UG/L	90.0	1.0
		Arsenic, TCLP Leachate	330	u	UG/L	330	1.0
		Barium, TCLP Leachate	1260		UG/L	10.0	1.0
		Cadmium, TCLP Leachate	40.0	u	UG/L	40.0	1.0
		Chromium, TCLP Leachate	499		UG/L	60.0	1.0
		Mercury, TCLP Leachate	1.0	u	UG/L	1.0	10.0
		Lead, TCLP Leachate	312		UG/L	180	1.0
		Selenium, TCLP Leachate	360	u	UG/L	360	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/22/99

CLIENT: TNU-HANFORD B99-036 RECRA LOT #: 9903L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0211-MB1	Silver, TCLP Leachate	90.0	u	UG/L	90.0	1.0
		Arsenic, TCLP Leachate	330	u	UG/L	330	1.0
		Barium, TCLP Leachate	40.0		UG/L	10.0	1.0
		Cadmium, TCLP Leachate	51.0		UG/L	40.0	1.0
		Chromium, TCLP Leachate	201		UG/L	60.0	1.0
		Lead, TCLP Leachate	309		UG/L	180	1.0
		Selenium, TCLP Leachate	360	u	UG/L	360	1.0
BLANK2	99L0211-MB2	Silver, TCLP Leachate	90.0	u	UG/L	90.0	1.0
		Arsenic, TCLP Leachate	330	u	UG/L	330	1.0
		Barium, TCLP Leachate	185		UG/L	10.0	1.0
		Cadmium, TCLP Leachate	40.0	u	UG/L	40.0	1.0
		Chromium, TCLP Leachate	219		UG/L	60.0	1.0
		Lead, TCLP Leachate	325		UG/L	180	1.0
		Selenium, TCLP Leachate	360	u	UG/L	360	1.0
BLANK3	99L0211-MB3	Silver, TCLP Leachate	90.0	u	UG/L	90.0	1.0
		Arsenic, TCLP Leachate	330	u	UG/L	330	1.0
		Barium, TCLP Leachate	368		UG/L	10.0	1.0
		Cadmium, TCLP Leachate	43.0		UG/L	40.0	1.0
		Chromium, TCLP Leachate	150		UG/L	60.0	1.0
		Lead, TCLP Leachate	381		UG/L	180	1.0
		Selenium, TCLP Leachate	360	u	UG/L	360	1.0
BLANK1	99C0097-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	99C0097-MB2	Mercury, TCLP Leachate	10.0	u	UG/L	10.0	100
BLANK3	99C0097-MB3	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0

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INORGANICS ACCURACY REPORT 04/22/99

CLIENT: TNU-HANFORD B99-036 RECRA LOT #: 9903L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-009	B0TJR8	Silver, TCLP Leachate	89100	90.0 u	500000	17.8	1.0
		Arsenic, TCLP Leachate	462000	330 u	500000	92.4	1.0
		Barium, TCLP Leachate	8510000	262	000000	85.1	1.0
		Cadmium, TCLP Leachate	90100	40.0 u	100000	90.1	1.0
		Chromium, TCLP Leachat	471000	126	500000	94.1	1.0
		Mercury, TCLP Leachate	197	10.0 u	200	98.4	100
		Lead, TCLP Leachate	478000	298	500000	95.6	1.0
		Selenium, TCLP Leachat	90400	360 u	100000	90.4	1.0

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INORGANICS PRECISION REPORT 04/22/99

CLIENT: TNU-HANFORD B99-036 RECRA LOT #: 9903L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-009REP	B0TJR8	Silver, TCLP Leachate	90.0 u	90.0 u	NC	1.0
		Arsenic, TCLP Leachate	330 u	330 u	NC	1.0
		Barium, TCLP Leachate	262	188	32.9	1.0
		Cadmium, TCLP Leachate	40.0 u	53.0	~~NC~~ 28	1.0
		Chromium, TCLP Leachate	126	141	11.2	1.0
		Mercury, TCLP Leachate	10.0 u	10.0 u	NC	100
		Lead, TCLP Leachate	298	399	29.0	1.0
		Selenium, TCLP Leachate	360 u	360 u	NC	1.0

correction MO 4/22/99

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/22/99

CLIENT: TNU-HANFORD B99-036 RECRA LOT #: 9903L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0211-LC1	Silver, LCS	49400	50000	UG/L	98.9
		Arsenic, LCS	945000	000000	UG/L	94.5
		Barium, LCS	494000	500000	UG/L	98.7
		Cadmium, LCS	23900	25000	UG/L	95.8
		Chromium, LCS	50100	50000	UG/L	100.2
		Lead, LCS	246000	250000	UG/L	98.4
		Selenium, LCS	912000	000000	UG/L	91.2
LCS1	99C0097-LC1	Mercury, LCS	5.2	5.0	UG/L	104.9

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-036

DATE RECEIVED: 03/22/99 RFW LOT # :9903L508

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TJT2						
TCLP	001	OI	99LTO034	03/09/99	03/30/99	03/31/99
B0TJR8						
TCLP	002	OI	99LTO034	03/08/99	03/30/99	03/31/99
B0TJT0						
TCLP	003	W	99LTF033	03/08/99	03/30/99	03/31/99
B0TJR9						
TCLP	004	OI	99LTO034	03/08/99	03/30/99	03/31/99
B0TJT3						
TCLP	005	W	99LTF033	03/09/99	03/30/99	03/31/99
B0TJR7						
TCLP	007	OI	99LTO034	03/08/99	03/30/99	03/31/99
B0TJT2						
SILVER, TCLP LEACHAT	008	W	99L0211	03/31/99	04/05/99	04/06/99
ARSENIC, TCLP LEACHA	008	W	99L0211	03/31/99	04/05/99	04/06/99
BARIUM, TCLP LEACHAT	008	W	99L0211	03/31/99	04/05/99	04/06/99
CADMIUM, TCLP LEACHA	008	W	99L0211	03/31/99	04/05/99	04/06/99
CHROMIUM, TCLP LEACH	008	W	99L0211	03/31/99	04/05/99	04/06/99
MERCURY, TCLP LEACHA	008	W	99C0097	03/31/99	03/31/99	04/01/99
LEAD, TCLP LEACHATE	008	W	99L0211	03/31/99	04/05/99	04/06/99
SELENIUM, TCLP LEACH	008	W	99L0211	03/31/99	04/05/99	04/06/99
B0TJR8						
SILVER, TCLP LEACHAT	009	W	99L0211	03/31/99	04/05/99	04/06/99

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-036

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CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SILVER, TCLP LEACHAT	009 REP	W	99L0211	03/31/99	04/05/99	04/06/99
SILVER, TCLP LEACHAT	009 MS	W	99L0211	03/31/99	04/05/99	04/06/99
ARSENIC, TCLP LEACHA	009	W	99L0211	03/31/99	04/05/99	04/06/99
ARSENIC, TCLP LEACHA	009 REP	W	99L0211	03/31/99	04/05/99	04/06/99
ARSENIC, TCLP LEACHA	009 MS	W	99L0211	03/31/99	04/05/99	04/06/99
BARIUM, TCLP LEACHAT	009	W	99L0211	03/31/99	04/05/99	04/06/99
BARIUM, TCLP LEACHAT	009 REP	W	99L0211	03/31/99	04/05/99	04/06/99
BARIUM, TCLP LEACHAT	009 MS	W	99L0211	03/31/99	04/05/99	04/06/99
CADMIUM, TCLP LEACHA	009	W	99L0211	03/31/99	04/05/99	04/06/99
CADMIUM, TCLP LEACHA	009 REP	W	99L0211	03/31/99	04/05/99	04/06/99
CADMIUM, TCLP LEACHA	009 MS	W	99L0211	03/31/99	04/05/99	04/06/99
CHROMIUM, TCLP LEACH	009	W	99L0211	03/31/99	04/05/99	04/06/99
CHROMIUM, TCLP LEACH	009 REP	W	99L0211	03/31/99	04/05/99	04/06/99
CHROMIUM, TCLP LEACH	009 MS	W	99L0211	03/31/99	04/05/99	04/06/99
MERCURY, TCLP LEACHA	009	W	99C0097	03/31/99	03/31/99	04/01/99
MERCURY, TCLP LEACHA	009 REP	W	99C0097	03/31/99	03/31/99	04/01/99
MERCURY, TCLP LEACHA	009 MS	W	99C0097	03/31/99	03/31/99	04/01/99
LEAD, TCLP LEACHATE	009	W	99L0211	03/31/99	04/05/99	04/06/99
LEAD, TCLP LEACHATE	009 REP	W	99L0211	03/31/99	04/05/99	04/06/99
LEAD, TCLP LEACHATE	009 MS	W	99L0211	03/31/99	04/05/99	04/06/99
SELENIUM, TCLP LEACH	009	W	99L0211	03/31/99	04/05/99	04/06/99
SELENIUM, TCLP LEACH	009 REP	W	99L0211	03/31/99	04/05/99	04/06/99
SELENIUM, TCLP LEACH	009 MS	W	99L0211	03/31/99	04/05/99	04/06/99
B0TJT0						
SILVER, TCLP LEACHAT	010	W	99L0211	03/31/99	04/05/99	04/06/99
ARSENIC, TCLP LEACHA	010	W	99L0211	03/31/99	04/05/99	04/06/99
BARIUM, TCLP LEACHAT	010	W	99L0211	03/31/99	04/05/99	04/06/99
CADMIUM, TCLP LEACHA	010	W	99L0211	03/31/99	04/05/99	04/06/99
CHROMIUM, TCLP LEACH	010	W	99L0211	03/31/99	04/05/99	04/06/99
MERCURY, TCLP LEACHA	010	W	99C0097	03/31/99	03/31/99	04/01/99
LEAD, TCLP LEACHATE	010	W	99L0211	03/31/99	04/05/99	04/06/99
SELENIUM, TCLP LEACH	010	W	99L0211	03/31/99	04/05/99	04/06/99
B0TJR9						
SILVER, TCLP LEACHAT	011	W	99L0211	03/31/99	04/05/99	04/06/99

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-036

DATE RECEIVED: 03/22/99 RFW LOT # :9903L508

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TCLP LEACHA	011	W	99L0211	03/31/99	04/05/99	04/06/99
BARIUM, TCLP LEACHAT	011	W	99L0211	03/31/99	04/05/99	04/06/99
CADMIUM, TCLP LEACHA	011	W	99L0211	03/31/99	04/05/99	04/06/99
CHROMIUM, TCLP LEACH	011	W	99L0211	03/31/99	04/05/99	04/06/99
MERCURY, TCLP LEACHA	011	W	99C0097	03/31/99	03/31/99	04/01/99
LEAD, TCLP LEACHATE	011	W	99L0211	03/31/99	04/05/99	04/06/99
SELENIUM, TCLP LEACH	011	W	99L0211	03/31/99	04/05/99	04/06/99
B0TJT3						
SILVER, TCLP LEACHAT	012	W	99L0211	03/31/99	04/05/99	04/06/99
ARSENIC, TCLP LEACHA	012	W	99L0211	03/31/99	04/05/99	04/06/99
BARIUM, TCLP LEACHAT	012	W	99L0211	03/31/99	04/05/99	04/06/99
CADMIUM, TCLP LEACHA	012	W	99L0211	03/31/99	04/05/99	04/06/99
CHROMIUM, TCLP LEACH	012	W	99L0211	03/31/99	04/05/99	04/06/99
MERCURY, TCLP LEACHA	012	W	99C0097	03/31/99	03/31/99	04/01/99
LEAD, TCLP LEACHATE	012	W	99L0211	03/31/99	04/05/99	04/06/99
SELENIUM, TCLP LEACH	012	W	99L0211	03/31/99	04/05/99	04/06/99
B0TJR7						
SILVER, TCLP LEACHAT	013	W	99L0211	03/31/99	04/05/99	04/06/99
ARSENIC, TCLP LEACHA	013	W	99L0211	03/31/99	04/05/99	04/06/99
BARIUM, TCLP LEACHAT	013	W	99L0211	03/31/99	04/05/99	04/06/99
CADMIUM, TCLP LEACHA	013	W	99L0211	03/31/99	04/05/99	04/06/99
CHROMIUM, TCLP LEACH	013	W	99L0211	03/31/99	04/05/99	04/06/99
MERCURY, TCLP LEACHA	013	W	99C0097	03/31/99	03/31/99	04/01/99
LEAD, TCLP LEACHATE	013	W	99L0211	03/31/99	04/05/99	04/06/99
SELENIUM, TCLP LEACH	013	W	99L0211	03/31/99	04/05/99	04/06/99

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L0211	N/A	04/05/99	04/06/99
SILVER, TCLP LEACHAT	MB1	W	99L0211	N/A	04/05/99	04/06/99
SILVER, TCLP LEACHAT	MB2	W	99L0211	N/A	04/05/99	04/06/99
SILVER, TCLP LEACHAT	MB3	W	99L0211	N/A	04/05/99	04/06/99
ARSENIC LABORATORY	LC1 BS	W	99L0211	N/A	04/05/99	04/06/99
ARSENIC, TCLP LEACHA	MB1	W	99L0211	N/A	04/05/99	04/06/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-036

DATE RECEIVED: 03/22/99 RFW LOT # :9903L508

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ARSENIC, TCLP LEACHA	MB2	W	99L0211	N/A	04/05/99	04/06/99
ARSENIC, TCLP LEACHA	MB3	W	99L0211	N/A	04/05/99	04/06/99
BARIUM LABORATORY	LC1 BS	W	99L0211	N/A	04/05/99	04/06/99
BARIUM, TCLP LEACHAT	MB1	W	99L0211	N/A	04/05/99	04/06/99
BARIUM, TCLP LEACHAT	MB2	W	99L0211	N/A	04/05/99	04/06/99
BARIUM, TCLP LEACHAT	MB3	W	99L0211	N/A	04/05/99	04/06/99
CADMIUM LABORATORY	LC1 BS	W	99L0211	N/A	04/05/99	04/06/99
CADMIUM, TCLP LEACHA	MB1	W	99L0211	N/A	04/05/99	04/06/99
CADMIUM, TCLP LEACHA	MB2	W	99L0211	N/A	04/05/99	04/06/99
CADMIUM, TCLP LEACHA	MB3	W	99L0211	N/A	04/05/99	04/06/99
CHROMIUM LABORATORY	LC1 BS	W	99L0211	N/A	04/05/99	04/06/99
CHROMIUM, TCLP LEACH	MB1	W	99L0211	N/A	04/05/99	04/06/99
CHROMIUM, TCLP LEACH	MB2	W	99L0211	N/A	04/05/99	04/06/99
CHROMIUM, TCLP LEACH	MB3	W	99L0211	N/A	04/05/99	04/06/99
MERCURY LABORATORY	LC1 BS	W	99C0097	N/A	03/31/99	04/01/99
MERCURY, TOTAL	MB1	W	99C0097	N/A	03/31/99	04/01/99
MERCURY, TCLP LEACHA	MB2	W	99C0097	N/A	03/31/99	04/01/99
MERCURY, TCLP LEACHA	MB3	W	99C0097	N/A	03/31/99	04/01/99
LEAD LABORATORY	LC1 BS	W	99L0211	N/A	04/05/99	04/06/99
LEAD, TCLP LEACHATE	MB1	W	99L0211	N/A	04/05/99	04/06/99
LEAD, TCLP LEACHATE	MB2	W	99L0211	N/A	04/05/99	04/06/99
LEAD, TCLP LEACHATE	MB3	W	99L0211	N/A	04/05/99	04/06/99
SELENIUM LABORATORY	LC1 BS	W	99L0211	N/A	04/05/99	04/06/99
SELENIUM, TCLP LEACH	MB1	W	99L0211	N/A	04/05/99	04/06/99
SELENIUM, TCLP LEACH	MB2	W	99L0211	N/A	04/05/99	04/06/99
SELENIUM, TCLP LEACH	MB3	W	99L0211	N/A	04/05/99	04/06/99

RECRA LabNet Use Only
99031508

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-036
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-0001-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 days
Date Rec'd: 3/22/99 Date Due: 4/21/99
Account #:

Refrigerator #		1	3	3						3	3	3	3			
#/Type Container	Liquid	1g	1g	1g						1g	1g	1g				
	Solid															
Volume	Liquid	40	40	40						120	120	120				
	Solid															
Preservatives													w/cd			
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		RECRA LabNet Use Only														
		8260 24H	8025H	8082B					8010CN	10NTO	1PH	1FLSH	1TCLP	1SFD		

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	8260 24H	8025H	8082B					8010CN	10NTO	1PH	1FLSH	1TCLP	1SFD		
001	B0TJT2			O	3/9/99	0830	✓	✓	✓					✓	✓	✓	✓	✓	✓		
2	R8			O	3/8/99	1025	✓	✓	✓					✓	✓	✓	✓	✓	✓		
3	T0			W	3/8/99	1100									✓		✓	✓			
4	R9			O	3/8/99	1042	✓	✓	✓					✓	✓	✓	✓	✓	✓		
5	T3			W	3/9/99	0900								✓				✓	✓		
6	T4			O	3/9/99	1015										✓					
7	R7			O	3/8/99	1000	✓	✓	✓					✓	✓	✓	✓	✓	✓		
8	T2 tclp of 001			L	*	—								✓							
9	R8 2					—								✓							
010	T0 3					—								✓							

Special Instructions:

oils - do dilute + shoot for BNA + PCB
005 - severely limited volume
003 - slightly limited volume

Comp waste

DATE/REVISIONS:

→ 1. Run matrix QC
→ 2. See Client COC for
3. special instructions
* 4. see labchron
5.
6.

Relinquished by	Received by	Date	Time
See original		3/22/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

Samples were:
1) Shipped ..... or Hand Delivered .....
Airbill # .....
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 C

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

Original

RECRA LabNet Use Only
9903L508

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-036
Est. Final Proj. Sampling Date:
Project #:
Project Contact/Phone #:
RECRA Project Manager:
QC: Del: TAT:
Date Rec'd: Date Due:
Account #:

Refrigerator #																
#/Type Container	Liquid															
	Solid															
Volume	Liquid															
	Solid															
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		RECRA LabNet Use Only														

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	RECRA LabNet Use Only
011	BOTR9 tclp of 004			L	*	–	✓
012	↓ T3 ↓ 5			↓	↓	–	✓
013	↓ R7 ↓ 7			↓	↓	–	✓

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Jackey	Joder	3/22/99	0930

Relinquished by	Received by	Date	Time

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

RECRA LabNet Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill #
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'd Y or N

Cooler Temp. C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-41

Collector: Douglas L. Bowers / SJ GALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 4 of 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown
FLAMMABLE

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None						
Type of Container	aGs*	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	40mL	~~60~~ 40mL	~~60~~ 40mL	120mL	120mL						
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010						
Sample No.	Matrix *	Sample Date	Sample Time								
BOTJR9	Other Liquid	3-8-99	1042	X	X	X	X	X			BOTJV9

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: SJ GALE	Date/Time: 3/8/99 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/1[illegible]	Received By: J. Italiano	Date/Time: 3-22-99/0[illegible]
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

POSSIBLE PURE ORGANIC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: J. Italiano	Title: Lab Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036- 06	Page 1 of 1

Collector: Douglas L. Bowers / S.J. GALE	Company Contact: Thomas M. Brown — Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ	Price Code / Data Turnaround: 45 Days
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX	SAF No.: B99-036	
Ice Chest No.: 1A2 1 of 4	Field Logbook No.: EL-1309-3	Method of Shipment: Overnight Carrier - Fed Ex	
Shipped To: RECRA	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA BR1S2A2W28	

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	COOL 4C				
Type of Container	aGs*	aG	aG	aG	aG	POLY				
No. of Container(s)	1	1	1	1	1	1				
Volume	40mL	60mL	60mL	120ml	120mL	120ml				
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010	SEE ITEM 1),(2) SPECIAL INST.				

Sample No.	Matrix *	Sample Date	Sample Time										
BOTJT3	Other Liquid	3-9-99	0900						X			BOTJW3	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: S.J. GALE	Date/Time: 3/8/99 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/0930	Received By: [illegible]	Date/Time: 3-22-99/0930
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

(2) HOMOGENIZE AND RUN AS SINGLE PHASE

MPS 976 0694 212

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: [illegible]	Title: Lab Tech.	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-58	Page 1 of 1

Collector Douglas L. Bowers / S. JGALE	**Company Contact** Thomas M. Brown **Telephone No.** 509-376-1547	**Project Coordinator** TRENT, SJ	**Price Code** / **Data Turnaround** 45 Days
Project Designation 202-S REDOX Miscellaneous Waste - Other Liquid	**Sampling Location** 202-S REDOX	**SAF No.** B99-036	
Ice Chest No. 1A2 3OF4	**Field Logbook No.** EL-1309-3	**Method of Shipment** Overnight Carrier - Fed Ex	
Shipped To RECRA	**Offsite Property No.**	**Bill of Lading/Air Bill No.**	
		COA BRISZA2W28	

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	COOL 4C ~~None~~						
Type of Container	aGs*	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	40mL	60mL	60mL	120mL	120mL						
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040; Ignitability - 1010 SEE ITEM (2) SPECIAL INST.						

Sample No.	Matrix *	Sample Date	Sample Time										
BOTJT4	Other Liquid	3-9-99	1015					X				BOTJW4	

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

(2) IF MATERIAL IS LEFT OVER, CONTACT BHI SAMPLE MANAGEMENT

FedEx 976 0694 221
CUSTOMER PACKAGE TRACKING NUMBER - PULL UP PURPLE TAB

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
SJGALE MAPER	3/8/99 1100	FED EX	
Relinquished By	Date/Time	Received By	Date/Time
Fed Ex	3-22-99/0830	J. Italiano	3-22-99/0830
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

LABORATORY SECTION	Received By J. Italiano	Title Lab. Tech.		Date/Time 3-22-99/0830
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By	Date/Time

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-57	Page 1 of 1

Collector Douglas L. Bowers /SJ GALE	**Company Contact** Thomas M. Brown **Telephone No.** 509-376-1547	**Project Coordinator** TRENT, SJ	**Price Code** / **Data Turnaround** 45 Days
Project Designation 202-S REDOX Miscellaneous Waste - Other Liquid	**Sampling Location** 202-S REDOX	**SAF No.** B99-036	
Ice Chest No. 1A2 3OF4	**Field Logbook No.** EL-1309-3	**Method of Shipment** Overnight Carrier - Fed Ex	
Shipped To RECRA	**Offsite Property No.**	**Bill of Lading/Air Bill No.**	
		COA BR1SZA2W28	

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None						
Type of Container	aGs*	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	40mL	40 ~~60~~mL	40 ~~60~~mL	120mL	120mL						
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010						
Sample No.	Matrix *	Sample Date	Sample Time								
B0TJR7	Other Liquid	3-8-99	1000	X	X	X	X	X				B0TJN7

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

MPS 976 0694 246

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

CHAIN OF POSSESSION	**Sign/Print Names**		
Relinquished By: S.J. GALE	Date/Time: 3/8/99 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/0930	Received By: [signature]	Date/Time: 3-22-99/0930
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

LABORATORY SECTION	Received By: [signature]	Title: Lab Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

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Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-036-47

Collector Douglas L. Bowers / SJ GALE	**Company Contact** Thomas M. Brown	**Telephone No.** 509-376-1547	**Project Coordinator** TRENT, SJ
Project Designation 202-S REDOX Miscellaneous Waste - Other Liquid	**Sampling Location** 202-S REDOX		**SAF No.** B99-036
Ice Chest No. 1A2 2 of 4	**Field Logbook No.** EL-1309-3		**Method of Shipment** Overnight Carrier - Fed Ex
Shipped To RECRA	**Offsite Property No.**		**Bill of Lading/Air Bill No.**

Price Code

Data Turnaround 45 Days

COA BR1S2A2W2S

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown.

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	cool 4C				
Type of Container	aGs*	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	40mL	40mL	40mL	120mL	120mL	120mL				
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010	SEE ITEM				

Sample No.	Matrix *	Sample Date	Sample Time										
BOTJT2	Other Liquid	3.9.99	0830	X	X	X	X	X				BOT	JW2
~~BOTJT4~~	~~"~~	~~3-9-99~~	~~1015~~						X			~~BOT~~	~~JW4~~

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
SJ GALE	3/8/99 1100	FED EX	
Fed Ex	3-22-99/0920	J. Wilkins	3-22-99/0930

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION Received By: J. Wilkins Title: Lab. Tech Date/Time: 3-22-99/0930

FINAL SAMPLE DISPOSITION Disposal Method: Disposed By: Date/Time:

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-036-01

Collector: Douglas L. Bowers / JJGALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 4 of 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA: BRISZA 2W28

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	Cool 4C					
Type of Container	aGs*	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	40ml.	40 ~~60~~ml.	40 ~~60~~ml.	120ml.	120ml.	120ml					
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040; Ignitability - 1010	SEE ITEM (2)					

Sample No.	Matrix *	Sample Date	Sample Time										
~~BOTJR7~~	Other Liquid	3-8-99	1000	X	X	X	X	X	JJG	31799			BOTJV7
BOTJR8	"	3-8-99	1025	X	X	X	X	X					BOTJV8
BOTJT0	"	3-8-99	1100						X				BOTJW0

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
JJGALE	31899 1100	FED EX	
Fed Ex	3-22-99/0930	J. Stallmo	3-22-99/0930

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030
(2) IGNITABILITY, pH, TCLP METALS, MERCURY

MPS 976 0694 237

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

LABORATORY SECTION	Received By: J. Stallmo	Title: Lab Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

22

RECRA
LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

MAY 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-036
RFW# : 9903L508
SDG# : H0361
SAF# : B99-036

W.O. # : 10985-001-001-9999-00
Date Received: 03-22-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 2 water and 5 oil samples.

2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary. Sulfide was not analyzed on Sample BOTJT3 due to insufficient volume.

3. Sample holding times as required by the method and/or contract were met with the exception of pH water samples and Sulfide samples which were received past hold and Total Cyanide samples which were analyzed past hold.

4. The method blanks were within method criteria.

5. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Sulfide was within the 20% Relative Percent Difference (RPD) control limit.

6. The matrix spike recoveries were within the 75-125% control limits. The matrix spike duplicates were within the 20% RPD control limit.

7. The replicate analyses were within the 20% RPD control limit with the exception of Sulfide.

8. Samples B0TJT2, B0TJR8, B0TJR9 and B0TJR7 were reported on a wet weight basis for Total Cyanide and Sulfide.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

5-10-99
Date

njp\i03-508

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 20 pages.

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

WET CHEMISTRY METHODS GLOSSARY FOR ANALYSIS OF WATER SAMPLES

	EPA 600	SW846	OTHER
Acidity	__305.1		
__Alkalinity __Bicarbonate __Carbonate	__310.1		
BOD	__405.1		__5210B (b)
Ion Chromatography:			
__Bromide __Chloride __Fluoride	__300.0	__9056	
__Nitrite __Nitrate __Phosphate	__300.0	__9056	
__Sulfate __Formate __Acetate __Oxalate	__300.0	__9056	
Chloride	__325.2	__9251	
Chlorine Residual	__330.5 (mod)		
Cyanide Amenable to Chlorination	__335.2	__9010A	
Cyanide (Total)	__335.2	✓9010A B __9012	__ILM04.0 (e)
Cyanide, Weak Acid Dissociable			__412 (a) __4500CN-I (b)
COD	__410.4 (mod)		__5220 C (b)
Color	__110.2		
Corrosivity (by Coupon)		__1110 (mod)	
Chromium VI		__7196A	__3500Cr-D (b)
Fluoride	__340.2		
Hardness, Calcium	__215.2		
Hardness, Total	__130.2		
Iodide			__ASTM D19P202 (1)
Surfactant	__425.1		
__Nitrate-Nitrite __Nitrate __Nitrite	__353.2		
Ammonia	__350.3		
Total__Kjeldahl Nitrogen __Organic Nitrogen	__351.4		
Total __Organic __Inorganic Carbon	__415.1	__9060	
Oil and Grease	__413.1	__9070	
✓pH __pH, Paper	__150.1	✓9040A __9041A	
Petroleum Hydrocarbons, Total Recoverable	__418.1		
Phenol	__420.1 __420.2	__9065 __9066	
__Ortho Phosphate __Total Phosphate	__365.2		__4500-P B __C
Salinity			__210A (a) __2520B (b)
Settleable Solids	__160.5		
Sulfide	__376.2 __376.1	✓9030A B	
Reactive __Cyanide __Sulfide		__Sec 7.3	
Silica	__370.1		
Sulfite	__377.1		
Sulfate	__375.4	__9038	
Specific Conductance	__120.1	__9050	
Specific Gravity			__213E (a)
__TCLP __TCLV		__1311	
Synthetic Precipitation Leach		__1312	
Total __Dissolved __Suspended __Solids	160__.1__.2__.3		
Total Organic Halides	__450.1	__9020B	
Turbidity	__180.1		
Volatile Solids __Total __Dissolved __Suspended	__160.4		

Other: Flash Point Method: SW1010

002

RFW 21-21-034/A-08/95

* Oil samples

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).

b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Recra LabNet Philadelphia
Inorganics Data Summary Report
Physical Testing Observations

Client : TNU-HANFORD B99-036
RFW# : 9903L508

W.O. #: 10985-001-001-9999-00
Date Received: 03-22-99

Analyte:

Flash Point

Observation:

No Flash Point observed.
Test flame extinguished at:
155°F for sample B0TJT0.

The test flame did not extinguish for samples B0TJT2, B0TJR8, B0TJR9, B0TJT4 or B0TJR7.

Samples were heated to 220°F.

Xylene was used to determine the accuracy of the flash point apparatus. The Xylene will flash at 81°F +/-2°F. For this test, the p-xylene flashed at 80°F.

njp\pt508.p2

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/27/99

CLIENT: TNU-HANFORD B99-036 RECRA LOT #: 9903L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0TJT2	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
		pH	4.4	PH UNITS	0.01	1.0
		Sulfide	15.4	MG/KG	1.0	1.0
		Flash Point - No flash point observed.				
-002	B0TJR8	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
		pH	2.9	PH UNITS	0.01	1.0
		Sulfide	1.3	MG/KG	1.0	1.0
		Flash Point - No flash point observed				
-003	B0TJT0	pH	3.6	PH UNITS	0.01	1.0
		Flash Point - No flash point observed.				
-004	B0TJR9	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
		pH	3.5	PH UNITS	0.01	1.0
		Sulfide	21.8	MG/KG	1.0	1.0
		Flash Point - No flash point observed.				
-005	B0TJT3	Cyanide, Total	950	UG/L	250	1.0
-006	B0TJT4	pH	4.5	PH UNITS	0.01	1.0
		Flash Point - No flash point observed.				
-007	B0TJR7	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
		pH	9.8	PH UNITS	0.01	1.0
		Sulfide	19.2	MG/KG	1.0	1.0
		Flash Point - No flash point observed.				

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/27/99

CLIENT: TNU-HANFORD B99-036 RECRA LOT #: 9903L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LC044A-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	99LSD019-MB1	Sulfide	1.0 u	MG/KG	1.0	1.0
BLANK1	99LC044-MB1	Cyanide, Total	5.0 u	UG/L	5.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 04/27/99

CLIENT: TNU-HANFORD B99-036 RECRA LOT #: 9903L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-004	B0TJR9	Cyanide, Total	4.4	0.50u	5.0	87.0	1.0
		Cyanide, Total MSD	4.0	0.50u	5.0	80.2	1.0
-007	B0TJR7	Sulfide	410	19.2	409	95.6	1.0
		Sulfide MSD	410	19.2	409	95.6	1.0
BLANK10	99LSD019-MB1	Sulfide	9.9	1.0 u	9.8	101.0	1.0
		Sulfide MSD	9.8	1.0 u	9.8	100	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 04/27/99

CLIENT: TNU-HANFORD B99-036

RECRA LOT #: 9903L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-004	B0TJR9	Cyanide, Total	87.0	80.2	8.2
-007	B0TJR7	Sulfide	95.6	95.6	0.024
BLANK10	99LSD019-MB1	Sulfide	101.0	100	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 04/27/99

CLIENT: TNU-HANFORD B99-036 RECRA LOT #: 9903L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-004REP	B0TJR9	Cyanide, Total	0.50u	0.50u	NC	1.0
-007REP	B0TJR7	pH	9.8	9.8	0.2	1.0
		Sulfide	19.2	15.7	20.3	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/27/99

CLIENT: TNU-HANFORD B99-036 RECRA LOT #: 9903L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS10	99LC044A-LC1	Cyanide, Total LCS	2.0	2.0	MG/KG	101.5
LCS20	99LC044A-LC2	Cyanide, Total LCS	9.8	10	MG/KG	98.4
LCS1	99LC044-LC1	Cyanide, Total LCS	20	20	UG/L	101.5
LCS2	99LC044-LC2	Cyanide, Total LCS	98	100	UG/L	98.4

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-036

DATE RECEIVED: 03/22/99 RFW LOT # :9903L508

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TJT2						
TOTAL CYANIDE	001	OI	99LC044A	03/09/99	03/30/99	03/30/99
FLASH POINT	001	OI	99LFP007	03/09/99	04/03/99	04/03/99
PH	001	OI	99LPH032	03/09/99	04/01/99	04/01/99
SULFIDE	001	OI	99LSD019	03/09/99	03/31/99	03/31/99
TCLP	001	OI	99LTO034	03/09/99	03/30/99	03/31/99
B0TJR8						
TOTAL CYANIDE	002	OI	99LC044A	03/08/99	03/30/99	03/30/99
FLASH POINT	002	OI	99LFP007	03/08/99	04/03/99	04/03/99
PH	002	OI	99LPH032	03/08/99	04/01/99	04/01/99
SULFIDE	002	OI	99LSD019	03/08/99	03/31/99	03/31/99
TCLP	002	OI	99LTO034	03/08/99	03/30/99	03/31/99
B0TJT0						
FLASH POINT	003	W	99LFP007	03/08/99	04/03/99	04/03/99
PH	003	W	99LPH032	03/08/99	04/01/99	04/01/99
TCLP	003	W	99LTF033	03/08/99	03/30/99	03/31/99
B0TJR9						
TOTAL CYANIDE	004	OI	99LC044A	03/08/99	03/30/99	03/30/99
TOTAL CYANIDE	004 REP	OI	99LC044A	03/08/99	03/30/99	03/30/99
TOTAL CYANIDE	004 MS	OI	99LC044A	03/08/99	03/30/99	03/30/99
TOTAL CYANIDE	004 MSD	OI	99LC044A	03/08/99	03/30/99	03/30/99
FLASH POINT	004	OI	99LFP007	03/08/99	04/03/99	04/03/99
PH	004	OI	99LPH032	03/08/99	04/01/99	04/01/99
SULFIDE	004	OI	99LSD019	03/08/99	03/31/99	03/31/99
TCLP	004	OI	99LTO034	03/08/99	03/30/99	03/31/99
B0TJT3						
TOTAL CYANIDE	005	W	99LC044	03/09/99	03/30/99	03/30/99
TCLP	005	W	99LTF033	03/09/99	03/30/99	03/31/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-036

DATE RECEIVED: 03/22/99 RFW LOT # :9903L508

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TJT4						
FLASH POINT	006	OI	99LFP007	03/09/99	04/03/99	04/03/99
PH	006	OI	99LPH032	03/09/99	04/01/99	04/01/99
B0TJR7						
TOTAL CYANIDE	007	OI	99LC044A	03/08/99	03/30/99	03/30/99
FLASH POINT	007	OI	99LFP007	03/08/99	04/03/99	04/03/99
PH	007	OI	99LPH032	03/08/99	04/01/99	04/01/99
PH	007 REP	OI	99LPH032	03/08/99	04/01/99	04/01/99
SULFIDE	007	OI	99LSD019	03/08/99	03/31/99	03/31/99
SULFIDE	007 REP	OI	99LSD019	03/08/99	03/31/99	03/31/99
SULFIDE	007 MS	OI	99LSD019	03/08/99	03/31/99	03/31/99
SULFIDE	007 MSD	OI	99LSD019	03/08/99	03/31/99	03/31/99
TCLP	007	OI	99LTO034	03/08/99	03/30/99	03/31/99

LAB QC:

TOTAL CYANIDE	LC1 L	S	99LC044A	N/A	03/30/99	03/30/99
TOTAL CYANIDE	LC2 L	S	99LC044A	N/A	03/30/99	03/30/99
TOTAL CYANIDE	MB1	S	99LC044A	N/A	03/30/99	03/30/99
SULFIDE	MB1	S	99LSD019	N/A	03/31/99	03/31/99
SULFIDE	MB1 BS	S	99LSD019	N/A	03/31/99	03/31/99
SULFIDE	MB1 BSD	S	99LSD019	N/A	03/31/99	03/31/99
TOTAL CYANIDE	LC1 L	W	99LC044	N/A	03/30/99	03/30/99
TOTAL CYANIDE	LC2 L	W	99LC044	N/A	03/30/99	03/30/99
TOTAL CYANIDE	MB1	W	99LC044	N/A	03/30/99	03/30/99

RECRA LabNet Use Only

9903L508

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INU-Hanford B99-036
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-0001-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 3/22/99 Date Due: 4/21/99
Account #:

Refrigerator #		1	3	3						3	3	3	3				
#/Type Container	Liquid	1g	1g	1g						1g	1g	1g					
	Solid																
Volume	Liquid	40	40	40						120	120	120					
	Solid																
Preservatives																	
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	CN							

RECRA LabNet Use Only

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	8024H	8025H	8082					RCRA Cyan	ICP/TO	IPH/FISH	TCLP	SFD		
001	BOTJT2			O	3/9/99	0830	✓	✓	✓						✓	✓	✓	✓		
2	R8			O	3/8/99	1025	✓	✓	✓						✓	✓	✓	✓		
3	T0			W	3/8/99	1100										✓	✓			
4	R9			O	3/8/99	1042	✓	✓	✓						✓	✓	✓	✓		
5	T3			W	3/9/99	0900									✓		✓	✓		
6	T4			O	3/9/99	1015										✓				
7	R7			O	3/8/99	1000	✓	✓	✓						✓	✓	✓	✓		
8	T2 tclp of 001			L	*	—								✓						
9	R8 2					—								✓						
010	T0 3					—								✓						

Special Instructions:
oils - do dilute + shoot for BNA + PCB
005 - severely limited volume
003 - slightly limited volume

Comp waste

DATE/REVISIONS:
→ 1. Run matrix QC
→ 2. See Client COC for
3. special instructions
* 4. see letter
5. * Insufficient sample volume
6. for Sulfide analysis

Relinquished by	Received by	Date	Time
See original		3/22/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

RECRA LabNet Use Only

Samples were:
1) Shipped ..... or
Hand Delivered .....
Airbill # .....
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 C

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

RECRA LabNet Use Only
99031508

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

014

Client: TNU-Hanford B99-C36
Est. Final Proj. Sampling Date:
Project #:
Project Contact/Phone #:
RECRA Project Manager:
QC: Del: TAT:
Date Rec'd: Date Due:
Account #:

Refrigerator #																
#/Type Container	Liquid															
	Solid															
Volume	Liquid															
	Solid															
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/ PCB	Herb				Metal	CN						
		RECRA LabNet Use Only														

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														
011	BQTR9 telpof 004			L	*	–								✓						
012	↓ T3 ↓ 5			↓	↓	–								✓						
013	↓ R7 ↓ 7			↓	↓	–								✓						

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill #
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 C

Relinquished by	Received by	Date	Time
Jedeep	Joder	3/22/99	0930

Relinquished by	Received by	Date	Time

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-41	Page 1 of 1

Collector: Douglas E. Bowers / S.J GALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 4 of 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA

Price Code:

Data Turnaround: 45 Days

015

POSSIBLE SAMPLE HAZARDS/REMARKS

Media Unknown

FLAMMABLE

Special Handling and/or Storage

Store samples at 4 degrees Celsius

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None							
Type of Container	aGs*	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1	1							
Volume	40mL	~~60~~ 40mL	~~60~~ 40mL	120mL	120mL							
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010							
Sample No.	Matrix *	Sample Date	Sample Time									
B0TJR9	Other Liquid	3-8-99	1042	X	X	X	X	X				B0TJV9

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: S.J GALE	Date/Time: 3/8/99 1100	Received By: FED EX	Date/Time:
Relinquished By: Fed Ex	Date/Time: 3-22-99/1400	Received By: J. Galiano	Date/Time: 3-22-99/1400
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010, Mercury (TCLP) - 1311-7470; Total Cyanide - 9010; Sulfides - 9030

POSSIBLE PURE ORGANIC

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: J. Galiano	Title: Lab Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-46	Page 1 of 1

016

Collector Douglas L. Bowers 'S JGALE	Company Contact Thomas M. Brown	Telephone No. 509-376-1547	Project Coordinator TRENT, SJ
Price Code	Data Turnaround 45 Days		
Project Designation 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location 202-S REDOX		SAF No. B99-036
Ice Chest No. 1A2 1 of 4	Field Logbook No. EL-1309-3		Method of Shipment Overnight Carrier - Fed Ex
Shipped To RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA BRISZA2LW28

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	COOL 4C				
Type of Container	aGs*	aG	aG	aG	aG	POLY				
No. of Container(s)	1	1	1	1	1	1				
Volume	40mL	60mL	60mL	120mL	120mL	120ml				
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010	SEE ITEM (1),(2) SPECIAL INST.				

Sample No.	Matrix *	Sample Date	Sample Time										
BOTJT3	Other Liquid	3-9-99	0900						X			BOT	JW3

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
S JGALE	3 1 99 1100	FED EX	
Fed Ex	3-22-99/0730	[illegible]	3-22-99/0800

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030
(2) HOMOGENIZE AND RUN AS SINGLE PHASE

MPS 976 0694 212

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By [illegible]	Title Lab Tech.	Date/Time 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-58	Page 1 of 1

017

Collector: Douglas L. Bowers / S. JGALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 3 OF 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA BRISZA 2W28'

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	COOL 4C ~~None~~						
Type of Container	aGs*	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	40mL	60mL	60mL	120mL	120mL						
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010 SEE ITEM (2) SPECIAL INST.						

Sample No.	Matrix *	Sample Date	Sample Time										
BOTJT4	Other Liquid	3-9-99	1015					X				BOTJW4	

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
SJGALE MAR 31899	1100	FED EX	
Fed Ex	3-22-99/0930	[illegible]	3-22-99/0930

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

(2) IF MATERIAL IS LEFT OVER, CONTACT BHI SAMPLE MANAGEMENT

FedEx 976 0694 221
CUSTOMER PACKAGE TRACKING NUMBER - PULL UP PURPLE TAB

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: [illegible]	Title: Lab Tech.	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-57	Page 1 of 1

018

Collector: Douglas L. Bowers /SJ GALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 3 of 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA BR1SZA2W28

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None						
Type of Container	aGs*	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	40mL	40 ~~60~~mL	40 ~~60~~mL	120mL	120mL						
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010						
Sample No.	Matrix *	Sample Date	Sample Time								
B0TJR7	Other Liquid	3-8-99	1000	X	X	X	X	X			B0TJV7

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: SJ GALE	Date/Time: 31899 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/0930	Received By: [illegible]	Date/Time: 3-22-99/0930
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010, Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

MPS 976 0694 246

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: [illegible]	Title: Lab Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-47	Page 1 of 1

Collector: Douglas L. Bowers / SJ GALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 2 of 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA: BR1S2A21W28

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	Cool 4C						
Type of Container	aGs*	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1	1						
Volume	40mL	40 ~~60~~mL	40 ~~60~~mL	120mL	120mL	120mL						
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010	SEE ITEM MJ 3-29-99						

Sample No.	Matrix *	Sample Date	Sample Time										
BOTJT2	Other Liquid	3-9-99	0830	X	X	X	X	X				BOT	JW2
~~BOTJT4~~	~~"~~	~~3-9-99~~	~~1015~~		MJ	3-10-99			X			~~BOT~~	~~JW4~~

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
SJ GALE	3/8/99 1100	FED EX	
Fed Ex	3-22-99/0930	J. Williams	3-22-99/0930

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION — Received By: J. Williams — Title: Lab Tech — Date/Time: 3-22-99/0930

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

019

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-~~59~~	Page 1 of 1

Collector: Douglas L. Bowers / SJGALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 4 of 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA BRISZA 2W2'8

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	Cool 4C				
Type of Container	aGs*	aG	aG	aG	aG	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	40mL	40 ~~80~~mL	40 ~~80~~mL	120mL	120mL	120mL				
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010	SEE ITEM (2)				

Sample No	Matrix *	Sample Date	Sample Time										
~~BOTJR7~~	~~Other Liquid~~	~~3-8-99~~	~~1000~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~JAN~~	~~31799~~			~~BOTJV7~~
BOTJR8	"	3-8-99	1025	X	X	X	X	X					BOTJV8
BOTJT0	"	3-8-99	1100						X				BOTJW0

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By	Date/Time
Relinquished By: SJGALE		31899 1100	Received By: FED EX	
Relinquished By: Fed Ex		3-22-99/0930	Received By:	3-22-99/0930
Relinquished By			Received By	
Relinquished By			Received By	

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030
(2) IGNITABILITY, pH, TCLP METALS, MERCURY

MPS 976 0694 237

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
		Lab Tech	3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

RECRA
LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

MAY 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-036
RFW#: 9903L508
SDG/SAF#: H0361/B99-036

W.O.#: 10985-001-001-9999-00
Date Received: 03-22-99

PCB

The set of samples consisted of four (4) oil samples collected on 03-08,09-99.

The samples and their associated QC samples were extracted on 03-29-99 and analyzed based on SW846, 3rd Edition on 04-01-99. The extraction procedure was based on method 3580A (Waste Dilution; 1 g into 10 mLs hexane) and the extracts were analyzed based on method 8082 for Aroclors only.

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 temperature has been recorded on the chain-of-custody.

2. All required holding times for analysis have been met. The samples were received out of extraction hold time.

3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.

4. The method blank was below the reporting limits for all target compounds.

5. One (1) of sixteen (16) surrogate recoveries were outside acceptance criteria, however, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

8. All initial calibrations associated with this data set were within acceptance criteria.

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 15 pages.

9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

By _____ 04-08-99

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

Date

pef\r:\group\data\pcb\03L-508.pcb

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

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

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification 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.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking 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 = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".

D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C = This flag applies to a compound that has been confirmed by GC/MS.

Recra LabNet - Lionville Laboratory

PCBs by GC

RFW Batch Number: **9903L508** Client: **TNU-HANFORD B99-036** Work Order: 10985001001 Page: 1 Report Date: 04/01/99 14:01

	Cust ID:	B0TJT2	B0TJT2	B0TJT2	B0TJR8	B0TJR9	B0TJR7
Sample Information	RFW#:	001	001 MS	001 MSD	002	004	007
	Matrix:	OIL	OIL	OIL	OIL	OIL	OIL
	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:	Tetrachloro-m-xylene	78 %	72 %	70 %	98 %	65 %	65 %
	Decachlorobiphenyl	44 %	39 %	39 %	83 %	32 * %	56 %
Aroclor-1016		1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
Aroclor-1221		2000 U	2000 U	2000 U	2000 U	2000 U	2000 U
Aroclor-1232		1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
Aroclor-1242		1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
Aroclor-1248		1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
Aroclor-1254		990 J	58 %	57 %	1000 U	1000 U	1000 U
Aroclor-1260		1000 U	1000 U	1000 U	1000 U	1000 U	1000 U

	Cust ID:	PBLKGL	PBLKGL BS
Sample Information	RFW#:	99LE0379-MB1	99LE0379-MB1
	Matrix:	OIL	OIL
	D.F.:	1.00	1.00
	Units:	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	92 %	95 %
	Decachlorobiphenyl	79 %	88 %
Aroclor-1016		1000 U	1000 U
Aroclor-1221		2000 U	2000 U
Aroclor-1232		1000 U	1000 U
Aroclor-1242		1000 U	1000 U
Aroclor-1248		1000 U	1000 U
Aroclor-1254		1000 U	96 %
Aroclor-1260		1000 U	1000 U

04/06/99

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/22/99

CLIENT: TNU-HANFORD B99-036 RECRA LOT #: 9903L508

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	B0TJT2	Silver, TCLP Leachate	90.0	u	UG/L	90.0	1.0
		Arsenic, TCLP Leachate	330	u	UG/L	330	1.0
		Barium, TCLP Leachate	1030		UG/L	10.0	1.0
		Cadmium, TCLP Leachate	40.0	u	UG/L	40.0	1.0
		Chromium, TCLP Leachate	147		UG/L	60.0	1.0
		Mercury, TCLP Leachate	0.14		UG/L	0.10	1.0
		Lead, TCLP Leachate	248		UG/L	180	1.0
		Selenium, TCLP Leachate	360	u	UG/L	360	1.0
-009	B0TJR8	Silver, TCLP Leachate	90.0	u	UG/L	90.0	1.0
		Arsenic, TCLP Leachate	330	u	UG/L	330	1.0
		Barium, TCLP Leachate	262		UG/L	10.0	1.0
		Cadmium, TCLP Leachate	40.0	u	UG/L	40.0	1.0
		Chromium, TCLP Leachate	126		UG/L	60.0	1.0
		Mercury, TCLP Leachate	10.0	u	UG/L	10.0	100
		Lead, TCLP Leachate	298		UG/L	180	1.0
		Selenium, TCLP Leachate	360	u	UG/L	360	1.0
-010	B0TJT0	Silver, TCLP Leachate	90.0	u	UG/L	90.0	1.0
		Arsenic, TCLP Leachate	330	u	UG/L	330	1.0
		Barium, TCLP Leachate	1700		UG/L	10.0	1.0
		Cadmium, TCLP Leachate	50.0		UG/L	40.0	1.0
		Chromium, TCLP Leachate	135		UG/L	60.0	1.0
		Mercury, TCLP Leachate	33.0		UG/L	10.0	100
		Lead, TCLP Leachate	344		UG/L	180	1.0
		Selenium, TCLP Leachate	360	u	UG/L	360	1.0
-011	B0TJR9	Silver, TCLP Leachate	90.0	u	UG/L	90.0	1.0
		Arsenic, TCLP Leachate	330	u	UG/L	330	1.0
		Barium, TCLP Leachate	601		UG/L	10.0	1.0
		Cadmium, TCLP Leachate	41.0		UG/L	40.0	1.0
		Chromium, TCLP Leachate	1090		UG/L	60.0	1.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Lead, TCLP Leachate	408		UG/L	180	1.0
		Selenium, TCLP Leachate	360	u	UG/L	360	1.0

Recra LabNet - Lionville Laboratory
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-036

DATE RECEIVED: 03/22/99 RFW LOT # :9903L508

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TJT2	001	OI	99LE0379	03/09/99	03/29/99	04/01/99
B0TJT2	001 MS	OI	99LE0379	03/09/99	03/29/99	04/01/99
B0TJT2	001 MSD	OI	99LE0379	03/09/99	03/29/99	04/01/99
B0TJR8	002	OI	99LE0379	03/08/99	03/29/99	04/01/99
B0TJR9	004	OI	99LE0379	03/08/99	03/29/99	04/01/99
B0TJR7	007	OI	99LE0379	03/08/99	03/29/99	04/01/99

LAB QC:

PBLKGL	MB1	OI	99LE0379	N/A	03/29/99	04/01/99
PBLKGL	MB1 BS	OI	99LE0379	N/A	03/29/99	04/01/99

RECRA LabNet Use Only

99031508

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-036
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-0001-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 3/22/99 Date Due: 4/21/99
Account #:

Refrigerator #		1	3	3						3	3	3	3					
#/Type Container	Liquid	1g	1g	1g						1g	1g	1g						
	Solid																	
Volume	Liquid	40	40	40						120	120	120						
	Solid																	
Preservatives																		
ANALYSES REQUESTED →		ORGANIC							INORG									
		VOA	BNA	Pest/PCB	Herb				Metal	CN								
		RECRA LabNet Use Only																
		6024	6025	8082					RCRA8Metals	ICNTO	1PH	1FLSH	1TCLP	1SFD				

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	MS	MSD	Matrix	Date Collected	Time Collected	6024	6025	8082					RCRA8Metals	ICNTO	1PH	1FLSH	1TCLP	1SFD			
001	BOTJT2			O	3/9/99	0830	✓	✓	✓						✓	✓	✓	✓				
2	R8			O	3/8/99	1025	✓	✓	✓						✓	✓	✓	✓				
3	TO			W	3/8/99	1100										✓	✓					
4	R9			O	3/8/99	1042	✓	✓	✓						✓	✓	✓	✓				
5	T3			W	3/9/99	0900									✓		✓	✓				
6	T4			O	3/9/99	1015										✓						
7	R7			O	3/8/99	1000	✓	✓	✓						✓	✓	✓	✓				
8	T2 tclp of 001			L	*	—								✓								
9	R8 ↓ 3			↓	↓	—								✓								
010	TO ↓ 3			↓	↓	—								✓								

Special Instructions:
001s - do dilute + shoot for BNA + PCB
005 - severely limited volume
003 - slightly limited volume

Comp waste

DATE/REVISIONS:
→ 1. Run matrix QC
→ 2. See Client COC for
3. special instructions
* 4. see leachate
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill #
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 C

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

Relinquished by	Received by	Date	Time
See original		3/22/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

See original

RECRA LabNet Use Only
9903L508

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-C36

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #:

RECRA Project Manager:

QC: Del: TAT:

Date Rec'd: Date Due:

Account #:

Refrigerator #		
#/Type Container	Liquid	
	Solid	
Volume	Liquid	
	Solid	
Preservatives		

ANALYSES REQUESTED → ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

RECRA LabNet Use Only

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	RECRA LabNet Use Only
011	BOTR9 telpof 004			L	*	–	✓
012	↓ T3 ↓ 5			↓	↓	–	✓
013	↓ R7 ↓ 7			↓	↓	–	✓

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Dedeep	Fodder	3/22/99	0930

Relinquished by	Received by	Date	Time

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

RECRA LabNet Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill # ____
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'd Y or N

Cooler Temp. C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-41	Page 1 of 1

Collector: Douglas L. Bowers / SJ GALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 4 of 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA

POSSIBLE SAMPLE HAZARDS/REMARKS

Media Unknown

FLAMMABLE

Special Handling and/or Storage

Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None					
Type of Container	aGs*	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	40ml.	~~40~~ 60ml.	40 ~~60~~ml.	120ml.	120ml.					
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010					

Sample No.	Matrix *	Sample Date	Sample Time										
BOTJR9	Other Liquid	3-8-99	1042	X	X	X	X	X				BOTJV9	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: SJ GALE	Date/Time: 3/8/99 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/1[illegible]	Received By: J. Graziano	Date/Time: 3-22-99/0[illegible]
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010, Mercury (TCLP) - 1311-7470; Total Cyanide - 9010; Sulfides - 9030

POSSIBLE PURE ORGANIC

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: J. Graziano	Title: Lab Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-46	Page 1 of 1

Collector: Douglas L. Bowers S.JGALE	Company Contact: Thomas M. Brown — Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ	Price Code / Data Turnaround: 45 Days
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX	SAF No.: B99-036	
Ice Chest No.: 1A2 1 of 4	Field Logbook No.: EL-1309-3	Method of Shipment: Overnight Carrier - Fed Ex	
Shipped To: RECRA	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA BK1S2A2LW28	

010

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	COOL 4C				
Type of Container	aGs*	aG	aG	aG	aG	POLY				
No. of Container(s)	1	1	1	1	1	1				
Volume	40mL	60mL	60mL	120mL	120mL	120ML				
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010	SEE ITEM (1),(2) SPECIAL INST.				

Sample No.	Matrix *	Sample Date	Sample Time										
BOTJT3	Other Liquid	3-9-99	0900						X			BOTJW3	

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
S.JGALE	3/8/99 1100	FED EX	
Fed Ex	3-22-99/0930	[illegible]	3-22-99/0930

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030
(2) HOMOGENIZE AND RUN AS SINGLE PHASE

MPS 976 0694 212

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION — Received By: [illegible] — Title: Lab Tech. — Date/Time: 3-22-99/0930

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-58	Page 1 of 1

Collector: Douglas E. Bowers / S. JGALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 3OF4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA BRISZA 2W28

011

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	COOL 4C ~~None~~						
Type of Container	aGs*	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	40mL	60mL	60mL	120mL	120mL						
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040; Ignitability - 1010 SEE ITEM (2) SPECIAL INSTR.						

Sample No.	Matrix *	Sample Date	Sample Time										
BOTJT4	Other Liquid	3-9-99	1015					X				BOTJW4	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: SJGALE MJB 3/8/99	Date/Time: 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/0800	Received By: J. Graham	Date/Time: 3-22-99/0800
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

(2) IF MATERIAL IS LEFT OVER, CONTACT BHI SAMPLE MANAGEMENT

FedEx 976 0694 221
CUSTOMER PACKAGE TRACKING NUMBER - PULL UP PURPLE TAB

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: J. Graham	Title: Lab Tech.	Date/Time: 3-22-99/0800
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-57	Page 1 of 1

Collector: Douglas F. Bowers / SJ GALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX	SAF No.: B99-036	
Ice Chest No.: 1A2 3 of 4	Field Logbook No.: EL-1309-3	Method of Shipment: Overnight Carrier - Fed Ex	
Shipped To: RECRA	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA BR1SZA2W28	

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None						
Type of Container	aGs*	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	40mL	40 ~~60~~mL	40 ~~60~~mL	120mL	120mL						
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010						
Sample No. / Matrix * / Sample Date / Sample Time											
B0TJR7 / Other Liquid / 3-8-99 / 1000	X	X	X	X	X					B0TJN7	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: S.J. GALE	Date/Time: 3/8/99 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/0930	Received By: [signature]	Date/Time: 3-22-99/0930
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

MPS 976 0694 246

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: [signature]	Title: Lab Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036- 47	Page 1 of 1

Collector: Douglas L Bowers / SJ GALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 2 of 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA: BR1S2A2W2S

013

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	Cool 4C					
Type of Container	aGs*	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	40mL	~~40~~ 60mL	~~40~~ 60mL	120mL	120mL	120mL					
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010	SEE ITEM (1)					
Sample No.	Matrix *	Sample Date	Sample Time									
BOTJT2	Other Liquid	3-9-99	0830	X	X	X	X	X			BOT	JW2
~~BOTJT4~~	~~"~~	~~3-9-99~~	~~1015~~		~~MB~~	~~3/10/99~~			~~X~~		~~BOT~~	~~JW4~~

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
SJ GALE	3/10/99 1100	FED EX	
Fed Ex	3-22-99/0930	J. Williams	3-22-99/0930

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: J. Williams	Title: Lab. Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-59	Page 1 of 1

Collector: Douglas I. Bowers / JJ GALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 4 of 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA: BRISZA 2W28

014

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	Cool 4C					
Type of Container	aGs*	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	40mL	40 ~~60~~mL	40 ~~60~~mL	120mL	120mL	120mL					
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010	SEE ITEM (2)					
Sample No.	Matrix *	Sample Date	Sample Time									
~~BOTJR7~~	Other Liquid	~~3-8-99~~	~~1000~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~DPB~~	~~31799~~		~~BOTJV7~~
BOTJR8	"	3-8-99	1025	X	X	X	X	X				BOTJV8
BOTJT0	"	3-8-99	1100						X			BOTJW0

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: JJ GALE	Date/Time: 31899 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/0900	Received By: [illegible]	Date/Time: 3-22-99/0900
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

(2) IGNITABILITY, pH, TCLP METALS, MERCURY

MPS 976 0694 237

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: [illegible]	Title: Lab Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

RECRA LabNet Use Only

9903L508

Custody Transfer Record/Lab Work Request

Page 1 of 1

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU - Hanford ~~SAF~~ # B99-036 3/22/99

Est. Final Proj. Sampling Date

Project # 10985-001-001-0001-00

Project Contact/Phone #

RECRA Project Manager OJ

QC spec Del std TAT 30day

Date Rec'd 3-22-99 Date Due 4-21-99

Account #

Refrigerator #		1																
#/Type Container	Liquid	1AG	1AG	1AG						1AG		1AG						
	Solid																	
Volume	Liquid	40ml	40ml	40ml						120		120						
	Solid																	
Preservatives		—	—	—						—		—						
ANALYSES REQUESTED →		ORGANIC								INORG								
		VOA	BNA	~~Pest~~ PCB	Herb					TCLP Metal	CN	Sulfide						

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	VOA	BNA	PCB	Herb	TCLP Metal	CN	Sulfide
001	ROT JT2			O	3-9-99	0830	✓	✓	✓		✓		✓
002	R8				3-8-99	1025	✓	✓	✓		✓		✓
003	TO				↓	1100					✓*		✓
004	R9				3-8-99	1042	✓	✓	✓		✓		✓
005	T3				3-9-99	0900	✓	✓	✓		✓**		✓
006	T4				↓	1015							✓
007	R7				3-8-99	1000	✓	✓	✓		✓		✓

Special Instructions:

*TCLP metals + mercury

** Metals by ICP (TCLP), Hg, Total CN, Sulfides
Homogenize and run as single phase

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

ORIGINAL

Relinquished by	Received by	Date	Time
Fed Ex	[illegible]	3/22/99	1000

Relinquished by	Received by	Date	Time

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # 926 084237
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. 4.5 °C

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

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

MAY 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B99-036
RFW #: 9903L508
SDG/SAF #: H0361/B99-036

W.O. #: 10985-001-001-9999-00
Date Received: 03-22-99

SEMIVOLATILE

Four (4) oil samples were collected on 03-08,09-99.

The samples and their associated QC samples were extracted on 03-29-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 03-31-99 and 04-01,02-99.

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 temperature upon receipt has been recorded on the chain-of-custody.

2. Samples were received on 13th and 14th day from sample collection; consequently, samples were extracted within seven (7) days from sample receipt.

3. Non-target compounds were detected in the samples.

4. These samples were prepared by Waste Dilution protocol (1g diluted to 20mL Methylene Chloride). All samples with the exception of B0TJR8 required an additional 5-fold instrument dilution for the analyses.

5. Two (2) of forty-eight (48) surrogate recoveries were outside EPA QC limits. However, EPA CLP surrogate recovery criteria are met [i.e., no more than one outlier per fraction (acid and base neutral) and no recoveries less than 10%]

6. Two (2) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.

7. Three (3) of eleven (11) blank spike recoveries were outside EPA QC limits.

The higher surrogate and spike recoveries are due to the use of Waste Dilution protocol.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

04-28-99
Date

som\gorup\data\bna\tnu03508.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 20 pages.

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.

mmz\10-94\gloss.bna

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.

mmz\10-94\gloss.bna

Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, HSL List

RFW Batch Number: **9903L508** Client: **TNU-HANFORD B99-036** Work Order: 10985001001 Report Date: 04/19/99 17:33 Page: 1a

	Cust ID:	B0TJT2	B0TJT2	B0TJT2	B0TJR8	B0TJR9	B0TJR7
Sample Information	RFW#:	001	001 MS	001 MSD	002	004	007
	Matrix:	OIL	OIL	OIL	OIL	OIL	OIL
	D.F.:	100	100	100	20.0	100	100
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate Recovery	Nitrobenzene-d5	100 %	99 %	106 %	78 %	101 %	101 %
	2-Fluorobiphenyl	106 %	109 %	108 %	92 %	103 %	118 * %
	Terphenyl-d14	91 %	78 %	86 %	83 %	86 %	78 %
	Phenol-d5	92 %	90 %	92 %	82 %	85 %	86 %
	2-Fluorophenol	85 %	81 %	88 %	80 %	77 %	77 %
	2,4,6-Tribromophenol	75 %	83 %	86 %	76 %	64 %	86 %
Phenol		1000000 U	91 * %	92 * %	200000 U	1000000 U	1000000 U
bis(2-Chloroethyl)ether		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
2-Chlorophenol		1000000 U	89 %	91 %	200000 U	1000000 U	1000000 U
1,3-Dichlorobenzene		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
1,4-Dichlorobenzene		1000000 U	86 %	88 %	200000 U	1000000 U	1000000 U
1,2-Dichlorobenzene		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
2-Methylphenol		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
2,2'-oxybis(1-Chloropropane)		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
4-Methylphenol		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
N-Nitroso-di-n-propylamine		1000000 U	101 %	104 %	200000 U	1000000 U	1000000 U
Hexachloroethane		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Nitrobenzene		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Isophorone		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
2-Nitrophenol		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
2,4-Dimethylphenol		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
bis(2-Chloroethoxy)methane		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
2,4-Dichlorophenol		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
1,2,4-Trichlorobenzene		1000000 U	100 %	96 %	200000 U	1000000 U	1000000 U
Naphthalene		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
4-Chloroaniline		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Hexachlorobutadiene		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
4-Chloro-3-methylphenol		1000000 U	65 %	66 %	200000 U	1000000 U	1000000 U
2-Methylnaphthalene		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Hexachlorocyclopentadiene		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
2,4,6-Trichlorophenol		1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
2,4,5-Trichlorophenol		2500000 U	2500000 U	2500000 U	500000 U	2500000 U	2500000 U

*= Outside of EPA CLP QC limits.

05

Cust ID:	B0TJT2	B0TJT2	B0TJT2	B0TJR8	B0TJR9	B0TJR7
RFW#:	001	001 MS	001 MSD	002	004	007
2-Chloronaphthalene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
2-Nitroaniline	2500000 U	2500000 U	2500000 U	500000 U	2500000 U	2500000 U
Dimethylphthalate	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Acenaphthylene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
2,6-Dinitrotoluene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
3-Nitroaniline	2500000 U	2500000 U	2500000 U	500000 U	2500000 U	2500000 U
Acenaphthene	1000000 U	87 %	85 %	200000 U	1000000 U	1000000 U
2,4-Dinitrophenol	2500000 U	2500000 U	2500000 U	500000 U	2500000 U	2500000 U
4-Nitrophenol	2500000 U	19 %	21 %	500000 U	2500000 U	2500000 U
Dibenzofuran	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
2,4-Dinitrotoluene	1000000 U	78 %	72 %	200000 U	1000000 U	1000000 U
Diethylphthalate	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
4-Chlorophenyl-phenylether	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Fluorene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
4-Nitroaniline	2500000 U	2500000 U	2500000 U	500000 U	2500000 U	2500000 U
4,6-Dinitro-2-methylphenol	2500000 U	2500000 U	2500000 U	500000 U	2500000 U	2500000 U
N-Nitrosodiphenylamine (1)	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
4-Bromophenyl-phenylether	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Hexachlorobenzene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Pentachlorophenol	2500000 U	78 %	69 %	500000 U	2500000 U	2500000 U
Phenanthrene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	200000 J
Anthracene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Carbazole	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Di-n-butylphthalate	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Fluoranthene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Pyrene	1000000 U	78 %	89 %	200000 U	1000000 U	1000000 U
Butylbenzylphthalate	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
3,3'-Dichlorobenzidine	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Benzo(a)anthracene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Chrysene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
bis(2-Ethylhexyl)phthalate	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Di-n-octyl phthalate	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Benzo(b)fluoranthene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Benzo(k)fluoranthene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Benzo(a)pyrene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Indeno(1,2,3-cd)pyrene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Dibenz(a,h)anthracene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 U
Benzo(g,h,i)perylene	1000000 U	1000000 U	1000000 U	200000 U	1000000 U	1000000 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: **9903L508** Client: **TNU-HANFORD B99-036** Work Order: 10985001001 Report Date: 04/19/99 17:33 Page: 2a

	Cust ID:	**SBLKTE**	**SBLKTE BS**
Sample Information	RFW#:	**99LE0380-MB1**	**99LE0380-MB1**
	Matrix:	SOIL	SOIL
	D.F.:	20.0	20.0
	Units:	UG/KG	UG/KG

Surrogate Recovery	Nitrobenzene-d5	92	%	124 *	%
	2-Fluorobiphenyl	91	%	112	%
	Terphenyl-d14	82	%	97	%
	Phenol-d5	77	%	100	%
	2-Fluorophenol	72	%	88	%
	2,4,6-Tribromophenol	78	%	103	%

Phenol	200000	U	104 *	%
bis(2-Chloroethyl)ether	200000	U	200000	U
2-Chlorophenol	200000	U	96	%
1,3-Dichlorobenzene	200000	U	200000	U
1,4-Dichlorobenzene	200000	U	103	%
1,2-Dichlorobenzene	200000	U	200000	U
2-Methylphenol	200000	U	200000	U
2,2'-oxybis(1-Chloropropane)	200000	U	200000	U
4-Methylphenol	200000	U	200000	U
N-Nitroso-di-n-propylamine	200000	U	109	%
Hexachloroethane	200000	U	200000	U
Nitrobenzene	200000	U	200000	U
Isophorone	200000	U	200000	U
2-Nitrophenol	200000	U	200000	U
2,4-Dimethylphenol	200000	U	200000	U
bis(2-Chloroethoxy)methane	200000	U	200000	U
2,4-Dichlorophenol	200000	U	200000	U
1,2,4-Trichlorobenzene	200000	U	112 *	%
Naphthalene	200000	U	200000	U
4-Chloroaniline	200000	U	200000	U
Hexachlorobutadiene	200000	U	200000	U
4-Chloro-3-methylphenol	200000	U	87	%
2-Methylnaphthalene	200000	U	200000	U
Hexachlorocyclopentadiene	200000	U	200000	U
2,4,6-Trichlorophenol	200000	U	200000	U
2,4,5-Trichlorophenol	500000	U	500000	U

*= Outside of EPA CLP QC limits.

Cust ID:	SBLKTE		SBLKTE BS		
RFW#:	99LE0380-MB1		99LE0380-MB1		
2-Chloronaphthalene	200000	U	200000	U	
2-Nitroaniline	500000	U	500000	U	
Dimethylphthalate	200000	U	200000	U	
Acenaphthylene	200000	U	200000	U	
2,6-Dinitrotoluene	200000	U	200000	U	
3-Nitroaniline	500000	U	500000	U	
Acenaphthene	200000	U	95	%	
2,4-Dinitrophenol	500000	U	500000	U	
4-Nitrophenol	500000	U	42	%	
Dibenzofuran	200000	U	200000	U	
2,4-Dinitrotoluene	200000	U	106 *	%	
Diethylphthalate	200000	U	200000	U	
4-Chlorophenyl-phenylether	200000	U	200000	U	
Fluorene	200000	U	200000	U	
4-Nitroaniline	500000	U	500000	U	
4,6-Dinitro-2-methylphenol	500000	U	500000	U	
N-Nitrosodiphenylamine (1)	200000	U	200000	U	
4-Bromophenyl-phenylether	200000	U	200000	U	
Hexachlorobenzene	200000	U	200000	U	
Pentachlorophenol	500000	U	91	%	
Phenanthrene	200000	U	200000	U	
Anthracene	200000	U	200000	U	
Carbazole	200000	U	200000	U	
Di-n-butylphthalate	200000	U	200000	U	
Fluoranthene	200000	U	200000	U	
Pyrene	200000	U	108	%	
Butylbenzylphthalate	200000	U	200000	U	
3,3'-Dichlorobenzidine	200000	U	200000	U	
Benzo(a)anthracene	200000	U	200000	U	
Chrysene	200000	U	200000	U	
bis(2-Ethylhexyl)phthalate	200000	U	200000	U	
Di-n-octyl phthalate	200000	U	200000	U	
Benzo(b)fluoranthene	200000	U	200000	U	
Benzo(k)fluoranthene	200000	U	200000	U	
Benzo(a)pyrene	200000	U	200000	U	
Indeno(1,2,3-cd)pyrene	200000	U	200000	U	
Dibenz(a,h)anthracene	200000	U	200000	U	
Benzo(g,h,i)perylene	200000	U	200000	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.

B0TJT2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-036

Matrix: (soil/water) OIL Lab Sample ID: 9903L508-001

Sample wt/vol: 1.00 (g/mL) G Lab File ID: A033114

Level: (low/med) LOW Date Received: 03/22/99

% Moisture: 0 decanted: (Y/N) Date Extracted: 03/29/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/31/99

Injection Volume: 2.0(uL) Dilution Factor: 100

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.	21 TO 32 MINUTES			
2.	UNRESOLVED HYDROCARBONS			
3.	ALKANE	24.89	1000000	J
4.	ALKANE	26.78	800000	J
5.	ALKANE	29.42	1000000	J
6.	UNKNOWN	31.14	7000000	J
7.	UNKNOWN	39.70	3000000	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0TJR8

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-036

Matrix: (soil/water) OIL Lab Sample ID: 9903L508-002

Sample wt/vol: 1.00 (g/mL) G Lab File ID: A040210

Level: (low/med) LOW Date Received: 03/22/99

% Moisture: 0 decanted: (Y/N) __ Date Extracted: 03/29/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/02/99

Injection Volume: 2.0(uL) Dilution Factor: 20.0

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	8.55	200000	J
2.	UNKNOWN	20.80	200000	J
3.	UNKNOWN	22.42	400000	J
4.	UNKNOWN	23.99	700000	J
5.	UNKNOWN	26.27	600000	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0TJR9

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-036

Matrix: (soil/water) OIL Lab Sample ID: 9903L508-004

Sample wt/vol: 1.00 (g/mL) G Lab File ID: A033119

Level: (low/med) LOW Date Received: 03/22/99

% Moisture: 0 decanted: (Y/N) Date Extracted: 03/29/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 04/01/99

Injection Volume: 2.0(uL) Dilution Factor: 100

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.	21 TO 32 MINUTES			
2.	UNRESOLVED HYDROCARBONS			
3.	ALKANE	22.92	1000000	J
4.	UNKNOWN	23.49	600000	J
5.	ALKANE	24.62	1000000	J
6.	ALKANE	24.89	1000000	J
7.	ALKANE	26.01	600000	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0TJR7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-036

Matrix: (soil/water) OIL Lab Sample ID: 9903L508-007

Sample wt/vol: 1.00 (g/mL) G Lab File ID: A033118

Level: (low/med) LOW Date Received: 03/22/99

% Moisture: 0 decanted: (Y/N) Date Extracted: 03/29/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 03/31/99

Injection Volume: 2.0(uL) Dilution Factor: 100

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.	16 TO 28 MINUTES			
2.	UNRESOLVED HYDROCARBONS			
3.	UNKNOWN	7.89	2000000	J
4.	UNKNOWN	16.76	2000000	J
5.	UNKNOWN	17.26	2000000	J
6.	UNKNOWN	17.94	1000000	J
7.	TRIMETHYLNAPHTHALENE	18.33	2000000	J
8.	UNKNOWN	18.52	2000000	J
9.	TRIMETHYLNAPHTHALENE	18.86	2000000	J

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKTE

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-036

Matrix: (soil/water) SOIL Lab Sample ID: 99LE0380-MB1

Sample wt/vol: 1.00 (g/mL) G Lab File ID: A033109

Level: (low/med) LOW Date Received: 03/29/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 03/29/99

Concentrated Extract Volume: 500(uL) Date Analyzed: 03/31/99

Injection Volume: 2.0(uL) Dilution Factor: 20.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-036

DATE RECEIVED: 03/22/99 RFW LOT # :9903L508

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TJT2	001	OI	99LE0380	03/09/99	03/29/99	03/31/99
B0TJT2	001 MS	OI	99LE0380	03/09/99	03/29/99	03/31/99
B0TJT2	001 MSD	OI	99LE0380	03/09/99	03/29/99	03/31/99
B0TJR8	002	OI	99LE0380	03/08/99	03/29/99	04/02/99
B0TJR9	004	OI	99LE0380	03/08/99	03/29/99	04/01/99
B0TJR7	007	OI	99LE0380	03/08/99	03/29/99	03/31/99

LAB QC:

SBLKTE	MB1	S	99LE0380	N/A	03/29/99	03/31/99
SBLKTE	MB1 BS	S	99LE0380	N/A	03/29/99	03/31/99

RECRA LabNet Use Only

99036508

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-036
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-0001-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 3/22/99 Date Due: 4/21/99
Account #:

Refrigerator #		1	3	3						3	3	3	3				
#/Type Container	Liquid	1q	1q	1q						1q	1q	1q					
	Solid																
Volume	Liquid	40	40	40						120	120	120					
	Solid																
Preservatives													W/CN				
ANALYSES REQUESTED	ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN								
RECRA LabNet Use Only																	

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	8260 24H	8260 25H	8270B					Reactivity	1CN/TO	1PH/FLSH	1TCLP	1SFD			
001	BOTJT2			O	3/9/99	0830	✓	✓	✓						✓	✓	✓	✓			
2	R8			O	3/8/99	1025	✓	✓	✓						✓	✓	✓	✓			
3	T0			W	3/8/99	1100										✓	✓				
4	R9			O	3/8/99	1042	✓	✓	✓						✓	✓	✓	✓			
5	T3			W	3/9/99	0900									✓		✓	✓			
6	T4			O	3/9/99	1015										✓					
7	R7			O	3/8/99	1000	✓	✓	✓						✓	✓	✓	✓			
8	T2 tclp of 001			L	*	—								✓							
9	R8 2					—								✓							
010	T0 3					—								✓							

Special Instructions:
oils - do dilute + shoot for BNA + PCB
005 - severely limited volume
003 - slightly limited volume

Comp waste

DATE/REVISIONS:
1. Run matrix QC
2. See Client COC for
3. special instructions
4. * see attached
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped or Hand Delivered
Airbill #
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'd Y or N
Cooler Temp C

See original

Relinquished by	Received by	Date	Time
See original		3/22/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

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

RECRA LabNet Use Only
99031508

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-036
Est. Final Proj. Sampling Date:
Project #:
Project Contact/Phone #:
RECRA Project Manager:
QC: Del: TAT:
Date Rec'd: Date Due:
Account #:

Refrigerator #																
#/Type Container	Liquid															
	Solid															
Volume	Liquid															
	Solid															
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		RECRA LabNet Use Only														

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	RECRA LabNet Use Only
011	BQTR9 telpof 004			L	*	–	✓
012	↓ T3 ↓ 5			↓	↓	–	✓
013	↓ R7 ↓ 7			↓	↓	–	✓

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Jedeep	Jodder	3/22/99	0930

Relinquished by	Received by	Date	Time

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

RECRA LabNet Use Only

Samples were:
1) Shipped or Hand Delivered
Airbill #
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'd Y or N
Cooler Temp C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-41	Page 1 of 1

Collector: Douglas L. Bowers / SJ GALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 4 of 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown
FLAMMABLE

Special Handling and/or Storage
Store samples at 4 degrees Celsius

SAMPLE ANALYSIS												
Preservation				Cool 4C	Cool 4C	Cool 4C	None	None				
Type of Container				aGs*	aG	aG	aG	aG				
No. of Container(s)				1	1	1	1	1				
Volume				40mL	~~60~~ 40 mL	~~60~~ 40 mL	120mL	120mL				
				VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010				
Sample No	Matrix *	Sample Date	Sample Time									
BOTJR9	Other Liquid	3-8-99	1042	X	X	X	X	X				BOTJV9

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By: SJ GALE	Date/Time: 3/8/99 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/1400	Received By: J. Galiano	Date/Time: 3-22-99/1400
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010, Mercury (TCLP) - 1311/7470, Total Cyanide - 9010; Sulfides - 9030
POSSIBLE PURE ORGANIC

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: J. Galiano	Title: Lab Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-46	Page 1 of 1

Collector: Douglas L. Bowers 'S.JGALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 1 of 4	Field Logbook No.: EL-1509-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA BR1S2A2LW28

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	COOL 4C				
Type of Container	aGs*	aG	aG	aG	aG	POLY				
No. of Container(s)	1	1	1	1	1	1				
Volume	40ml.	60ml.	60ml	120ml	120ml.	120ml				
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) on Special Instructions	pH (Water) - 9040, Ignitability - 1010	SEE ITEM (1),(2) SPECIAL INST.				
Sample No	Matrix *	Sample Date	Sample Time								
B0TJT3	Other Liquid	3-9-99	0900				X			POT JW3	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: S.JGALE	Date/Time: 31899 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/0930	Received By: [illegible]	Date/Time: 3-22-99/0930
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010, Mercury (TCLP) - 1311/7470, Total Cyanide - 9010, Sulfides - 9030
(2) HOMOGENIZE AND RUN AS SINGLE PHASE

MPS 976 0694 212

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: [illegible]	Title: Lab Tech.		Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method		Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-58	Page 1 of 1 ∞

Collector: Douglas L. Bowers / S. JGALE	Company Contact: Thomas M. Brown — Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ	Price Code / Data Turnaround: 45 Days
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX	SAF No.: B99-036	
Ice Chest No.: 1A2 3 of 4	Field Logbook No.: EL-1309-3	Method of Shipment: Overnight Carrier - Fed Ex	
Shipped To: RECRA	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA: BRIS2A 2W28	

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius

Preservation	Cool 4C	Cool 4C	Cool 4C	None	COOL 4C ~~None~~						
Type of Container	aGs*	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	40mL	60mL	60mL	120mL	120mL						
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010 SEE ITEM (2) SPECIAL INST.						
Sample No.	Matrix *	Sample Date	Sample Time								
BOTJT4	Other Liquid	3-9-99	1015				X				BOTJW4

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: SJGALE MAR 31899	Date/Time: 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/080	Received By: [illegible]	Date/Time: 3-22-99/[illegible]
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030
(2) IF MATERIAL IS LEFT OVER, CONTACT BHI SAMPLE MANAGEMENT

FedEx 976 0694 221
CUSTOMER PACKAGE TRACKING NUMBER - PULL UP PURPLE TAB

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: [illegible]	Title: Lab Tech.	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-57	Page 1 of 1

Collector: Douglas L. Bowers / SJ GALE	Company Contact: Thomas M. Brown — Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ	Price Code / Data Turnaround: 45 Days
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX	SAF No.: B99-036	
Ice Chest No.: 1A2 3 of 4	Field Logbook No.: EL-1309-3	Method of Shipment: Overnight Carrier - Fed Ex	
Shipped To: RECRA	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA: BR/S ZA2W28	

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None						
Type of Container	aGs*	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	40mL	40 ~~60~~mL	40 ~~60~~mL	120mL	120mL						
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010						
Sample No.	Matrix *	Sample Date	Sample Time								
B0TJR7	Other Liquid	3-8-99	1000	X	X	X	X	X				B0TJV7

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: SJ GALE	Date/Time: 3/8/99 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/0930	Received By: [signature]	Date/Time: 3-22-99/0930
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010, Mercury (TCLP) - 1311/7470; Total Cyanide - 9010, Sulfides - 9030

MPS 976 0694 246

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: [signature]	Title: Lab Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-47	Page 1 of 1

Collector: Douglas L. Bowers / SJ GALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 2 of 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA: BR1S2A2W28

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	Cool 4C						
Type of Container	aGs*	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1	1						
Volume	40ml.	40ml.	40ml.	120ml.	120ml.	120ml						
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010	SEE ITEM						

Sample No.	Matrix *	Sample Date	Sample Time										
BOTJT2	Other Liquid	3-9-99	0830	X	X	X	X	X				BOT	JW2
~~BOTJT4~~	~~"~~	~~3-9-99~~	~~1015~~		N/A	3-10-99			X			~~BOT~~	~~JW4~~

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: SJ GALE	Date Time: 3/8/99 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date Time: 3-22-99/0900	Received By: J. Lithene	Date/Time: 3-22-99/0900
Relinquished By	Date Time	Received By	Date Time
Relinquished By	Date Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: J. Lithene	Title: Lab. Tech	Date Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date Time

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

MAY 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-036
RFW# : 9903L508
SDG/SAF #: H0361/B99-036

W.O. #: 10985-001-001-9999-00
Date Received: 03-22-99

GC/MS VOLATILE

Four (4) oil samples were collected on 03-08,09-99.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 04-01-99.

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

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.

2. Samples were received outside of holding time; however, there is no specified holding time for oil matrix.

3. Non-target compounds were detected in the samples.

4. All samples required medium level analysis due to the sample matrix. (The forms do not reflect the correct dilution factors due to programming limitations.)

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 method blank contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than the CRQL.

for J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

04-23-99
Date

som\group\data\ voa\tnu03508.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.

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

GLOSSARY OF VOA 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.
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.

mmz\10-94\gloss.voa

GLOSSARY OF VOA 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.

mmz\10-94\gloss.voa

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 04/14/99 11:49

RFW Batch Number: **9903L508** Client: **TNU-HANFORD B99-036** Work Order: 10985001001 Page: 1a

	Cust ID:	B0TJT2		B0TJT2		B0TJT2		B0TJR8		B0TJR9		B0TJR7	
Sample Information	RFW#:	001		001 MS		001 MSD		002		004		007	
	Matrix:	OIL		OIL		OIL		OIL		OIL		OIL	
	D.F.:	8.00		8.00		8.00		8.00		8.00		8.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
	Level:	MED		MED		MED		MED		MED		MED	
Surrogate Recovery	Toluene-d8	93	%	89	%	94	%	85	%	90	%	88	%
	Bromofluorobenzene	91	%	92	%	94	%	88	%	98	%	92	%
	1,2-Dichloroethane-d4	94	%	81	%	86	%	85	%	94	%	89	%
Chloromethane		5000	U	5000	U	5000	U	5000	U	5000	U	5000	U
Bromomethane		5000	U	5000	U	5000	U	5000	U	5000	U	5000	U
Vinyl Chloride		5000	U	5000	U	5000	U	5000	U	5000	U	5000	U
Chloroethane		5000	U	5000	U	5000	U	5000	U	5000	U	5000	U
Methylene Chloride		1300	BJ	1400	BJ	1200	BJ	28000	B	28000	B	1300	BJ
Acetone		3500	BJ	3000	BJ	2900	BJ	67000	B	3800	BJ	6900	B
Carbon Disulfide		2500	U	2500	U	2500	U	2500	U	2500	U	2500	U
1,1-Dichloroethene		2500	U	105	%	97	%	2500	U	2500	U	2500	U
1,1-Dichloroethane		2500	U	2500	U	2500	U	1500	J	2500	U	2500	U
1,2-Dichloroethene (total)		2500	U	2500	U	2500	U	2500	U	2500	U	2500	U
Chloroform		2500	U	2500	U	2500	U	2500	U	710	J	2500	U
1,2-Dichloroethane		2500	U	2500	U	2500	U	2500	U	2500	U	2500	U
2-Butanone		5000	U	5000	U	5000	U	13000		5000	U	5200	
1,1,1-Trichloroethane		2500	U	2500	U	2500	U	2500	U	2500	U	2500	U
Carbon Tetrachloride		2500	U	2500	U	2500	U	2500	U	2500	U	2500	U
Bromodichloromethane		2500	U	2500	U	2500	U	2500	U	2500	U	2500	U
1,2-Dichloropropane		2500	U	2500	U	2500	U	2500	U	2500	U	2500	U
cis-1,3-Dichloropropene		2500	U	2500	U	2500	U	2500	U	2500	U	2500	U
Trichloroethene		2500	U	119	%	116	%	2500	U	2500	U	2500	U
Dibromochloromethane		2500	U	2500	U	2500	U	2500	U	2500	U	2500	U
1,1,2-Trichloroethane		2500	U	2500	U	2500	U	2500	U	2500	U	2500	U
Benzene		2500	U	112	%	110	%	2500	U	2500	U	2500	U
Trans-1,3-Dichloropropene		2500	U	2500	U	2500	U	[illegible]	U	2500	U	2500	U
Bromoform		2500	U	2500	U	2500	U	[illegible]	U	2500	U	2500	U
4-Methyl-2-pentanone		5000	U	5000	U	5000	U	[illegible]	U	5000	U	960	J
2-Hexanone		5000	U	5000	U	5000	U	[illegible]		5000	U	33000	
Tetrachloroethene		2500	U	2500	U	2500	U	2500	U	62000		2500	U
1,1,2,2-Tetrachloroethane		2500	U	2500	U	2500	U	2500	U	2500	U	2500	U
Toluene		2500	U	112	%	112	%	14000		12000		1100	J

*= Outside of EPA CLP QC limits.

RFW Batch Number: **9903L508** Client: **TNU-HANFORD B99-036** Work Order: 10985001001 Page: 1b

Cust ID:	B0TJT2		B0TJT2		B0TJT2		B0TJR8		B0TJR9		B0TJR7	
RFW#:	001		001 MS		001 MSD		002		004		007	
Level:	MED		MED		MED		MED		MED		MED	
Chlorobenzene	2500	U	110	%	112	%	2500	U	2500	U	2500	U
Ethylbenzene	2500	U	2500	U	2500	U	1500	J	2500	U	3000	
Styrene	2500	U	2500	U	2500	U	2500	U	2500	U	2500	U
Xylene (total)	2500	U	2500	U	2500	U	24000		2500	U	41000	

*= Outside of EPA CLP QC limits.

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

RFW Batch Number: **9903L508** Client: **TNU-HANFORD B99-036** Work Order: 10985001001 Page: 2a Report Date: 04/14/99 11:4

	Cust ID:	**VBLKYX**	**VBLKYX BS**
Sample Information	RFW#:	**99LVN108-MB1**	**99LVN108-MB1**
	Matrix:	SOIL	SOIL
	D.F.:	8.00	8.00
	Units:	UG/KG	UG/KG
	Level:	MED	MED

	Toluene-d8	99	%	98	%
Surrogate	Bromofluorobenzene	98	%	99	%
Recovery	1,2-Dichloroethane-d4	100	%	101	%

Chloromethane	5000	U	5000	U
Bromomethane	5000	U	5000	U
Vinyl Chloride	5000	U	5000	U
Chloroethane	5000	U	5000	U
Methylene Chloride	2200	J	2500	BJ
Acetone	2400	J	3100	BJ
Carbon Disulfide	2500	U	2500	U
1,1-Dichloroethene	2500	U	103	%
1,1-Dichloroethane	2500	U	2500	U
1,2-Dichloroethene (total)	2500	U	2500	U
Chloroform	2500	U	2500	U
1,2-Dichloroethane	2500	U	2500	U
2-Butanone	5000	U	5000	U
1,1,1-Trichloroethane	2500	U	2500	U
Carbon Tetrachloride	2500	U	2500	U
Bromodichloromethane	2500	U	2500	U
1,2-Dichloropropane	2500	U	2500	U
cis-1,3-Dichloropropene	2500	U	2500	U
Trichloroethene	2500	U	115	%
Dibromochloromethane	2500	U	2500	U
1,1,2-Trichloroethane	2500	U	2500	U
Benzene	2500	U	115	%
Trans-1,3-Dichloropropene	2500	U	2500	U
Bromoform	2500	U	2500	U
4-Methyl-2-pentanone	5000	U	5000	U
2-Hexanone	5000	U	5000	U
Tetrachloroethene	2500	U	2500	U
1,1,2,2-Tetrachloroethane	2500	U	2500	U
Toluene	2500	U	118	%

*= Outside of EPA CLP QC limits.

Cust ID:	VBLKYX		VBLKYX BS	
RFW#:	99LVN108-MB1		99LVN108-MB1	
Level:	MED		MED	
Chlorobenzene	2500	U	115	%
Ethylbenzene	2500	U	2500	U
Styrene	2500	U	2500	U
Xylene (total)	2500	U	2500	U

*= Outside of EPA CLP QC limits.

1E

VOLATILE ORGANICS ANALYSIS SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0TJT2

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) OIL Lab Sample ID: 9903L508-001

Sample wt/vol: 1.00 (g/mL) G Lab File ID: n040106

Level: (low/med) MED Date Received: 03/22/99

% Moisture: not dec. 0 Date Analyzed: 04/01/99

Column: (pack/cap) CAP Dilution Factor: 8.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0TJR8

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) OIL Lab Sample ID: 9903L508-002

Sample wt/vol: 1.00 (g/mL) G Lab File ID: n040107

Level: (low/med) MED Date Received: 03/22/99

% Moisture: not dec. 0 Date Analyzed: 04/01/99

Column: (pack/cap) CAP Dilution Factor: 8.00

Number TICs found: 5

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75070	ACETALDEHYDE	4.922	30000	NJ
2. 79209	ACETIC ACID METHYL ESTER	8.710	20000	JN
3.	UNKNOWN	21.461	10000	J
4.	C3-ALKYLBENZENE	22.346	6000	J
5.	ALKANE	23.616	9000	J

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0TJR9

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) OIL Lab Sample ID: 9903L508-004

Sample wt/vol: 1.00 (g/mL) G Lab File ID: n040108

Level: (low/med) MED Date Received: 03/22/99

% Moisture: not dec. 0 Date Analyzed: 04/01/99

Column: (pack/cap) CAP Dilution Factor: 8.00

Number TICs found: 2

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	ALKANE	19.038	3000	J
2.	UNKNOWN	21.458	4000	J

FORM 1 VOA-TIC 1/87 Rev.

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B0TJR7

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) OIL Lab Sample ID: 9903L508-007

Sample wt/vol: 1.00 (g/mL) G Lab File ID: n040109

Level: (low/med) MED Date Received: 03/22/99

% Moisture: not dec. 0 Date Analyzed: 04/01/99

Column: (pack/cap) CAP Dilution Factor: 8.00

Number TICs found: 10

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	C3-ALKYLBENZENE	22.348	8000	J
2.	UNKNOWN	28.507	20000	J
3.	METHYLNAPHTHALENE	28.930	7000	J
4.	UNKNOWN	30.494	10000	J
5.	DIMETHYLNAPHTHALENE	30.849	20000	J
6.	DIMETHYLNAPHTHALENE	31.272	30000	J
7.	DIMETHYLNAPHTHALENE	31.390	20000	J
8.	UNKNOWN	31.567	10000	J
9.	DIMETHYLNAPHTHALENE	31.960	10000	J
10.	UNKNOWN	33.122	8000	J

1E

VOLATILE ORGANICS ANALYSIS SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLKYX

Lab Name: Recra.LabNet Contract: 10985001001

Lab Code: Recra Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 99LVN108-MB1

Sample wt/vol: 1.00 (g/mL) G Lab File ID: n040104

Level: (low/med) MED Date Received: 04/01/99

% Moisture: not dec. 0 Date Analyzed: 04/01/99

Column: (pack/cap) CAP Dilution Factor: 8.00

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

FORM 1 VOA-TIC 1/87 Rev.

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-036

DATE RECEIVED: 03/22/99 RFW LOT # :9903L508

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TJT2	001 M1	OI	99LVN108	03/09/99	N/A	04/01/99
B0TJT2	001 MS M1	OI	99LVN108	03/09/99	N/A	04/01/99
B0TJT2	001 MSD M1	OI	99LVN108	03/09/99	N/A	04/01/99
B0TJR8	002 M1	OI	99LVN108	03/08/99	N/A	04/01/99
B0TJR9	004 M1	OI	99LVN108	03/08/99	N/A	04/01/99
B0TJR7	007 M1	OI	99LVN108	03/08/99	N/A	04/01/99

LAB QC:

VBLKYX	MB1	S	99LVN108	N/A	N/A	04/01/99
VBLKYX	MB1 BS	S	99LVN108	N/A	N/A	04/01/99

RECRA LabNet Use Only

9903L508

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-036
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-0001-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 3/22/99 Date Due: 4/21/99
Account #:

Refrigerator #		1	3	3						3	3	3	3				
#/Type Container	Liquid	1g	1g	1g						1g	1g	1g					
	Solid																
Volume	Liquid	40	40	40						120	120	120					
	Solid																
Preservatives													W/CN				
ANALYSES REQUESTED →		ORGANIC								INORG							
		VOA	BNA	Pest/PCB	Herb					Metal	CN						

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	8240H	8250H	8PCB					RECRA LabNet Use Only: Reactivity	ICNTO	IPH	FISH	ITCLP	ISFD			
001	BOTJT2			O	3/9/99	0830	✓	✓	✓						✓	✓	✓	✓				
2	R8			O	3/8/99	1025	✓	✓	✓						✓	✓	✓	✓				
3	TO			W	3/8/99	1100										✓	✓					
4	R9			O	3/8/99	1042	✓	✓	✓						✓	✓	✓	✓				
5	T3			W	3/9/99	0900									✓		✓	✓				
6	T4			O	3/9/99	1015										✓						
7	R7			O	3/8/99	1000	✓	✓	✓						✓	✓	✓	✓				
8	T2 top of 001			L	*	—								✓								
9	R8 3					—								✓								
010	TO 3					—								✓								

Special Instructions:
001 - do dilute + shoot for BNA + PCB
005 - severely limited volume
003 - slightly limited volume

Comp waste

DATE/REVISIONS:
1. Run matrix QC
2. See Client COC for
3. special instructions
4. * see labchron
5.
6.

RECRA LabNet Use Only

Samples were:
1) Shipped ___ or Hand Delivered ___
Airbill #
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'd Y or N
Cooler Temp C

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

Relinquished by	Received by	Date	Time
See original		3/22/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

See original

RECRA LabNet Use Only
9903L508

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: INU-Hanford B99-036
Est. Final Proj. Sampling Date:
Project #:
Project Contact/Phone #:
RECRA Project Manager:
QC: Del: TAT:
Date Rec'd: Date Due:
Account #:

Refrigerator #																
#/Type Container	Liquid															
	Solid															
Volume	Liquid															
	Solid															
Preservatives																
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	CN						
		RECRA LabNet Use Only														

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	RECRA LabNet Use Only
011	BOTR9 tclp of 004			L	*	–	✓
012	↓ T3 ↓ 5			↓	↓	–	✓
013	↓ R7 ↓ 7			↓	↓	–	✓

Special Instructions:

DATE/REVISIONS:
1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Jeckel	Joder	3/22/99	0930

Relinquished by	Received by	Date	Time

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

RECRA LabNet Use Only

Samples were:
1) Shipped ____ or Hand Delivered ____
Airbill #
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'd Y or N

Cooler Temp. C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-41	Page 1 of 1

Collector: Douglas L. Bowers / S.J GALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX	SAF No.: B99-036	
Ice Chest No.: 1A2 4 of 4	Field Logbook No.: EL-1309-3	Method of Shipment: Overnight Carrier - Fed Ex	
Shipped To: RECRA	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Media Unknown

FLAMMABLE

Special Handling and/or Storage

Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None					
Type of Container	aGs*	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	40ml.	~~60~~ 40ml.	~~60~~ 40ml.	120ml.	120ml.					
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010					

Sample No.	Matrix *	Sample Date	Sample Time										
BOTJR9	Other Liquid	3-8-99	1042	X	X	X	X	X				BOTJV9	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: S.J GALE	Date/Time: 3/1899 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/1[illegible]	Received By: J. Galiano	Date/Time: 3-22-99/0[illegible]
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010, Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

POSSIBLE PURE ORGANIC

Matrix *

Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: J. Galiano	Title: Lab Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-46	Page 1 of 1 17

Collector: Douglas L. Bowers S JGALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 1 of 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA BK1S2A2LW28

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	COOL 4C				
Type of Container	aGs*	aG	aG	aG	aG	POLY				
No. of Container(s)	1	1	1	1	1	1				
Volume	40mL	60mL	60mL	120mL	120mL	120ml				
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010	SEE ITEM (1),(2) SPECIAL INST.				

Sample No	Matrix *	Sample Date	Sample Time										
BOTJT3	Other Liquid	3-9-99	0900						X			BOTJW3	

CHAIN OF POSSESSION

Relinquished By	Date/Time	Received By	Date/Time
S JGALE	MAR 31 99 1100	FED EX	
Fed Ex	3-22-99/0930	[illegible]	3-22-99/0930

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030
(2) HOMOGENIZE AND RUN AS SINGLE PHASE

MPS 976 0694 212

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: [illegible]	Title: Lab Tech.	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-58	Page 1 of 1

Collector: Douglas L. Bowers / S. JGALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 3 of 4	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: RECRA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA BRISZA 2W28

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool-IC	Cool-IC	Cool-IC	None	COOL-4C ~~None~~							
Type of Container	aGs*	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1	1							
Volume	40mL	60mL	60mL	120mL	120mL							
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040; Ignitability - 1010 SEE ITEM (2) SPECIAL INST.							

Sample No.	Matrix *	Sample Date	Sample Time										
BOTJT4	Other Liquid	3-9-99	1015					X				BOTJW4	

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
S. JGALE MAR 31899	1100	FED EX	
Fed Ex	3-22-99/0800	[illegible]	3-22-99/0800

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030
(2) IF MATERIAL IS LEFT OVER, CONTACT BHI SAMPLE MANAGEMENT

FedEx 976 0694 221
CUSTOMER PACKAGE TRACKING NUMBER - PULL UP PURPLE TAB

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: [illegible]	Title: Lab. Tech.	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-57	Page 1 of 1

Collector: Douglas L. Bowers / SJ GALE	Company Contact: Thomas M. Brown — Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ	Price Code / Data Turnaround: 45 Days
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX	SAF No.: B99-036	
Ice Chest No.: 1A2 3 of 4	Field Logbook No.: EL-1309-3	Method of Shipment: Overnight Carrier - Fed Ex	
Shipped To: RECRA	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA: BR1SZA2W28	

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None							
Type of Container	aGs*	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1	1							
Volume	40mL	40 ~~60~~mL	40 ~~60~~mL	120mL	120mL							
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010							

Sample No.	Matrix *	Sample Date	Sample Time										
B0TJR7	Other Liquid	3-8-99	1000	X	X	X	X	X				B0TJN7	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
SJ GALE	3-18-99 1100	FED EX	
Fed Ex	3-22-99/0930	[signature]	3-22-99/0930

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

MPS 976 0694 246

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION — Received By: [signature] — Title: Lab Tech — Date/Time: 3-22-99/0930

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-47	Page 1 of 1

Collector: Douglas L. Bowers / SJ GALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX	SAF No.: B99-036	
Ice Chest No.: 1A2 2 of 4	Field Logbook No.: EL-1309-3	Method of Shipment: Overnight Carrier - Fed Ex	
Shipped To: RECRA	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA: BR1S2A2W28	

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	Cool 4C						
Type of Container	aGs*	aG	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1	1						
Volume	40mL	40 ~~60~~mL	40 ~~60~~mL	120mL	120mL	120mL						
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010	SEE ITEM MB 3/30/99						
Sample No.	Matrix *	Sample Date	Sample Time									
BOTJT2	Other Liquid	3-9-99	0830	X	X	X	X	X			BOT	JW2
~~BOTJT4~~	~~"~~	~~3-9-99~~	~~1015~~		MB	3/30/99			X		~~BOT~~	~~JW4~~

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: SJ GALE	Date/Time: 3/18/99 1100	Received By: FED EX	Date/Time
Relinquished By: Fed Ex	Date/Time: 3-22-99/0930	Received By: J. Wilburn	Date/Time: 3-22-99/0930
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: J. Wilburn	Title: Lab. Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-59	Page 1 of 1

Collector: Douglas L. Bowers / JJGALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX	SAF No.: B99-036	
Ice Chest No.: 1A2 4 of 4	Field Logbook No.: EL-1309-3	Method of Shipment: Overnight Carrier - Fed Ex	
Shipped To: RECRA	Offsite Property No.	Bill of Lading/Air Bill No.	
		COA: BRISZA 2W2'8	

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store samples at 4 degrees Celsius.

Preservation	Cool 4C	Cool 4C	Cool 4C	None	None	Cool 4C					
Type of Container	aGs*	aG	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	40mL	40 ~~80~~mL	40 ~~80~~mL	120mL	120mL	120mL					
SAMPLE ANALYSIS	VOA - 8260A (TCL)	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (1) in Special Instructions	pH (Water) - 9040, Ignitability - 1010	SEE ITEM (2)					
Sample No.	Matrix*	Sample Date	Sample Time								
~~BOTJR7~~	~~Other Liquid~~	~~3-8-99~~	~~1000~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~JJ~~ 31799		~~BOTJV7~~
BOTJR8	"	3-8-99	1025	X	X	X	X	X			BOTJV8
BOTJT0	"	3-8-99	1100						X		BOTJW0

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By: JJGALE		31899 1100
Received By: FED EX		
Relinquished By: Fed Ex		3-22-99/0930
Received By: J. [illegible]		3-22-99/0930
Relinquished By		
Received By		
Relinquished By		
Received By		

SPECIAL INSTRUCTIONS
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Total Cyanide - 9010; Sulfides - 9030
(2) IGNITABILITY, pH, TCLP METALS, MERCURY

MPS 976 0694 237

Matrix*
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By: [illegible]	Title: Lab Tech	Date/Time: 3-22-99/0930
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0361 is comprised of six liquid samples designated under SAF No. B9-051 with a Project Designation of: 202-S REDOX Miscellaneous Waste-Other Liquid.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. The complete data package for this SDG was sent to Bechtel Hanford via fascimillie on May 4, 1999.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

The aliquot for the analysis was reduced due to the sample matrix. The resultant increased MDA's reflect the decreased aliquot. No problems were encountered during the processing of the samples.

2.2 Total Strontium Analyses

The aliquot for the analysis was reduced due to the sample matrix. The resultant increased MDA's reflect the decreased aliquot. No problems were encountered during the processing of the samples.

2.3 Isotopic Plutonium Analyses

The aliquot for the analysis was reduced due to the sample matrix. The resultant increased MDA's reflect the decreased aliquot. No problems were encountered during the processing of the samples.

2.4 Gamma Scan Analyses

The aliquot for the analysis was reduced due to the sample matrix. The resultant increased MDA's reflect the decreased aliquot. No problems were encountered during the processing of the samples.

2.5 Isotopic Uranium Analyses

The aliquot for the analysis was reduced due to the sample matrix. The resultant increased MDA's reflect the decreased aliquot. No problems were encountered during the processing of the samples.

2.6 Technetium-99 Analyses

The aliquot for the analysis was reduced due to the sample matrix. The resultant increased MDA's reflect the decreased aliquot. Sample B0TJR8 was prepared twice due to very low recoveries caused by the matrix interferences.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

SAMPLE SUMMARY

SDG 7100
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0361

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0TJR7	202-S REDOX	LIQUID		N903096-04	B99-036	B99-036-37	03/08/99 10:00
B0TJR8	202-S REDOX	LIQUID		N903096-05	B99-036	B99-036-38	03/08/99 10:25
B0TJR9	202-S REDOX	LIQUID		N903096-02	B99-036	B99-036-22	03/08/99 10:42
B0TJT0	202-S REDOX	LIQUID		N903096-06	B99-036	B99-036-38	03/08/99 11:00
B0TJT1	202-S REDOX	LIQUID		N903096-01	B99-036	B99-036-21	03/08/99 11:10
B0TJT2	202-S REDOX	LIQUID		N903096-03	B99-036	B99-036-23	03/09/99 08:30
Method Blank		LIQUID		N903096-08	B99-036		
Lab Control Sample		LIQUID		N903096-07	B99-036		
Duplicate (N903096-01)	202-S REDOX	LIQUID		N903096-09	B99-036		03/08/99 11:10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

QC SUMMARY

SDG 7100
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0361

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7100	B99-036-21	B0TJT1	LIQUID				03/19/99	11	N903096-01	7100-001
	B99-036-22	B0TJR9	LIQUID				03/19/99	11	N903096-02	7100-002
	B99-036-23	B0TJT2	LIQUID				03/19/99	10	N903096-03	7100-003
	B99-036-37	B0TJR7	LIQUID				03/19/99	11	N903096-04	7100-004
	B99-036-38	B0TJR8	LIQUID				03/19/99	11	N903096-05	7100-005
		B0TJT0	LIQUID				03/19/99	11	N903096-06	7100-006
		Method Blank	LIQUID						N903096-08	7100-008
		Lab Control Sample	LIQUID						N903096-07	7100-007
		Duplicate (N903096-01)	LIQUID				03/19/99	11	N903096-09	7100-009

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

SDG 7100
Contact L.A. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0361

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
PU	LIQUID	Plutonium-238,239/240, Liquid	6880-006	5.0	5			1	1	1/1		
U	LIQUID	Uranium in Liquid	6880-006	5.0	5			1	1	1/1		
Beta Counting												
SR	LIQUID	Total Strontium in Liquids	6880-006	10.0	5			1	1	1/1		
TC	LIQUID	Technetium-99 in Liquid	6880-006	10.0	5			1	1	1/1		
Gas Proportional Counting												
80A	LIQUID	Gross Alpha in Liquid Samples	6880-006	20.0	6			1	1	1/1		
80B	LIQUID	Gross Beta in Liquid Samples	6880-006	15.0	6			1	1	1/1		
Gamma Spectroscopy												
GAM	LIQUID	Gamma Scan in Liquid	6880-006	10.0	5			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

WORK SUMMARY

SDG 7100
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0361

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0TJR7			N903096-04	7100-004	80A/80		04/23/99	05/04/99	TAH	Gross Alpha in Liquid Samples
202-S REDOX		LIQUID	03/08/99	7100-004	80B/80		04/23/99	05/04/99	TAH	Gross Beta in Liquid Samples
B99-036-37	B99-036		03/19/99	7100-004	GAM		04/14/99	05/04/99	TAH	Gamma Scan in Liquid
				7100-004	PU		04/16/99	05/04/99	TAH	Plutonium-238,239/240, Liquid
				7100-004	SR		04/20/99	05/04/99	TAH	Total Strontium in Liquids
				7100-004	TC		04/23/99	05/04/99	TAH	Technetium-99 in Liquid
				7100-004	U		04/16/99	05/04/99	TAH	Uranium in Liquid
B0TJR8			N903096-05	7100-005	80A/80		04/23/99	05/04/99	TAH	Gross Alpha in Liquid Samples
202-S REDOX		LIQUID	03/08/99	7100-005	80B/80		04/23/99	05/04/99	TAH	Gross Beta in Liquid Samples
B99-036-38	B99-036		03/19/99	7100-005	GAM		04/15/99	05/04/99	TAH	Gamma Scan in Liquid
				7100-005	PU		04/16/99	05/04/99	TAH	Plutonium-238,239/240, Liquid
				7100-005	SR		04/20/99	05/04/99	TAH	Total Strontium in Liquids
				7100-005	TC	A1	04/30/99	05/04/99	TAH	Technetium-99 in Liquid
				7100-005	U		04/16/99	05/04/99	TAH	Uranium in Liquid
B0TJR9			N903096-02	7100-002	80A/80		04/23/99	05/04/99	TAH	Gross Alpha in Liquid Samples
202-S REDOX		LIQUID	03/08/99	7100-002	80B/80		04/23/99	05/04/99	TAH	Gross Beta in Liquid Samples
B99-036-22	B99-036		03/19/99	7100-002	GAM		04/09/99	05/04/99	TAH	Gamma Scan in Liquid
				7100-002	PU		04/16/99	05/04/99	TAH	Plutonium-238,239/240, Liquid
				7100-002	SR		04/20/99	05/04/99	TAH	Total Strontium in Liquids
				7100-002	TC		04/24/99	05/04/99	TAH	Technetium-99 in Liquid
				7100-002	U		04/16/99	05/04/99	TAH	Uranium in Liquid
B0TJT0			N903096-06	7100-006	80A/80		04/23/99	05/04/99	TAH	Gross Alpha in Liquid Samples
202-S REDOX		LIQUID	03/08/99	7100-006	80B/80		04/23/99	05/04/99	TAH	Gross Beta in Liquid Samples
B99-036-38	B99-036		03/19/99	7100-006	GAM		04/15/99	05/04/99	TAH	Gamma Scan in Liquid
B0TJT1			N903096-01	7100-001	80A/80		04/23/99	05/04/99	TAH	Gross Alpha in Liquid Samples
202-S REDOX		LIQUID	03/08/99	7100-001	80B/80		04/23/99	05/04/99	TAH	Gross Beta in Liquid Samples
B99-036-21	B99-036		03/19/99	7100-001	GAM		04/16/99	05/04/99	TAH	Gamma Scan in Liquid
				7100-001	PU		04/16/99	05/04/99	TAH	Plutonium-238,239/240, Liquid
				7100-001	SR		04/20/99	05/04/99	TAH	Total Strontium in Liquids
				7100-001	TC		04/23/99	05/04/99	TAH	Technetium-99 in Liquid
				7100-001	U		04/16/99	05/04/99	TAH	Uranium in Liquid

Lab id TMANC
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

SDG 7100
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0361

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B0TJT2			N903096-03	7100-003	80A/80		04/23/99	05/04/99	TAH	Gross Alpha in Liquid Samples
202-S REDOX		LIQUID	03/09/99	7100-003	80B/80		04/23/99	05/04/99	TAH	Gross Beta in Liquid Samples
B99-036-23	B99-036		03/19/99	7100-003	PU		04/16/99	05/04/99	TAH	Plutonium-238,239/240, Liquid
				7100-003	SR		04/20/99	05/04/99	TAH	Total Strontium in Liquids
				7100-003	TC		04/24/99	05/04/99	TAH	Technetium-99 in Liquid
				7100-003	U		04/16/99	05/04/99	TAH	Uranium in Liquid
Method Blank			N903096-08	7100-008	80A/80		04/23/99	05/04/99	TAH	Gross Alpha in Liquid Samples
		LIQUID		7100-008	80B/80		04/23/99	05/04/99	TAH	Gross Beta in Liquid Samples
	B99-036			7100-008	GAM		04/16/99	05/04/99	TAH	Gamma Scan in Liquid
				7100-008	PU		04/16/99	05/04/99	TAH	Plutonium-238,239/240, Liquid
				7100-008	SR		04/20/99	05/04/99	TAH	Total Strontium in Liquids
				7100-008	TC		04/23/99	05/04/99	TAH	Technetium-99 in Liquid
				7100-008	U		04/16/99	05/04/99	TAH	Uranium in Liquid
Lab Control Sample			N903096-07	7100-007	80A/80		04/23/99	05/04/99	TAH	Gross Alpha in Liquid Samples
		LIQUID		7100-007	80B/80		04/23/99	05/04/99	TAH	Gross Beta in Liquid Samples
	B99-036			7100-007	GAM		04/08/99	05/04/99	TAH	Gamma Scan in Liquid
				7100-007	PU		04/16/99	05/04/99	TAH	Plutonium-238,239/240, Liquid
				7100-007	SR		04/20/99	05/04/99	TAH	Total Strontium in Liquids
				7100-007	TC		04/23/99	05/04/99	TAH	Technetium-99 in Liquid
				7100-007	U		04/16/99	05/04/99	TAH	Uranium in Liquid
Duplicate (N903096-01)			N903096-09	7100-009	80A/80		04/23/99	05/04/99	TAH	Gross Alpha in Liquid Samples
202-S REDOX		LIQUID	03/08/99	7100-009	80B/80		04/23/99	05/04/99	TAH	Gross Beta in Liquid Samples
	B99-036		03/19/99	7100-009	GAM		04/16/99	05/04/99	TAH	Gamma Scan in Liquid
				7100-009	PU		04/16/99	05/04/99	TAH	Plutonium-238,239/240, Liquid
				7100-009	SR		04/20/99	05/04/99	TAH	Total Strontium in Liquids
				7100-009	TC		04/23/99	05/04/99	TAH	Technetium-99 in Liquid
				7100-009	U		04/16/99	05/04/99	TAH	Uranium in Liquid

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SAMPLE DELIVERY GROUP H0361

SDG 7100
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0361

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
80A/80	B99-036	Gross Alpha in Liquid Samples	EPA900.0	6			1	1	1	9
80B/80	B99-036	Gross Beta in Liquid Samples	EPA900.0	6			1	1	1	9
GAM	B99-036	Gamma Scan in Liquid	GAMMAHI	5			1	1	1	8
PU	B99-036	Plutonium-238,239/240, Liquid	PUPLATE	5			1	1	1	8
SR	B99-036	Total Strontium in Liquids	SR-RAD	5			1	1	1	8
TC	B99-036	Technetium-99 in Liquid	TC99TRLSC	5			1	1	1	8
U	B99-036	Uranium in Liquid		5			1	1	1	8
TOTALS				37			7	7	7	58

Lab id TMANC
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TMA / RICHMOND

SAMPLE DELIVERY GROUP H0361

N903096-08 Method Blank

METHOD BLANK

SDG	7100	Client/Case no	Hanford	SDG-H0361	
Contact	L.A. Johnson	Case no	TRB-SBB-207925		
Lab sample id	N903096-08	Client sample id	Method Blank		
Dept sample id	7100-008	Material/Matrix		LIQUID	
		SAF No	B99-036		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.148	2.0	4.0	3.0	U	80A
Gross Beta	12587-47-2	-0.641	3.3	5.8	4.0	U	80B
Technetium 99	14133-76-7	-0.015	0.33	0.93	15	U	TC
Uranium 233/234	U-233/234	0	0.019	0.073	1.0	U	U
Uranium 235	15117-96-1	0	0.023	0.088	1.0	U	U
Uranium 238	U-238	0	0.019	0.073	1.0	U	U
Plutonium 238	13981-16-3	0.004	0.016	0.030	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.008	0.030	1.0	U	PU
Total Strontium	SR-RAD	-0.056	0.13	0.20	2.0	U	SR
Potassium 40	13966-00-2	U		200		U	GAM
Cobalt 60	10198-40-0	U		20	25	U	GAM
Cesium 137	10045-97-3	U		10	15	U	GAM
Europium 152	14683-23-9	U		40	50	U	GAM
Europium 154	15585-10-1	U		40	50	U	GAM
Europium 155	14391-16-3	U		20	50	U	GAM
Americium 241	14596-10-2	U		10		U	GAM
Uranium 238	U-238	U		2000		U	GAM
Uranium 235	15117-96-1	U		40		U	GAM

202-S REDOX Misc. Waste-Other Liquid

QC-BLANK 30380

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/99

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SAMPLE DELIVERY GROUP H0361

N903096-07

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7100

Contact L.A. Johnson

Client/Case no Hanford SDG-H0361

Case no TRB-SBB-207925

Lab sample id N903096-07

Dept sample id 7100-007

Client sample id Lab Control Sample

Material/Matrix LIQUID

SAF No B99-036

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	219	16	3.3	3.0		80A	201	8.0	109	65-135	80-120
Gross Beta	231	11	5.8	4.0		80B	229	9.2	101	75-125	80-120
Technetium 99	66.3	2.4	0.95	15		TC	65.4	2.6	101	83-117	80-120
Uranium 233/234	5.05	0.57	0.27	1.0		U	4.75	0.19	106	79-121	80-120
Uranium 235	4.00	0.49	0.069	1.0		U	3.89	0.16	103	79-121	80-120
Uranium 238	5.33	0.59	0.25	1.0		U	4.90	0.20	109	79-121	80-120
Plutonium 238	10.3	0.79	0.038	1.0		PU	10.1	0.40	102	85-115	80-120
Plutonium 239/240	10.7	0.81	0.044	1.0		PU	10.6	0.42	101	85-115	80-120
Total Strontium	12.0	0.42	0.20	2.0		SR	11.4	0.46	105	82-118	
Cobalt 60	410	32	20	25		GAM	460	18	89	82-118	80-120
Cesium 137	400	31	20	15		GAM	520	21	77	84-116	80-120

202-S REDOX Misc. Waste-Other Liquid

QC-LCS 30379

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

N903096-09

B0TJT1

DUPLICATE

SDG	7100	Client/Case no	Hanford SDG-H0361
Contact	L.A. Johnson	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N903096-09	Lab sample id	N903096-01
Dept sample id	7100-009	Dept sample id	7100-001
		Received	03/19/99
Client sample id	B0TJT1		
Location/Matrix	202-S REDOX LIQUID		
Collected	03/08/99 11:10		
Custody/SAF No	B99-036-21 B99-036		

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	-0.527	1.9	4.6	3.0	U	80A	-1.74	1.8	5.6	U	-	
Gross Beta	0.103	4.5	7.6	4.0	U	80B	-1.09	3.5	6.2	U	-	
Technetium 99	-3.78	4.8	15	15	U	TC	1.29	5.3	10	U	-	
Uranium 233/234	0.074	0.15	0.57	1.0	U	U	0.414	0.33	0.63	U	-	
Uranium 235	0.090	0.18	0.69	1.0	U	U	0	0.20	0.77	U	-	
Uranium 238	0.148	0.15	0.57	1.0	U	U	0	0.17	0.63	U	-	
Plutonium 238	-0.007	0.020	0.052	1.0	U	PU	0.011	0.016	0.029	U	-	
Plutonium 239/240	0.003	0.013	0.032	1.0	U	PU	0.003	0.011	0.025	U	-	
Total Strontium	-0.012	0.13	0.20	2.0	U	SR	-0.064	0.17	0.22	U	-	
Potassium 40	U		1.0		U	GAM	U		0.91	U	-	
Cobalt 60	U		0.080	25	U	GAM	U		0.068	U	-	
Cesium 137	U		0.070	15	U	GAM	U		0.060	U	-	
Europium 152	U		0.20	50	U	GAM	U		0.16	U	-	
Europium 154	U		0.20	50	U	GAM	U		0.19	U	-	
Europium 155	U		0.10	50	U	GAM	U		0.10	U	-	
Americium 241	U		0.060		U	GAM	U		0.055	U	-	
Uranium 238	U		8.0		U	GAM	U		7.1	U	-	
Uranium 235	U		0.20		U	GAM	U		0.19	U	-	

202-S REDOX Misc. Waste-Other Liquid

QC-DUP#1 30381

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

N903096-04 B0TJR7

DATA SHEET

SDG	7100	Client/Case no	Hanford SDG-H0361
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903096-04	Client sample id	B0TJR7
Dept sample id	7100-004	Location/Matrix	202-S REDOX LIQUID
Received	03/19/99	Collected	03/08/99 10:00
		Custody/SAF No	B99-036-37 B99-036

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.211	0.99	2.4	3.0	U	80A
Gross Beta	12587-47-2	-2.30	4.4	7.6	4.0	U	80B
Technetium 99	14133-76-7	0.203	0.35	0.96	15	U	TC
Uranium 233/234	U-233/234	0	0.019	0.072	1.0	U	U
Uranium 235	15117-96-1	0	0.023	0.087	1.0	U	U
Uranium 238	U-238	0	0.019	0.072	1.0	U	U
Plutonium 238	13981-16-3	0	0.011	0.030	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.005	0.021	1.0	U	PU
Total Strontium	SR-RAD	0.011	0.15	0.20	2.0	U	SR
Potassium 40	13966-00-2	U		0.83		U	GAM
Cobalt 60	10198-40-0	U		0.062	25	U	GAM
Cesium 137	10045-97-3	U		0.056	15	U	GAM
Europium 152	14683-23-9	U		0.15	50	U	GAM
Europium 154	15585-10-1	U		0.17	50	U	GAM
Europium 155	14391-16-3	U		0.094	50	U	GAM
Americium 241	14596-10-2	U		0.051		U	GAM
Uranium 238	U-238	U		7.3		U	GAM
Uranium 235	15117-96-1	U		0.18		U	GAM

202-S REDOX Misc. Waste-Other Liquid

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

N903096-05 B0TJR8

DATA SHEET

SDG	7100	Client/Case no	Hanford SDG-H0361
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903096-05	Client sample id	B0TJR8
Dept sample id	7100-005	Location/Matrix	202-S REDOX LIQUID
Received	03/19/99	Collected	03/08/99 10:25
		Custody/SAF No	B99-036-38 B99-036

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.315	0.98	2.4	3.0	U	80A
Gross Beta	12587-47-2	3.03	3.7	6.2	4.0	U	80B
Technetium 99	14133-76-7	-1.93	3.0	8.1	15	U	TC
Uranium 233/234	U-233/234	-0.008	0.017	0.064	1.0	U	U
Uranium 235	15117-96-1	0.010	0.020	0.077	1.0	U	U
Uranium 238	U-238	0	0.017	0.064	1.0	U	U
Plutonium 238	13981-16-3	-0.007	0.007	0.031	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.007	0.007	0.031	1.0	U	PU
Total Strontium	SR-RAD	-0.007	0.15	0.20	2.0	U	SR
Potassium 40	13966-00-2	U		1.1		U	GAM
Cobalt 60	10198-40-0	U		0.080	25	U	GAM
Cesium 137	10045-97-3	U		0.073	15	U	GAM
Europium 152	14683-23-9	U		0.20	50	U	GAM
Europium 154	15585-10-1	U		0.24	50	U	GAM
Europium 155	14391-16-3	U		0.12	50	U	GAM
Americium 241	14596-10-2	U		0.065		U	GAM
Uranium 238	U-238	U		8.8		U	GAM
Uranium 235	15117-96-1	U		0.22		U	GAM

202-S REDOX Misc. Waste-Other Liquid

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

N903096-02 B0TJR9

DATA SHEET

SDG	7100	Client/Case no	Hanford SDG-H0361
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903096-02	Client sample id	B0TJR9
Dept sample id	7100-002	Location/Matrix	202-S REDOX LIQUID
Received	03/19/99	Collected	03/08/99 10:42
		Custody/SAF No	B99-036-22 B99-036

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.314	1.5	3.1	3.0	U	80A
Gross Beta	12587-47-2	-0.790	3.3	5.7	4.0	U	80B
Technetium 99	14133-76-7	0.152	0.47	1.3	15	U	TC
Uranium 233/234	U-233/234	-0.009	0.018	0.069	1.0	U	U
Uranium 235	15117-96-1	0	0.022	0.083	1.0	U	U
Uranium 238	U-238	0	0.018	0.069	1.0	U	U
Plutonium 238	13981-16-3	0.005	0.016	0.032	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.005	0.016	0.038	1.0	U	PU
Total Strontium	SR-RAD	-0.029	0.15	0.20	2.0	U	SR
Potassium 40	13966-00-2	U		1.0		U	GAM
Cobalt 60	10198-40-0	U		0.078	25	U	GAM
Cesium 137	10045-97-3	U		0.068	15	U	GAM
Europium 152	14683-23-9	U		0.21	50	U	GAM
Europium 154	15585-10-1	U		0.20	50	U	GAM
Europium 155	14391-16-3	U		0.16	50	U	GAM
Americium 241	14596-10-2	U		0.083		U	GAM
Uranium 238	U-238	U		8.5		U	GAM
Uranium 235	15117-96-1	U		0.26		U	GAM

202-S REDOX Misc. Waste-Other Liquid

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

N903096-06 B0TJT0

DATA SHEET

SDG	7100	Client/Case no	Hanford SDG-H0361
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903096-06	Client sample id	B0TJT0
Dept sample id	7100-006	Location/Matrix	202-S REDOX LIQUID
Received	03/19/99	Collected	03/08/99 11:00
		Custody/SAF No	B99-036-38 B99-036

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.055	0.090	0.24	3.0	U	80A
Gross Beta	12587-47-2	-0.029	0.41	0.71	4.0	U	80B
Potassium 40	13966-00-2	U		1.1		U	GAM
Cobalt 60	10198-40-0	U		0.078	25	U	GAM
Cesium 137	10045-97-3	U		0.068	15	U	GAM
Europium 152	14683-23-9	U		0.19	50	U	GAM
Europium 154	15585-10-1	U		0.24	50	U	GAM
Europium 155	14391-16-3	U		0.12	50	U	GAM
Americium 241	14596-10-2	U		0.064		U	GAM
Uranium 238	U-238	U		8.9		U	GAM
Uranium 235	15117-96-1	U		0.23		U	GAM

202-S REDOX Misc. Waste-Other Liquid

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

N903096-01 B0TJT1

DATA SHEET

SDG	7100	Client/Case no	Hanford SDG-H0361
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903096-01	Client sample id	B0TJT1
Dept sample id	7100-001	Location/Matrix	202-S REDOX LIQUID
Received	03/19/99	Collected	03/08/99 11:10
		Custody/SAF No	B99-036-21 B99-036

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-1.74	1.8	5.6	3.0	U	80A
Gross Beta	12587-47-2	-1.09	3.5	6.2	4.0	U	80B
Technetium 99	14133-76-7	1.29	5.3	10	15	U	TC
Uranium 233/234	U-233/234	0.414	0.33	0.63	1.0	U	U
Uranium 235	15117-96-1	0	0.20	0.77	1.0	U	U
Uranium 238	U-238	0	0.17	0.63	1.0	U	U
Plutonium 238	13981-16-3	0.011	0.016	0.029	1.0	U	PU
Plutonium 239/240	PU-239/240	0.003	0.011	0.025	1.0	U	PU
Total Strontium	SR-RAD	-0.064	0.17	0.22	2.0	U	SR
Potassium 40	13966-00-2	U		0.91		U	GAM
Cobalt 60	10198-40-0	U		0.068	25	U	GAM
Cesium 137	10045-97-3	U		0.060	15	U	GAM
Europium 152	14683-23-9	U		0.16	50	U	GAM
Europium 154	15585-10-1	U		0.19	50	U	GAM
Europium 155	14391-16-3	U		0.10	50	U	GAM
Americium 241	14596-10-2	U		0.055		U	GAM
Uranium 238	U-238	U		7.1		U	GAM
Uranium 235	15117-96-1	U		0.19		U	GAM

202-S REDOX Misc. Waste-Other Liquid

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

N903096-03 B0TJT2

DATA SHEET

SDG	7100	Client/Case no	Hanford SDG-H0361
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903096-03	Client sample id	B0TJT2
Dept sample id	7100-003	Location/Matrix	202-S REDOX LIQUID
Received	03/19/99	Collected	03/09/99 08:30
		Custody/SAF No	B99-036-23 B99-036

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.284	0.98	2.4	3.0	U	80A
Gross Beta	12587-47-2	0.536	4.3	7.2	4.0	U	80B
Technetium 99	14133-76-7	0.041	0.40	0.95	15	U	TC
Uranium 233/234	U-233/234	0	0.017	0.067	1.0	U	U
Uranium 235	15117-96-1	0	0.021	0.081	1.0	U	U
Uranium 238	U-238	0	0.017	0.067	1.0	U	U
Plutonium 238	13981-16-3	0	0.010	0.025	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.008	0.010	0.029	1.0	U	PU
Total Strontium	SR-RAD	-0.039	0.13	0.19	2.0	U	SR

202-S REDOX Misc. Waste-Other Liquid

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

Test PU	Matrix LIQUID
SDG 7100	
Contact L.A. Johnson	

METHOD SUMMARY

PLUTONIUM-238,239/240, LIQUID

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0361	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240	
Preparation batch 6880-006								
B0TJR7	N903096-04			7100-004	U		U	
B0TJR8	N903096-05			7100-005	U		U	
B0TJR9	N903096-02			7100-002	U		U	
B0TJT1	N903096-01			7100-001	U		U	
B0TJT2	N903096-03			7100-003	U		U	
BLK (QC ID=30380)	N903096-08			7100-008	U		U	
LCS (QC ID=30379)	N903096-07			7100-007	ok		ok	
Duplicate (N903096-01)	N903096-09			7100-009	-	U	-	U
Nominal values and limits from method				RDLs (pCi/L)	1.0		1.0	
202-S REDOX Misc. Waste-Other Liquid								

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-006	2σ prep error 5.0 %			Reference Lab Notebook 6880 pg.06												
B0TJR7	N903096-04			0.030	0.500			96		922			39	04/16/99	04/16	SS-062
B0TJR8	N903096-05			0.031	0.500			94		755			39	04/16/99	04/16	SS-063
B0TJR9	N903096-02			0.038	0.500			96		922			39	04/16/99	04/16	SS-057
B0TJT1	N903096-01			0.029	0.500			96		922			39	04/16/99	04/16	SS-055
B0TJT2	N903096-03			0.029	0.500			95		922			38	04/16/99	04/16	SS-061
BLK (QC ID=30380)	N903096-08			0.030	0.500			80		755				04/16/99	04/16	SS-066
LCS (QC ID=30379)	N903096-07			0.044	0.500			76		755				04/16/99	04/16	SS-065
Duplicate (N903096-01) (QC ID=30381)	N903096-09			0.052	0.500			98		739			39	04/16/99	04/16	SS-009
Nominal values and limits from method				1.0	0.500					700			180			

PROCEDURES	REFERENCE	PUPLATE
	RP-070	Sample Dissolution - HF Method, rev 0
	RP-941	Plutonium Purification - Small Aliquot, rev 0

AVERAGES ± 2 SD	MDA	0.035	±	0.017
FOR 8 SAMPLES	YIELD	91	±	17

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

Test U	Matrix LIQUID
SDG 7100	
Contact L.A. Johnson	

METHOD SUMMARY

URANIUM IN LIQUID

ALPHA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0361	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234		2: Uranium 235		3: Uranium 238		RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 6880-006														
B0TJR7	N903096-04			7100-004	U		U		U					
B0TJR8	N903096-05			7100-005	U		U		U					
B0TJR9	N903096-02			7100-002	U		U		U					
B0TJT1	N903096-01			7100-001	U		U		U					
B0TJT2	N903096-03			7100-003	U		U		U					
BLK (QC ID=30380)	N903096-08			7100-008	U		U		U					
LCS (QC ID=30379)	N903096-07			7100-007	ok		ok		ok					
Duplicate (N903096-01)	N903096-09			7100-009	-	U	-	U	-	U				
Nominal values and limits from method				RDLs (pCi/L)	1.0		1.0		1.0					
202-S REDOX Misc. Waste-Other Liquid											Averages			

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ mL	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-006	2σ prep error 5.0 %			Reference Lab Notebook 6880 pg.06												
B0TJR7	N903096-04			0.087	1.00			74		176			39	04/16/99	04/16	SS-009
B0TJR8	N903096-05			0.077	1.00			80		176			39	04/16/99	04/16	SS-010
B0TJR9	N903096-02			0.083	1.00			76		174			39	04/16/99	04/16	SS-007
B0TJT1	N903096-01			0.77	0.100			81		174			39	04/16/99	04/16	SS-006
B0TJT2	N903096-03			0.081	1.00			77		176			38	04/16/99	04/16	SS-008
BLK (QC ID=30380)	N903096-08			0.088	1.00			70		176				04/16/99	04/16	SS-012
LCS (QC ID=30379)	N903096-07			0.27	1.00			91		176				04/16/99	04/16	SS-011
Duplicate (N903096-01) (QC ID=30381)	N903096-09			0.69	0.100			90		176			39	04/16/99	04/16	SS-013
Nominal values and limits from method				1.0	1.00					700			180			

PROCEDURES	RP-070	Sample Dissolution - HF Method, rev 0
	RP-911	Uranium Purification - Small Aliquot, rev 0

AVERAGES ± 2 SD	MDA	0.27	±	0.59
FOR 8 SAMPLES	YIELD	80	±	15

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

Test SR Matrix LIQUID
SDG 7100
Contact L.A. Johnson

METHOD SUMMARY

TOTAL STRONTIUM IN LIQUIDS

BETA COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0361

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6880-006					
B0TJR7	N903096-04			7100-004	U
B0TJR8	N903096-05			7100-005	U
B0TJR9	N903096-02			7100-002	U
B0TJT1	N903096-01			7100-001	U
B0TJT2	N903096-03			7100-003	U
BLK (QC ID=30380)	N903096-08			7100-008	U
LCS (QC ID=30379)	N903096-07			7100-007	ok
Duplicate (N903096-01)	N903096-09			7100-009	- U
Nominal values and limits from method 202-S REDOX Misc. Waste-Other Liquid		RDLs (pCi/L)			2.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-006	2σ prep error 10.0 % Reference Lab Notebook 6880 pg.06															
B0TJR7	N903096-04			0.20	1.00			68		400			43	04/15/99	04/20	GRB-204
B0TJR8	N903096-05			0.20	1.00			63		400			43	04/15/99	04/20	GRB-217
B0TJR9	N903096-02			0.20	1.00			64		400			43	04/15/99	04/20	GRB-202
B0TJT1	N903096-01			0.22	1.00			63		400			43	04/15/99	04/20	GRB-201
B0TJT2	N903096-03			0.19	1.00			65		400			42	04/15/99	04/20	GRB-203
BLK (QC ID=30380)	N903096-08			0.20	1.00			67		400				04/15/99	04/20	GRB-219
LCS (QC ID=30379)	N903096-07			0.20	1.00			64		400				04/15/99	04/20	GRB-218
Duplicate (N903096-01) (QC ID=30381)	N903096-09			0.20	1.00			68		400			43	04/15/99	04/20	GRB-220
Nominal values and limits from method				2.0	1.00					100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

Test SR	Matrix LIQUID
SDG 7100	
Contact L.A. Johnson	

METHOD SUMMARY, cont.

TOTAL STRONTIUM IN LIQUIDS

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0361	

PROCEDURES	REFERENCE	SR-RAD
	RP-500	Strontium - Initial Separation, rev 0
	RP-519	Strontium-89,90 Demounting and Yttrium Purification, rev 0

AVERAGES ± 2 SD	MDA	0.20	±	0.017
FOR 8 SAMPLES	YIELD	65	±	4

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

Test TC	Matrix LIQUID
SDG 7100	
Contact L.A. Johnson	

METHOD SUMMARY

TECHNETIUM-99 IN LIQUID

BETA COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0361	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6880-006						
B0TJR7	N903096-04			7100-004	U	
B0TJR8	N903096-05		A1	7100-005	U	
B0TJR9	N903096-02			7100-002	U	
B0TJT1	N903096-01			7100-001	U	
B0TJT2	N903096-03			7100-003	U	
BLK (QC ID=30380)	N903096-08			7100-008	U	
LCS (QC ID=30379)	N903096-07			7100-007	ok	
Duplicate (N903096-01)	N903096-09			7100-009	-	U

Nominal values and limits from method RDLs (pCi/L) 15

202-S REDOX Misc. Waste-Other Liquid

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ mL	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-006	2σ prep error 10.0 % Reference Lab Notebook 6880 pg.06															
B0TJR7	N903096-04			0.96	1.00			35		101			46	04/20/99	04/23	GRB-220
B0TJR8	N903096-05		A1	8.1	1.00			4		155			53	04/27/99	04/30	GRB-208
B0TJR9	N903096-02			1.3	1.00			26		101			47	04/20/99	04/24	GRB-219
B0TJT1	N903096-01			10	0.100			34		101			46	04/20/99	04/23	GRB-217
B0TJT2	N903096-03			0.95	1.00			36		101			46	04/20/99	04/24	GRB-220
BLK (QC ID=30380)	N903096-08			0.93	1.00			37		101				04/20/99	04/23	GRB-219
LCS (QC ID=30379)	N903096-07			0.95	1.00			37		101				04/20/99	04/23	GRB-218
Duplicate (N903096-01) (QC ID=30381)	N903096-09			15	0.100			23		101			46	04/20/99	04/23	GRB-220
Nominal values and limits from method				15	1.00					100			180			

PROCEDURES	REFERENCE	TC99TRLSC
	RP-020	Sample Leach for Technetium, rev 1
	RP-540	Technetium Purification, rev 0

AVERAGES ± 2 SD	MDA 4.8 ± 11
FOR 8 SAMPLES	YIELD 29 ± 23

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

Test 80A Matrix LIQUID
SDG 7100
Contact L.A. Johnson

METHOD SUMMARY

GROSS ALPHA IN LIQUID SAMPLES
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0361

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Gross Alpha	2: Sum, Alpha Emitters	RESULT RATIO (%) 2÷1	2σ
Preparation batch 6880-006								
B0TJR7	N903096-04	80		7100-004	U			
B0TJR8	N903096-05	80		7100-005	U			
B0TJR9	N903096-02	80		7100-002	U			
B0TJT0	N903096-06	80		7100-006	U			
B0TJT1	N903096-01	80		7100-001	U			
B0TJT2	N903096-03	80		7100-003	U			
BLK (QC ID=30380)	N903096-08	80		7100-008	U			
LCS (QC ID=30379)	N903096-07	80		7100-007	ok			
Duplicate (N903096-01)	N903096-09	80		7100-009	- U			
Nominal values and limits from method				RDLs (pCi/L)	3.0			
202-S REDOX Misc. Waste-Other Liquid						Average		

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-006	2σ prep error 20.0 %				Reference Lab Notebook 6880 pg.06											
B0TJR7	N903096-04	80		2.4	0.100			8		100			46	04/19/99	04/23	GRB-110
B0TJR8	N903096-05	80		2.4	0.100			6		100			46	04/19/99	04/23	GRB-111
B0TJR9	N903096-02	80		3.1	0.100			6		100			46	04/19/99	04/23	GRB-115
B0TJT0	N903096-06	80		0.24	1.00			2		100			46	04/19/99	04/23	GRB-112
B0TJT1	N903096-01	80		5.6	0.100			107		100			46	04/19/99	04/23	GRB-113
B0TJT2	N903096-03	80		2.4	0.100			6		100			45	04/19/99	04/23	GRB-116
BLK (QC ID=30380)	N903096-08	80		4.0	0.100			34		100				04/19/99	04/23	GRB-115
LCS (QC ID=30379)	N903096-07	80		3.3	0.100			35		100				04/19/99	04/23	GRB-113
Duplicate (N903096-01) (QC ID=30381)	N903096-09	80		4.6	0.100			84		100			46	04/19/99	04/23	GRB-116
Nominal values and limits from method				3.0	0.100			5-150		100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

Test 80A	Matrix LIQUID
SDG 7100	
Contact L.A. Johnson	

METHOD SUMMARY, cont.

GROSS ALPHA IN LIQUID SAMPLES

GAS PROPORTIONAL COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0361	

PROCEDURES	REFERENCE	EPA900.0
	EP-120	Gross Alpha and Gross Beta in Environmental Water, rev 2

AVERAGES ± 2 SD	MDA	3.1	±	3.1
FOR 9 SAMPLES	RESIDUE	32	±	77

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

Test 80B Matrix LIQUID
SDG 7100
Contact L.A. Johnson

METHOD SUMMARY

GROSS BETA IN LIQUID SAMPLES
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0361

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Gross Beta	2: Sum, Beta Emitters	RESULT RATIO (%) 2÷1	2σ
Preparation batch 6880-006								
B0TJR7	N903096-04	80		7100-004	U			
B0TJR8	N903096-05	80		7100-005	U			
B0TJR9	N903096-02	80		7100-002	U			
B0TJT0	N903096-06	80		7100-006	U			
B0TJT1	N903096-01	80		7100-001	U			
B0TJT2	N903096-03	80		7100-003	U			
BLK (QC ID=30380)	N903096-08	80		7100-008	U			
LCS (QC ID=30379)	N903096-07	80		7100-007	ok			
Duplicate (N903096-01)	N903096-09	80		7100-009	-	U		
Nominal values and limits from method				RDLs (pCi/L)	4.0			
202-S REDOX Misc. Waste-Other Liquid							Average	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ ml	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-006	2σ prep error 15.0 %			Reference Lab Notebook 6880 pg.06												
B0TJR7	N903096-04	80		7.6	0.100			8		100			46	04/19/99	04/23	GRB-110
B0TJR8	N903096-05	80		6.2	0.100			6		100			46	04/19/99	04/23	GRB-111
B0TJR9	N903096-02	80		5.7	0.100			6		100			46	04/19/99	04/23	GRB-115
B0TJT0	N903096-06	80		0.71	1.00			2		100			46	04/19/99	04/23	GRB-112
B0TJT1	N903096-01	80		6.2	0.100			107		100			46	04/19/99	04/23	GRB-113
B0TJT2	N903096-03	80		7.2	0.100			6		100			45	04/19/99	04/23	GRB-116
BLK (QC ID=30380)	N903096-08	80		5.8	0.100			34		100				04/19/99	04/23	GRB-115
LCS (QC ID=30379)	N903096-07	80		5.8	0.100			35		100				04/19/99	04/23	GRB-113
Duplicate (N903096-01) (QC ID=30381)	N903096-09	80		7.6	0.100			84		100			46	04/19/99	04/23	GRB-116
Nominal values and limits from method				4.0	0.100			5-150		100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

Test 80B	Matrix LIQUID
SDG 7100	
Contact L.A. Johnson	

METHOD SUMMARY, cont.

GROSS BETA IN LIQUID SAMPLES

GAS PROPORTIONAL COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG-H0361	

PROCEDURES	REFERENCE	EPA900.0
	EP-120	Gross Alpha and Gross Beta in Environmental Water, rev 2

AVERAGES ± 2 SD	MDA	5.9	±	4.2
FOR 9 SAMPLES	RESIDUE	32	±	77

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	05/06/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

Test GAM Matrix LIQUID
SDG 7100
Contact L.A. Johnson

METHOD SUMMARY

GAMMA SCAN IN LIQUID
GAMMA SPECTROSCOPY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0361

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60		Cesium 137	
Preparation batch 6880-006								
B0TJR7	N903096-04			7100-004	U		U	
B0TJR8	N903096-05			7100-005	U		U	
B0TJR9	N903096-02			7100-002	U		U	
B0TJT0	N903096-06			7100-006	U		U	
B0TJT1	N903096-01			7100-001	U		U	
BLK (QC ID=30380)	N903096-08			7100-008	U		U	
LCS (QC ID=30379)	N903096-07			7100-007	ok		LOW	
Duplicate (N903096-01)	N903096-09			7100-009	-	U	-	U
Nominal values and limits from method 202-S REDOX Misc. Waste-Other Liquid				RDLs (pCi/L)	25		15	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-006 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.06																
B0TJR7	N903096-04			0.056	100					641			37	03/29/99	04/14	JR,07,00
B0TJR8	N903096-05			0.073	100					404			38	03/29/99	04/15	JR,07,00
B0TJR9	N903096-02			0.068	100					408			32	03/29/99	04/09	JR,07,00
B0TJT0	N903096-06			0.068	95.0					459			38	03/29/99	04/15	JR,07,00
B0TJT1	N903096-01			0.060	100					597			39	03/29/99	04/16	JR,07,00
BLK (QC ID=30380)	N903096-08			10	0.500					434				03/29/99	04/16	JR,07,00
LCS (QC ID=30379)	N903096-07			20	0.500					444				03/29/99	04/08	JR,07,00
Duplicate (N903096-01) (QC ID=30381)	N903096-09			0.070	100					404			39	03/29/99	04/16	JR,07,00
Nominal values and limits from method				15	0.500					5			180			

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0361

Test	GAM Matrix LIQUID
SDG	7100
Contact	L.A. Johnson

METHOD SUMMARY, cont.

GAMMA SCAN IN LIQUID

GAMMA SPECTROSCOPY

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG-H0361

PROCEDURES	REFERENCE	GAMMAHI
	RP-070	Sample Dissolution - HF Method, rev 0
	RP-100	Ge(Li) Preparation for Reactor Waste Samples, rev 0

AVERAGES ± 2 SD	MDA	3.8	±	15
FOR 8 SAMPLES	YIELD		±	

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
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SDG 7100
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0361

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/06/99

SDG 7100
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0361

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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SDG 7100
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REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0361

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

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GUIDE, cont.

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DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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REPORT GUIDE

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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

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REPORT GUIDE

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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

SDG 7100
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

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SDG 7100
Contact L.A. Johnson

GUIDE, cont.

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Contract TRB-SBB-207925
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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

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REPORT GUIDE

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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

SDG 7100
Contact L.A. Johnson

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METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-036-21	Page 1 of 1

Collector Douglas L. Bowers / SJ GALE	Company Contact Thomas M. Brown	Telephone No. 509-376-1547	Project Coordinator TRENT, SJ	Price Code	Data Turnaround 45 Days
Project Designation 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location 202-S REDOX		SAF No. B99-036		
Ice Chest No. SML-264	Field Logbook No. EL-1309-3		Method of Shipment Overnight Carrier - Fed Ex		
Shipped To ~~TNA~~ THERMA RETEC	Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A		
			COA BR5ZA2W28		

POSSIBLE SAMPLE HAZARDS/REMARKS Media Unknown.	Preservation	None	None	None	COOL 4C						
	Type of Container	G/P	aG	aG	P						
	No. of Container(s)	1	1	1	1						
Special Handling and/or Storage None noted on SAF	Volume	40mL	60mL	500mL	500ml						
SAMPLE ANALYSIS		See item (1) in Special Instructions.	Activity Scan	See item (2) in Special Instructions.	SEE ITEM (1),(2),(3)(Ø) SPECIAL INST.						

Sample No.	Matrix *	Sample Date	Sample Time										
BOTJT1	Other Liquid	3-8-99	1110				X					BOT	JW1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
SJGALE	3/8/99 1100	FED EX	3-18-99
Relinquished By	Date/Time	Received By	Date/Time
Fed Ex	3-19-99 10:00	[illegible]	3-19-99 10:00
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(Ø) ACTIVITY SCAN

(1) Gross Alpha; Gross Beta; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Technetium-99

(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

(3) LAB SHALL ATTEMPT TO REDESOLVE OR HOMOGENIZE SAMPLE. SEND REMAINING SAMPLE TO RECRA FOR IGNITABILITY, pH, TCLP METALS, SULFIDE, CYANIDE, PCBs, VOA, SEMI-VOA,

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

B99-036-22 Page 1 of 1

Collector: Douglas L. Bowers SJGALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 172 3 OF 5	Field Logbook No.: EL-1309-3		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: TMA	Offsite Property No.		Bill of Lading/Air Bill No.
			COA BR152AZW28

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown.
FLAMMABLE

Special Handling and/or Storage
None noted on SAF

Preservation	None	None	None								
Type of Container	G/P	aG	aG								
No. of Container(s)	1	1	1								
Volume	40mL	60mL	500mL								

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	Activity Scan ✓	See item (2) in Special Instructions. ✓							
✓ BOTJR9	Other Liquid	3-8-99	1042	X	X	X						BOTJV9	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
SJGALE	3-18-99 1100	FED EX	3-18-99
Relinquished By: Fed Ex	Date/Time: 3-19-99 10:00	Received By:	Date/Time: 10:17 3-19-99
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
(1) Gross Alpha; Gross Beta; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Technetium-99
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}
POSSIBLE PURE ORGANIC

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

B99-036-23

Collector: Douglas L. Bowers / SJ GALE	Company Contact: Thomas M. Brown	Telephone No.: 509-376-1547	Project Coordinator: TRENT, SJ
Price Code	Data Turnaround: 45 Days		
Project Designation: 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location: 202-S REDOX		SAF No.: B99-036
Ice Chest No.: 1A2 3 of 3	Field Logbook No.		Method of Shipment: Overnight Carrier - Fed Ex
Shipped To: ~~TMA~~ THERMO NUTECH	Offsite Property No.		Bill of Lading/Air Bill No.
			COA BRIS2A2W28

POSSIBLE SAMPLE HAZARDS/REMARKS

Media Unknown.

Special Handling and/or Storage

None noted on SAF

Preservation	None	None	None								
Type of Container	G/P	aG	aG								
No. of Container(s)	1	1	1								
Volume	40mL	60mL	500mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions ✓	Activity Scan ✓	See item (2) in Special Instructions								
Sample No.	Matrix *	Sample Date	Sample Time								
✓ B0TJT2	Other Liquid	3-9-99	0830	X	X						B0TJW2

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By: SJ GALE	Date/Time: 3-8-99 1100	Received By: FED EX	Date/Time: 3-18-99
Relinquished By: Fed Ex	Date/Time: 3-19-99 10:00	Received By: [illegible]	Date/Time: 3-19-99 10:00
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gross Alpha; Gross Beta; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Technetium-99

(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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	B99-036-37	Page 1 of 1

Collector Douglas L. Bowers / SJ GALE	Company Contact Thomas M. Brown	Telephone No. 509-376-1547	Project Coordinator TRENT, SJ	Price Code	Data Turnaround 45 Days
Project Designation 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location 202-S REDOX		SAF No. B99-036		
Ice Chest No. 1A2 DRUM 1 OF 1	Field Logbook No. EL-1309-3		Method of Shipment Overnight Carrier - Fed Ex		
Shipped To ~~FMA~~ THERMO NUTECH	Offsite Property No.		Bill of Lading/Air Bill No.		
			COA BRISZA2W28		

POSSIBLE SAMPLE HAZARDS/REMARKS Media Unknown. Special Handling and/or Storage None noted on SAF												
	Preservation			None	None	None						
	Type of Container			G/P	aG	aG						
	No. of Container(s)			1	1	1						
	Volume			40ml.	60ml.	500ml.						
SAMPLE ANALYSIS				See item (1) in Special Instructions. ✓	Activity Scan ✓	See item (2) in Special Instructions ✓						
Sample No.	Matrix *	Sample Date	Sample Time									
✓ B0TJR7	Other Liquid	3-8-99	1000	X	X	X						B0TJV7

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
SJ GALE	3/8/99 1100	FED EX	3-12-99
Relinquished By	Date/Time	Received By	Date/Time
Fed Ex	3-14-99 10:00	Deborah R Lowe	3-14-99 60'g
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gross Alpha; Gross Beta; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Technetium-99
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

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	B99-036-38	Page 1 of 1

Collector Douglas L. Bowers / SJ GALE	Company Contact Thomas M. Brown	Telephone No. 509-376-1547	Project Coordinator TRENT, SJ	Price Code	Data Turnaround 45 Days
Project Designation 202-S REDOX Miscellaneous Waste - Other Liquid	Sampling Location 202-S REDOX		SAF No. B99-036		
Ice Chest No. 1A2 2OF3	Field Logbook No. EL-1309-3		Method of Shipment Overnight Carrier - Fed Ex		
Shipped To ~~FMA~~ THERMO NOTECH	Offsite Property No.		Bill of Lading/Air Bill No.		
			COA BRIS2A2W28		

POSSIBLE SAMPLE HAZARDS/REMARKS Media Unknown.											
	Preservation	None	None	None	NONE						
	Type of Container	G/P	aG	aG	aG						
Special Handling and/or Storage None noted on SAF	No. of Container(s)	1	1	1	1						
	Volume	40mL	60mL	500mL	120ml						
SAMPLE ANALYSIS		See item (1) in Special Instructions. ✓	Activity Scan ✓	See item (2) in Special Instructions. ✓	SEE ITEM (2)(3) SPECIAL INST.						

Sample No.	Matrix *	Sample Date	Sample Time										
~~BOTJR7~~	~~Other Liquid~~	~~3-8-99~~	~~1000~~	~~X~~	~~X~~	~~X~~			~~4/x~~	~~3/1799~~		~~BOTJV7~~	
✓ BOTJR8	"	3-8-99	1025	X	X	X	✓					BOTJV8	
✓ BOTJT0	"	3-8-99	1100				X					BOTJW0	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
SJ GALE 4/Gale	3/8/99 1100	FED EX	
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gross Alpha; Gross Beta; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Technetium-99
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}
(3) GROSS ALPHA; GROSS BETA

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

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

HAZARDOUS MATERIAL SHIPMENT RECORD (HMSR)

SHIPPING INST.

SHIP TO: Thermo Nutech
Company: 2030 Wright Avenue
Address: Richmond CA 94804-0040
City, State, Zip: Larry Johnson
Attention: 510-235-2633

Originating Facility: Building 3728, Area 300.
Originator Signature: David G. Johnson
Date: 3/18/99
FROM: ☐ WHC ☐ KEH ☐ PNL ☒ OTHER BHI

OFFSITE ONLY: SHIP: ☒ PREPAID ☐ COLLECT
VIA: ☐ Parcel Post ☐ Air Parcel Post ☐ Freight (Rail/Truck) ☒ Air (Passenger) ☐ Air (Cargo)
Cost Code: ERC-COA BRISC2A2W28

SHIPMENT DESCRIPTION

CONTAINERS / PACKAGING						CONTENT DESCRIPTION
Number of Containers	Type	DOT Spec	Package Dimensions	Quantity Pkg	Gross Wt Each Pkg	See 49 CFR 172.101(c) Hazardous Material Table
1	metal can w/ lock ring inner, steel drum outer	IP3 inner, 1A2 outer	Outer Package 5 gal drum 30 cm dia 45 cm ht	1-40ml 1-60ml 1-150ml 1-500ml 720 ml.	5 kg Total	Proper Ship Name: Flammable liquids, n.o.s. Hazard Class: Class 3, PG II UN/NA No.: UN 1993 List Secondary Hazards: Polychlorinated biphenyls class 9 List Labels Req'd/Applied Class 3 and Class 9
1	metal can w/ lock ring inner, steel drum outer	IP3 inner, 1A2 outer	Outer Package 5 gal drum 30 cm dia 45 cm ht	2-40ml 2-60ml 1-500ml 600 ml	5 kg Total	Proper Ship Name: Flammable liquids, n.o.s. Hazard Class: Class 3, PG II UN/NA No.: UN 1993 List Secondary Hazards: Polychlorinated biphenyls Class 9 List Labels Req'd/Applied Class 3 and Class 9
						Proper Ship Name: Hazard Class: UN/NA No.: List Secondary Hazards: List Labels Req'd/Applied

Total No. Containers: See pg 1 of 2
Gross Wt of Shipment: See Page 1 of 2
Identify Placards Required: 1. None-Excepted 2. 3. 4.
Identify Property Control or Return Order No.: (if applicable)

Material in manufacturers original container: ☐ Yes ☒ No
Container free of deterioration or damage: ☒ Yes
Container acceptability documented: ☒ Yes
Material is packaged, sealed, marked and labelled to meet DOT requirements: ☒ Yes

Describe Internal Packaging: See page 1 of 2

RADIATION RELEASE	Survey No.	Date	RM Signature	Print Name
	Not Radioactive. See attached Total Activity Reports			

CERTIFICATION

CONTRACTORS CERTIFICATION

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transport according to the applicable regulations of the Department of Transportation:

SEE PAGE 1

This shipment is within the Limitations prescribed for: ☐ Passenger Aircraft ☐ Cargo Aircraft ☐ NA

Authorizing Signature: _____ Print Name _____ Date: _____

FOR OFFSITE SHIPMENTS – ADDITIONAL APPROVAL REQUIRED

WHC	TRAFFIC	B.L. No.	Date Shipped	ETA	Routing	Special Considerations

WHC Traffic: _____ WHC Shipping: _____

HAZARDOUS MATERIAL SHIPMENT RECORD (HMSR)

Page 1 of 2

SHIPPING INST.

SHIP TO: Thermo Nutech
Company
2030 Wright Avenue
Address
Richmond CA 94804-0010
City, State, Zip
Larry Johnson
Attention: 510-235-5133

Originating Facility: Building 2725, Area 300
Originator Signature: David St John
Date: 3/18/99
FROM: ☐ WHC ☐ KEH ☐ PNL ☒ OTHER BHI
OFFSITE ONLY: SHIP: ☒ PREPAID ☐ COLLECT
VIA: ☐ Parcel Post ☐ Air Parcel Post ☐ Freight (Rail/Truck) ☒ Air (Passenger) ☐ Air (Cargo)
Cost Code: ERC-COA BR15C2A2W28

SHIPMENT DESCRIPTION

CONTAINERS/PACKAGING						CONTENT DESCRIPTION
Number of Containers	Type	DOT Spec	Package Dimensions	Quantity Pkg	Gross Wt Each Pkg	See 49 CFR 172.101(c) Hazardous Material Table
1	Metal control lock box, inner, Steel drum outer	IP3 inner, 1A2 outer	Outer package: 30cm dia 45cm ht.	1-40ml, 1-60ml, 1-500ml, 600 ml. total	5 kg	Proper Ship Name: Flammable liquids, n.o.s. (TAS 3/18/99) Hazard Class: Class 3, PG II UN/NA No.: UN 1993 List Secondary Hazards: Chlorinated biphenyls Class 9 List Labels Req'd/Applied: Class 3
						Proper Ship Name: Hazard Class: UN/NA No.: IATA 3305 pkg per Instruct 10.5 List Secondary Hazards: (TAS 3/18/99) FX-06 List Labels Req'd/Applied: IATA Stickers Instruction USG-14
Emergency Response: 509-373 3800 CAG Numbers: 129 (flammable) 171 (PCBs)						Proper Ship Name: Hazardous Waste Liquid, n.o.s. Hazard Class: Dangerous UN/NA No.: UN 3082 Class 9 List Secondary Hazards: List Labels Req'd/Applied:
Total Volume = 1920ml						

Total No. Containers	Gross Wt of Shipment	Identify Placards Required	Identify Property Control or Return Order No.: (if applicable)
3	15 kg	1. None required 2. 3. 4.	

Material in manufacturers original container: ☐ Yes ☒ No
Container free of deterioration or damage: ☒ Yes
Container acceptability documented: ☒ Yes
Material is packaged, sealed, marked and labelled to meet DOT requirements: ☒ Yes

Describe Internal Packaging: [illegible]

RADIATION RELEASE	Survey No.	Date	RM Signature	Print Name
	Not Radioactive	See	attached Total Activity Reports	

CERTIFICATION

CONTRACTORS CERTIFICATION

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transport according to the applicable regulations of the Department of Transportation:

This shipment is within the Limitations prescribed for: ☒ Passenger Aircraft ☐ Cargo Aircraft ☐ NA

Authorizing Signature: [signature] Print Name: Randall Clawson Date: 3-18-99

FOR OFFSITE SHIPMENTS – ADDITIONAL APPROVAL REQUIRED

WHC	TRAFFIC	B.L. No.	Date Shipped	ETA	Routing	Special Considerations
			3/18/99	3/19/99	FED-X	

WHC Traffic: [signature] for WHC Shipping:

54-3000-596 (10-87)

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 3-17-99 10:00

CoC No. B99-036-21, 22, 23, 37 & 38 B99-038-18 & 19
+5 gal Drums

Container I.D. No. SML-264 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: _____
7. Number of containers per sample: _____ (Or see CoC ✓)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [✓] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [✓] No [ ] Date 3-19-99
14. Received by [signature] Date: 3-17-99 Time: 10:00

LOGIN

TNU W.O. No. _____ Group No. _____ Client W.O. No. _____

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____