H0550-TMA/RECRA

[illegible]259

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JAN 27 2000
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Thermo Nutech
W.O. No. N9-09-208-7223

Bechtel Hanford Inc.
SDG H0550

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0550 is composed of seven liquid (water) samples designated under SAF No. C99-045 with a Project Designation of: ERDF GW MONITORING, SEPTEMBER 1999.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklists. The finalized results were reported to BHI via fax on November 30, 1999.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Total Radium Analyses

No problems were encountered during the course of the analyses.

2.3 Iodine-129 Analyses

No problems were encountered during the course of the analyses. A recount was performed on sample T0V457.

2.4 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.5 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.6 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

DEC 1999
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

SAMPLE SUMMARY

SDG 7223
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0550

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
T0V457	HANFORD SITE	WATER		N909208-01	C99-045	C99-045-7	09/28/99 11:26
T0V459	HANFORD SITE	WATER		N909208-02	C99-045	C99-045-5	09/28/99 11:45
T0V461	HANFORD SITE	WATER		N909208-03	C99-045	C99-045-6	09/28/99 10:30
T0V463	HANFORD SITE	WATER		N909208-04	C99-045	C99-045-1	09/28/99 09:39
T0V465	HANFORD SITE	WATER		N909208-05	C99-045	C99-045-2	09/28/99 09:39
T0V467	HANFORD SITE	WATER		N909208-06	C99-045	C99-045-3	09/28/99 13:23
T0V469	HANFORD SITE	WATER		N909208-07	C99-045	C99-045-4	09/28/99 08:15
Method Blank		WATER		N909208-09	C99-045		
Lab Control Sample		WATER		N909208-08	C99-045		
Duplicate (N909208-01)	HANFORD SITE	WATER		N909208-10	C99-045		09/28/99 11:26

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

QC SUMMARY

SDG 7223
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0550

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
7223	C99-045-1	T0V463	WATER				09/29/99	1	N909208-04	7223-004
	C99-045-2	T0V465	WATER				09/29/99	1	N909208-05	7223-005
	C99-045-3	T0V467	WATER				09/29/99	1	N909208-06	7223-006
	C99-045-4	T0V469	WATER				09/29/99	1	N909208-07	7223-007
	C99-045-5	T0V459	WATER				09/29/99	1	N909208-02	7223-002
	C99-045-6	T0V461	WATER				09/29/99	1	N909208-03	7223-003
	C99-045-7	T0V457	WATER				09/29/99	1	N909208-01	7223-001
		Method Blank	WATER						N909208-09	7223-009
		Lab Control Sample	WATER						N909208-08	7223-008
		Duplicate (N909208-01)	WATER				09/29/99	1	N909208-10	7223-010

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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

PREP BATCH SUMMARY

SDG 7223
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0550

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Beta Counting												
TC	WATER	Technetium 99 in Water	6904-047	10.0	7			1	1	1/1		
Gas Proportional Counting												
RAT	WATER	Radium 226/228 in Water	6904-047	5.0	7			1	1	1/1		
Gas Proportional Counting												
80A	WATER	Gross Alpha in Water	6904-047	20.0	7			1	1	1/1		
80B	WATER	Gross Beta in Water	6904-047	15.0	7			1	1	1/1		
Gamma Spectroscopy												
I	WATER	Iodine 129 in Water	6904-047	5.0	7			1	1	1/1		
Kinetic Phosphorimetry												
U_T	WATER	Uranium, Total in Water	6904-047	9.0	7			1	1	1/1		
Liquid Scintillation Counting												
C	WATER	Carbon 14 in Water	6904-047	10.0	7			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
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Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

WORK SUMMARY

SDG 7223
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0550

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
T0V457			N909208-01	7223-001	80A/80		10/26/99	11/30/99	NJV	Gross Alpha in Water
HANFORD SITE		WATER	09/28/99	7223-001	80B/80		10/26/99	11/30/99	NJV	Gross Beta in Water
C99-045-7	C99-045		09/29/99	7223-001	C		10/23/99	11/30/99	NJV	Carbon 14 in Water
				7223-001	I		11/24/99	11/30/99	NJV	Iodine 129 in Water
				7223-001	RAT		11/01/99	11/30/99	NJV	Radium 226/228 in Water
				7223-001	TC		11/22/99	11/30/99	NJV	Technetium 99 in Water
				7223-001	U_T		10/26/99	11/30/99	NJV	Uranium, Total in Water
T0V459			N909208-02	7223-002	80A/80		10/26/99	11/30/99	NJV	Gross Alpha in Water
HANFORD SITE		WATER	09/28/99	7223-002	80B/80		10/26/99	11/30/99	NJV	Gross Beta in Water
C99-045-5	C99-045		09/29/99	7223-002	C		10/24/99	11/30/99	NJV	Carbon 14 in Water
				7223-002	I		11/19/99	11/30/99	NJV	Iodine 129 in Water
				7223-002	RAT		11/01/99	11/30/99	NJV	Radium 226/228 in Water
				7223-002	TC		11/23/99	11/30/99	NJV	Technetium 99 in Water
				7223-002	U_T		10/26/99	11/30/99	NJV	Uranium, Total in Water
T0V461			N909208-03	7223-003	80A/80		10/26/99	11/30/99	NJV	Gross Alpha in Water
HANFORD SITE		WATER	09/28/99	7223-003	80B/80		10/26/99	11/30/99	NJV	Gross Beta in Water
C99-045-6	C99-045		09/29/99	7223-003	C		10/24/99	11/30/99	NJV	Carbon 14 in Water
				7223-003	I		11/19/99	11/30/99	NJV	Iodine 129 in Water
				7223-003	RAT		11/03/99	11/30/99	NJV	Radium 226/228 in Water
				7223-003	TC		11/23/99	11/30/99	NJV	Technetium 99 in Water
				7223-003	U_T		10/26/99	11/30/99	NJV	Uranium, Total in Water
T0V463			N909208-04	7223-004	80A/80		10/26/99	11/30/99	NJV	Gross Alpha in Water
HANFORD SITE		WATER	09/28/99	7223-004	80B/80		10/26/99	11/30/99	NJV	Gross Beta in Water
C99-045-1	C99-045		09/29/99	7223-004	C		10/24/99	11/30/99	NJV	Carbon 14 in Water
				7223-004	I		11/20/99	11/30/99	NJV	Iodine 129 in Water
				7223-004	RAT		11/03/99	11/30/99	NJV	Radium 226/228 in Water
				7223-004	TC		11/23/99	11/30/99	NJV	Technetium 99 in Water
				7223-004	U_T		10/26/99	11/30/99	NJV	Uranium, Total in Water
T0V465			N909208-05	7223-005	80A/80		10/26/99	11/30/99	NJV	Gross Alpha in Water
HANFORD SITE		WATER	09/28/99	7223-005	80B/80		10/26/99	11/30/99	NJV	Gross Beta in Water
C99-045-2	C99-045		09/29/99	7223-005	C		10/24/99	11/30/99	NJV	Carbon 14 in Water
				7223-005	I		11/22/99	11/30/99	NJV	Iodine 129 in Water
				7223-005	RAT		11/05/99	11/30/99	NJV	Radium 226/228 in Water
				7223-005	TC		11/19/99	11/30/99	NJV	Technetium 99 in Water
				7223-005	U_T		10/26/99	11/30/99	NJV	Uranium, Total in Water

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

SDG 7223
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0550

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
T0V467			N909208-06	7223-006	80A/80		10/26/99	11/30/99	NJV	Gross Alpha in Water
HANFORD SITE		WATER	09/28/99	7223-006	80B/80		10/26/99	11/30/99	NJV	Gross Beta in Water
C99-045-3	C99-045		09/29/99	7223-006	C		10/24/99	11/30/99	NJV	Carbon 14 in Water
				7223-006	I		11/23/99	11/30/99	NJV	Iodine 129 in Water
				7223-006	RAT		11/04/99	11/30/99	NJV	Radium 226/228 in Water
				7223-006	TC		11/23/99	11/30/99	NJV	Technetium 99 in Water
				7223-006	U_T		10/26/99	11/30/99	NJV	Uranium, Total in Water
T0V469			N909208-07	7223-007	80A/80		10/26/99	11/30/99	NJV	Gross Alpha in Water
HANFORD SITE		WATER	09/28/99	7223-007	80B/80		10/26/99	11/30/99	NJV	Gross Beta in Water
C99-045-4	C99-045		09/29/99	7223-007	C		10/24/99	11/30/99	NJV	Carbon 14 in Water
				7223-007	I		11/23/99	11/30/99	NJV	Iodine 129 in Water
				7223-007	RAT		11/05/99	11/30/99	NJV	Radium 226/228 in Water
				7223-007	TC		11/23/99	11/30/99	NJV	Technetium 99 in Water
				7223-007	U_T		10/26/99	11/30/99	NJV	Uranium, Total in Water
Method Blank			N909208-09	7223-009	80A/80		10/26/99	11/30/99	NJV	Gross Alpha in Water
		WATER		7223-009	80B/80		10/26/99	11/30/99	NJV	Gross Beta in Water
	C99-045			7223-009	C		10/24/99	11/30/99	NJV	Carbon 14 in Water
				7223-009	I		11/22/99	11/30/99	NJV	Iodine 129 in Water
				7223-009	RAT		11/02/99	11/30/99	NJV	Radium 226/228 in Water
				7223-009	TC		11/23/99	11/30/99	NJV	Technetium 99 in Water
				7223-009	U_T		10/26/99	11/30/99	NJV	Uranium, Total in Water
Lab Control Sample			N909208-08	7223-008	80A/80		10/26/99	11/30/99	NJV	Gross Alpha in Water
		WATER		7223-008	80B/80		10/26/99	11/30/99	NJV	Gross Beta in Water
	C99-045			7223-008	C		10/24/99	11/30/99	NJV	Carbon 14 in Water
				7223-008	I		11/24/99	11/30/99	NJV	Iodine 129 in Water
				7223-008	RAT		10/30/99	11/30/99	NJV	Radium 226/228 in Water
				7223-008	TC		11/19/99	11/30/99	NJV	Technetium 99 in Water
				7223-008	U_T		10/26/99	11/30/99	NJV	Uranium, Total in Water
Duplicate (N909208-01)			N909208-10	7223-010	80A/80		10/26/99	11/30/99	NJV	Gross Alpha in Water
HANFORD SITE		WATER	09/28/99	7223-010	80B/80		10/26/99	11/30/99	NJV	Gross Beta in Water
	C99-045		09/29/99	7223-010	C		10/25/99	11/30/99	NJV	Carbon 14 in Water
				7223-010	I		11/26/99	11/30/99	NJV	Iodine 129 in Water
				7223-010	RAT		11/04/99	11/30/99	NJV	Radium 226/228 in Water
				7223-010	TC		11/22/99	11/30/99	NJV	Technetium 99 in Water
				7223-010	U_T		10/26/99	11/30/99	NJV	Uranium, Total in Water

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

SDG 7223
Contact Kevin C. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0550

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
80A/80	C99-045	Gross Alpha in Water	EPA900.0	7			1	1	1	10
80B/80	C99-045	Gross Beta in Water	EPA900.0	7			1	1	1	10
C	C99-045	Carbon 14 in Water	C14CHEMLSC	7			1	1	1	10
I	C99-045	Iodine 129 in Water	I129LEPS	7			1	1	1	10
RAT	C99-045	Radium 226/228 in Water		7			1	1	1	10
TC	C99-045	Technetium 99 in Water	TC99TRLSC	7			1	1	1	10
U_T	C99-045	Uranium, Total in Water	UKPA	7			1	1	1	10
TOTALS				49			7	7	7	70

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

N909208-09

Method Blank

METHOD BLANK

SDG	7223	Client/Case no	Hanford	SDG	H0550
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909208-09	Client sample id	Method Blank		
Dept sample id	7223-009	Material/Matrix		WATER	
		SAF No	C99-045		

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.087	0.33	0.90	3.0	U	80A
Gross Beta	12587-47-2	-0.456	1.2	2.1	4.0	U	80B
Carbon 14	14762-75-5	-11.3	9.8	17		U	C
Technetium 99	14133-76-7	2.91	3.9	7.7	15	U	TC
Iodine 129	15046-84-1	1.86	1.6	3.5		U	I
Radium 226	ALPHA-RA	-0.037	0.084	0.41		U	RAT
Total Uranium (ug/L)	7440-61-1	-0.006	0.004	0.010	0.10	U	U_T

ERDF GW MONITORING SEPTEMBER 1999

QC-BLANK 32130

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

N909208-08

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7223

Contact Kevin C. Johnson

Client/Case no Hanford SDG H0550

Case no TRB-SBB-207925

Lab sample id N909208-08

Dept sample id 7223-008

Client sample id Lab Control Sample

Material/Matrix WATER

SAF No C99-045

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	68.0	5.1	1.1	3.0		80A	67.0	2.7	102	67-133	80-120
Gross Beta	77.4	3.8	2.5	4.0		80B	75.3	3.0	103	75-125	
Carbon 14	3970	42	21			C	4340	170	91	85-115	
Technetium 99	1060	35	12	15		TC	1130	45	94	84-116	80-120
Iodine 129	176	4.4	6.0			I	185	7.4	95	90-110	
Radium 226	54.0	2.6	0.70			RAT	59.0	2.4	92	89-111	
Total Uranium (ug/L)	87.5	10	0.097	0.10		U_T	82.5	3.3	106	76-124	80-120

ERDF GW MONITORING SEPTEMBER 1999

QC-LCS 32129

Lab id TMANC

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

N909208-10

T0V457

DUPLICATE

SDG	7223	Client/Case no	Hanford SDG H0550
Contact	Kevin C. Johnson	Case no	TRB-SBB-207925
DUPLICATE		ORIGINAL	
Lab sample id	N909208-10	Lab sample id	N909208-01
Dept sample id	7223-010	Dept sample id	7223-001
		Received	09/29/99
Client sample id	T0V457		
Location/Matrix	HANFORD SITE WATER		
Collected	09/28/99 11:26		
Custody/SAF No	C99-045-7 C99-045		

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 TOT	PROT LIMIT
Gross Alpha	1.24	1.3	1.6	3.0	U	80A	1.55	1.5	2.0	U	-		
Gross Beta	25.9	2.5	2.5	4.0		80B	27.1	2.6	2.6		5	38	
Carbon 14	-1.59	9.6	16		U	C	-5.94	10	17	U	-		
Technetium 99	35.9	12	22	15		TC	44.6	9.0	21		22	60	
Iodine 129	1.26	1.8	4.0		U	I	1.87	2.2	5.0	U	-		
Radium 226	0.006	0.18	0.48		U	RAT	-0.068	0.13	0.69	U	-		
Total Uranium (ug/L)	2.55	0.29	0.010	0.10		U_T	2.58	0.29	0.010		1	31	

ERDF GW MONITORING SEPTEMBER 1999

QC-DUP#1 32131

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

N909208-01 T0V457

DATA SHEET

SDG	7223	Client/Case no	Hanford SDG H0550
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909208-01	Client sample id	T0V457
Dept sample id	7223-001	Location/Matrix	HANFORD SITE WATER
Received	09/29/99	Collected	09/28/99 11:26
		Custody/SAF No	C99-045-7 C99-045

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1.55	1.5	2.0	3.0	U	80A
Gross Beta	12587-47-2	27.1	2.6	2.6	4.0		80B
Carbon 14	14762-75-5	-5.94	10	17		U	C
Technetium 99	14133-76-7	44.6	9.0	21	15		TC
Iodine 129	15046-84-1	1.87	2.2	5.0		U	I
Radium 226	ALPHA-RA	-0.068	0.13	0.69		U	RAT
Total Uranium (ug/L)	7440-61-1	2.58	0.29	0.010	0.10		U_T

ERDF GW MONITORING SEPTEMBER 1999

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

N909208-02 T0V459

DATA SHEET

SDG	7223	Client/Case no	Hanford SDG H0550
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909208-02	Client sample id	T0V459
Dept sample id	7223-002	Location/Matrix	HANFORD SITE WATER
Received	09/29/99	Collected	09/28/99 11:45
		Custody/SAF No	C99-045-5 C99-045

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	1.31	1.4	1.4	3.0	U	80A
Gross Beta	12587-47-2	50.2	3.0	2.2	4.0		80B
Carbon 14	14762-75-5	-9.54	9.8	16		U	C
Technetium 99	14133-76-7	90.1	8.9	15	15		TC
Iodine 129	15046-84-1	6.54	3.2	6.9		U	I
Radium 226	ALPHA-RA	0.195	0.17	0.58		U	RAT
Total Uranium (ug/L)	7440-61-1	3.41	0.38	0.010	0.10		U_T

ERDF GW MONITORING SEPTEMBER 1999

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

N909208-03

T0V461

DATA SHEET

SDG	7223	Client/Case no	Hanford SDG H0550
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909208-03	Client sample id	T0V461
Dept sample id	7223-003	Location/Matrix	HANFORD SITE WATER
Received	09/29/99	Collected	09/28/99 10:30
		Custody/SAF No	C99-045-6 C99-045

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.069	0.25	0.68	3.0	U	80A
Gross Beta	12587-47-2	-0.720	1.3	2.3	4.0	U	80B
Carbon 14	14762-75-5	-6.49	9.9	17		U	C
Technetium 99	14133-76-7	0.740	4.7	10	15	U	TC
Iodine 129	15046-84-1	0.494	1.5	3.3		U	I
Radium 226	ALPHA-RA	-0.007	0.11	0.42		U	RAT
Total Uranium (ug/L)	7440-61-1	0.166	0.021	0.010	0.10		U_T

ERDF GW MONITORING SEPTEMBER 1999

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

N909208-04 T0V463

DATA SHEET

SDG	7223	Client/Case no	Hanford SDG H0550
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909208-04	Client sample id	T0V463
Dept sample id	7223-004	Location/Matrix	HANFORD SITE WATER
Received	09/29/99	Collected	09/28/99 09:39
		Custody/SAF No	C99-045-1 C99-045

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	2.64	1.5	1.5	3.0	J	80A
Gross Beta	12587-47-2	25.8	2.3	2.0	4.0		80B
Carbon 14	14762-75-5	7.43	10	17		U	C
Technetium 99	14133-76-7	40.4	6.1	9.3	15		TC
Iodine 129	15046-84-1	5.68	2.2	4.7			I
Radium 226	ALPHA-RA	0.025	0.10	0.39		U	RAT
Total Uranium (ug/L)	7440-61-1	2.53	0.28	0.010	0.10		U_T

ERDF GW MONITORING SEPTEMBER 1999

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

N909208-05 T0V465

DATA SHEET

SDG	7223	Client/Case no	Hanford SDG H0550
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909208-05	Client sample id	T0V465
Dept sample id	7223-005	Location/Matrix	HANFORD SITE WATER
Received	09/29/99	Collected	09/28/99 09:39
		Custody/SAF No	C99-045-2 C99-045

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.565	1.0	1.5	3.0	U	80A
Gross Beta	12587-47-2	25.1	2.4	2.3	4.0		80B
Carbon 14	14762-75-5	14.1	10	17		U	C
Technetium 99	14133-76-7	34.3	5.7	12	15		TC
Iodine 129	15046-84-1	6.96	2.6	5.6			I
Radium 226	ALPHA-RA	0.088	0.12	0.38		U	RAT
Total Uranium (ug/L)	7440-61-1	2.65	0.30	0.010	0.10		U_T

ERDF GW MONITORING SEPTEMBER 1999

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

N909208-06 T0V467

DATA SHEET

SDG	7223	Client/Case no	Hanford SDG H0550
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925
Lab sample id	N909208-06	Client sample id	T0V467
Dept sample id	7223-006	Location/Matrix	HANFORD SITE WATER
Received	09/29/99	Collected	09/28/99 13:23
		Custody/SAF No	C99-045-3 C99-045

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.535	1.3	1.9	3.0	U	80A
Gross Beta	12587-47-2	57.2	3.2	2.0	4.0		80B
Carbon 14	14762-75-5	-2.74	9.9	17		U	C
Technetium 99	14133-76-7	85.2	6.9	10	15		TC
Iodine 129	15046-84-1	9.24	2.2	4.5			I
Radium 226	ALPHA-RA	0.083	0.12	0.39		U	RAT
Total Uranium (ug/L)	7440-61-1	2.63	0.29	0.010	0.10		U_T

ERDF GW MONITORING SEPTEMBER 1999

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

N909208-07 T0V469

DATA SHEET

SDG	7223	Client/Case no	Hanford	SDG H0550	
Contact	Kevin C. Johnson	Contract	TRB-SBB-207925		
Lab sample id	N909208-07	Client sample id	T0V469		
Dept sample id	7223-007	Location/Matrix	HANFORD SITE	WATER	
Received	09/29/99	Collected	09/28/99 08:15		
		Custody/SAF No	C99-045-4	C99-045	

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.029	0.32	0.71	3.0	U	80A
Gross Beta	12587-47-2	-0.129	1.4	2.4	4.0	U	80B
Carbon 14	14762-75-5	-14.2	9.8	17		U	C
Technetium 99	14133-76-7	0.296	5.1	12	15	U	TC
Iodine 129	15046-84-1	-1.12	1.9	4.4		U	I
Radium 226	ALPHA-RA	0.108	0.14	0.40		U	RAT
Total Uranium (ug/L)	7440-61-1	0.129	0.018	0.010	0.10		U_T

ERDF GW MONITORING SEPTEMBER 1999

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

Test	TC
Matrix	WATER
SDG	7223
Contact	Kevin C. Johnson

METHOD SUMMARY

TECHNETIUM 99 IN WATER

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0550

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99
Preparation batch 6904-047					
T0V457	N909208-01			7223-001	44.6
T0V459	N909208-02			7223-002	90.1
T0V461	N909208-03			7223-003	U
T0V463	N909208-04			7223-004	40.4
T0V465	N909208-05			7223-005	34.3
T0V467	N909208-06			7223-006	85.2
T0V469	N909208-07			7223-007	U
BLK (QC ID=32130)	N909208-09			7223-009	U
LCS (QC ID=32129)	N909208-08			7223-008	ok
Duplicate (N909208-01)	N909208-10			7223-010	ok

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

ERDF GW MONITORING SEPTEMBER 1999

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 6904-047	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 047															
T0V457	N909208-01			21	0.0500			33		101			55	11/16/99	11/22	GRB-221
T0V459	N909208-02			15	0.0500			44		101			56	11/16/99	11/23	GRB-218
T0V461	N909208-03			10	0.0500			67		101			56	11/16/99	11/23	GRB-220
T0V463	N909208-04			9.3	0.0500			72		101			56	11/16/99	11/23	GRB-222
T0V465	N909208-05			12	0.0500			57		101			52	11/16/99	11/19	GRB-230
T0V467	N909208-06			10	0.0500			66		101			56	11/16/99	11/23	GRB-224
T0V469	N909208-07			12	0.0500			62		101			56	11/16/99	11/23	GRB-229
BLK (QC ID=32130)	N909208-09			7.7	0.0500			88		101				11/16/99	11/23	GRB-230
LCS (QC ID=32129)	N909208-08			12	0.0500			61		101				11/16/99	11/19	GRB-202
Duplicate (N909208-01) (QC ID=32131)	N909208-10			22	0.0500			31		101			55	11/16/99	11/22	GRB-203
Nominal values and limits from method				15	0.0500			20-105		50			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

Test	TC
Matrix	WATER
SDG	7223
Contact	Kevin C. Johnson

METHOD SUMMARY, cont.

TECHNETIUM 99 IN WATER

BETA COUNTING

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0550

PROCEDURES	REFERENCE	TC99TRLSC
	EP-020	Sample Leach For Technetium-99, rev 0
	EP-540	Technetium-99 Purification, rev 0

AVERAGES ± 2 SD	MDA	13	±	9.7
FOR 10 SAMPLES	YIELD	58	±	35

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

Test RAT Matrix WATER
SDG 7223
Contact Kevin C. Johnson

METHOD SUMMARY

RADIUM 226/228 IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0550

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Radium 226	
Preparation batch 6904-047						
T0V457	N909208-01			7223-001	U	
T0V459	N909208-02			7223-002	U	
T0V461	N909208-03			7223-003	U	
T0V463	N909208-04			7223-004	U	
T0V465	N909208-05			7223-005	U	
T0V467	N909208-06			7223-006	U	
T0V469	N909208-07			7223-007	U	
BLK (QC ID=32130)	N909208-09			7223-009	U	
LCS (QC ID=32129)	N909208-08			7223-008	ok	
Duplicate (N909208-01)	N909208-10			7223-010	-	U

Nominal values and limits from method RDLs (pCi/L)
ERDF GW MONITORING SEPTEMBER 1999

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 6904-047	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 047											
T0V457	N909208-01			0.69	0.200			71		100			34	10/29/99	11/01	GAW-113
T0V459	N909208-02			0.58	0.200			91		100			34	10/29/99	11/01	GAW-114
T0V461	N909208-03			0.42	0.200			87		100			36	10/29/99	11/03	GAW-111
T0V463	N909208-04			0.39	0.200			85		100			36	10/29/99	11/03	GAW-112
T0V465	N909208-05			0.38	0.200			84		100			38	10/29/99	11/05	GAW-111
T0V467	N909208-06			0.39	0.200			84		100			37	10/29/99	11/04	GAW-114
T0V469	N909208-07			0.40	0.200			85		100			38	10/29/99	11/05	GAW-112
BLK (QC ID=32130)	N909208-09			0.41	0.200			87		100				10/29/99	11/02	GAW-116
LCS (QC ID=32129)	N909208-08			0.70	0.200			87		100				10/29/99	10/30	GAW-116
Duplicate (N909208-01) (QC ID=32131)	N909208-10			0.48	0.200			82		100			37	10/29/99	11/04	GAW-112
Nominal values and limits from method					0.200			20-105		100			180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

METHOD SUMMARY, cont.

RADIUM 226/228 IN WATER

GAS PROPORTIONAL COUNTING

Test RAT Matrix WATER
SDG 7223
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0550

PROCEDURES EP-700 Total Radium in Water, rev 0

AVERAGES ± 2 SD	MDA	0.48	±	0.25
FOR 10 SAMPLES	YIELD	84	±	11

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

Test 80A	Matrix WATER
SDG 7223	
Contact Kevin C. Johnson	

METHOD SUMMARY

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0550	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 6904-047						
T0V457	N909208-01	80		7223-001	U	
T0V459	N909208-02	80		7223-002	U	
T0V461	N909208-03	80		7223-003	U	
T0V463	N909208-04	80		7223-004	2.64	J
T0V465	N909208-05	80		7223-005	U	
T0V467	N909208-06	80		7223-006	U	
T0V469	N909208-07	80		7223-007	U	
BLK (QC ID=32130)	N909208-09	80		7223-009	U	
LCS (QC ID=32129)	N909208-08	80		7223-008	ok	
Duplicate (N909208-01)	N909208-10	80		7223-010	-	U

Nominal values and limits from method RDLs (pCi/L) 3.0

ERDF GW MONITORING SEPTEMBER 1999

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 6904-047	2σ prep error 20.0 %				Reference Lab Notebook 6904 pg. 047											
T0V457	N909208-01	80		2.0	0.300			114		100			28	10/22/99	10/26	GRB-110
T0V459	N909208-02	80		1.4	0.300			101		100			28	10/22/99	10/26	GRB-111
T0V461	N909208-03	80		0.68	0.300			5		100			28	10/22/99	10/26	GRB-112
T0V463	N909208-04	80		1.5	0.300			76		100			28	10/22/99	10/26	GRB-113
T0V465	N909208-05	80		1.5	0.300			73		100			28	10/22/99	10/26	GRB-114
T0V467	N909208-06	80		1.9	0.300			80		100			28	10/22/99	10/26	GRB-115
T0V469	N909208-07	80		0.71	0.300			2		100			28	10/22/99	10/26	GRB-116
BLK (QC ID=32130)	N909208-09	80		0.90	0.300			38		100				10/22/99	10/26	GRB-111
LCS (QC ID=32129)	N909208-08	80		1.1	0.300			36		100				10/22/99	10/26	GRB-110
Duplicate (N909208-01) (QC ID=32131)	N909208-10	80		1.6	0.300			119		100			28	10/22/99	10/26	GRB-112
Nominal values and limits from method				3.0	0.300			5-150		100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

Test 80A	Matrix WATER
SDG 7223	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

GROSS ALPHA IN WATER

GAS PROPORTIONAL COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0550	

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

AVERAGES ± 2 SD	MDA	1.3	±	0.93
FOR 10 SAMPLES	RESIDUE	64	±	85

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

Test 80B	Matrix WATER
SDG 7223	
Contact Kevin C. Johnson	

METHOD SUMMARY

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0550	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation batch 6904-047					
T0V457	N909208-01	80		7223-001	27.1
T0V459	N909208-02	80		7223-002	50.2
T0V461	N909208-03	80		7223-003	U
T0V463	N909208-04	80		7223-004	25.8
T0V465	N909208-05	80		7223-005	25.1
T0V467	N909208-06	80		7223-006	57.2
T0V469	N909208-07	80		7223-007	U
BLK (QC ID=32130)	N909208-09	80		7223-009	U
LCS (QC ID=32129)	N909208-08	80		7223-008	ok
Duplicate (N909208-01)	N909208-10	80		7223-010	ok

Nominal values and limits from method RDLs (pCi/L) 4.0

ERDF GW MONITORING SEPTEMBER 1999

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 6904-047	2σ prep error 15.0 % Reference Lab Notebook 6904 pg. 047															
T0V457	N909208-01	80		2.6	0.300			114		100			28	10/22/99	10/26	GRB-110
T0V459	N909208-02	80		2.2	0.300			101		100			28	10/22/99	10/26	GRB-111
T0V461	N909208-03	80		2.3	0.300			5		100			28	10/22/99	10/26	GRB-112
T0V463	N909208-04	80		2.0	0.300			76		100			28	10/22/99	10/26	GRB-113
T0V465	N909208-05	80		2.3	0.300			73		100			28	10/22/99	10/26	GRB-114
T0V467	N909208-06	80		2.0	0.300			80		100			28	10/22/99	10/26	GRB-115
T0V469	N909208-07	80		2.4	0.300			2		100			28	10/22/99	10/26	GRB-116
BLK (QC ID=32130)	N909208-09	80		2.1	0.300			38		100				10/22/99	10/26	GRB-111
LCS (QC ID=32129)	N909208-08	80		2.5	0.300			36		100				10/22/99	10/26	GRB-110
Duplicate (N909208-01) (QC ID=32131)	N909208-10	80		2.5	0.300			119		100			28	10/22/99	10/26	GRB-112
Nominal values and limits from method				4.0	0.300			5-150		100			180			

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

METHOD SUMMARY, cont.

GROSS BETA IN WATER

GAS PROPORTIONAL COUNTING

Test	80B
Matrix	WATER
SDG	7223
Contact	Kevin C. Johnson

Client	Hanford
Contract	TRB-SBB-207925
Case no	SDG H0550

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

AVERAGES ± 2 SD	MDA	2.3	±	0.43
FOR 10 SAMPLES	RESIDUE	64	±	85

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

Test I	Matrix WATER
SDG 7223	
Contact Kevin C. Johnson	

METHOD SUMMARY

IODINE 129 IN WATER

GAMMA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0550	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Iodine 129	
Preparation batch 6904-047						
T0V457	N909208-01			7223-001	U	
T0V459	N909208-02			7223-002	U	
T0V461	N909208-03			7223-003	U	
T0V463	N909208-04			7223-004	5.68	
T0V465	N909208-05			7223-005	6.96	
T0V467	N909208-06			7223-006	9.24	
T0V469	N909208-07			7223-007	U	
BLK (QC ID=32130)	N909208-09			7223-009	U	
LCS (QC ID=32129)	N909208-08			7223-008	ok	
Duplicate (N909208-01)	N909208-10			7223-010	-	U

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

ERDF GW MONITORING SEPTEMBER 1999

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 6904-047	2σ prep error 5.0 %				Reference Lab Notebook 6904 pg. 047											
T0V457	N909208-01			5.0	0.250			78		507			57	11/18/99	11/24	XSPEC-014
T0V459	N909208-02			6.9	0.250			55		424			52	11/18/99	11/19	XSPEC-014
T0V461	N909208-03			3.3	0.250			67		833			52	11/18/99	11/19	XSPEC-014
T0V463	N909208-04			4.7	0.250			81		410			53	11/18/99	11/20	XSPEC-014
T0V465	N909208-05			5.6	0.250			71		443			55	11/19/99	11/22	XSPEC-014
T0V467	N909208-06			4.5	0.250			78		402			56	11/19/99	11/23	XSPEC-014
T0V469	N909208-07			4.4	0.250			90		514			56	11/19/99	11/23	XSPEC-014
BLK (QC ID=32130)	N909208-09			3.5	0.250			82		460				11/18/99	11/22	XSPEC-014
LCS (QC ID=32129)	N909208-08			6.0	0.250			81		451				11/19/99	11/24	XSPEC-014
Duplicate (N909208-01) (QC ID=32131)	N909208-10			4.0	0.250			81		758			59	11/19/99	11/26	XSPEC-014
Nominal values and limits from method					0.250			20-105		200	100					

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

Test I	Matrix WATER
SDG 7223	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

IODINE 129 IN WATER

GAMMA SPECTROSCOPY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0550	

PROCEDURES	REFERENCE	I129LEPS
	EP-024	Iodine-129, Sample Dissolution, rev 0
	EP-560	Iodine-129 Purification, rev 0

AVERAGES ± 2 SD	MDA	4.8	±	2.2
FOR 10 SAMPLES	YIELD	76	±	20

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

Test U T Matrix WATER
SDG 7223
Contact Kevin C. Johnson

METHOD SUMMARY

URANIUM, TOTAL IN WATER
KINETIC PHOSPHORIMETRY

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0550

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Uranium
Preparation batch 6904-047					
T0V457	N909208-01			7223-001	2.58
T0V459	N909208-02			7223-002	3.41
T0V461	N909208-03			7223-003	0.166
T0V463	N909208-04			7223-004	2.53
T0V465	N909208-05			7223-005	2.65
T0V467	N909208-06			7223-006	2.63
T0V469	N909208-07			7223-007	0.129
BLK (QC ID=32130)	N909208-09			7223-009	U
LCS (QC ID=32129)	N909208-08			7223-008	ok
Duplicate (N909208-01)	N909208-10			7223-010	ok
Nominal values and limits from method				RDLs (ug/L)	0.10

ERDF GW MONITORING SEPTEMBER 1999

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA ug/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6904-047	2σ prep error 9.0 %			Reference Lab Notebook 6904 pg. 047												
T0V457	N909208-01			0.010	0.0200								28	10/26/99	10/26	KPA-001
T0V459	N909208-02			0.010	0.0200								28	10/26/99	10/26	KPA-001
T0V461	N909208-03			0.010	0.0200								28	10/26/99	10/26	KPA-001
T0V463	N909208-04			0.010	0.0200								28	10/26/99	10/26	KPA-001
T0V465	N909208-05			0.010	0.0200								28	10/26/99	10/26	KPA-001
T0V467	N909208-06			0.010	0.0200								28	10/26/99	10/26	KPA-001
T0V469	N909208-07			0.010	0.0200								28	10/26/99	10/26	KPA-001
BLK (QC ID=32130)	N909208-09			0.010	0.0200									10/26/99	10/26	KPA-001
LCS (QC ID=32129)	N909208-08			0.097	0.0200									10/26/99	10/26	KPA-001
Duplicate (N909208-01) (QC ID=32131)	N909208-10			0.010	0.0200								28	10/26/99	10/26	KPA-001
Nominal values and limits from method				0.10	0.0200								180			

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

Test U T	Matrix WATER
SDG 7223	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

URANIUM, TOTAL IN WATER

KINETIC PHOSPHORIMETRY

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0550	

PROCEDURES	REFERENCE	UKPA
	EP-040	Environmental Water Dissolution, rev 1
	EP-044	Preparation of Total Uranium by Kinetic Phosphorimetry, rev 1
	EP-928	Total Uranium by Kinetic Phosphorimetry, rev 0

AVERAGES ± 2 SD	MDA 0.019	± 0.055
FOR 10 SAMPLES	YIELD	±

Lab id	TMANC
Protocol	Hanford
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Form	DVD-CMS
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

Test C	Matrix WATER
SDG 7223	
Contact Kevin C. Johnson	

METHOD SUMMARY

CARBON 14 IN WATER

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0550	

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Carbon 14	
Preparation batch 6904-047						
T0V457	N909208-01			7223-001	U	
T0V459	N909208-02			7223-002	U	
T0V461	N909208-03			7223-003	U	
T0V463	N909208-04			7223-004	U	
T0V465	N909208-05			7223-005	U	
T0V467	N909208-06			7223-006	U	
T0V469	N909208-07			7223-007	U	
BLK (QC ID=32130)	N909208-09			7223-009	U	
LCS (QC ID=32129)	N909208-08			7223-008	ok	
Duplicate (N909208-01)	N909208-10			7223-010	-	U

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

ERDF GW MONITORING SEPTEMBER 1999

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 6904-047	2σ prep error 10.0 % Reference Lab Notebook 6904 pg. 047															
T0V457	N909208-01			17	0.0500			100		200			25	10/21/99	10/23	LSC-004
T0V459	N909208-02			16	0.0500			100		200			26	10/21/99	10/24	LSC-004
T0V461	N909208-03			17	0.0500			100		200			26	10/21/99	10/24	LSC-004
T0V463	N909208-04			17	0.0500			100		200			26	10/21/99	10/24	LSC-004
T0V465	N909208-05			17	0.0500			100		200			26	10/21/99	10/24	LSC-004
T0V467	N909208-06			17	0.0500			100		200			26	10/21/99	10/24	LSC-004
T0V469	N909208-07			17	0.0500			100		200			26	10/21/99	10/24	LSC-004
BLK (QC ID=32130)	N909208-09			17	0.0500			100		200				10/21/99	10/24	LSC-004
LCS (QC ID=32129)	N909208-08			21	0.0500			100		133				10/21/99	10/24	LSC-004
Duplicate (N909208-01) (QC ID=32131)	N909208-10			16	0.0500			100		200			27	10/21/99	10/25	LSC-004
Nominal values and limits from method					0.0500					150			180			

Lab id TMANC	
Protocol Hanford	
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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

Test C	Matrix WATER
SDG 7223	
Contact Kevin C. Johnson	

METHOD SUMMARY, cont.

CARBON 14 IN WATER

LIQUID SCINTILLATION COUNTING

Client Hanford	
Contract TRB-SBB-207925	
Case no SDG H0550	

PROCEDURES	REFERENCE	C14CHEMLSC
	EP-240	Carbon-14 in Aqueous Solutions, rev 0

AVERAGES ± 2 SD	MDA	17	±	2.8
FOR 10 SAMPLES	YIELD	100	±	0

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-CMS
Version	3.06
Report date	11/30/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

SDG 7223
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0550

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
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SDG 7223
Contact Kevin C. Johnson

Client Hanford
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Case no SDG H0550

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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REPORT GUIDE

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Contract TRB-SBB-207925
Case no SDG H0550

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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REPORT GUIDE

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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.

Client Hanford
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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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TMA/RICHMOND

SAMPLE DELIVERY GROUP H0550

SDG 7223
Contact Kevin C. Johnson

REPORT GUIDE

Client Hanford
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Case no SDG H0550

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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GUIDE, cont.

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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.

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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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GUIDE, cont.

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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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Protocol Hanford
Version Ver 1.0
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REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0550

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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METHOD SUMMARY

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.

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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

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/30/99

SDG 7223
Contact Kevin C. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG H0550

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.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 11/30/99

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-7

Collector: K.J. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WBN-SML H25, PAGE 25	Ice Chest No.: SML 519 Temp.: cool/4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 73
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V456 (F)		W	9-28-99	1126	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V457		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V457		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V457		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V457		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V457		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V457		W			1x20-mL P	Activity Scan	None
T0V457		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V457		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V457		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V457		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V457		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
K.J. YOUNG	9-28-99 1430	R. R. Fox	9-28-99 1430
R. R. Fox	9-28-99 1500	FEDEX	9-28-99
FedEx	9-29-99 10:00	TNV M. Goldenberg	9-29-99 10:00

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-5

Collector R.T SICKLE	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C99-045	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title ERDF GW MONITORING, SEPTEMBER 1999	Logbook No. WM-SML-1429	Ice Chest No. SML-366 Temp. 4 °C
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235795299 40
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No. W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V458 (F)		W	9-28-99	1145	1x1000-mL G/P	ICP Metals - 6010A RCRA GW {Barium, Chromium, Lead, Tin, Vanadium, Zinc}; Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V459		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V459		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW {Barium, Chromium, Lead, Tin, Vanadium, Zinc}; Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V459		W			1x500-mL P	IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Sulfate}	Cool 4C
T0V459		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V459		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V459		W			1x20-mL P	Activity Scan	None
T0V459		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V459		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V459		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V459		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V459		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
R.T SICKLE	9-28-99 1215	D.R. BREWINGTON D.R. Brewington	9/28/99 1215
D.R. Brewington D.R. Brewington	9/28/99 1422	Fed Ex	9-28-99
Fed Ex	9-29-99 10:00	TNV M. Goldenberg	9-29-99 10:00

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-6

Collector: R.T SICKLE	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WMSML-439	Ice Chest No.: 5n1382 Temp.: 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 38
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V460 (F)		W	9-28-99	1030	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V461		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V461		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V461		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V461		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V461		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V461		W			1x20-mL P	Activity Scan	None
T0V461		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V461		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V461		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V461		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V461		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
R.T SICKLE	9-28-99 1215	D.R. BREWINGTON D.R. Brewington	9/28/99 1215
D.R. Brewington D.R. Brewington	9/28/99 1427	FedEx	9-28-99
FedEx	9-29-99 10:00	TNV M. Goldenberg	9-29-99 10:00

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-1

Collector: RT SICKLE (RFS)	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SML-1429	Ice Chest No.: SML-571 Temp.: 4 °C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 51
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V462 (F)		W	9-28-99	0939	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V463		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V463		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V463		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V463		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V463		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V463		W			1x20-mL P	Activity Scan	None
T0V463		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V463		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V463		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V463		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V463		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
RT SICKLE (RFS)	9-28-99 1215	D.R. BREWINGTON	9/28/99 1215
D.R. Brewington	9/28/99 1422	FedEx	9-28-99
FedEx	9-29-99 10:00	M. Goldenberg	9-29-99 10:00

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-2

Collector: RT SICKLE (RFS)	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING SEPTEMBER 1999	Logbook No.: WM-SML-429	Ice Chest No.: SML461 Temp.: 4 °C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7952 9529
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V464 (F)		W	9-28-99	0939	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V465		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V465		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V465		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V465		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V465		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V465		W			1x20-mL P	Activity Scan	None
T0V465		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V465		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V465		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V465		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V465		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
RT SICKLE (RFS)	9-28-99 1215	D.R. BREWINGTON D.R. Brewington	9/28/99 1215
D.R. Brewington D.R. Brewington	9/28/99 1422	FedEx	9-28-99
FedEx	9-29-99 10:00	TNN M. Goldenberg	9-29-99 10:00

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-3

Collector: K.J. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SMC H 25, PAGE 25	Ice Chest No.: SMC 462 Temp.: cool 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4257952994 2
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V466 (F)		W	9-28-99	1323	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V467		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V467		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V467		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V467		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V467		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V467		W			1x20-mL P	Activity Scan	None
T0V467		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V467		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V467		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V467		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V467		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
K.J. YOUNG	9-28-99 1430	R.R. Fox	9-28-99 1430
R.R. Fox	9-28-99 1500	FED EX	9-28-99
Fed Ex	9-29-99 10:00	TN M. Goldenberg	9-29-99 10:00

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-4

Collector: K. Young	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SMC H 25, PAGE 25	Ice Chest No.: SMC 450 Temp.: cool/4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V468 (F)		W	9-28-99	0815	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V469		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V469		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V469		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V469		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V469		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V469		W			1x20-mL P	Activity Scan	None
T0V469		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V469		W			5x1000-mL G/P	Iodine-129; Carbon-14 OUT lab	None
T0V469		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V469		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V469		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
K. Young	9-28-99 1470	R.R. Fox	9-28-99 1430
R.R. Fox	9-28-99 1500	FED EX	9-28-99
Fed Ex	9-29-99 10:00	TNU M. Goldenberg	9-29-99 10:00

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 9-29-99 10:00

CoC No. C99-045-5

Container I.D. No. _____ 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: 15
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 _____
14. Received by M. Goldenberg Date: 9-29-99 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 _____

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 9-29-99 10:00

CoC No. C99-045-6

Container I.D. No. SML 382 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: 13
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 _____
14. Received by M. Goldenberg Date: 9-29-99 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 _____

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 9-29-99 10:00

CoC No. P99-045-2

Container I.D. No. _____ 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: 13
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 _____
14. Received by M. Goldenberg Date: 9-29-99 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 _____

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 9-29-99 10:00

CoC No. ~~SML-57~~ C99-045-1, 8

Container I.D. No. SML-571 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: 15
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 _____
14. Received by M. Goldenberg Date: 9-29-99 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 _____

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 9-29-99 10:00

CoC No. C99-045-4

Container I.D. No. SMC 450 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: 13
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 _____
14. Received by M. Goldenberg Date: 9-29-99 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 _____

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 9-29-99 10:00

CoC No. C99-045-7, 11

Container I.D. No. _____ 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: 15
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 _____
14. Received by M. Goldenberg Date: 9-29-99 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 _____

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc Date/Time received 9-29-99 10:00

CoC No. C99-045-3,10

Container I.D. No. SML-462 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: 15
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 _____
14. Received by M. Goldenberg Date: 9-29-99 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 _____

Thermo **NU**tech - Richmond

A ThermoRetec Company

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Bechtel Hanford Inc Date: 9-29-99

Ice chest # or description	SML 462					
Thermometer: time in	10:20					
Thermometer: time out	10:50					
Thermometer reading	2°C					
Thermometer number	1911					
Correction factor						
Actual temperature*						
Custody seals on ice chest intact?	yes					
Custody seals dated ?	yes					
Custody seals signed?	yes					
Custody seals on samples?	yes					
Ice chest scanned for activity?	yes					

* Temperature is in degrees centigrade.

Technician: M. Goldenberg

Comments:

Thermo **NU**tech - Richmond

A ThermoRetec Company

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Bechtel Hanford Inc Date: 9-29-99

Ice chest # or description	SMC 366					
Thermometer: time in	10:10					
Thermometer: time out	10:40					
Thermometer reading	1°C					
Thermometer number	194					
Correction factor						
Actual temperature*						
Custody seals on ice chest intact?	Yes					
Custody seals dated ?	Yes					
Custody seals signed?	Yes					
Custody seals on samples?	Yes					
Ice chest scanned for activity?	Yes					

* Temperature is in degrees centigrade.

Technician: M. Goldenberg

Comments:

Thermo NUtech - Richmond

A ThermoRetec Company

ICE CHEST RECEIPT LOG

Use one form per shipment. Refer to Thermometer Correction Log for correction factor.

Customer: Bechtel Hanford Inc Date: 9-28-99

Ice chest # or description	SMC 382					
Thermometer: time in	10:20					
Thermometer: time out	10:50					
Thermometer reading	2°C					
Thermometer number	1911					
Correction factor						
Actual temperature*						
Custody seals on ice chest intact?	yes					
Custody seals dated ?	yes					
Custody seals signed?	yes					
Custody seals on samples?	yes					
Ice chest scanned for activity?	yes					

* Temperature is in degrees centigrade.

Technician: M. Goldenberg

Comments:

AIR OVERNIGHT

Contractor WASTE MANAGEMENT TECHNICAL SERVICES	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) W99-0-0323

PART I - TO BE COMPLETED BY ORIGINATOR

Department SAMPLING + WELL SERVICES	Section SAMPLING	Unit
The following items are to be shipped from	☒ Contractor	☐ Vendor
Routing Fed. EX	☒ Prepaid	☐ Collect
Shipped to TMA/WESTON Company 2030 WRIGHT AV Address City RICHMOND State CA Zip Code 94804 Country	Off-site Custodian DELORES SANCHEZ On-site Custodian JG HOGAN	Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
		POLY COOLERS: ENVIRONMENTAL WATER SAMPLES COOLER SML461 WEIGHT 64 42357952999 SML382 75 42357952993O SML366 76 42357952994O SML571 67 42357952995	

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

☐ Required for Project Work. List Project No. _____

☐ Business Trip

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. _____

☒ Other (Please specify) SAMPLES REQUIRE ANALYSIS NOT PRESENTLY AVAILABLE ON SITE

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
JG Hogan	N/A	9-28-99

Location of and Contact for Property (Name/Phone No./Bldg./Area)
JG HOGAN / 539-2752 / 6269 / 600

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
9-28-99	K96917	N/A

Originated By	Date	Authorized By	Date
JG HOGAN	9-28-99	JG Hogan	9-28-99
Property Representative Signature	Date	Property Management Approval: Kathy Caxy	Date 9/28/99

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
C.R. Nelson	9-28-99

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

BC-6001-579 (01/95)

AIR OVERNIGHT

Contractor WASTE MANAGEMENT TECHNICAL SERVICES	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) W99-0-0323

PART I - TO BE COMPLETED BY ORIGINATOR

Department SAMPLING + WELL SERVICES	Section SAMPLING	Unit
The following items are to be shipped from	☒ Contractor ☐ Vendor	
Routing Fed. EX	☒ Prepaid ☐ Collect	

Shipped to TMA/WESTON
Company
Address 2030 WRIGHT AV
City RICHMOND State CA Zip Code 94804
Country

Off-site Custodian DELORES SANCHEZ

On-site Custodian JG HOGAN Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
		POLYCOOLERS: ENVIRONMENTAL WATER SAMPLES COOLER SML461 WEIGHT 64 42357952999 SML382 75 42357952993O SML366 76 42357952994O SML571 67 42357952995T	

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

☐ Required for Project Work. List Project No. _____

☐ Business Trip

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. _____

☒ Other (Please specify) SAMPLES REQUIRE ANALYSIS NOT PRESENTLY AVAILABLE ON SITE

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
JG Hogan	N/A	9-28-99

Location of and Contact for Property (Name/Phone No./Bldg./Area)
JG HOGAN / 539-2752 / 6269 / 600

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
9-28-99	K96917	N/A

Originated By	Date	Authorized By	Date
JG HOGAN	9-28-99	JG Hogan	9-28-99
Property Representative Signature	Date	Property Management Approval	Date
		Kathy Caxy	9/28/99

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
C.R. Nelson	9-28-99

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

BC-6001-579 (01/95)

AIR OVERNIGHT

Contractor WASTE MANAGEMENT TECHNICAL SERVICES	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) W99-0-0323

PART I - TO BE COMPLETED BY ORIGINATOR

Department SAMPLING + WELL SERVICES	Section SAMPLING	Unit
The following items are to be shipped from	☒ Contractor	☐ Vendor
Routing Fed. EX	☒ Prepaid	☐ Collect

Shipped to TMA/WESTON
Company 2030 WRIGHT AV
Address
City RICHMOND State CA Zip Code 94804
Country

Off-site Custodian: DELORES SANCHEZ

On-site Custodian: JG HOGAN

Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
		POLYCOOLERS: ENVIRONMENTAL WATER SAMPLES COOLER SML461 WEIGHT 64 42357952999 SML382 75 42357952993 0 SML366 76 42357952994 0 SML571 67 42357952995 1	

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

☐ Required for Project Work. List Project No. _____

☐ Business Trip

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. _____

☒ Other (Please specify) SAMPLES REQUIRE ANALYSIS NOT PRESENTLY AVAILABLE ON SITE

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
JG Hogan	N/A	9-28-99

Location of and Contact for Property (Name/Phone No./Bldg./Area)
JG HOGAN / 539-2752 / 6269 / 600

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
9-28-99	K96917	N/A

Originated By	Date	Authorized By	Date
JG Hogan	9-28-99	J Hogan	9-28-99
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
		Kathy Caxy	9/28/99

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
C.R. Nelson	9-28-99

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

PC 6001 578 (01/95)

OVERNIGHT AIR

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
Waste Management T.S		W99-0-0324

PART I - TO BE COMPLETED BY ORIGINATOR

Department	Section	Unit
Environmental Services	Analytical Chemistry	Sampling + Mobile Labs

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing Fed Ex ☒ Prepaid ☐ Collect

Shipped to TMA / RECRA
Company
Address 2030 Wright Ave.
City Richmond State CA Zip Code 94804
Country

Off-site Custodian Delores Sanchez

On-site Custodian Payroll No.

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
3	Coolers,	Groundwater samples that are double bagged and on wet ice.	
		Cooler # SML-462 Weight 68 lbs 423579529962	
		Cooler # SML-519 Weight 66 lbs 423579529973	
		Cooler # SML-450 Weight 65 lbs 423579529984	

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

☐ Required for Project Work. List Project No. _____

☐ Business Trip

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. _____

☒ Other (Please specify) Samples require analysis from an off-site lab.

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
NA	NA	NA

Location of and Contact for Property (Name/Phone No./Bldg./Area)
Rory Z Steffler 372-2321 345 Hill St. 1100

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
9-28-99	K96917 / 08000	NA

~~Originated By~~ Relinquished by:	Date	Authorized By	Date
R.R. Fox Time 1500	9-28-99	J.H. Waley	9/28/99
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
		Kathy Cathey	9/28/99

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
C.R. Nelson	9-28-99

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

BC-6001-579 (01/95)

AIR OVERNIGHT

Contractor WASTE MANAGEMENT TECHNICAL SERVICES	OFF-S E PROPERTY NTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT) W99-0-0323

PART I - TO BE C LETED BY ORIGINATOR

Department SAMPLING + WELL SERVICES	Section SAM INK	Unit
The following items are to be shipped from	Contractor ☐ Vendor	
Routing Fed. EX	☐ Prepaid ☐ Collect	
Shipped to TMA/WESTON	Off-site Custodian DELORES SANCHEZ	
Company 2030 WRIGHT AV		
Address	-site Custodian JG HOGAN	Payroll No.
City RICHMOND State CA Zip Code 94804		
Country		

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
		POLYCOOLERS: ENVIRONMENTAL WATER SAMPLES	
		COOLER SML461 WEIGHT 64 42357952999	
		SML382 75 42357952993 0	
		SML366 76 42357952994 0	
		SML571 67 42357952995 1	

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

☐ Required for Project Work. List Project No. _____

☐ Business Trip

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. _____

☒ Other (Please specify) SAMPLES REQUIRE ANALYSIS NOT PRESENTLY AVAILABLE ON SITE

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
JG Hogan	N/A	9-28-99

Location of and Contact for Property (Name/Phone No./Bldg./Area)
JG HOGAN / 539-2752 / 6269 / 600

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
9-28-99	K96917	N/A

Originated By	Date	Authorized By	Date
JG Hogan	9-28-99	JG Hogan	9-28-99
Property Representative Signature	Date	Property Management Approval	Date
		Kathy Caxy	9/28/99

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
C.R. Wilson	9-28-99

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

PC 6001 579 (01/95)

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

DEC 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD C99-045
RFW# : 9910L276
SDG# : H0550
SAF# : C99-045

W.O. # : 10985-001-001-9999-00
Date Received: 10-02-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 7 water samples.

2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

3. Sample holding times as required by the method and/or contract were met with the exception of Nitrate and Nitrite which were received past hold and Total Organic Halides (TOX) samples T0V459, T0V465 and T0V467 which were analyzed past hold.

4. The cooler temperatures were recorded on the chain-of-custody.

5. The method blanks were within method criteria.

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

7. The matrix spike recoveries were within the 75-125% control limits with the exception of Total Organic Halides.

8. The replicate analyses were within the 20% RPD control limit.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

12-2-99
Date

njp&pef\i10-276

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 37 pages.

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

Recra LabNet Philadelphia

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
✓ Alkalinity ___ Bicarbonate ___ Carbonate	✓ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chormatography:			
___ Bromide ✓ Chloride ✓ Fluoride	✓ 300.0	___ 9056	
✓ Nitrite ✓ Nitrite ___ Phosphate	✓ 300.0	___ 9056	
✓ Sulfate ___ Formate ___ Acetate ___ Oxalate	✓ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
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 ___ Organic Nitrogen	___ 351.4		
Total___ Organic ___ Inorganic Carbon	___ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
___ pH ____ pH; paper	___ 150.1	___ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 ___ 420.2	___ 9065 ___ 9066	
___ Ortho ___ Total Phosphate	___ 365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1 ___ 376.2	___ 9030B/9034 (acid soluble)	
Reactive ___ Cyanide ___ Sulfide		___ Section 7.3	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	___ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
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:		**Method:**	

Recra LabNet Philadelphia
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, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

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 - Lionville

INORGANICS DATA SUMMARY REPORT 11/30/99

CLIENT: TNU-HANFORD C99-045

RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	T0V463	Alkalinity	139	MG/L	2.0	1.0
		Chloride by IC	19.9	MG/L	1.0	4.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	19	MG/L	1.0	4.0
		Sulfate by IC	25.9	MG/L	2.0	4.0
		Nitrate Nitrite	4.6	MG-N/L	0.20	10.0
		Total Dissolved Solids	270	MG/L	5.0	1.0
		Total Organic Halides	12.0 u	UG/L	12.0	1.0
-004	T0V469	Alkalinity	1.0 u	MG/L	1.0	1.0
		Chloride by IC	0.31	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.50 u	MG/L	0.50	1.0
		Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
		Total Dissolved Solids	6.0	MG/L	5.0	1.0
		Total Organic Halides	12.0 u	UG/L	12.0	1.0
-007	T0V457	Alkalinity	130	MG/L	2.0	1.0
		Chloride by IC	28.1	MG/L	1.0	4.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	140	MG/L	5.0	20
		Sulfate by IC	31.3	MG/L	2.0	4.0
		Nitrate Nitrite	33.0	MG-N/L	2.0	100
		Total Dissolved Solids	470	MG/L	5.0	1.0
		Total Organic Halides	12.0 u	UG/L	12.0	1.0
-009	T0V459	Alkalinity	122	MG/L	2.0	1.0
		Chloride by IC	23.2	MG/L	1.0	4.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	110	MG/L	5.0	20
		Sulfate by IC	34.6	MG/L	10.0	20.0
		Nitrate Nitrite	23.7	MG-N/L	2.0	100
		Total Dissolved Solids	410	MG/L	5.0	1.0
		Total Organic Halides	12.0 u	UG/L	12.0	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 11/30/99

CLIENT: TNU-HANFORD C99-045 RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	T0V461	Alkalinity	1.0 u	MG/L	1.0	1.0
		Chloride by IC	0.25 u	MG/L	0.25	1.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.50 u	MG/L	0.50	1.0
		Nitrate Nitrite	0.02 u	MG-N/L	0.02	1.0
		Total Dissolved Solids	5.0 u	MG/L	5.0	1.0
		Total Organic Halides	12.0 u	UG/L	12.0	1.0
-013	T0V465	Alkalinity	140	MG/L	2.0	1.0
		Chloride by IC	18.9	MG/L	1.0	4.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	19	MG/L	1.0	4.0
		Sulfate by IC	25.8	MG/L	2.0	4.0
		Nitrate Nitrite	4.5	MG-N/L	0.20	10.0
		Total Dissolved Solids	280	MG/L	5.0	1.0
		Total Organic Halides	128	UG/L	12.0	1.0
-015	T0V467	Alkalinity	123	MG/L	2.0	1.0
		Chloride by IC	26.3	MG/L	1.0	4.0
		Fluoride by IC	0.50 u	MG/L	0.50	1.0
		Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	85	MG/L	5.0	20
		Sulfate by IC	32.5	MG/L	2.0	4.0
		Nitrate Nitrite	20.0	MG-N/L	0.50	25.0
		Total Dissolved Solids	370	MG/L	5.0	1.0
		Total Organic Halides	206	UG/L	12.0	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/30/99

CLIENT: TNU-HANFORD C99-045 RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LAK031-MB1	Alkalinity	1.0	u	MG/L	1.0	1.0
BLANK10	99LICB84-MB1	Chloride by IC	0.25	u	MG/L	0.25	1.0
		Fluoride by IC	0.50	u	MG/L	0.50	1.0
		Nitrite by IC	0.25	u	MG/L	0.25	1.0
		Nitrate by IC	0.25	u	MG/L	0.25	1.0
		Sulfate by IC	0.50	u	MG/L	0.50	1.0
BLANK10	99LN3048-MB1	Nitrate Nitrite	0.02	u	MG-N/L	0.02	1.0
BLANK10	99LSS1C3-MB1	Total Dissolved Solids	5.0	u	MG/L	5.0	1.0
BLANK1	99LX076-MB1	Total Organic Halides	12.0	u	UG/L	12.0	1.0
BLANK1	99LX078-MB1	Total Organic Halides	12.0	u	UG/L	12.0	1.0
BLANK1	99LX079-MB1	Total Organic Halides	12.0	u	UG/L	12.0	1.0

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INORGANICS ACCURACY REPORT 11/30/99

CLIENT: TNU-HANFORD C99-045 RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	T0V463	Alkalinity	249	139	100	109.8	1.0
-004	T0V469	Chloride by IC	4.8	0.31	5.0	89.7	1.0
		Chloride by IC MSD	4.8	0.31	5.0	88.9	1.0
		Fluoride by IC	10.3	0.00	10.0	102.7	1.0
		Fluoride by IC MSD	10.1	0.00	10.0	101.3	1.0
		Nitrite by IC	4.9	0.25u	5.0	97.4	1.0
		Nitrite by IC MSD	4.9	0.25u	5.0	97.7	1.0
		Nitrate by IC	4.7	0.25u	5.0	95.0	1.0
		Nitrate by IC MSD	4.8	0.25u	5.0	95.1	1.0
		Sulfate by IC	4.8	0.50u	5.0	95.2	1.0
		Sulfate by IC MSD	4.7	0.50u	5.0	94.5	1.0
-009	T0V459	Total Organic Halides	66.3	0.0	50.0	132.6	1.0
-015	T0V467	Nitrate Nitrite	45.0	20.0	25.0	100	50.0
		Nitrate Nitrite MSD	44.7	20.0	25.0	98.6	50.0
BLANK10	99LAK031-MB1	Alkalinity	100	1.0 u	100	100.5	1.0
		Alkalinity MSD	100	1.0 u	100	100	1.0
BLANK10	99LICB84-MB1	Chloride by IC	4.7	0.25u	5.0	95.0	1.0
		Fluoride by IC	10.4	0.50u	10.0	104.1	1.0
		Nitrite by IC	4.9	0.25u	5.0	97.3	1.0
		Nitrate by IC	4.8	0.25u	5.0	96.5	1.0
		Sulfate by IC	4.8	0.50u	5.0	95.7	1.0
BLANK10	99LN3048-MB1	Nitrate Nitrite	0.52	0.02u	0.50	103.2	1.0
		Nitrate Nitrite MSD	0.50	0.02u	0.50	100.8	1.0
BLANK10	99LSS1C3-MB1	Total Dissolved Solids	100	5.0 u	100	102.0	1.0
		Total Dissolved Solids	100	5.0 u	100	101.0	1.0
LCS1	99LX076-LC1	Total Organic Halides	53.5	12.0 u	50.0	107.0	1.0
LCS1	99LX078-LC1	Total Organic Halides	45.2	12.0 u	50.0	90.4	1.0

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INORGANICS ACCURACY REPORT 11/30/99

CLIENT: TNU-HANFORD C99-045

RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
LCS1	99LX079-LC1	Total Organic Halides	44.8	12.0 u	50.0	89.5	1.0

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INORGANICS DUPLICATE SPIKE REPORT 11/30/99

CLIENT: TNU-HANFORD C99-045 RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
-004	T0V469	Chloride by IC	89.7	88.9	0.90
		Fluoride by IC	102.7	101.3	1.3
		Nitrite by IC	97.4	97.7	0.31
		Nitrate by IC	95.0	95.1	0.11
		Sulfate by IC	95.2	94.5	0.72
-015	T0V467	Nitrate Nitrite	100	98.6	1.4
BLANK10	99LAK031-MB1	Alkalinity	100.5	100	0.49
BLANK10	99LN3048-MB1	Nitrate Nitrite	103.2	100.8	2.4
BLANK10	99LSS1C3-MB1	Total Dissolved Solids	102.0	101.0	0.99

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INORGANICS PRECISION REPORT 11/30/99

CLIENT: TNU-HANFORD C99-045 RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	T0V463	Alkalinity	139	142	2.0	1.0
-004REP	T0V469	Chloride by IC	0.31	0.25u	NC	1.0
		Fluoride by IC	0.50u	0.50u	NC	1.0
		Nitrite by IC	0.25u	0.25u	NC	1.0
		Nitrate by IC	0.25u	0.25u	NC	1.0
		Sulfate by IC	0.50u	0.50u	NC	1.0
-009REP	T0V459	Total Organic Halides	12.0 u	12.0 u	NC	1.0
-015REP	T0V467	Nitrate Nitrite	20.0	20.1	0.37	25.0
		Total Dissolved Solids	370	370	1.9	1.0

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-045

DATE RECEIVED: 10/02/99 RFW LOT # :9910L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
T0V463						
ALKALINITY	002	W	99LAK031	09/28/99	10/05/99	10/05/99
ALKALINITY	002 REP	W	99LAK031	09/28/99	10/05/99	10/05/99
ALKALINITY	002 MS	W	99LAK031	09/28/99	10/05/99	10/05/99
CHLORIDE BY IC	002	W	99LICB84	09/28/99	10/13/99	10/13/99
FLUORIDE BY IC	002	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRITE BY IC	002	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE BY IC	002	W	99LICB84	09/28/99	10/13/99	10/13/99
SULFATE BY IC	002	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE NITRITE	002	W	99LN3048	09/28/99	10/04/99	10/04/99
TOTAL DISSOLVED SOLI	002	W	99LSS1C3	09/28/99	10/04/99	10/05/99
TOTAL ORGANIC HALIDE	002	W	99LX076	09/28/99	10/24/99	10/25/99
T0V469						
ALKALINITY	004	W	99LAK031	09/28/99	10/05/99	10/05/99
CHLORIDE BY IC	004	W	99LICB84	09/28/99	10/13/99	10/13/99
CHLORIDE BY IC	004 REP	W	99LICB84	09/28/99	10/13/99	10/13/99
CHLORIDE BY IC	004 MS	W	99LICB84	09/28/99	10/13/99	10/13/99
CHLORIDE BY IC	004 MSD	W	99LICB84	09/28/99	10/13/99	10/13/99
FLUORIDE BY IC	004	W	99LICB84	09/28/99	10/13/99	10/13/99
FLUORIDE BY IC	004 REP	W	99LICB84	09/28/99	10/13/99	10/13/99
FLUORIDE BY IC	004 MS	W	99LICB84	09/28/99	10/13/99	10/13/99
FLUORIDE BY IC	004 MSD	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRITE BY IC	004	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRITE BY IC	004 REP	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRITE BY IC	004 MS	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRITE BY IC	004 MSD	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE BY IC	004	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE BY IC	004 REP	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE BY IC	004 MS	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE BY IC	004 MSD	W	99LICB84	09/28/99	10/13/99	10/13/99
SULFATE BY IC	004	W	99LICB84	09/28/99	10/13/99	10/13/99
SULFATE BY IC	004 REP	W	99LICB84	09/28/99	10/13/99	10/13/99
SULFATE BY IC	004 MS	W	99LICB84	09/28/99	10/13/99	10/13/99
SULFATE BY IC	004 MSD	W	99LICB84	09/28/99	10/13/99	10/13/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-045

DATE RECEIVED: 10/02/99 RFW LOT # :9910L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE NITRITE	004	W	99LN3048	09/28/99	10/04/99	10/04/99
TOTAL DISSOLVED SOLI	004	W	99LSS1C3	09/28/99	10/04/99	10/05/99
TOTAL ORGANIC HALIDE	004	W	99LX076	09/28/99	10/24/99	10/25/99
T0V457						
ALKALINITY	007	W	99LAK031	09/28/99	10/05/99	10/05/99
CHLORIDE BY IC	007	W	99LICB84	09/28/99	10/13/99	10/13/99
FLUORIDE BY IC	007	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRITE BY IC	007	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE BY IC	007	W	99LICB84	09/28/99	10/13/99	10/13/99
SULFATE BY IC	007	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE NITRITE	007	W	99LN3048	09/28/99	10/04/99	10/04/99
TOTAL DISSOLVED SOLI	007	W	99LSS1C3	09/28/99	10/04/99	10/05/99
TOTAL ORGANIC HALIDE	007	W	99LX076	09/28/99	10/24/99	10/25/99
T0V459						
ALKALINITY	009	W	99LAK031	09/28/99	10/05/99	10/05/99
CHLORIDE BY IC	009	W	99LICB84	09/28/99	10/13/99	10/13/99
FLUORIDE BY IC	009	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRITE BY IC	009	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE BY IC	009	W	99LICB84	09/28/99	10/13/99	10/13/99
SULFATE BY IC	009	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE NITRITE	009	W	99LN3048	09/28/99	10/04/99	10/04/99
TOTAL DISSOLVED SOLI	009	W	99LSS1C3	09/28/99	10/04/99	10/05/99
TOTAL ORGANIC HALIDE	009	W	99LX078	09/28/99	11/08/99	11/08/99
TOTAL ORGANIC HALIDE	009 REP	W	99LX078	09/28/99	11/08/99	11/08/99
TOTAL ORGANIC HALIDE	009 MS	W	99LX078	09/28/99	11/08/99	11/08/99
T0V461						
ALKALINITY	011	W	99LAK031	09/28/99	10/05/99	10/05/99
CHLORIDE BY IC	011	W	99LICB84	09/28/99	10/13/99	10/13/99
FLUORIDE BY IC	011	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRITE BY IC	011	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE BY IC	011	W	99LICB84	09/28/99	10/13/99	10/13/99
SULFATE BY IC	011	W	99LICB84	09/28/99	10/13/99	10/13/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-045

DATE RECEIVED: 10/02/99 RFW LOT # :9910L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE NITRITE	011	W	99LN3048	09/28/99	10/04/99	10/04/99
TOTAL DISSOLVED SOLI	011	W	99LSS1C3	09/28/99	10/04/99	10/05/99
TOTAL ORGANIC HALIDE	011	W	99LX079	09/28/99	11/08/99	11/08/99
T0V465						
ALKALINITY	013	W	99LAK031	09/28/99	10/05/99	10/05/99
CHLORIDE BY IC	013	W	99LICB84	09/28/99	10/13/99	10/13/99
FLUORIDE BY IC	013	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRITE BY IC	013	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE BY IC	013	W	99LICB84	09/28/99	10/13/99	10/13/99
SULFATE BY IC	013	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE NITRITE	013	W	99LN3048	09/28/99	10/04/99	10/04/99
TOTAL DISSOLVED SOLI	013	W	99LSS1C3	09/28/99	10/04/99	10/05/99
TOTAL ORGANIC HALIDE	013	W	99LX079	09/28/99	11/08/99	11/08/99
T0V467						
ALKALINITY	015	W	99LAK031	09/28/99	10/05/99	10/05/99
CHLORIDE BY IC	015	W	99LICB84	09/28/99	10/13/99	10/13/99
FLUORIDE BY IC	015	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRITE BY IC	015	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE BY IC	015	W	99LICB84	09/28/99	10/13/99	10/13/99
SULFATE BY IC	015	W	99LICB84	09/28/99	10/13/99	10/13/99
NITRATE NITRITE	015	W	99LN3048	09/28/99	10/04/99	10/04/99
NITRATE NITRITE	015 REP	W	99LN3048	09/28/99	10/04/99	10/04/99
NITRATE NITRITE	015 MS	W	99LN3048	09/28/99	10/04/99	10/04/99
NITRATE NITRITE	015 MSD	W	99LN3048	09/28/99	10/04/99	10/04/99
TOTAL DISSOLVED SOLI	015	W	99LSS1C3	09/28/99	10/04/99	10/05/99
TOTAL DISSOLVED SOLI	015 REP	W	99LSS1C3	09/28/99	10/04/99	10/05/99
TOTAL ORGANIC HALIDE	015	W	99LX079	09/28/99	11/08/99	11/08/99

LAB QC:

ALKALINITY	MB1	W	99LAK031	N/A	10/05/99	10/05/99
ALKALINITY	MB1 BS	W	99LAK031	N/A	10/05/99	10/05/99
ALKALINITY	MB1 BSD	W	99LAK031	N/A	10/05/99	10/05/99
CHLORIDE BY IC	MB1	W	99LICB84	N/A	10/13/99	10/13/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-045

DATE RECEIVED: 10/02/99 RFW LOT # :9910L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHLORIDE BY IC	MB1 BS	W	99LICB84	N/A	10/13/99	10/13/99
FLUORIDE BY IC	MB1	W	99LICB84	N/A	10/13/99	10/13/99
FLUORIDE BY IC	MB1 BS	W	99LICB84	N/A	10/13/99	10/13/99
NITRITE BY IC	MB1	W	99LICB84	N/A	10/13/99	10/13/99
NITRITE BY IC	MB1 BS	W	99LICB84	N/A	10/13/99	10/13/99
NITRATE BY IC	MB1	W	99LICB84	N/A	10/13/99	10/13/99
NITRATE BY IC	MB1 BS	W	99LICB84	N/A	10/13/99	10/13/99
SULFATE BY IC	MB1	W	99LICB84	N/A	10/13/99	10/13/99
SULFATE BY IC	MB1 BS	W	99LICB84	N/A	10/13/99	10/13/99
NITRATE NITRITE	MB1	W	99LN3048	N/A	10/04/99	10/04/99
NITRATE NITRITE	MB1 BS	W	99LN3048	N/A	10/04/99	10/04/99
NITRATE NITRITE	MB1 BSD	W	99LN3048	N/A	10/04/99	10/04/99
TOTAL DISSOLVED SOLI	MB1	W	99LSS1C3	N/A	10/04/99	10/05/99
TOTAL DISSOLVED SOLI	MB1 BS	W	99LSS1C3	N/A	10/04/99	10/05/99
TOTAL DISSOLVED SOLI	MB1 BSD	W	99LSS1C3	N/A	10/04/99	10/05/99
TOTAL ORGANIC HALIDE	LC1 BS	W	99LX076	N/A	10/24/99	10/24/99
TOTAL ORGANIC HALIDE	MB1	W	99LX076	N/A	10/24/99	10/24/99
TOTAL ORGANIC HALIDE	LC1 BS	W	99LX078	N/A	11/08/99	11/08/99
TOTAL ORGANIC HALIDE	MB1	W	99LX078	N/A	11/08/99	11/08/99
TOTAL ORGANIC HALIDE	LC1 BS	W	99LX079	N/A	11/08/99	11/08/99
TOTAL ORGANIC HALIDE	MB1	W	99LX079	N/A	11/08/99	11/08/99

RECRA LabNet Use Only
9910L276

Custody Transfer Record/Lab Work Request

Page 1 of 2

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford C99-045
Est. Final Proj. Sampling Date:
Project #: 16985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 day
Date Rec'd: 10.2.99 Date Due: 11/1/99
Account #:

Refrigerator #		1						2									
#/Type Container	Liquid	3 bag						1p	1p		1 bag	1p	1p	1p			
	Solid																
Volume	Liquid	40						500	ltr		1L	500	500	500			
	Solid																
Preservatives		HCL						–	HNO3		H_2SO_4	–	H_2SO_4	–			
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb			Anions	INORG: Metal	CN	TOX 9020						
RECRA LabNet Use Only		0024H						Ang(1)	Met(1)		1TOX	1ALKL	1N3N2 HNO3	1TDS			

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	0024H	Ang(1)	Met(1)	1TOX	1ALKL	1N3N2 HNO3	1TDS
001	BOWBC7			W	9/28/99	0730	X						
002	TOV463					0939	X	X	X	X	X	X	X
003	TOV462					0815			X				
004	TOV469					↓	X	X	X	X	X	X	X
005	TOV468					↓			X				
006	TOV456					1126			X				
007	TOV457					↓	X	X	X	X	X	X	X
008	TOV458					1145			X				
009	TOV459					↓	X	X	X	X	X	X	X
010	TOV460			↓	↓	1030			X				

Special Instructions:
saf# C99-045
sdg# H0550

COMPOSITE WASTE

Cooler temp
6.2°C
5.4
5.6
5.2

DATE/REVISIONS:
Ang (1) = ICCL, ICFL, ICNO2, ICNO3, ICSO4
Met (1) = Ba, Cr, Pb, Sn, V-, Zn, As
3.
4.
5.
6. Run matrix QC

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	10/2/99	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. 5.2 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*9659504206 NO3, NO2 out

* 9159504215 1.2° * 9159504224 1.5° * 9159504230 1.5°

RECRA LabNet Use Only
9910L276

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford
Est. Final Proj. Sampling Date:
Project #:
Project Contact/Phone #:
RECRA Project Manager:
QC: Del: TAT:

Date Rec'd: 10.2.99 Date Due:
Account #:

Refrigerator #		1							2						1	
#/Type Container	Liquid	3g							1p	1p		1p	1p	1p	1p	
	Solid															
Volume	Liquid	40							ltr	500		ltr	500	500	500	
	Solid															
Preservatives		HCl							HNO3	–		H2SO4	–	H2SO4	–	
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb				Metal	[illegible]						
		RECRA LabNet Use Only														
		0E2444							9METO	8MGO		1TOX	1ALKL	1NO3N2	1TDS	

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	0E2444							9METO	8MGO		1TOX	1ALKL	1NO3N2	1TDS	
011	TOV461			W	9/28/99	1030	X							X	X		X	X	X	X	
012	TOV464					0939								X							
013	TOV465					⊥	X							X	X		X	X	X	X	
014	TOV466					1323								X							
015	TOV467					⊥	X							X	X		X	X	X	X	
016	BOWBC8					0730	X														
017	BOWBC9					0800	X														
018	BOWBDO					⊥	X														

Special Instructions:

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

Relinquished by	Received by	Date	Time
[signature]	[signature]	10/2/99	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't Y or N
Cooler Temp. ____ °C

4710 L 2'16

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-8

Page 1 of 1

Collector: SICKLE	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SIML-429	Ice Chest No.: SIML-571 Temp.: 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 785 29951
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0WBC7		W	9-28-99	0736	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B0WBC7		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
SICKLE			9-28-99 1215	D.E. BREWINGTON	D.E. Brewington		9/28/99 1215
D.E. Brewington	D.E. Brewington		9/28/99 1422	FedEx			9-28-99
FedEx			9-29-99 10:00	TNV	M. Goldenberg		9-29-99 10:00
Jeo Ey			10/2/99 0930	D. Smito			10.2.99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-1

Collector: RT SICKLE (RFS)	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING SEPTEMBER 1999	Logbook No.: WM-SML-1429	Ice Chest No.: SML-571 Temp.: 4 °C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 51
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V462 (F)		W	9-28-99	0939	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V463		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V463		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V463		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V463		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V463		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V463		W			1x20-mL P	Activity Scan	None
T0V463		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V463		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V463		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V463		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V463		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
RT SICKLE (RFS)	9-28-99 1215	D.R. BREWINGTON	9/28/99 1215
D.R. Brewington	9/28/99 1422	FedEx	9-28-99
FedEx	9-29-99 10:00	FNU M. Goldenberg	9-29-99 10:00
FedEx	10.2.99 / 0930	D. Smith	10.2.99 / 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-1

SAF No. C99-045

Contact/Requestor: JH KESSNER

Telephone No.: (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V463		W	9-28-99	0939	1x~~500~~ mL aGs* 1000 ~~2552~~	TOX - 9020	H2SO4 to pH <2 Cool 4C

2552

9-28-99

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
RT SICKLE (HFS)			9-28-99 1715	D.R. BREWINGTON		D.R. Brewington	9/28/99 1215
D.R. Brewington		D.R. Brewington	9/28/99 1422	Fed Ex			9-28-99
Fed Ex			9-29-99 10:00	TNV	M. Goldenberg		9-29-99 10:00
Fed Ex			10.2.99 0930				

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-4

020

SAF No. C99-045

Contact/Requestor: JH KESSNER

Telephone No. (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V469		W	9-28-99	0815	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K. YOUNG			9-28-99 1430	R.R. Fox			9-28-99 1430
R.R. Fox			9-28-99 1500	FED EX			9-28-99
FedEx			9-29-99 10:00	TNU M. Goldenberg			9-29-99 10:00
Fed Ex			10-2-99 0930	D. Smith			10-2-99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-0454

120

Collector: K. Young	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING SEPTEMBER 1999	Logbook No.: WM-SML H 25, PAGE 25	Ice Chest No.: SML 450 Temp.: cool 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V468 (F)		W	9-28-99	0815	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V469		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V469		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V469		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V469		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V469		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V469		W			1x20-mL P	Activity Scan	None
T0V469		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V469		W			5x1000-mL G/P	Iodine-129; Carbon-14 other lab	None
T0V469		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V469		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V469		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K. Young			9-28-99 1470	R.R. Fox			9-28-99 1430
R.R. Fox			9-28-99 1500	FED EX			9-28-99
Fed Ex			9-29-99 10:00	TNU M. Goldenberg			9-29-99 10:00
Fed Ex			10.29.99 0930	D. Yoman			10.29.99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-7

220

Collector: K.J. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING SEPTEMBER 1999	Logbook No.: LWM-SML H25, PAGE 25	Ice Chest No.: SML 519 Temp.: cool/4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 73
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: 6499-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, B1H.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V456 (F)		W	9-28-99	1126	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V457		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V457		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V457		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V457		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V457		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V457		W			1x20-mL P	Activity Scan	None
T0V457		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V457		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V457		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V457		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V457		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
K.J. YOUNG	9-28-99 1430	R. R. Fox	9-28-99 1430
R. R. Fox	9-28-99 1500	FEDEX	9-28-99
FedEx	9-29-99 10:00	TNV M. Goldenberg	9-29-99 10:00

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process): Fed Ex 10.2.99 0930 D. Smith 10.2.99 Disposed By 0930 Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-7

023

SAF No.	Contact/Requestor	Telephone No.	MSIN	FAX
C99-045	JH KESSNER	(509) 375-4688		

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V457		W	9-28-99	1126	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	K.J. YOUNG		9-28-99 1430		R.R. Fox		9-28-99 1430
Relinquished By			Date/Time	Received By			Date/Time
	R.R. Fox		9-28-99 1360		FEDEX	9-28-99	
Relinquished By			Date/Time	Received By			Date/Time
	Fed Ex		9-29-99 10:00		TNV M. Goldenberg		9-29-99 10:00
Relinquished By			Date/Time	Received By			Date/Time
	Fed Ex		10.2.99 0930		D. Smith		10.2.99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
= Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-5

Collector R.T SICKLE	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C99-045	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title ERDF GW MONITORING SEPTEMBER 1999	Logbook No. WM-SML-1429	Ice Chest No. SML-366 Temp. 4 °C
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235795299 40
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No. W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V458 (F)		W	9-28-99	1145	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V459		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V459		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V459		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V459		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V459		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V459		W			1x20-mL P	Activity Scan	None
T0V459		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V459		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V459		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V459		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V459		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
R.T SICKLE	9-28-99 1215	D.R. BREWINGTON D.R. Brewington	9/28/99 1215
D.R. Brewington D.R. Brewington	9/28/99 1422	FedEx	9-28-99
FedEx	9-29-99 10:00	TNV M. Coldenberg	9-29-99 10:00
FedEx	10-2-99 0930	D. Jones	10-2-99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-5

020

SAF No. C99-045

Contact/Requestor: JH KESSNER

Telephone No.: (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V459		W	9-28-99	1145	1x~~500~~ mL aGs* 1000 X 2	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
R.T SICKLE			9-28-99 1215	D.R. BREWINGTON		D.R. Brewington	9/28/99 1215
D.R. Brewington		D.R. Brewington	9/28/99 1422	Fed Ex			9-28-99
Fed Ex			9-29-99 10:00	TWU M. Goldenberg			10:00 9-29-99
Fed Ex			10-2-99 0930	D. Smith			10-2-99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-6

920

Collector: R.T SICKLE	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WMSINL-1429	Ice Chest No.: 5in1382 Temp.: 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299938
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V460 (F)		W	9-28-99	1030	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V461		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V461		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V461		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V461		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V461		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V461		W			1x20-mL P	Activity Scan	None
T0V461		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V461		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V461		W			1x1000 mL G/P	Technetium-99	HCl to pH <2
T0V461		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V461		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
R.T SICKLE	9-28-99 1215	D.R. BREWINGTON D.R. Brewington	9/28/99 1215
D.R. Brewington D.R. Brewington	9/28/99 1427	FedEx	9-28-99
FedEx	9-29-99 10:00	TNV M. Goldenberg	9-29-99 10:00
Geo Ey	10-2-99 0930	D. Smith	10-2-99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) | Disposed By | Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-6

SAF No.	Contact/Requestor	Telephone No.	MSIN	FAX
C99-045	JH KESSNER	(509) 375-4688		

Sample No.	Lab ID	*	Date	Time	No/Type Containers	Sample Analysis	Preservative
T0V461		W	9-28-99	1030	1x~~500~~-mL aGs* 1x½ [illegible]	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
R.T SICKLE			9-28-99 1215	D.R. BREWINGTON		D.R. Brewington	9/28/99 1215
D.R. Brewington		DR Brewington	9/28/99 1400	Fed Ex			9-28-99
Fed Ex			9-29-99 10:00	TNV M. Goldenberg			9-29-99 10:00
Fed Ex			10-2-99 0930	[illegible]			10-2-99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-2

028

Collector: RT SICKLE (RFS)	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING SEPTEMBER 1999	Logbook No.: WMM-SML-#29	Ice Chest No.: SAL461 Temp.: 4 °C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7952 9529
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V464 (F)		W	9-28-99	0939	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V465		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V465		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V465		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V465		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V465		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V465		W			1x20-mL P	Activity Scan	None
T0V465		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V465		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V465		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V465		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V465		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
RT SICKLE (RFS)	9-28-99 1215	D.R. BREWINGTON	9/28/99 1215
D.R. Brewington	9/28/99 1422	FedEx	9-28-99
FedEx	9-29-99 10:00	TNV M. Goldenberg	9-29-99 10:00
Fed Ex	10.2.99 0930	D. Friedl	10.2.99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-2

620

SAF No. C99-045

Contact/Requestor: JH KESSNER

Telephone No.: (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
13 T0V465		W	9-28-99	0939	1x~~500~~-mL aGs* 1000 ~~X 52~~	TOX - 9020	H2SO4 to pH <2 Cool 4C

2532

9-28-99

Relinquished By	Received By
Print: RT SICKLE (HFS) Sign: [signature] Date/Time: 9-28-99 1215	Print: D.R. BREWINGTON Sign: D.R. Brewington Date/Time: 9/28/99 1215
Relinquished By: D.R. Brewington D.R. Brewington 9/28/99 Date/Time: 1422	Received By: FedEx Date/Time: 9-28-99
Relinquished By: FedEx 9-29-99 Date/Time: 10:00	Received By: TNV M. Goldenberg 9-29-99 Date/Time: 10:00
Relinquished By: Fed Ex 10.2.99 Date/Time: 0930	Received By: [signature] 10.2.99 Date/Time: 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-3

Collector: K.J. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SMC H 25, PAGE 25	Ice Chest No.: SMC 462 Temp.: cool 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4257952994 2
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V466 (F)		W	9-28-99	1323	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V467		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V467		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V467		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V467		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V467		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V467		W			1x20-mL P	Activity Scan	None
T0V467		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V467		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V467		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V467		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V467		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
K.J. YOUNG	9-28-99 1430	R.R. Fox	9-28-99 1430
R.R. Fox	9-28-99 1500	FEDEX	9-28-99
Fed Ex	9-29-99 10:00	TNN M. Goldenberg	9-29-99 10:00
Fed Ex	10.2.99 0930	D. Smith	10.2.99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-3

031

SAF No. C99-045

Contact/Requestor: JH KESSNER

Telephone No.: (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V467		W	9-28-99	1323	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K.J. YOUNG			9-28-99 1430	P.R. FOX			9-28-99 1430
P.P. FOX			9-28-99 1500	FEDEX			9-28-99
Fed Ex			9-29-99 10:00	TNV M. Goldenberg			9-29-99 10:00
Fed Ex			10.2.99 0930	D. Smith			10.2.99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-9

Page 1 of 1

032

Collector: SICKLE	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SMC-H29	Ice Chest No.: SMC-366 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 40
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0WBC8		W	9-28-99	0730	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B0WBC8		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
SICKLE	9-28-99 1215	D.R. BREWINGTON D.R. Brewington	9/28/99 1215
FedEx	9-29-99 10:00	FedEx	9-28-99 10:00
		TNV M. Goldenberg	9-28-99
Fed Ex	10-2-99 0930	D. Jones	10-2-99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-10

Page 1 of 1

033

Collector: K. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SMIL H 25, PAGE 25	Ice Chest No.: SMIL 462 Temp.: COOL/4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 62
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0WBC9		W	9-28-99	0800	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B0WBC9		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K. YOUNG			9-28-99 1430	R.R. Fox			9-28-99 1430
R.R. Fox			9-28-99 1500	FEDEX			9-28-99
FedEx			9-29-99 10:00	TNV M. Goldenberg			9-29-99 10:00
Fed Ex			10.2.99 0930				10.2.99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) DS 10.2.99 Disposed By Date/Time

PNNL	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # C99-045-11
		Page 1 of 1

034

Collector: K. Young	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SUM H 25, PAGE 25	Ice Chest No. Temp.: Cool 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 43
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0WBD0		W	9-28-99	0800	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B0WBD0		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K. Young			9-28-99 1430	R.R. Fox			9-28-99 1430
R.R. Fox			9-28-99 1500	~~HR~~ FEDEX			
				RHF			9-28-99
FedEx			9-29-99 10:00	TNV M. Goldenberg			9-29-99 10:00

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

FedEx 10-2-99 0930 D. Gruen 10-2-99 0930

Thermo NUtech

CHAIN OF CUSTODY

ORD # N9-09-206

09/30/99 12:56:29

WORK ID: SAF C99-045/SDG H0550

RCVD: 09/29/99 DUE: 11/13/99

SDG H0550

KEEP: 11/12/00 DISP: S

DASH	SAMPLE IDENTIFICATION	STORED	TESTS
01A-W	TOV462 (F)	SCA-2	DISPOS WB028 WB043 WB133
02A-W	TOV463	SCA-2	DISPOS WB028 WB043 WB133 WB202 WB238 WB337 WB464 WB468 WB503
02B-W	TOV463 MS	SCA-2	WB028 WB043 WB133 WB202 WB238 WB337 WB464 WB468 WB503
02C-W	TOV463 DUP	SCA-2	WB028 WB043 WB133 WB202 WB238 WB337 WB464 WB468 WB503
03A-W	TOV464 (F)	SCA-2	DISPOS WB028 WB043 WB133
04A-W	TOV465	SCA-2	DISPOS WB028 WB043 WB133 WB202 WB238 WB337 WB464 WB468 WB503
05A-W	TOV466 (F)	SCA-2	DISPOS WB028 WB043 WB133
06A-W	TOV467	SCA-2	DISPOS WB028 WB043 WB133 WB202 WB238 WB337 WB464 WB468 WB503
07A-W	TOV468 (F)	SCA-2	DISPOS WB028 WB043 WB133
08A-W	TOV469	SCA-2	DISPOS WB028 WB043 WB133 WB202 WB238 WB337 WB464 WB468 WB503
09A-W	TOV458 (F)	SCA-2	DISPOS WB028 WB043 WB133
10A-W	TOV459	SCA-2	DISPOS WB028 WB043 WB133 WB202 WB238 WB337 WB464 WB468 WB503
11A-W	TOV460 (F)	SCA-2	DISPOS WB028 WB043 WB133
12A-W	TOV461	SCA-2	DISPOS WB028 WB043 WB133 WB202 WB238 WB337 WB464 WB468 WB503
13A-W	TOV456 (F)	SCA-2	DISPOS WB028 WB043 WB133
14A-W	TOV457	SCA-2	DISPOS WB028 WB043 WB133 WB202 WB238 WB337 WB464 WB468 WB503
15A-W	B0WBC7	SCA-2	DISPOS WB202
16A-W	B0WBC8	SCA-2	DISPOS WB202
17A-W	B0WBC9	SCA-2	DISPOS WB202
18A-W	B0WBD0	SCA-2	DISPOS WB202

RELEASED BY	DATE	TRANSFERRED TO	DATE	RECEIVED BY	DATE
Xerin Co	9-30	KECRA	9-30		

PAGE 1 Thermo NUtech WORK SHEET ORD # N9-09-206

CLIENT: WES_HANFORD CON: KCJ SDG KOSSO CAT: ENVWT RCVD: 09/29/99 DUE: 11/13/99

PROJ: WHC_BHI 09/30/99 12:56:14 STAT: TRANSMITTED 09/30/99

DASH	SAMPLE IDENTIFICATION	STORED	DEPT	START	DUE BY	TESTS, FRACTIONS /
01A-W	TOV462 (F)	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB028 WB043 WB133
02A-W	TOV463	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB028 WB043 WB133 WB202
				10/04	11/13	WB238 WB337 WB464 WB468 WB503
02B-W	TOV463 MS	SCA-2	SU WT	09/27	11/06	WB028 WB043 WB133 WB202
				10/04	11/13	WB238 WB337 WB464 WB468 WB503
02C-W	TOV463 DUP	SCA-2	SU WT	09/27	11/06	WB028 WB043 WB133 WB202
				10/04	11/13	WB238 WB337 WB464 WB468 WB503
03A-W	TOV464 (F)	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB028 WB043 WB133
04A-W	TOV465	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB028 WB043 WB133 WB202
				10/04	11/13	WB238 WB337 WB464 WB468 WB503
05A-W	TOV466 (F)	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB028 WB043 WB133
06A-W	TOV467	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB028 WB043 WB133 WB202
				10/04	11/13	WB238 WB337 WB464 WB468 WB503
07A-W	TOV468 (F)	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB028 WB043 WB133
08A-W	TOV469	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB028 WB043 WB133 WB202
				10/04	11/13	WB238 WB337 WB464 WB468 WB503
09A-W	TOV458 (F)	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB028 WB043 WB133
10A-W	TOV459	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB028 WB043 WB133 WB202
				10/04	11/13	WB238 WB337 WB464 WB468 WB503
11A-W	TOV460 (F)	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB028 WB043 WB133
12A-W	TOV461	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB028 WB043 WB133 WB202
				10/04	11/13	WB238 WB337 WB464 WB468 WB503
13A-W	TOV456 (F)	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB028 WB043 WB133
14A-W	TOV457	SCA-2	CO	09/29	09/29	DISPOS

Thermo NUtech

SDG40550

CLIENT: WES_HANFORD CON: KCJ
PROJ: WHC_BHI

09/30/99 12:56:14

WORK SHEET
CAT: ENVWT

ORD # N9-09-206
RCVD: 09/29/99 DUE: 11/13/99
STAT: TRANSMITTED 09/30/99

DASH	SAMPLE IDENTIFICATION	STORED	DEPT	START	DUE BY	TESTS, FRACTIONS /
			SU WT	09/27	11/06	WB028 WB043 WB133 WB202
				10/04	11/13	WB238 WB337 WB464 WB468 WB503
15A-W	B0WBC7	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB202
16A-W	B0WBC8	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB202
17A-W	B0WBC9	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB202
18A-W	B0WBD0	SCA-2	CO	09/29	09/29	DISPOS
			SU WT	09/27	11/06	WB202

RECRA LabNet
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Virtual Laboratories Everywhere

DEC 1999
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Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD C99-045
RFW# : 9910L276
SDG/SAF# : H0550/C99-045

W.O.# : 10985-001-001-9999-00
Date Received: 10-02-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 14 water samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

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 (80-120% for Mercury).

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) or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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

9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. All matrix spike (MS) recoveries were within the 75-125% control limits. 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.

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 38 pages.

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.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

10-28-99
Date

mld/m10-276

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9910L276

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

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/27/99

CLIENT: TNU-HANFORD C99-045 RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	T0V463	Arsenic, Total	5.0		UG/L	3.3	1.0
		Barium, Total	41.5		UG/L	0.30	1.0
		Chromium, Total	15.7		UG/L	0.80	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	3.7	u	UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	29.2		UG/L	0.60	1.0
		Zinc, Total	3.5		UG/L	0.80	1.0
-003	T0V462	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	40.3		UG/L	0.30	1.0
		Chromium, Total	14.8		UG/L	0.80	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	3.7	u	UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	28.7		UG/L	0.60	1.0
		Zinc, Total	2.9		UG/L	0.80	1.0
-004	T0V469	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	0.72		UG/L	0.30	1.0
		Chromium, Total	0.80	u	UG/L	0.80	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	3.7	u	UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	0.60	u	UG/L	0.60	1.0
		Zinc, Total	4.6		UG/L	0.80	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/27/99

CLIENT: TNU-HANFORD C99-045 RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	T0V468	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	0.42		UG/L	0.30	1.0
		Chromium, Total	0.80	u	UG/L	0.80	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	3.7	u	UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	0.60	u	UG/L	0.60	1.0
		Zinc, Total	0.92		UG/L	0.80	1.0
-006	T0V456	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	69.8		UG/L	0.30	1.0
		Chromium, Total	3.1		UG/L	0.80	1.0
		Lead, Total	2.4		UG/L	2.1	1.0
		Selenium, Total	4.6		UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	23.5		UG/L	0.60	1.0
		Zinc, Total	350		UG/L	0.80	1.0
-007	T0V457	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	69.9		UG/L	0.30	1.0
		Chromium, Total	3.7		UG/L	0.80	1.0
		Lead, Total	2.9		UG/L	2.1	1.0
		Selenium, Total	4.6		UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	23.4		UG/L	0.60	1.0
		Zinc, Total	400		UG/L	0.80	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/27/99

CLIENT: TNU-HANFORD C99-045 RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	T0V458	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	75.6		UG/L	0.30	1.0
		Chromium, Total	4.4		UG/L	0.80	1.0
		Lead, Total	6.7		UG/L	2.1	1.0
		Selenium, Total	7.3		UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	26.4		UG/L	0.60	1.0
		Zinc, Total	0.80	u	UG/L	0.80	1.0
-009	T0V459	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	77.0		UG/L	0.30	1.0
		Chromium, Total	13.5		UG/L	0.80	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	3.7	u	UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	26.9		UG/L	0.60	1.0
		Zinc, Total	0.80	u	UG/L	0.80	1.0
-010	T0V460	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	0.92		UG/L	0.30	1.0
		Chromium, Total	0.80	u	UG/L	0.80	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	3.7	u	UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	0.60	u	UG/L	0.60	1.0
		Zinc, Total	1.4		UG/L	0.80	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/27/99

CLIENT: TNU-HANFORD C99-045 RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	T0V461	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	0.41		UG/L	0.30	1.0
		Chromium, Total	0.80	u	UG/L	0.80	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	3.7	u	UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	0.60	u	UG/L	0.60	1.0
		Zinc, Total	0.80	u	UG/L	0.80	1.0
-012	T0V464	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	40.2		UG/L	0.30	1.0
		Chromium, Total	14.8		UG/L	0.80	1.0
		Lead, Total	4.0		UG/L	2.1	1.0
		Selenium, Total	5.2		UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	28.6		UG/L	0.60	1.0
		Zinc, Total	3.5		UG/L	0.80	1.0
-013	T0V465	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	39.9		UG/L	0.30	1.0
		Chromium, Total	15.4		UG/L	0.80	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	5.6		UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	28.9		UG/L	0.60	1.0
		Zinc, Total	3.3		UG/L	0.80	1.0

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 10/27/99

CLIENT: TNU-HANFORD C99-045 RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-014	T0V466	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	54.1		UG/L	0.30	1.0
		Chromium, Total	2.5		UG/L	0.80	1.0
		Lead, Total	49.2		UG/L	2.1	1.0
		Selenium, Total	3.7	u	UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	17.5		UG/L	0.60	1.0
		Zinc, Total	215		UG/L	0.80	1.0
-015	T0V467	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	59.7		UG/L	0.30	1.0
		Chromium, Total	6.0		UG/L	0.80	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	4.1		UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	25.4		UG/L	0.60	1.0
		Zinc, Total	432		UG/L	0.80	1.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 10/27/99

CLIENT: TNU-HANFORD C99-045 RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0711-MB1	Arsenic, Total	3.3	u	UG/L	3.3	1.0
		Barium, Total	0.68		UG/L	0.30	1.0
		Chromium, Total	0.80	u	UG/L	0.80	1.0
		Lead, Total	2.1	u	UG/L	2.1	1.0
		Selenium, Total	3.7	u	UG/L	3.7	1.0
		Tin, Total	2.1	u	UG/L	2.1	1.0
		Vanadium, Total	0.60	u	UG/L	0.60	1.0
		Zinc, Total	0.80	u	UG/L	0.80	1.0

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INORGANICS ACCURACY REPORT 10/27/99

CLIENT: TNU-HANFORD C99-045

RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	T0V463	Arsenic, Total	2030	5.0	2000	101.2	1.0
		Barium, Total	1950	41.5	2000	95.2	1.0
		Chromium, Total	211	15.7	200	97.8	1.0
		Lead, Total	494	2.1 u	500	98.8	1.0
		Selenium, Total	2020	3.7 u	2000	101.0	1.0
		Tin, Total	1020	2.1 u	1000	101.6	1.0
		Vanadium, Total	525	29.2	500	99.2	1.0
		Zinc, Total	484	3.5	500	96.0	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 10/27/99

CLIENT: TNU-HANFORD C99-045 RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-002REP	T0V463	Arsenic, Total	5.0	3.3 u	~~NC~~ 200	1.0
		Barium, Total	41.5	40.1	3.4	1.0
		Chromium, Total	15.7	15.6	0.64	1.0
		Lead, Total	2.1 u	2.4	~~NC~~ 200	1.0
		Selenium, Total	3.7 u	4.2	~~NC~~ 200	1.0
		Tin, Total	2.1 u	2.1 u	NC	1.0
		Vanadium, Total	29.2	29.2	0.00	1.0
		Zinc, Total	3.5	3.3	5.9	1.0

Corrections
MD 10/27/99

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 10/27/99

CLIENT: TNU-HANFORD C99-045 RECRA LOT #: 9910L276

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0711-LC1	Arsenic, LCS	9840	10000	UG/L	98.4
		Barium, LCS	4890	5000	UG/L	97.8
		Chromium, LCS	494	500	UG/L	98.7
		Lead, LCS	2460	2500	UG/L	98.4
		Selenium, LCS	9870	10000	UG/L	98.7
		Tin, LCS	4920	5000	UG/L	98.4
		Vanadium, LCS	2510	2500	UG/L	100.5
		Zinc, LCS	976	1000	UG/L	97.6

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-045

DATE RECEIVED: 10/02/99 RFW LOT # :9910L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
T0V463						
ARSENIC, TOTAL	002	W	99L0711	09/28/99	10/21/99	10/21/99
ARSENIC, TOTAL	002 REP	W	99L0711	09/28/99	10/21/99	10/21/99
ARSENIC, TOTAL	002 MS	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	002	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	002 REP	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	002 MS	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	002	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	002 REP	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	002 MS	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	002	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	002 REP	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	002 MS	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	002	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	002 REP	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	002 MS	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	002	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	002 REP	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	002 MS	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	002	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	002 REP	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	002 MS	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	002	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	002 REP	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	002 MS	W	99L0711	09/28/99	10/21/99	10/21/99
T0V462						
ARSENIC, TOTAL	003	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	003	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	003	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	003	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	003	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	003	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	003	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	003	W	99L0711	09/28/99	10/21/99	10/21/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-045

DATE RECEIVED: 10/02/99 RFW LOT # :9910L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
T0V469						
ARSENIC, TOTAL	004	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	004	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	004	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	004	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	004	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	004	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	004	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	004	W	99L0711	09/28/99	10/21/99	10/21/99
T0V468						
ARSENIC, TOTAL	005	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	005	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	005	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	005	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	005	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	005	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	005	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	005	W	99L0711	09/28/99	10/21/99	10/21/99
T0V456						
ARSENIC, TOTAL	006	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	006	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	006	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	006	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	006	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	006	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	006	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	006	W	99L0711	09/28/99	10/21/99	10/21/99
T0V457						
ARSENIC, TOTAL	007	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	007	W	99L0711	09/28/99	10/21/99	10/21/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-045

DATE RECEIVED: 10/02/99 RFW LOT # :9910L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM, TOTAL	007	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	007	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	007	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	007	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	007	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	007	W	99L0711	09/28/99	10/21/99	10/21/99
T0V458						
ARSENIC, TOTAL	008	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	008	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	008	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	008	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	008	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	008	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	008	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	008	W	99L0711	09/28/99	10/21/99	10/21/99
T0V459						
ARSENIC, TOTAL	009	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	009	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	009	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	009	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	009	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	009	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	009	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	009	W	99L0711	09/28/99	10/21/99	10/21/99
T0V460						
ARSENIC, TOTAL	010	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	010	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	010	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	010	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	010	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	010	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	010	W	99L0711	09/28/99	10/21/99	10/21/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-045

DATE RECEIVED: 10/02/99 RFW LOT # :9910L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
ZINC, TOTAL	010	W	99L0711	09/28/99	10/21/99	10/21/99
T0V461						
ARSENIC, TOTAL	011	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	011	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	011	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	011	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	011	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	011	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	011	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	011	W	99L0711	09/28/99	10/21/99	10/21/99
T0V464						
ARSENIC, TOTAL	012	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	012	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	012	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	012	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	012	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	012	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	012	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	012	W	99L0711	09/28/99	10/21/99	10/21/99
T0V465						
ARSENIC, TOTAL	013	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	013	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	013	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	013	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	013	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	013	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	013	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	013	W	99L0711	09/28/99	10/21/99	10/21/99
T0V466						
ARSENIC, TOTAL	014	W	99L0711	09/28/99	10/21/99	10/21/99

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-045

DATE RECEIVED: 10/02/99 RFW LOT # :9910L276

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BARIUM, TOTAL	014	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	014	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	014	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	014	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	014	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	014	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	014	W	99L0711	09/28/99	10/21/99	10/21/99
T0V467						
ARSENIC, TOTAL	015	W	99L0711	09/28/99	10/21/99	10/21/99
BARIUM, TOTAL	015	W	99L0711	09/28/99	10/21/99	10/21/99
CHROMIUM, TOTAL	015	W	99L0711	09/28/99	10/21/99	10/21/99
LEAD, TOTAL	015	W	99L0711	09/28/99	10/21/99	10/21/99
SELENIUM, TOTAL	015	W	99L0711	09/28/99	10/21/99	10/21/99
TIN, TOTAL	015	W	99L0711	09/28/99	10/21/99	10/21/99
VANADIUM, TOTAL	015	W	99L0711	09/28/99	10/21/99	10/21/99
ZINC, TOTAL	015	W	99L0711	09/28/99	10/21/99	10/21/99

LAB QC:

ARSENIC LABORATORY	LC1 BS	W	99L0711	N/A	10/21/99	10/21/99
ARSENIC, TOTAL	MB1	W	99L0711	N/A	10/21/99	10/21/99
BARIUM LABORATORY	LC1 BS	W	99L0711	N/A	10/21/99	10/21/99
BARIUM, TOTAL	MB1	W	99L0711	N/A	10/21/99	10/21/99
CHROMIUM LABORATORY	LC1 BS	W	99L0711	N/A	10/21/99	10/21/99
CHROMIUM, TOTAL	MB1	W	99L0711	N/A	10/21/99	10/21/99
LEAD LABORATORY	LC1 BS	W	99L0711	N/A	10/21/99	10/21/99
LEAD, TOTAL	MB1	W	99L0711	N/A	10/21/99	10/21/99
SELENIUM LABORATORY	LC1 BS	W	99L0711	N/A	10/21/99	10/21/99
SELENIUM, TOTAL	MB1	W	99L0711	N/A	10/21/99	10/21/99
TIN LABORATORY	LC1 BS	W	99L0711	N/A	10/21/99	10/21/99
TIN, TOTAL	MB1	W	99L0711	N/A	10/21/99	10/21/99
VANADIUM LABORATORY	LC1 BS	W	99L0711	N/A	10/21/99	10/21/99
VANADIUM, TOTAL	MB1	W	99L0711	N/A	10/21/99	10/21/99
ZINC LABORATORY	LC1 BS	W	99L0711	N/A	10/21/99	10/21/99
ZINC, TOTAL	MB1	W	99L0711	N/A	10/21/99	10/21/99

RECRA LabNet Use Only
9910L276

Custody Transfer Record/Lab Work Request

Page 1 of 2

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals dig.

Client: TNU Hanford C99-045
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 days
Date Rec'd: 10-2-99 Date Due: 11/1/99
Account #:

Refrigerator #		1						2						1		
#/Type Container	Liquid	3 bag						1p	1p		1 bag	1p	1p	1p		
	Solid															
Volume	Liquid	40						500	1 ltr		1L	500	500	500		
	Solid															
Preservatives		HCL						–	HNO3		H_2SO_4	–	NaOH	–		
ANALYSES REQUESTED →		ORGANIC							INORG							
		VOA	BNA	Pest/PCB	Herb			Anions	Metal	CN	TOX					
RECRA LabNet Use Only		0824						Ang(1)	Met(1)		1TOX	1ALKL	1N3N2 1HO3	1TDS		

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	0824						Ang(1)	Met(1)		1TOX	1ALKL	1N3N2 1HO3	1TDS		
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	001	BOWBC7			W	9/28/99	0730	X														
	002	TOV463					0939	X						X	X		X	X	X	X		
	003	TOV462					0815								X							
	004	TOV469						X						X	X		X	X	X	X		
	005	TOV468													X							
	006	TOV456					1126								X							
	007	TOV457						X						X	X		X	X	X	X		
	008	TOV458					1145								X							
	009	TOV459						X						X	X		X	X	X	X		
	010	TOV460					1030								X							

Special Instructions: 10/4/99
saf# ~~A~~ C99-045
sdg# H0550

COMPOSITE WASTE

DATE/REVISIONS:
Ang (1) = ICCL, ICFL, ICNO2, ICNO3, ICSO4
Met (1) = Ba, Cr, Pb, Sn, V, Zn, As, Se
10/4/99 3. Se added to metals list
4. per client coc
5.
6. Run matrix QC

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	10/2/99	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. 5.2 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES:
*9659504206 NO3, NO2 out

* 9659504224 / 5.6° * 8094594213 00 / 5.6°

RECRA LabNet Use Only

991DL276

Custody Transfer Record/Lab Work Request

Page 2 of 2

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford

Est. Final Proj. Sampling Date:

Project #:

Project Contact/Phone #:

RECRA Project Manager:

QC: Del: TAT:

Date Rec'd: 10.2.99 Date Due:

Account #:

Refrigerator #		1							2						1		
#/Type Container	Liquid	3g							1p	1p		1p	1p	1p	1p		
	Solid																
Volume	Liquid	40							ltr	500		ltr	500	500	500		
	Solid																
Preservatives		HCl							HNO3	–		H_2SO_4	–	H_2SO_4	–		
ANALYSES REQUESTED →		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal	[illegible]							
		RECRA LabNet Use Only															
		0824							8010	8080		TOX	TALK	TN3N2	TDS		

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	0824						8010	8080		TOX	TALK	TN3N2	TDS	
011	TOV461			W	9/28/99	1030	X						X	X		X	X	X	X	
012	TOV464					0939							X							
013	TOV465					⊥	X						X	X		X	X	X	X	
014	TOV466					1323							X							
015	TOV467					⊥	X						X	X		X	X	X	X	
016	BOWBC8				9	0730	X													
017	BOWBC9				⊥	0800	X													
018	BOWBDO			⊥	⊥	⊥	X													

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

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

Relinquished by	Received by	Date	Time
[illegible]	[illegible]	10/2/99	0930

Relinquished by	Received by	Date	Time

9910 L 276

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-8

Page 1 of 1

Collector: SICKLE

SAF No.: C99-045

Project Title: ERDF GW MONITORING, SEPTEMBER 1999

Shipped To (Lab): TMA/RECRA

Protocol: CERCLA

Contact/Requester: JH KESSNER

Sampling Origin: HANFORD SITE

Logbook No.: WIM-SIML-1429

Method of Shipment: GOVT. VEHICLE

Data Turnaround: 45 Days

Telephone No.: (509) 375-4688 MSIN FAX

Purchase Order/Charge Code

Ice Chest No.: SIML-571 Temp.: 4°C

Bill of Lading/Air Bill No.: 4235 785 29951

Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0WBC7		W	9-28-99	0730	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B0WBC7		W	↓	↓	1x20-mL P	Activity Scan	None

Matrix *

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

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
SICKLE			9-28-99 1215		D.R. BREWINGTON	D.R. Brewington	9/28/99 1215
D.R. Brewington		D.R. Brewington	9/28/99 1422	FedEx			9-28-99
FedEx			9-29-99 10:00	TNN		M. Goldenberg	9-29-99 10:00
			10/2/99 0930			D. Smith	10.2.99 0930

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By: Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-1

Collector: RT SICKLE (RFS)	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SML-1429	Ice Chest No.: SML-571 Temp.: 4 °C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795 29951
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V462 (F)		W	9-28-99	0939	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V463		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V463		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V463		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V463		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V463		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V463		W			1x20-mL P	Activity Scan	None
T0V463		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V463		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V463		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V463		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V463		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
RT SICKLE (RFS)	9-28-99 1215	D.R. BREWINGTON D.R. Brewington	9/28/99 1215
D.R. Brewington D.R. Brewington	9/28/99 1422	FedEx	9-28-99
FedEx	9-29-99 10:00	FNU M. Goldenberg	9-29-99 10:00
FedEx	10.2.99 / 0930	D. Yonuid	10.2.99 / 0930

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-1

SAF No. C99-045

Contact/Requestor JH KESSNER

Telephone No. (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V463		W	9-28-99	0939	1x~~500~~ mL aGs* 1000 mL	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By (Print / Sign) RT SICKLE (RFS) — Date/Time 9-28-99 1215

Received By (Print / Sign) D.R. BREWINGTON — Date/Time 9/28/99 1215

Relinquished By (Print / Sign) DR Brewington D.R. Brewington — Date/Time 9/28/99 1422

Received By Fed Ex — Date/Time 9-28-99

Relinquished By Fed Ex — Date/Time 9-29-99 10:00

Received By TNV M. Goldenberg — Date/Time 9-29-99 10:00

Relinquished By Fed Ex — Date/Time 10.2.99 0930

Received By D. Smith — Date/Time 10.2.99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-4

SAF No. C99-045

Contact/Requestor: JH KESSNER

Telephone No. (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V469		W	9-28-99	0815	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By: K. Young — Print — Sign — Date/Time 1430 9-28-99

Received By: P.R. Fox — Print — Sign — Date/Time 1430 9-28-99

Relinquished By: R.R. Fox — Date/Time 1500 9-28-99

Received By: FED EX — Date/Time 9-28-99

Relinquished By: FedEx — Date/Time 9-29-99 10:00

Received By: TNU M. Goldenberg — Date/Time 9-29-99 10:00

Relinquished By: Fed Ex — Date/Time 10-2-99 0930

Received By: D. Smith — Date/Time 10-2-99 0930

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

Matrix *

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

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-0454

Collector: K. Young	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4088 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-5ML H 25, PAGE 25	Ice Chest No.: 5ML 450 Temp.: cool 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V468 (F)		W	9-28-99	0815	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V469		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V469		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V469		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V469		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V469		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V469		W			1x20-mL P	Activity Scan	None
T0V469		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V469		W			5x1000-mL G/P	Iodine-129; Carbon-14 other lab	None
T0V469		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V469		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V469		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K. Young			9-28-99 1430	R.R. Fox			9-28-99 1430
R.R. Fox			9-28-99 1500	FED EX			9-28-99
Fed Ex			9-29-99 10:00	TNU M. Goldenberg			9-29-99 10:00
Fed Ex			10-2-99 0930	D. Jones			10-2-99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-7

Collector: K.J. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: LWM-SML H25, PAGE 25	Ice Chest No.: SML 519 Temp.: COOL/4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 73
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: LW99-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V456 (F)		W	9-28-99	1126	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V457		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V457		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V457		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V457		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V457		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V457		W			1x20-mL P	Activity Scan	None
T0V457		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V457		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V457		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V457		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V457		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
K.J. YOUNG	9-28-99 1430	R. R. Fox	9-28-99 1430
R. R. Fox	9-28-99 1500	FEDEX	9-28-99
FedEx	9-29-99 10:00	TNV M. Goldenberg	9-29-99 10:00

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process): Fed Ex 10.2.99 0930 D. Smith 10.2.99 Disposed By 0930 Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-7

SAF No. C99-045

Contact/Requestor JH KESSNER

Telephone No. (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V457		W	9-28-99	1126	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
KW. YOUNG			9-28-99 1430	R.R. Fox			9-28-99 1430
R.R. Fox			9-28-99 1500	FEDEX			9-28-99
FedEx			9-29-99 10:00	TNV M. Goldenberg			9-29-99 10:00
FedEx			10.2.99 0930	D. Smith			10.2.99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-5

Collector R.T SICKLE	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C99-045	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title ERDF GW MONITORING, SEPTEMBER 1999	Logbook No. WM-SML-1429	Ice Chest No. SML-366 Temp. 4 °C
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235795299 40
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No. W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V458 (F)		W	9-28-99	1145	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V459		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V459		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V459		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V459		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V459		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V459		W			1x20-mL P	Activity Scan	None
T0V459		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V459		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V459		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V459		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V459		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
R.T SICKLE	9-28-99 1215	D.R. BREWINGTON D.R. Brewington	9/28/99 1215
D.R. Brewington D.R. Brewington	9/28/99 1422	FedEx	9-28-99
FedEx	9-29-99 10:00	TNV M. Goldenberg	9-29-99 10:00
FedEx	10.2.99 0930	D. Grieb	10.2.99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-5

SAF No. C99-045

Contact/Requestor: JH KESSNER

Telephone No. (509) 375-4688 MSIN FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V459		W	9-28-99	1145	1x~~500~~mL aGs* 1000 X 2	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	R.T SICKLE	[signature]	9-28-99 1215		D.R. BREWINGTON	D.R. Brewington	9/28/99 1215
D.R. Brewington		D.R. Brewington	9/28/99 1422	FedEx			9-28-99
FedEx			9-29-99 10:00	TWV M. Goldenberg			10:00 9-29-99
FedEx			10-2-99 0930	[signature]			10-2-99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-6

Collector: R.T SICKLE	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SINL-429	Ice Chest No.: Sin 1382 Temp.: 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795 29938
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V460 (F)		W	9-28-99	1030	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V461		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V461		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V461		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V461		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V461		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V461		W			1x20-mL P	Activity Scan	None
T0V461		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V461		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V461		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V461		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V461		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
R.T SICKLE			9-28-99 1215	D.R. BREWINGTON		D.R. Brewington	9/28/99 1215
D.R. Brewington		D.R. Brewington	9/28/99 1427	FedEx			9-28-99
FedEx			9-29-99 10:00	TNV M. Goldenberg			9-29-99 10:00
[illegible]			10-2-99 0930	D. Smith			10-2-99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-6

SAF No. C99-045

Contact/Requestor JH KESSNER

Telephone No. (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V461		W	9-28-99	1030	1x~~500~~-mL aGs* 1000 ~~250~~	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
R.T SICKLE			9-28-99 1215	D.R. BREWINGTON		D.R. Brewington	9/28/99 1215
D.R. Brewington		DR Brewington	9/28/99 1202	Fed Ex			9-28-99
Fed Ex			9-29-99 10:00	TNV	M. Colollusbong		9-29-99 10:00
Fed Ex			10.2.99 0930				10.2.99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-2

Collector: RT SICKLE (RFS)	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING SEPTEMBER 1999	Logbook No.: WM-SML-1429	Ice Chest No.: SML461 Temp.: 4 °C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7952 9529
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V464 (F)		W	9-25-99	0939	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V465		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V465		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V465		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V465		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V465		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V465		W			1x20-mL P	Activity Scan	None
T0V465		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V465		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V465		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V465		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V465		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
RT SICKLE (RFS)	9-28-99 1215	D.R. BREWINGTON D.R. Brewington	9/28/99 1215
D.R. Brewington D.R. Brewington	9/28/99 1422	Fed Ex	9-28-99
Fed Ex	9-29-99 10:00	TNN M. Goldenberg	9-29-99 10:00
Fed Ex	10.2.99 0930	D. Friedl	10.2.99 09:30

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-2

SAF No. C99-045

Contact/Requestor: JH KESSNER

Telephone No.: (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
13 T0V465		W	9-28-99	0939	1x~~500~~-mL aGs* 1000 X 52	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By: RT SICKLE (HFS) Print / Sign — Date/Time 9-28-99 1215

Received By: D.R. BREWINGTON D.R. Brewington — Date/Time 9/28/99 1215

Relinquished By: D.R. Brewington D.R. Brewington — Date/Time 9/28/99 1422

Received By: Fed Ex — Date/Time 9-28-99

Relinquished By: Fed Ex 9-29-99 — Date/Time 10:00

Received By: TNV M. Goldenberg — Date/Time 9-29-99 10:00

Relinquished By: Fed Ex 10.2.99 — Date/Time 0930

Received By: [signature] — Date/Time 10.2.99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-3

Collector: K.J. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SMC H 25, PAGE 25	Ice Chest No.: SMC 462 Temp.: cool 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4257952996 2
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V466 (F)		W	9-28-99	1323	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V467		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V467		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V467		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V467		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V467		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V467		W			1x20-mL P	Activity Scan	None
T0V467		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V467		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V467		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V467		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V467		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
K.J. YOUNG	9-28-99 1430	R.R. Fox	9-28-99 1430
R.R. Fox	9-28-99 1500	FEDEX	9-28-99
Fed Ex	9-29-99 10:00	TNN M. Goldenberg	9-29-99 10:00
Fed Ex	10.2.99 0930		10.2.99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-3

SAF No. C99-045

Contact/Requestor: JH KESSNER

Telephone No. (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V467		W	9-28-99	1323	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K.J. YOUNG			9-28-99 1430	R.R. FOX			9-28-99 1430
R.R. FOX			9-28-99 1500	FEDEX			9-28-99
Fed Ex			9-29-99 10:00	TNV M. Goldenberg			9-29-99 10:00
Fed Ex			10.2.99 0930	D. Smith			10.2.99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-9

Page 1 of 1

Collector: SICKLE	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SMC-H29	Ice Chest No.: SMC-366 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795 29940
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0WBC8		W	9-28-99	0730	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B0WBC8		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
SICKLE [signature]	9-28-99 1215	D.R. BREWINGTON D.R. Brewington	9/28/99 1215
FedEx	9-29-99 10:00	FedEx	9-28-99 10:00
		TNV M. Goldenberg	9-29-99
FedEx	10-2-99 0930	[signature]	10-2-99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-10

Page 1 of 1

Collector: K. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SMIL H 25, PAGE 25	Ice Chest No.: SMIL 462 Temp.: COOL/4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 62
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0WBC9		W	9-28-99	0800	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B0WBC9		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Date/Time	Received By	Date/Time
K. YOUNG (Print) (Sign)	9-28-99 1430	R.R. Fox (Print) (Sign)	9-28-99 1430
R.R. Fox	9-28-99 1500	FEDEX	9-28-99
FedEx	9-29-99 10:00	TNV M. Goldenberg	9-29-99 10:00
Fed Ex	10.2.99 0930	D. Spinka	10.2.99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) DS 10.2.99 Disposed By Date/Time

PNNL	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # C99-045-11
		Page 1 of 1

Collector: K. Young	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SOM H 25, PAGE 25	Ice Chest No. Temp.: cool 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795294 73
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0WBD0		W	9-28-99	0800	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B0WBD0		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K. Young			9-28-99 1430	R.R. Fox			9-28-99 1430
R.R. Fox			9-28-99 1500	~~AAR~~ FEDEX			
				RAR 9-28-99			
FedEx			9-29-99 10:00	TNV M. Goldenberg			9-29-99 10:00

Matrix *

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

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

FedEx 10-2-99 0930 10-2-99 0930

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Measurement Information

DEC 1999
RECEIVED
Data
Log In

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD C99-045
RFW# : 9910L276
SDG/SAF #: H0550/C99-045

W.O. #: 10985-001-001-9999-00
Date Received: 10-02-99

GC/MS VOLATILE

Eleven (11) water samples were collected on 09-28-99.

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 10-11,12-99.

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 temperatures upon receipt have been recorded on the chain-of-custody.

2. The required holding time for analysis was met.

3. Non-target compounds were not detected in the samples.

4. All surrogate recoveries were within EPA QC limits.

5. All matrix spike recoveries were within EPA QC limits.

6. The method blanks contained the common laboratory contaminants Methylene Chloride, Acetone and the target compound 2-Butanone at levels less than the CRQL. The method blank 99LVH402-MB1 also contained the target compound 2-Hexanone at a level less than the CRQL.

by J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

11-11-99
Date

som\group\data\voa\tnu10276.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 30 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: 11/04/99 21:19

RFW Batch Number: **9910L276** Client: **TNU-HANFORD C99-045** Work Order: 10985001001 Page: 1a

04

	Cust ID:	B0WBC7		T0V463		T0V469		T0V457		T0V459		T0V461	
Sample Information	RFW#:	001		002		004		007		009		011	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Toluene-d8	96	%	97	%	97	%	94	%	94	%	94	%
	Bromofluorobenzene	90	%	87	%	92	%	88	%	90	%	86	%
	1,2-Dichloroethane-d4	90	%	83	%	92	%	93	%	93	%	88	%
			fl		fl		fl		fl		fl		fl
Chloromethane		10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride		8	B	7	B	6	B	6	B	6	B	7	B
Acetone		3	JB	9	JB	8	BJ	6	BJ	8	BJ	7	BJ
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		5	U	0.9	J	5	U	1	J	1	J	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		2	JB	10	U	10	U	10	U	10	U	10	U
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	1	J	5	U	3	J	5		5	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	5	U	5	U	5	U	5	U	5	U
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Benzene		5	U	5	U	5	U	5	U	5	U	5	U
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Toluene		5	U	5	U	5	U	1	J	5	U	5	U

*= Outside of EPA CLP QC limits.

11/05/99

RFW Batch Number: **9910L276** Client: **TNU-HANFORD C99-045** Work Order: 10985001001 Page: 1b

Cust ID:	B0WBC7	T0V463	T0V469	T0V457	T0V459	T0V461
RFW#:	001	002	004	007	009	011
Chlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory

Volatiles by GC/MS, HSL List

Report Date: 11/04/99 21:19

RFW Batch Number: **9910L276** Client: **TNU-HANFORD C99-045** Work Order: 10985001001 Page: 2a

90

	Cust ID:	T0V465		T0V467		B0WBC8		B0WBC8		B0WBC8		B0WBC9	
Sample Information	RFW#:	013		015		016		016 MS		016 MSD		017	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Toluene-d8	95	%	95	%	92	%	92	%	91	%	91	%
	Bromofluorobenzene	92	%	92	%	86	%	87	%	86	%	88	%
	1,2-Dichloroethane-d4	96	%	90	%	90	%	84	%	90	%	93	%
Chloromethane		10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride		6	B	7	B	5	JB	5	B	5	BJ	5	JB
Acetone		5	BJ	5	BJ	9	JB	4	BJ	5	BJ	13	B
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	5	U	100	%	95	%	5	U
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		5	U	1	J	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		10	U	10	U	2	JB	2	BJ	2	BJ	2	JB
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	4	J	5	U	5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		5	U	5	U	5	U	92	%	92	%	5	U
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Benzene		5	U	5	U	5	U	96	%	99	%	5	U
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Toluene		5	U	5	U	5	U	95	%	96	%	5	U

*= Outside of EPA CLP QC limits.

pw 11/18/99

RFW Batch Number: **9910L276** Client: **TNU-HANFORD C99-045** Work Order: 10985001001 Page: 2b

Cust ID:	T0V465	T0V467	B0WBC8	B0WBC8	B0WBC8	B0WBC9
RFW#:	013	015	016	016 MS	016 MSD	017
Chlorobenzene	5 U	5 U	5 U	93 %	95 %	5 U
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

	Cust ID:	B0WBD0		VBLKVI		VBLKWI	
Sample Information	RFW#:	018		99LVH402-MB1		99LVH406-MB1	
	Matrix:	WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L	
Surrogate Recovery	Toluene-d8	90	%	96	%	88	%
	Bromofluorobenzene	87	%	87	%	86	%
	1,2-Dichloroethane-d4	90	%	82	%	90	%
Chloromethane		10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U
Methylene Chloride		4	JB	7		6	
Acetone		8	JB	2	J	3	J
Carbon Disulfide		5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	5	U
1,1-Dichloroethane		5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U
Chloroform		5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U
2-Butanone		2	JB	2	J	2	J
1,1,1-Trichloroethane		5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U
Bromodichloromethane		5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U
Trichloroethene		5	U	5	U	5	U
Dibromochloromethane		5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U
Benzene		5	U	5	U	5	U
Trans-1,3-Dichloropropene		5	U	5	U	5	U
Bromoform		5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U
2-Hexanone		10	U	2	J	10	U
Tetrachloroethene		5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U
Toluene		5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

pw 11-08-99

Cust ID:	**B0WBD0**	**VBLKVI**	**VBLKWI**
RFW#:	**018**	**99LVH402-MB1**	**99LVH406-MB1**
Chlorobenzene	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U
Styrene	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory
VOA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD C99-045

DATE RECEIVED: 10/02/99 RFW LOT # :9910L276

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0WBC7	001	W	99LVH402	09/28/99	N/A	10/11/99
T0V463	002	W	99LVH402	09/28/99	N/A	10/11/99
T0V469	004	W	99LVH402	09/28/99	N/A	10/11/99
T0V457	007	W	99LVH402	09/28/99	N/A	10/11/99
T0V459	009	W	99LVH402	09/28/99	N/A	10/11/99
T0V461	011	W	99LVH402	09/28/99	N/A	10/11/99
T0V465	013	W	99LVH402	09/28/99	N/A	10/11/99
T0V467	015	W	99LVH402	09/28/99	N/A	10/11/99
B0WBC8	016	W	99LVH406	09/28/99	N/A	10/12/99
B0WBC8	016 MS	W	99LVH406	09/28/99	N/A	10/12/99
B0WBC8	016 MSD	W	99LVH406	09/28/99	N/A	10/12/99
B0WBC9	017	W	99LVH406	09/28/99	N/A	10/12/99
B0WBD0	018	W	99LVH406	09/28/99	N/A	10/12/99

LAB QC:

VBLKVI	MB1	W	99LVH402	N/A	N/A	10/11/99
VBLKWI	MB1	W	99LVH406	N/A	N/A	10/12/99

11-08-99

RECRA LabNet Use Only: 9910L276

Custody Transfer Record/Lab Work Request

Page 1 of 2

RECRA LabNet

All FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

(8) metals dig.

Client: TMU Hanford C99-045
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec Del: std TAT: 30 days
Date Rec'd: 10.2.99 Date Due: 11/1/99
Account #:

Refrigerator #		1						2						1			
#/Type Container	Liquid	3aq						1p	1p		1aq	1p	1p	1p			
	Solid																
Volume	Liquid	40						500	1Lr		1L	500	500	500			
	Solid																
Preservatives		HCL						–	HNO3		H_2SO_4	–	NaOH	–			
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb			Anions	INORG: Metal	CN	Tot SO_4						
RECRA LabNet Use Only		02A24						Ang(1)	Met(1)		1TOT	1ALKL	1NO3NO2 HNO3	1TDS			

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	02A24	Ang(1)	Met(1)	1TOT	1ALKL	1NO3NO2 HNO3	1TDS
001	BOWBC7			W	9/28/99	0730	X						
002	TOV463					0939	X	X	X	X	X	X	X
003	TOV462					0815			X				
004	TOV469					↓	X	X	X	X	X	X	X
005	TOV468					↓			X				
006	TOV456					1126			X				
007	TOV457					↓	X	X	X	X	X	X	X
008	TOV458					1145			X				
009	TOV459					↓	X	X	X	X	X	X	X
010	TOV460			↓	↓	1030			X				

Special Instructions: 10/4/99
saf# C99-045
sdg# H0550

COMPOSITE WASTE

DATE/REVISIONS:
Ang (1.) = ICCL, ICFL, ICNO2, ICNO3, ICSO4
Met (1.) = Ba, Cr, Pb, Sn, V, Zn, As, Se
10/4/99 3. Se added to metals list
4. per client coc
5.
6. Run matrix QC

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. 5.2 °C

Discrepancies Between Samples Labels and COC Record? Y or N
NOTES: *9659504206 NO3, NO2 out

Relinquished by	Received by	Date	Time
Fed Ex	D. Smith	10/2/99	0930

Relinquished by	Received by	Date	Time
	ORIGINAL REWRITTEN		

* 9659504215 / 1.0 2° * 9659504224 / 5.6° * R09459421300 / 5.6°

RECRA LabNet Use Only
991DL276

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford
Est. Final Proj. Sampling Date:
Project #:
Project Contact/Phone #:
RECRA Project Manager:
QC: Del: TAT:
Date Rec'd: 10.2.99 Date Due:
Account #:

Refrigerator #		1							2						1		
#/Type Container	Liquid	3g							1p	1p		1p	1p	1p	1p		
	Solid																
Volume	Liquid	40							ltr	500		ltr	500	500	500		
	Solid																
Preservatives		HCl							HNO3	–		H2SO4	–	H2SO4	–		
ANALYSES REQUESTED		ORGANIC							INORG								
		VOA	BNA	Pest/PCB	Herb				Metal								
		RECRA LabNet Use Only															
		0E244							9MET	8MET		1TOX	1ALKL	1N3N2	1TDS		

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	0E244	9MET	8MET	1TOX	1ALKL	1N3N2	1TDS
011	TOV461			W	9/28/99	1030	X	X	X	X	X	X	X
012	TOV464					0939		X					
013	TOV465					⊥	X	X	X	X	X	X	X
014	TOV466					1323		X					
015	TOV467					⊥	X	X	X	X	X	X	X
016	BOWBC8				9	0730	X						
017	BOWBC9				⊥	0800	X						
018	BOWBDO			⊥	⊥	⊥	X						

Special Instructions:

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

Relinquished by	Received by	Date	Time
Fed Ex	D. Johnson	10/2/99	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't Y or N
Cooler Temp. ____ °C

7110 L 210

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-89

Page 1 of 1

Collector: SICKLE	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SIML-429	Ice Chest No.: SML-571 Temp.: 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 785 29951
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

	Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
01	B0WBC7		W	9-28-99	0730	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
↓	B0WBC7		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
SICKLE			9-28-99 1215	D.E. BREWINGTON		D.R. Brewington	9/28/99 1215
D.R. Brewington		D.R. Brewington	9/28/99 1422	FedEx			9-28-99
FedEx			9-29-99 10:00	TNV		M. Goldenberg	9-29-99 10:00
Joe Q			10/2/99 0930	D. Smith			10 2 99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By: Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-1

Collector: RT SICKLE (RFS)	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SML-1429	Ice Chest No.: SML-571 Temp.: 4 °C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 51
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V462 (F)		W	9-28-99	0939	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V463		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V463		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V463		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V463		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V463		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V463		W			1x20-mL P	Activity Scan	None
T0V463		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V463		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V463		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V463		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V463		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
RT SICKLE (RFS) [signature]	9-28-99 1215	D.R. BREWINGTON [signature]	9/28/99 1215
[signature]	9/28/99 1427	FedEx	9-28-99
FedEx	9-29-99 10:00	[signature] M. Goldenberg	9-29-99 10:00
FedEx	10.2.99 / 0930	[signature]	10.2.99 / 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-1

15

SAF No. C99-045

Contact/Requestor: JH KESSNER

Telephone No.: (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V463		W	9-28-99	0939	1x~~500~~mL aGs* 1000 752	TOX - 9020	H2SO4 to pH <2 Cool 4C

1552

9-28-99

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
RT SICKLE (RFS)			9-28-99 1715	D.R. BREWINGTON		D.R. Brewington	9/28/99 1215
Relinquished By: D.R. Brewington		D.R. Brewington	9/28/99 1422	Received By: Fed Ex			Date/Time: 9-28-99
Relinquished By: Fed Ex			9-29-99 10:00	Received By: TNV M. Goldenberg			Date/Time: 9-29-99 10:00
Relinquished By: Fed Ex			10.2.99 0930	Received By: D. Smith			Date/Time: 10.2.99 0930

Matrix *

S	= Soil	DS	= Drum Solid
SE	= Sediment	DL	= Drum Liqui
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wine
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-4

16

SAF No. C99-045

Contact/Requestor: JH KESSNER

Telephone No.: (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V469		W	9-28-99	0815	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K. Young			9-28-99 1430	R.R. Fox			9-28-99 1430
R.R. Fox			9-28-99 1500	FED EX			9-28-99
Fed Ex			9-29-99 10:00	TNU M. Goldenberg			9-29-99 10:00
Fed Ex			10-2-99 0930	P. Smith			10-2-99 0930

Matrix *

S	= Soil	DS	= Drum Solid
SE	= Sediment	DL	= Drum Liqui
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wine
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-4

17

Collector: K. Young	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING SEPTEMBER 1999	Logbook No.: WM-SMC H 25, Page 25	Ice Chest No.: SMC 450 Temp.: cool 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V468 (F)		W	9-28-99	0815	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V469		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V469		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V469		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V469		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V469		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V469		W			1x20-mL P	Activity Scan	None
T0V469		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V469		W			5x1000-mL G/P	Iodine-129; Carbon-14 OWL lab	None
T0V469		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V469		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V469		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
K. Young	9-28-99 1470	R.R. Fox	9-28-99 1430
R.R. Fox	9-28-99 1500	FED EX	9-28-99
Fed Ex	9-29-99 10:00	TNU M. Goldenberg	9-29-99 10:00
Fed Ex	10.2.99 0930	D. Yman	10.2.99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-7

Collector: K.J. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: LWM-SML H25, PAGE 25	Ice Chest No.: SML 519 Temp.: COOL/4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 73
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: LW99-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V456 (F)		W	9-28-99	1126	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V457		W			3x40-mL aGs'	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V457		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V457		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V457		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V457		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V457		W			1x20-mL P	Activity Scan	None
T0V457		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V457		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V457		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V457		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V457		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
K.J. YOUNG	9-28-99 1430	R. R. Fox	9-28-99 1430
R. R. Fox	9-28-99 1500	FEDEX	9-28-99
FedEx	9-29-99 10:00	TNV M. Goldenberg	9-29-99 10:00

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process): Fed Ex 10.2.99 0930 D. Smith 10.2.99 Disposed By 0930 Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-7

SAF No.	Contact/Requestor	Telephone No.	MSIN	FAX
C99-045	JH KESSNER	(509) 375-4688		

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V457		W	9-28-99	1126	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	K.J. YOUNG		9-28-99 1430		R.R. Fox		9-28-99 1430
R.R. Fox			9-28-99 1500	FEDEX			9-28-99
FedEx			9-29-99 10:00	TNV	M. Goldenberg		9-29-99 10:00
Fed Ex			10.2.99 0930	D. Smith			10.2.99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-5

Collector R.T SICKLE	Contact/Requester JH KESSNER	Telephone No. (509) 375-4688 MSIN FAX
SAF No. C99-045	Sampling Origin HANFORD SITE	Purchase Order/Charge Code
Project Title ERDF GW MONITORING SEPTEMBER 1999	Logbook No. WM-SML-1429	Ice Chest No. SML-366 Temp. 4 °C
Shipped To (Lab) TMA/RECRA	Method of Shipment GOVT. VEHICLE	Bill of Lading/Air Bill No. 4235795299 40
Protocol CERCLA	Data Turnaround 45 Days	Offsite Property No. W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V458 (F)		W	9-28-99	1145	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V459		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V459		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V459		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V459		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V459		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V459		W			1x20-mL P	Activity Scan	None
T0V459		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V459		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V459		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V459		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V459		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
R.T SICKLE [signature]	9-28-99 1215	D.R. BREWINGTON D.R. Brewington	9/28/99 1215
D.R. Brewington D.R. Brewington	9/28/99 1422	Fed Ex	9-28-99
Fed Ex	9-29-99 10:00	TNV M. Goldenberg	9-29-99 10:00
Fed Ex	10-2-99 0930	D. Grillo	10-2-99 0930

Matrix *

S	= Soil	DS	= Drum Solid
SE	= Sediment	DL	= Drum Liqui
SO	= Solid	T	= Tissue
SL	= Sludge	WI	= Wine
W	= Water	L	= Liquid
O	= Oil	V	= Vegetation
A	= Air	X	= Other

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-5

21

SAF No. C99-045

Contact/Requestor: JH KESSNER

Telephone No. (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V459		W	9-28-99	1145	1x~~500~~ mL aGs* 1000 mL	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	R.T SICKLE	[signature]	9-28-99 1215		D.R. BREWINGTON	D.R. Brewington	9/28/99 1215
D.R. Brewington	D.R. Brewington		9/28/99 1422	FedEx			9-28-99
FedEx			9-29-99 10:00	TWV M. Goldenberg			10:00 9-29-99
FedEx			10-2-99 0930	[signature]			10-2-99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-6

22

Collector: R.T SICKLE	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WMS-SNL-429	Ice Chest No.: 5n1382 Temp.: 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 38
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V460 (F)		W	9-28-99	1030	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V461		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V461		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V461		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V461		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V461		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V461		W			1x20-mL P	Activity Scan	None
T0V461		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V461		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V461		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V461		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V461		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
R.T SICKLE	9-28-99 1215	D.R. BREWINGTON D.R. Brewington	9/28/99 1215
D.R. Brewington D.R. Brewington	9/28/99 1422	FedEx	9-28-99
FedEx	9-29-99 10:00	TNV M. Goldenberg	9-29-99 10:00
Geo Ey	10-2-99 0930	D. Smith	10-2-99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-6

23

SAF No. C99-045

Contact/Requestor JH KESSNER

Telephone No. (509) 375-4688 MSIN FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V461		W	9-28-99	1030	1x500-mL aGs* 1000-mL aGs	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
R.T SICKLE			9-28-99 1215	D.R. BREWINGTON		D.R. Brewington	9/28/99 1215
D.R. Brewington		DR Brewington	9/28/99 1402	Fed Ex			9-28-99
Fed Ex			9-29-99 10:00	TNV M. Colollubong			9-29-99 10:00
Fed Ex			10-2-99 0930				10-2-99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-2

Collector: RT SICKLE (RFS)	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: NM-SML-429	Ice Chest No: SML461 Temp. 4 °C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235 7952 9529
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V464 (F)		W	9-28-99	0939	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V465		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V465		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V465		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V465		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V465		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V465		W			1x20-mL P	Activity Scan	None
T0V465		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V465		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V465		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V465		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V465		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
RT SICKLE (RFS)	9-28-99 1215	D.R. BREWINGTON D.R. Brewington	9/28/99 1215
D.R. Brewington D.R. Brewington	9/28/99 1422	Fed Ex	9-28-99
Fed Ex	9-29-99 10:00	TNV M. Goldenberg	9-29-99 10:00
Fed Ex	10.2.99 0930	D. Spindt	10.2.99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-2

SAF No. C99-045

Contact/Requestor: JH KESSNER

Telephone No. (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B T0V465		W	9-28-99	0939	1x~~500~~ mL aGs* 1000 ~~X 62~~	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By: Print RT SICKLE (RFS) Sign [signature] Date/Time 9-28-99 1215

Received By: Print D.R. BREWINGTON Sign D.R. Brewington 9/28/99 Date/Time 1215

Relinquished By: D.R. Brewington D.R. Brewington 9/28/99 Date/Time 1422

Received By: Fed Ex 9-28-99 Date/Time

Relinquished By: Fed Ex 9-29-99 10:00

Received By: TNV M. Goldenberg 9-29-99 10:00 Date/Time

Relinquished By: Fed Ex 10.2.99 0930

Received By: [signature] 10.2.99 0930 Date/Time

Matrix *

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

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-3

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Collector: K.J. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SMC H 25, PAGE 25	Ice Chest No.: SMC 462 Temp.: cool 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4257952994 2
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V466 (F)		W	9-28-99	1323	1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V467		W			3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
T0V467		W			1x1000-mL G/P	ICP Metals - 6010A RCRA GW (Barium, Chromium, Lead, Tin, Vanadium, Zinc); Selenium - 7740 - (GFAA); Arsenic - 7060 - (GFAA)	HNO3 to pH <2
T0V467		W			1x500-mL P	IC Anions - 300.0 (Chloride, Fluoride, Nitrate, Nitrite, Sulfate)	Cool 4C
T0V467		W			1x500-mL G/P	Alkalinity - 310.1	Cool 4C
T0V467		W			1x500-mL G/P	NO2/NO3 - 353.1	H2SO4 to pH <2 Cool 4C
T0V467		W			1x20-mL P	Activity Scan	None
T0V467		W			2x1000-mL G/P	Gross Alpha; Gross Beta; Total Radium	HNO3 to pH <2
T0V467		W			5x1000-mL G/P	Iodine-129; Carbon-14	None
T0V467		W			1x1000-mL G/P	Technetium-99	HCl to pH <2
T0V467		W			1x125-mL G/P	Total Uranium	HNO3 to pH <2
T0V467		W			1x500-mL G/P	TDS - 160.1	Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	K.J. YOUNG		9-28-99 1430		R.R. Fox		9-28-99 1430
R.R. Fox			9-28-99 1500	FEDEX			9-28-99
FedEx			9-29-99 10:00	TNN M. Goldenberg			9-29-99 10:00
FedEx			10-2-99 0930				10-2-99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-3

SAF No. C99-045

Contact/Requestor JH KESSNER

Telephone No. (509) 375-4688

MSIN

FAX

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
T0V467		W	9-28-99	1323	1x500-mL aGs*	TOX - 9020	H2SO4 to pH <2 Cool 4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K.J. YOUNG			9-28-99 1430	P.R. FOX			9-28-99 1430
P.R. FOX			9-28-99 1500	FEDEX			9-28-99
Fed Ex			9-29-99 10:00	TNV M. Goldenberg			9-29-99 10:00
Fed Ex			10.2.99 0930	D. Smith			10.2.99 0930

Matrix *

S = Soil		DS = Drum Solid	
SB = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION

Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By

Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-9

Page 1 of 1

Collector: Sickle	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: KIM-SMC-H29	Ice Chest No.: SMC-366 Temp.
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795 29940
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0323

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0WBC8		W	9-28-99	0730	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B0WBC8		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
SICKLE			9-28-99 1215	D.R. BREWINGTON		D.R. Brewington	9/28/99 1215
Relinquished By			Date/Time	Received By			Date/Time
FedEx			9-29-99 10:00	FedEx			9-28-99 10:00
Relinquished By			Date/Time	Received By			Date/Time
				TNV M. Goldenberg			9-28-99
Relinquished By			Date/Time	Received By			Date/Time
Fed Ex			10-2-99 0930				10-2-99 0930

Matrix *

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

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-10

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Collector: K. YOUNG	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SMIL H 25, PAGE 25	Ice Chest No.: SMIL 462 Temp.: 100/4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795299 62
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0WBC9		W	9-28-99	0800	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B0WBC9		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K. YOUNG			9-28-99 1430	R.R. Fox			9-28-99 1430
R.R. Fox			9-28-99 1500	FEDEX			9-28-99
FedEx			9-29-99 10:00	TNV M. Goldenberg			9-29-99 10:00
Fed Ex			10.2.99 0930	D. Spinka			10.2.99 0930

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process) DS 10.2.99 Disposed By Date/Time

PNNL

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # C99-045-11

Page 1 of 1

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Collector: K. Young	Contact/Requester: JH KESSNER	Telephone No.: (509) 375-4688 MSIN FAX
SAF No.: C99-045	Sampling Origin: HANFORD SITE	Purchase Order/Charge Code
Project Title: ERDF GW MONITORING, SEPTEMBER 1999	Logbook No.: WM-SOM H 25, PAGE 25	Ice Chest No. Temp.: cool 4°C
Shipped To (Lab): TMA/RECRA	Method of Shipment: GOVT. VEHICLE	Bill of Lading/Air Bill No.: 4235795294 73
Protocol: CERCLA	Data Turnaround: 45 Days	Offsite Property No.: W99-0-0324

POSSIBLE SAMPLE HAZARDS/REMARKS
** **

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☒ No ☐
TOTAL ACTIVITY EXEMPTION APPLIES
FAX copies of TMA log-in to DL Stewart (372-1704) & JH Kessner (372-9487) SUBMIT INVOICES AND DELIVERABLES TO JH KESSNER, BHI.

Sample No.	Lab ID	*	Date	Time	No/Type Container	Sample Analysis	Preservative
B0WBD0		W	9-28-99	0800	3x40-mL aGs*	VOA - 8240A (TCL)	HCl or H2SO4 to pH <2 Cool 4C
B0WBD0		W	↓	↓	1x20-mL P	Activity Scan	None

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
K. Young			9-28-99 1430	R. R. Fox			9-28-99 1430
R. R. Fox			9-28-99 1500	~~HAR~~ FEDEX			
				RRF 9-28-99			
Fed Ex 9-29-99 10:00				TNV M. Goldenberg 9-29-99 10:00			

Matrix *

S = Soil		DS = Drum Solid	
SE = Sediment		DL = Drum Liqui	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wine	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION: Disposal Method (e.g., Return to customer, per lab procedure, used in process)

Disposed By: Fed Ex 10-2-99 0930 Date/Time: D. Gruber 10-2-99 0930