W03587

3/22/2018 REV.1

0056640

SEVERN TRENT SERVICES

STL St. Louis

CASE NARRATIVE

Bechtel Hanford Incorporated
3350 George Washington Way
Richland, Washington 99352

October 3, 2001

Attention: Joan Kessner

RECEIVED
MAR 14 2002
EDMC

Project Number	:	43018
SAF	:	B01-058
SDG	:	W03587
Number of Samples	:	six
Sample Matrix	:	soil
Data Deliverable	:	Summary
Date SDG Closed	:	September 13, 2001

II. Introduction

Between September 29 and 31, 2001, six (6) "solid" samples were received by STL--St. Louis for chemical analysis. The samples were received at the St. Louis lab outside temperature criteria. See the COC and CUR forms for details of sample condition and temperature. See the attached Sample Summary form for the Lab ID's and corresponding Client Ids.

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. This report is not complete without the Case Narrative. Results are reported "as received"; i.e. wet weight, unless otherwise noted on the data sheets.

Analyses requested: see the attached methods summary sheet

Deviation from Request: The metals were done using method 6010B in place of 6010A.

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike
MS- Matrix Spike.
DUP- Matrix Duplicate
MSD- Matrix Spike Duplicate.

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Bechtel Hanford Incorporated
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V. Comments

General: The term "Detection Limit" used in the analytical data reports refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

Metals: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Spike Duplicate were analyzed with each preparation batch per the protocol for this analysis.

The MS recoveries for several metals were outside control limits. The spike data was flagged with an "N" qualifier. LCS recoveries met criteria.

Wet Chemistry: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Duplicate were analyzed with each preparation batch per the protocol for each analysis.

There was no recovery of the matrix spike for the Cyanide analysis of sample B12DC1-A. LCS recovery was acceptable. The spike data was flagged with an "N" qualifier.

There was no TOC MS recovery for sample B12DC1-A and the data is flagged with an "N" qualifier. The sample was spiked with 80 ul of a 600 ppm TOC standard. The spike was analyzed by itself with a reading of 640. The sample was weighted and the spike was added on top. When the sample plus the spike was burned, a very low result was given. It is believed that sample matrix was the interference.

I certify that this Summary is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Marti Ward

Marti Ward
St. Louis Project Manager

Correction to SDGs W03557, W03574, and W03587
March 22, 2018
J. G. Douglas 373-7154
Sample Management and Reporting
Soil and Groundwater Remediation Project
CH2M HILL Plateau Remediation Company

These SDGs report analytical results for the incorrect analyte names "Nitrate," "Nitrite," and "Phosphate as P, Ortho." These SDGs were reported by the Severn-Trent Laboratory – St. Louis (STLSL) in 2001.

The analytical results are correct, but the correct speciation for these analytes in the SDGs is "Nitrogen in Nitrate" (Nitrate as N), "Nitrogen in Nitrite" (Nitrite as N), and "Phosphate."

The Hanford Environmental Information System (HEIS) data associated with these analytical results does have the correct speciation ("Nitrogen in Nitrate," "Nitrogen in Nitrite," and "Phosphate.") associated with the analytical results.

The determination of which species names were correct was made by comparing split sample results for STLSL with the paired split sample results from other laboratories (Lionville and the Waste Sampling and Characterization Facility (WSCF)). The STLSL results matched the Lionville and WSCF results correctly when the STLSL results were reported as "Nitrogen in Nitrate," "Nitrogen in Nitrite," and "Phosphate."

SAMPLE SUMMARY

F1H290206

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
EJQX8	001	B12DC1-A	08/24/01	02:00
EJQ4N	002	B12C89-B	08/23/01	01:30

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

SAMPLE SUMMARY

F1H310250

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
EJXPC	001	B12ML7	08/28/01	01:00
EJXPV	002	B12ML4-A	08/26/01	23:45
EJXP7	003	B12ML5-A	08/27/01	01:15
EJXQC	004	B12ML6-A	08/27/01	04:30

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

METHODS SUMMARY

F1H290206

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
pH Non-Aqueous	SW846 9045A	
Chloride	MCAWW 300.0A	MCAWW 300.0A
Fluoride	MCAWW 300.0A	MCAWW 300.0A
Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B
Mercury in Solids by Modified 7470A	SW846 Hg Mod 74	
Nitrate as N	MCAWW 300.0A	MCAWW 300.0A
Nitrate-Nitrite	MCAWW 353.1	
Nitrite as N	MCAWW 300.0A	MCAWW 300.0A
Nitrogen, Ammonia	MCAWW 350.1	
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD
Phosphate as P, Ortho	MCAWW 300.0A	MCAWW 300.0A
Sulfate	MCAWW 300.0A	MCAWW 300.0A
Total Cyanide	SW846 9010A	SW846 9010A
Total Organic Carbon	SW846 9060	SW846 9060
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 8/29/01
Page 1 CLIENT ANALYSIS SUMMARY Time: 13:57:30
STL St. Louis User Id.: WILSONS

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 43018
PROJECT MANAGER: MARTI WARD LAB ID: F-1H290206-001
PROJECT #: 200-TW-1&2SOIL WORK ORDER: EJQX8
REPORT TO: Joan Kessner RECEIVING DATE: 8/29/01
P.O. NUMBER: MRC-SBB-A-19981 SAMPLING DATE: 8/24/01
SITE: B01-058 ANALYTICAL DUE DATE: 9/28/01N
AMOUNT REC"D: 2X60G,120G,250G REPORT DUE DATE: 10/12/01
STORAGE LOC: S126 PRIORITY: 30
LOT COMMENTS: Metals: CRDL standard required +/-25% SAMPLING TIME: 2:00
MATRIX: SOLID RECEIVING TIME: 8:50
SAMPLE ID: B12DC1
QC PACKAGE: Report SDG# :
SAMPLE COMMENTS:
RUN A DUPLICATE ON ALL WET CHEM.
Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Moisture, Percent (160.3)	06	8/29/01	0/00/00	12/01/01
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION				
(A-88-WM-01) EJQX8-1-AA Protocol: A QC Program: STANDARD TEST SET				
Chloride (300.0, Ion Chromatography)	06	8/29/01	12/01/01	12/29/01
LEACHATE, DI (Routine)				
(A-82-CX-01) EJQX8-1-AC Protocol: A QC Program: STANDARD TEST SET				
Fluoride (300.0, Ion Chromatography)	06	8/29/01	12/01/01	12/29/01
LEACHATE, DI (Routine)				
(A-82-C8-01) EJQX8-1-AF Protocol: A QC Program: STANDARD TEST SET				
Nitrate as N (300.0, Ion Chromatography)	06	8/29/01	12/01/01	12/03/01
LEACHATE, DI (Routine)				
(A-82-C9-01) EJQX8-1-AJ Protocol: A QC Program: STANDARD TEST SET				
Nitrite as N (300.0, Ion Chromatography)	06	8/29/01	12/01/01	12/03/01
LEACHATE, DI (Routine)				
(A-82-GO-01) EJQX8-1-AM Protocol: A QC Program: STANDARD TEST SET				
Sulfate (300.0, Ion Chromatography)	06	8/29/01	12/01/01	12/29/01
LEACHATE, DI (Routine)				
(A-82-CY-01) EJQX8-1-AQ Protocol: A QC Program: STANDARD TEST SET				
Phosphate as P, Ortho (300.0, Ion Chroma	06	8/29/01	12/01/01	12/03/01
LEACHATE, DI (Routine)				
(A-82-DO-01) EJQX8-1-AU Protocol: A QC Program: STANDARD TEST SET				
Inductively Coupled Plasma (6010B Trace)	06	8/29/01	0/00/00	2/20/02
METALS, TOTAL - Soils				
MT6010_S AG,AL,CA,CD,CR,CU,FE,MG,MN,MO,NI,PB,VX,ZN				
(A-46-QM-01) EJQX8 Protocol: B QC Program: STANDARD TEST SET				
Inductively Coupled Plasma (6010B)	06	8/29/01	0/00/00	2/20/02
METALS, TOTAL - Soils				

M6010_S BI,KX,NA
(A-46-QO-01) EJQX8 Protocol: B QC Program: STANDARD TEST SET

Mercury in Solids by Modified 7470A 06 8/29/01 9/21/01 9/21/01
METALS, TOTAL (Method Exclusive) - Solids
M7470A_S HG
(A-70-0G-01) EJQX8 Protocol: A QC Program: STANDARD TEST SET

Nitrogen, Ammonia (350.1, Automated) 06 8/29/01 0/00/00 9/21/01
LEACHATE, DI (Routine)
(A-82-VM-01) EJQX8-1-A2 Protocol: A QC Program: STANDARD TEST SET

Nitrate-Nitrite (353.1) 06 8/29/01 9/21/01 9/21/01
LEACHATE, DI (Routine) -> REDUCTION
(A-0R-HN-01) EJQX8-1-A5 Protocol: A QC Program: STANDARD TEST SET

Cyanide, Total (9010) 06 8/29/01 0/00/00 9/07/01
DISTILLATION, MICRO/MIDI - Acid
(A-06-RV-01) EJQX8-1-A8 Protocol: A QC Program: STANDARD TEST SET

pH (9045) - Non-Aqueous 06 8/29/01 0/00/00 8/26/01
LEACHATE, DI (Routine)
(A-82-FK-01) EJQX8-1-CC Protocol: A QC Program: STANDARD TEST SET

Carbon, Total Organic "TOC" (9060) 06 8/29/01 0/00/00 9/21/01
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION
(A-88-FM-01) EJQX8-1-CF Protocol: A QC Program: STANDARD TEST SET

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 8/29/01
Page 1 CLIENT ANALYSIS SUMMARY Time: 13:57:30
STL St. Louis User Id.: WILSONS

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 43018
PROJECT MANAGER: MARTI WARD LAB ID: F-1H290206-001-D
PROJECT #: 200-TW-1&2SOIL WORK ORDER: EJQX8 MSD
REPORT TO: Joan Kessner RECEIVING DATE: 8/29/01
P.O. NUMBER: MRC-SBB-A-19981 SAMPLING DATE: 8/24/01
SITE: B01-058 ANALYTICAL DUE DATE: 9/28/01N
AMOUNT REC"D: 2X60G,120G,250G REPORT DUE DATE: 10/12/01
STORAGE LOC: S126 PRIORITY: 30
LOT COMMENTS: Metals: CRDL standard required +/-25% SAMPLING TIME: 2:00
MATRIX: SOLID RECEIVING TIME: 8:50
SAMPLE ID: B12DC1
QC PACKAGE: Report SDG# :
SAMPLE COMMENTS:
RUN A DUPLICATE ON ALL WET CHEM.
Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace)	06	8/29/01	0/00/00	2/20/02
METALS, TOTAL - Soils				
MT6010_S AG,AL,CA,CD,CR,CU,FE,MG,MN,MO,NI,PB,VX,ZN				
(A-46-QM-01) EJQX8 Protocol: B QC Program: STANDARD TEST SET				
Inductively Coupled Plasma (6010B)	06	8/29/01	0/00/00	2/20/02
METALS, TOTAL - Soils				
M6010_S BI,KX,NA				
(A-46-QO-01) EJQX8 Protocol: B QC Program: STANDARD TEST SET				
Mercury in Solids by Modified 7470A	06	8/29/01	9/21/01	9/21/01
METALS, TOTAL (Method Exclusive) - Solids				
M7470A_S HG				
(A-70-0G-01) EJQX8 Protocol: A QC Program: STANDARD TEST SET				

PSL20300
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SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 8/29/01
Time: 13:57:30
User Id.: WILSONS

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 200-TW-1&2SOIL
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B01-058
AMOUNT REC"D: 2X60G,120G,250G
STORAGE LOC: S126
LOT COMMENTS: Metals: CRDL standard required +/-25%
MATRIX: SOLID
SAMPLE ID: B12DC1
QC PACKAGE: Report
SAMPLE COMMENTS:
RUN A DUPLICATE ON ALL WET CHEM.
Beginning Depth: .00 **Ending Depth:** .00

QUOTE/SAR #: 43018
LAB ID: F-1H290206-001-S
WORK ORDER: EJQX8 MS
RECEIVING DATE: 8/29/01
SAMPLING DATE: 8/24/01
ANALYTICAL DUE DATE: 9/28/01N
REPORT DUE DATE: 10/12/01
PRIORITY: 30
SAMPLING TIME: 2:00
RECEIVING TIME: 8:50
SDG# :

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Chloride (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-CX-01) EJQX8-1-AD Protocol: A QC Program: STANDARD TEST SET	06	8/29/01	12/01/01	12/29/01
Fluoride (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-C8-01) EJQX8-1-AG Protocol: A QC Program: STANDARD TEST SET	06	8/29/01	12/01/01	12/29/01
Nitrate as N (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-C9-01) EJQX8-1-AK Protocol: A QC Program: STANDARD TEST SET	06	8/29/01	12/01/01	12/03/01
Nitrite as N (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-GO-01) EJQX8-1-AN Protocol: A QC Program: STANDARD TEST SET	06	8/29/01	12/01/01	12/03/01
Sulfate (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-CY-01) EJQX8-1-AR Protocol: A QC Program: STANDARD TEST SET	06	8/29/01	12/01/01	12/29/01
Phosphate as P, Ortho (300.0, Ion Chroma LEACHATE, DI (Routine) (A-82-DO-01) EJQX8-1-AV Protocol: A QC Program: STANDARD TEST SET	06	8/29/01	12/01/01	12/03/01
Inductively Coupled Plasma (6010B Trace) METALS, TOTAL - Soils MT6010_S AG,AL,CA,CD,CR,CU,FE,MG,MN,MO,NI,PB,VX,ZN (A-46-QM-01) EJQX8 Protocol: B QC Program: STANDARD TEST SET	06	8/29/01	0/00/00	2/20/02
Inductively Coupled Plasma (6010B) METALS, TOTAL - Soils M6010_S BI,KX,NA (A-46-QO-01) EJQX8 Protocol: B QC Program: STANDARD TEST SET	06	8/29/01	0/00/00	2/20/02

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 8/29/01
Page 2 CLIENT ANALYSIS SUMMARY Time: 13:57:30
STL St. Louis User Id.: WILSONS

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 43018
PROJECT MANAGER: MARTI WARD LAB ID: F-1H290206-001-S
PROJECT #: 200-TW-1&2SOIL WORK ORDER: EJQX8 MS
REPORT TO: Joan Kessner RECEIVING DATE: 8/29/01
P.O. NUMBER: MRC-SBB-A-19981 SAMPLING DATE: 8/24/01
SITE: B01-058 ANALYTICAL DUE DATE: 9/28/01N
AMOUNT REC"D: 2X60G,120G,250G REPORT DUE DATE: 10/12/01
STORAGE LOC: S126 PRIORITY: 30
LOT COMMENTS: Metals: CRDL standard required +/-25% SAMPLING TIME: 2:00
MATRIX: SOLID RECEIVING TIME: 8:50
SAMPLE ID: B12DC1
QC PACKAGE: Report SDG# :
SAMPLE COMMENTS:
RUN A DUPLICATE ON ALL WET CHEM.
Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Mercury in Solids by Modified 7470A	06	8/29/01	9/21/01	9/21/01
METALS, TOTAL (Method Exclusive) - Solids				
M7470A_S HG				
(A-70-0G-01) EJQX8 Protocol: A QC Program: STANDARD TEST SET				
Nitrogen, Ammonia (350.1, Automated)	06	8/29/01	0/00/00	9/21/01
LEACHATE, DI (Routine)				
(A-82-VM-01) EJQX8-1-A3 Protocol: A QC Program: STANDARD TEST SET				
Nitrate-Nitrite (353.1)	06	8/29/01	9/21/01	9/21/01
LEACHATE, DI (Routine) -> REDUCTION				
(A-0R-HN-01) EJQX8-1-A6 Protocol: A QC Program: STANDARD TEST SET				
Cyanide, Total (9010)	06	8/29/01	0/00/00	9/07/01
DISTILLATION, MICRO/MIDI - Acid				
(A-06-RV-01) EJQX8-1-A9 Protocol: A QC Program: STANDARD TEST SET				
Carbon, Total Organic "TOC" (9060)	06	8/29/01	0/00/00	9/21/01
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION				
(A-88-FM-01) EJQX8-1-CG Protocol: A QC Program: STANDARD TEST SET				

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 8/29/01
Page 1 CLIENT ANALYSIS SUMMARY Time: 13:57:30
STL St. Louis User Id.: WILSONS

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 43018
PROJECT MANAGER: MARTI WARD LAB ID: F-1H290206-002
PROJECT #: 200-TW-1&2SOIL WORK ORDER: EJQ4N
REPORT TO: Joan Kessner RECEIVING DATE: 8/29/01
P.O. NUMBER: MRC-SBB-A-19981 SAMPLING DATE: 8/23/01
SITE: B01-058 ANALYTICAL DUE DATE: 9/28/01N
AMOUNT REC"D: 60G,120G,250G REPORT DUE DATE: 10/12/01
STORAGE LOC: S126 PRIORITY: 30
LOT COMMENTS: Metals: CRDL standard required +/-25% SAMPLING TIME: 1:30
MATRIX: SOLID RECEIVING TIME: 8:50
SAMPLE ID: B12C89
QC PACKAGE: Report SDG# :
SAMPLE COMMENTS:

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Moisture, Percent (160.3)	06	8/29/01	0/00/00	11/30/01
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION				
(A-88-WM-01) EJQ4N-1-AA Protocol: A QC Program: STANDARD TEST SET				
Inductively Coupled Plasma (6010B)	06	8/29/01	0/00/00	2/19/02
METALS, TOTAL - Soils				
M6010_S AG,CD,CR,CU,NI,PB				
(A-46-QO-01) EJQ4N Protocol: A QC Program: STANDARD TEST SET				
Mercury in Solids by Modified 7470A	06	8/29/01	9/20/01	9/20/01
METALS, TOTAL (Method Exclusive) - Solids				
M7470A_S HG				
(A-70-0G-01) EJQ4N Protocol: A QC Program: STANDARD TEST SET				
Chloride (300.0, Ion Chromatography)	06	8/29/01	11/30/01	12/28/01
LEACHATE, DI (Routine)				
(A-82-CX-01) EJQ4N-1-AJ Protocol: A QC Program: STANDARD TEST SET				
Fluoride (300.0, Ion Chromatography)	06	8/29/01	11/30/01	12/28/01
LEACHATE, DI (Routine)				
(A-82-C8-01) EJQ4N-1-AK Protocol: A QC Program: STANDARD TEST SET				
Nitrate as N (300.0, Ion Chromatography)	06	8/29/01	11/30/01	12/02/01
LEACHATE, DI (Routine)				
(A-82-C9-01) EJQ4N-1-AL Protocol: A QC Program: STANDARD TEST SET				
Nitrite as N (300.0, Ion Chromatography)	06	8/29/01	11/30/01	12/02/01
LEACHATE, DI (Routine)				
(A-82-GO-01) EJQ4N-1-AM Protocol: A QC Program: STANDARD TEST SET				
Sulfate (300.0, Ion Chromatography)	06	8/29/01	11/30/01	12/28/01
LEACHATE, DI (Routine)				
(A-82-CY-01) EJQ4N-1-AN Protocol: A QC Program: STANDARD TEST SET				

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 8/29/01
Page 2 CLIENT ANALYSIS SUMMARY Time: 13:57:30
STL St. Louis User Id.: WILSONS

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 43018
PROJECT MANAGER: MARTI WARD LAB ID: F-1H290206-002
PROJECT #: 200-TW-1&2SOIL WORK ORDER: EJQ4N
REPORT TO: Joan Kessner RECEIVING DATE: 8/29/01
P.O. NUMBER: MRC-SBB-A-19981 SAMPLING DATE: 8/23/01
SITE: B01-058 ANALYTICAL DUE DATE: 9/28/01N
AMOUNT REC"D: 60G,120G,250G REPORT DUE DATE: 10/12/01
STORAGE LOC: S126 PRIORITY: 30
LOT COMMENTS: Metals: CRDL standard required +/-25% SAMPLING TIME: 1:30
MATRIX: SOLID RECEIVING TIME: 8:50
SAMPLE ID: B12C89
QC PACKAGE: Report SDG# :
SAMPLE COMMENTS:

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Phosphate as P, Ortho (300.0, Ion Chroma	06	8/29/01	11/30/01	12/02/01
LEACHATE, DI (Routine)				
(A-82-DO-01) EJQ4N-1-AP Protocol: A QC Program: STANDARD TEST SET				
Nitrogen, Ammonia (350.1, Automated)	06	8/29/01	0/00/00	9/20/01
LEACHATE, DI (Routine)				
(A-82-VM-01) EJQ4N-1-AR Protocol: A QC Program: STANDARD TEST SET				
Nitrate-Nitrite (353.1)	06	8/29/01	9/20/01	9/20/01
LEACHATE, DI (Routine) -> REDUCTION				
(A-0R-HN-01) EJQ4N-1-AT Protocol: A QC Program: STANDARD TEST SET				
Cyanide, Total (9010)	06	8/29/01	0/00/00	9/06/01
DISTILLATION, MICRO/MIDI - Acid				
(A-06-RV-01) EJQ4N-1-AU Protocol: A QC Program: STANDARD TEST SET				
pH (9045) - Non-Aqueous	06	8/29/01	0/00/00	8/25/01
LEACHATE, DI (Routine)				
(A-82-FK-01) EJQ4N-1-AV Protocol: A QC Program: STANDARD TEST SET				
Carbon, Total Organic "TOC" (9060)	06	8/29/01	0/00/00	9/20/01
NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION				
(A-88-FM-01) EJQ4N-1-AW Protocol: A QC Program: STANDARD TEST SET				

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STL St. Louis 14 of 167

RT 8.28.01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-206	Page 1 of ~~1~~ 2

Collector: Thomas G./Watson D.	Company Contact: Todd, M.R.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: VIKING SN 08/98 050011	Field Logbook No.: EL-1518-1	COA: B20TW12A4/C ~~B20TW26746~~ BT 8/24/01	Method of Shipment: Fed EX
Shipped To: Severn Trent Incorporated St. Louis	Offsite Property No.: RSR 106563		Bill of Lading/Air Bill No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Radiologic. Field Instrument Reading 35mR/3 2 mR/hr on bottles. Possible α.

Samples stored in Ref.# Site Trailer at the 3728 Shipping Facility on 8.24.01. Collector not available to relinquish samples on 8.28.01 for shipment. RT 8.28.01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	250mL	60mL	60mL	120mL	250mL	60mL		
	Mercury - 7470 - (CV)	Chromium Hex - 7196 DJW 8/28/01	See item (1) in Special Instructions.	VOA - 8260 (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions. DJW 8/28/01	Activity Scan		Tie to

Sample No.	Matrix *	Sample Date	Sample Time									
B12DC1	SOIL	8/24/01	0200	X		X			X			B12MK0

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	0600 8/24/01	200TW 1&2 Site Trailer	0600 8/24/01
200TW 1&2 Site Trailer	0415 8/28/01	R.T. Thorson	0415 8.28.01
R.T. Thorson	0850 8.28.01	FEDEX	
			8.29.01 0850

SPECIAL INSTRUCTIONS
(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
~~(2) Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D~~ BT 8/24/01
(3) ICP Metals - 6010TR (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 = Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~
DJW 08/15/01

Matrix *: S=Soil, SE=Sediment, SO=Solid, SL=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, Z=Other

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

BHI-EE-011 (10/99)

W03587

STL St. Louis

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-206	Page 1 of 1

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: VIKING SN 08/98 050011	Field Logbook No.: EL-1518-1	COA: B20TW2444K B20TW2574C SJT	Method of Shipment: Fed EX
Shipping Container: RT 8.28.01 ~~Eastern Test Incorporated~~ ~~St Louis~~	Offsite Property No.: PSP 106563 8/24/01		Bill of Lading/Air Bill No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS: Radiological Field Instruments Reading 35mR B 2mR γ on bottles. Possible α.

Samples stored in Ref.# Site Trailer at the 3728 Shipping Facility on 8/24/01. Collector not available to relinquish samples on 8/28/01 RT 8.28.01 for shipment.

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL		
	Mercury - 7470 - (CV)	Chromium Hex - 7196	See Item (1) in Special Instructions.	VOA - 8260A (TCL)	See Item (2) in Special Instructions.	See Item (3) in Special Instructions.	See Item (4) in Special Instructions.	Activity Scan		

Sample No.	Matrix *	Sample Date	Sample Time	Mercury - 7470 - (CV)	Chromium Hex - 7196	See Item (1) in Special Instructions.	VOA - 8260A (TCL)	See Item (2) in Special Instructions.	See Item (3) in Special Instructions.	See Item (4) in Special Instructions.	Activity Scan		
B12DC1	SOIL	8/24/01	0200		X					X	X	B12	MKO

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Bryan Thomas 8/24/01	0600	200TW1&2 Site Trailer 8/24/01	0600
200TW1&2 Site Trailer 8/28/01	0415	R. Thorest	0415 8.28.01
R. Thorest 8.28.01	0450	FEDEX	
		SUBMISS 8.29.01	0850

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen-in-Nitrate, Nitrogen-in-Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(2) ~~Semi-VOA - 8270A (Add-On) (Tributylphosphate); TPH Diesel Range - WTPH-D~~
(3) ICP Metals - 6010B (Client List) {Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc}
(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-230, 232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium

Matrix *: S=Soil, SD=Sediment, SO=Solid, SL=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, wi=Wipe, L=Liquid, V=Vegetation, X=Other

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

BHI-EE-011 (10/99)

SAP#: [illegible]
MEDIA: SOLID

VISUAL CONTAINER: S/N 08/08/05001

[redacted]

SAMPLE#: B12MK0
SAMPLE VOLUME: 40 grams
PACKAGE MASS: 592 grams

Radscreen Result

HAVE	Pci/sample	Pci/gram	Ci/gram	Ci/pkg	TBq/pkg	MBq/pkg
Cs-137	1.60E+06	4.00E+04	4.00E-09	2.01E-05	7.43E-07	7.43E-01
Th-234	6.30E+04	1.58E+03	1.58E-09	7.91E-07	2.93E-08	2.93E-02
Pu-239	8.00E+04	2.00E+03	2.00E-09	1.00E-06	3.71E-08	3.71E-02
Am-241	1.60E+04	4.00E+02	4.00E-10	2.01E-07	7.43E-09	7.43E-03
Sr-90	1.80E+06	4.50E+04	4.50E-08	2.26E-05	8.36E-07	8.36E-01
TOTALS:	3.56E+06	8.90E+04	8.90E-08	4.47E-05	1.65E-06	1.65

SAMPLE #: B12MJ8
SAMPLE VOLUME: 35 grams
PACKAGE MASS: 486 grams

Radscreen result

HAVE	Pci/sample	Pci/gram	Ci/gram	Ci/pkg	TBq/pkg	MBq/pkg
Cs-137	1.30E+06	3.71E+04	3.71E-08	1.80E-05	6.67E-07	6.67E-01
Pu-239	2.00E+05	5.71E+03	5.71E-09	2.77E-06	1.03E-07	1.03E-01
Am-241	4.80E+04	1.37E+03	1.37E-09	6.65E-07	2.46E-08	2.46E-02
Sr-90	1.50E+06	4.29E+04	4.29E-08	2.08E-05	7.69E-07	7.69E-01
TOTALS:	3.05E+06	8.71E+04	8.71E-08	4.22E-05	1.56E-06	1.56

[redacted] ACCUMULATED ACTIVITY FOR ENTIRE PACKAGE

HAVE	Ci/pkg	TBq/pkg	MBq/pkg
Cs-137	3.81E-05	1.41E-06	1.41E+00
Th-234	7.91E-07	2.93E-08	2.93E-02
Pu-239	3.78E-06	1.40E-07	1.40E-01
Am-241	8.66E-07	3.20E-08	3.20E-02
Sr-90	4.34E-05	1.60E-06	1.60E+00
Totals:	8.69E-05	3.22E-06	3.22

ON RSR

[redacted] LIMITED QUANTITY SHIPMENT (TBq/PK(8))

HAVE	TBq/pkg	A2 VALUES	LTD.QTY A2(10-3) solid, normal form	Derived Value Have/A2 Values	
Cs-137	1.41E-06	0.5	5.00E-04	2.82E-03	0.00
Th-234	2.93E-08	0.2	2.00E-04	1.46E-04	0.00
Pu-239	1.40E-07	2.00E-04	2.00E-07	6.98E-01	0.70
Am-241	3.20E-08	2.00E-04	2.00E-07	1.60E-01	0.16
Sr-90	1.60E-06	0.1	1.00E-04	1.60E-02	0.02
			UNITY TOTAL:	8.75E-01	0.88

Radioactive material, excepted package, limited quantity of material
UN2910
No RQ
Fissile Excepted

1

3/22/2018 REV.1

Kessner, Joan H

From: mward@stl-inc.com
Sent: Thursday, August 30, 2001 11:36 AM
To: jhkessne@mail.bhi-erc.com; jwaddell@stl-inc.com
Subject: Cr6+ for SAF B01-058
Importance: High

These samples have not yet been shipped to Richland. After re-packaging them in the container, the rad readings indicated that it needed to be sent back as a "white-1". We are going to hold them one more day to make sure that we send them correctly.

Joan: The rad screening info sent with the COC lists the unit activity as "each" instead of pc/g. Is there any way for you to know which of the bottles was used to determine the ativity levels. Our RSO said that that info would be useful to him in making his determination.

I will let you both know when these get shipped.

to -> marti ward
fax -> (314) 298-8757
from -> joan kessner

marti --
this should help
joan

8/30/01

3/22/2018 REV.1

ERC Radiological Counting Facility Analysis Report

RCF Number RCF9604 **Sample Date & Time** 8/23/01 0130

Project ID: 200E B-7A **SAF Number:** B01-058 **Date Analyzed** 8/24/01 10:32:

Sample ID: B12MJ8

Gamma Energy Analysis

Nuclide		Activity (pCi/g) EA		Error (pCi/g) EA	MDC (pCi/g) EA
K-40	<	2.2E+03			2.2E+03
Co-60	<	5.0E+02			5.0E+02
Cs-137		1.3E+06	+/-	2.7E+05	1.7E+03
Eu-152	<	5.6E+03			5.6E+03
Eu-155	<	5.9E+03			5.9E+03
Tl-208	<	3.9E+03			3.9E+03
Pb-212	<	2.3E+04			2.3E+04
Bi-214	<	3.9E+03			3.9E+03
Pb-214	<	4.1E+03			4.1E+03
Ra-226	<	4.3E+04			4.3E+04
Ac-228	<	2.4E+03			2.4E+03
Pa-234	<	4.8E+03			4.8E+03
Th-234	<	2.3E+04			2.3E+04
U-235	<	1.1E+04			1.1E+04
Am-241		4.8E+04	+/-	6.2E+03	4.5E+03

$Sr^{90} = 1.5 \times 10^6$

QUALITATIVE ONLY DUE TO HIGH DEAD TIME 13.3%. COUNTED 2" ABOVE DETECTOR

GH

$Pa = 2 \times 10^5$

Total GEA (pCi/g) EA	1.3E+06	+/-	2.8E+05

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

TIE TO B12C89

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDA GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst: G. L. Hastings 8/24/01

Report Printed: Friday, August 24, 2001

Report To	Fax
CS Cearlock	372-9292
SJ Trent	372-9292
Joan Kessner	372-9487

ERC Radiological Counting Facility Analysis Report

RCF Number RCF9606 **Sample Date & Time** 8/24/01 0200

Project ID: 200E B-7A **SAF Number:** B01-058 **Date Analyzed** 8/24/01 1:32:1

Sample ID: B12MK0

Gamma Energy Analysis

Nuclide		Activity (pCi/g) EA		Error (pCi/g) EA	MDC (pCi/g) EA	
K-40	<	3.0E+03			3.0E+03	
Co-60	<	6.7E+02			6.7E+02	
Cs-137		1.6E+06	+/-	2.7E+05	7.0E+03	Sr-90 1.8 x10^6
Eu-152	<	6.6E+03			6.6E+03	
Eu-154	<	1.9E+03			1.9E+03	
Eu-155	<	6.8E+03			6.8E+03	
Tl-208	<	4.6E+03			4.6E+03	
Pb-212	<	2.7E+04			2.7E+04	
Bi-214	<	5.2E+03			5.2E+03	
Pb-214	<	4.8E+03			4.8E+03	
Ra-226	<	4.8E+04			4.8E+04	
Ac-228	<	3.1E+03			3.1E+03	
Pa-234	<	5.6E+03			5.6E+03	
Th-234		6.3E+04	+/-	2.3E+04	3.7E+04	Pa
U-235	<	1.3E+04			1.3E+04	
Am-241		1.6E+04	+/-	3.8E+03	5.3E+03	8 x10^4

QUALITATIVE ONLY DUE TO HIGH DEAD TIME COUNTED SAMPLE 1.25" ABOVE DETECTOR.

NOTE: DUE TO THE HIGH DOSE NO GAB WAS AVAILABLE TO HELP WITH THE IDENTIFICATION OF THE TH-234 AND AM-241 ACTIVITY. BOTH ACTIVITIES REPORTED.
GH 8/24/01

Total GEA (pCi/g) EA	1.7E+06	+/-	3.0E+05

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

TIC TO B12DC1

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDA GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst G. J. Hastings 8/24/01

Report To	Fax
CS Cearlock	372-9292
SJ Tacot	372-9292
Joan Kessner	372-9487

Report Printed: Friday, August 24, 2001

STL St. Louis

3/22/2018

RADIOACTIVE SHIPMENT RECORD

REV 1

168563 3.

Page 1 of 2

1. SHIP FROM U.S. DEPT. OF ENERGY C/O

Company: BBI HANFORD
Address: 3728 BUILDING / 300 AREA
City, State, Zip: RICHLAND, WA 99352
Contact: RIKKI THOREN
Phone: (509) 521-8003

Ship: ☑ Prepaid ☐ Collect 4.

Via: ☐ Motor ☑ Air Psgr ☐ UPS ☐ Rail ☑ Air Cargo ☐ Site Carrier

SHIPMENT AUTHORIZATION NUMBER

2. SHIP TO

Company: SEVERN TRENT INC.
Address: 13715 RIDER TRAIL NORTH
City, State, Zip: EARTH CITY, MO 63045
Attention: MARTI WARD
Phone: (314) 298-8566

Markings Applied 6.
- Radioactive - LSA ☐
- Radioactive - SCO ☐
- Type A N/A ☐
- Type B with trefoil ☐

LSA Description 8.
- LSA-I ☐
- LSA-II ☐
- LSA-III N/A ☐
- SCO-I ☐
- SCO-II ☐

Labels Applied 10.
- Empty ☐
- Radioactive White - I ☐
- Radioactive Yellow - II ☐
- Radioactive Yellow - III ☐
- Subsidiary Hazard ☐

For Normal Form only 7.
Identify
Physical Form: ☐ Liquid ☐ Gas ☑ Solid
Chemical Form: ☑ Elemental ☐ Metal ☐ Nitrate ☐ Oxide ☐ Mixture ☐ Other

EMERGENCY RESPONSE 9.
Telephone: 1-888-766-0711
Emergency Response Guide(s): 161

Highway Route Controlled Quantity ☐
Exclusive Use Shipment with Instructions ☐
Placards Applied ☐
If Rail Specify:
Fissile Excepted, Grams <15g ☑
Excepted Package Statement ☑

5. HM Proper Shipping Name: _____ Radioactive Material,

☐	excepted package - empty packaging	7	UN2910
☐	excepted package - instruments or articles	7	UN2910
☑	excepted package - limited quantity of material	7	UN2910
☐	excepted package - articles manufactured from natural or depleted uranium or natural thorium	7	UN2910
☐	Special Form, n.o.s.	7	UN2974
☐	Low Specific Activity, n.o.s.	7	UN2912
☐	n.o.s.	7	UN2982
☐	Fissile, n.o.s.	7	UN2918
☐	Surface Contaminated Object	7	UN2913

Warning -- Fissile Material Controlled Shipment. Do Not Load More Than _____ Packages Per Vehicle. In Loading and Storage Areas, Keep at Least 20 Feet From Other Packages Bearing Radioactive Labels.

11.

No. Pkg.	Model Package	COC/Spec	Serial No.	Seal No.	Isotopes	T.I.	Bq/Package	Gr. Wt. Kg
1	PLASTIC BOX VIKING 987g Solid, Double Polybagged IN FOAM inserts with Blue ICE PKG in VIKING	4HZV	SN09/980500	TAPE	Pu-239, Am241	N/A	3.22E-06	56 Kg
(Shipper may describe package in detail on one of the unused lines above)					301-058	TOTALS	N/A	3.22E-06 56 Kg

12. This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Certifier's Signature: [signature] On behalf of DOE-RL | Date: 8-28-01 | Organization: ERC-HFS | Complete Cost Code (Inc. End Function): B20TW2A44C

13. Surface Dose Rate of Package: ☑ <0.005 or _____ mSv/hr; <0.5 or _____ mrem/hr (N+ß γ)

Dose Rate @ 1 Meter from Surface of Package: ☑ <0.005 or _____ mSv/hr; <0.5 or _____ mrem/hr (N+ß γ)

Smears of Outer Container: ☑ <0.41 Bq (22 dpm) ß γ /cm²; ☑ <0.04 Bq (2.2 dpm) α /cm²; ☑ <Tbl. 2-2 HSRCM Onsite Limits

TRUCK LOAD OR EXCLUSIVE USE: Surface ☑ <2 mSv/hr (200 mrem/hr); @ 2 meters ☑ <0.1 mSv/hr (10 mrem/hr); @ Cab or sleeper ☑ <0.02 mSv/hr (2 mrem/hr) (Using N+ß γ)

Additional Data and Instructions (inc. Readings on Internal Packaging)

Signature - Radiation Monitoring: Jerry Duffey | Bldg. 3728 | Survey No. RCF-01-0325 | Date 8-28-01

14. TRANSPORTER: Vehicle Number 661-D6052 | DRIVER SIGNATURE: [signature]

RECEIVER: RECEIVER SIGNATURE | Date

15. OFFSITE AUTHORIZATION

Shipment has been inspected and verified to be in compliance with DOT regulations.

Authorized Signature: [signature] | Printed Name: Keith R. Smith | Date 8-28-01

16. AUTHORIZATION FOR SHIPMENT

AIR TRANSPORT CERTIFICATION: ☐ N/A

CARGO AIRCRAFT: ☐ Cargo Aircraft Only Labels Applied

PASSENGER AIRCRAFT: ☑ Ltd Qty ☐ <3 T.I. ☐ Research/Medical Diagnosis ☐ Human Medical Research

Pkg. Dimensions (cm)

17. OFFSITE AUTHORIZATION

Tracking No.	Date Shipped	Routing	ETA
RMBH-4709	8-28-01	FedEx	8-29-01
Surveyed By: [signature]	Date 8-28-01	Approved for Shipment Offsite: [signature]	Date 8-28-01

Priority Overnight - WEDNESDAY Delivery

54-6000-088 (06/97)

W03587

Excepted PKG 10^{-3} Az 1TBq 1TBq = 27Ci

	Az	10^{-3} Az
Cs137a	Ø.6 = 16.2 Ci =	16.2 mCi
Pu239	Ø.001 = Ø.027 Ci = 27 mCi	27 μCi
Am241	Ø.001 = Ø.027 Ci = 27 mCi	27 μCi
Sr90a	Ø.3 = 8.1 Ci	8.1 mCi
Th234a	Ø.3 = 8.1 Ci	8.1 mCi

a = and daughter products

Sample 1 X40g

Cs137 1.6 μCi/gr

Th234 Ø.0063 μCi

Am241 Ø.0016 μCi

Sr90 1.8 μCi

Sample 42 X35g

Cs 1.3 μCi

Pu Ø.020 μCi

Am Ø.0048 μCi

Sr90 1.5 μCi

Sum Sample #1 & #2 < 10^{-3} Az

Page 1 of 2 RT

Bechtel Hanford Inc. | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | B01-058-166 | Page 1 of 2

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: VIKING Sn 08/98 050011	Field Logbook No.: EL-1518-1	COA B20TW2A44C ~~B20FW9634C~~ BT 8/23/01	Method of Shipment: Fed EX
Shipped To: SEVERN TRENT	Offsite Property No.: RSR 106563		Bill of Lading/Air Bill No.: NA

POSSIBLE SAMPLE HAZARDS/REMARKS

Radiological Field Instrument Readings on bottles ranged from 15mR B/<.5mR γ to 3.0mR B/1.3mR γ. Possible presence of (mercury) of this sample

COA

Sample originally sent to RCF for on site analysis. Page 2 of 2 represents custody transfer to RCF. The sample was picked up from RCF and re-[illegible] for off-site analysis. A new COC was generated [illegible] appropriate off site custody transfer. Page 1 of 2 represents custody transfer to offsite laboratory for directed analysis.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	sG	sG	sG	sG	sG	sG	sG
No. of Container(s)	1	1	1	1	1	1	1
Volume	60mL	60mL	[illegible]	120mL	250mL	[illegible]mL	250mL
	Chromium Hex - 7196	Mercury - 7470 - (CV)	VOA - 8260A (TCL)	See Item (1) in Special Instructions.	See Item (2) in Special Instructions.	See Item (3) in Special Instructions.	See Item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										Tie #s
B12C89	SOIL	8-23-01	0130	X	X		X	X					~~B12C89 B~~ B12MJ8

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
Greg Thomas/Greg Thomas	0815 8/23/01	200 TW1&2 site Trailer	0815 8/23/01
200 TW1&2 Trailer Site	0445 8-28-01	R.T. R. Thoren	0445 8-28-01
R.T. R Thoren	0400 8-28-01	FEDEX	
		[illegible]	8-29-01 0850

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) ~~Semi-VOA - 8270A (A44 On) {Triethyl phosphate}, TPH-Diesel Range - WTPHD~~
(4) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90~~

Samples stored in Ref.# SHETRAILER at the 3728 Shipping Facility on 8/28/01. Collector not available to relinquish samples on 8/28/01 for shipment.

RT 8-28-01

Matrix *: S=Soil, SD=Sediment, SO=Solid, S=Water, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

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

BHI-EE-011 (10/99)

STL St. Louis

3/23/2018

REV. 1

Page 2 of 2 ~~3 of 3~~ 8.28.01 ~~2 of 2~~ RT 8.28.01

W03587

STL St Louis

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-238	Page ~~1 of 1~~
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E		SAF No.: B01-058	Air Quality ☐
Ice Chest No.	Field Logbook No.: EL-1518-1	COA B20TW2A44C B20TW2624G JT 8/23/01	Method of Shipment: Fed EX	Data Turnaround: 24 Hours
Shipped To: Radiological Counting Facility	Offsite Property No.		Bill of Lading/Air Bill No.	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radiological Field Instrument Readings on bottles were 70 mR β/<5 mR γ on 125 mL and 3.0 mR β/<5 mR γ on 60 mL. Possible α
Special Handling and/or Storage

Preservation	None	Cool 4°C None JT 8/23/01									
Type of Container	P	AG									
No. of Container(s)	1	1									
Volume	125mL	60 mL									
SAMPLE ANALYSIS	Rad Screen GEA	Rad Screen GEA	JT 8/23/01	RCF						Tie to 1	

Sample No.	Matrix*	Sample Date	Sample Time										
~~B12MJ8~~	~~SOIL~~	~~8-23-01~~	~~0130~~	~~X~~			~~9604~~	RT 8.28.01					~~B12C89~~
B12C89-A	Soil	8-23-01	0130	X JT 8/23/01	X		9605						

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Greg Thomas/Greg Thomas	0915 8/23/01	Received By/Stored In: J Duffey/J Duffey	0915 8-23-01
Relinquished By/Removed From: J Duffey/J Duffey	0760 8-27-01	Received By/Stored In: Troy Thomas/Troy Thomas	0750 8/27/01
Relinquished By/Removed From: Greg Thomas/Greg Thomas	08/0 8/27/01	Received By/Stored In: Ref 3C	08/0 8/27/01
Relinquished By/Removed From: Ref 3C	0230 8.28.01	Received By/Stored In: R Thorer	0230 8.28.01
Relinquished By/Removed From	Date/Time	Received By/Stored In: ~~[illegible] 8.28.01~~	~~Date/Time 850~~
Relinquished By/Removed From	Date/Time	Received By/Stored In: SW 8.29.01	Date/Time

SPECIAL INSTRUCTIONS

ample originally sent to RCF for on site analysis.
age 2 of 2 represents custody transfer to RCF.
he sample was picked up from RCF and re-labeled
r off-site analysis. ~~A new COC was generated for the~~ RT 8-28-01
~~appropriate off-site custody transfer.~~ Page 1 of 2
epresents custody transfer to offsite laboratory for
irected analysis.

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

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

BHI-EE-011 (10/99)

REV. 1

3/22/2018

23 of 167

SEVERN TRENT SERVICES

Lot No.: F1H290206
W03587

Condition Upon Receipt Form
St. Louis Laboratory

Client: Flour Hanford
Quote No: 43018
Shipper/No: FedX 4476 5461 26

Date: 8.29.01 Time: 0850
Initiated by: SJ
COC/RFA Numbers: BD1-058-206, 166, 238

Condition/Variance (Circle "Y" for yes and "N" for no. If "N" is circled, see notes for explanation):

1.	Y N	Sample received in undamaged condition.	5.	Y N	Sample volume sufficient for analysis.
2.	Y N	Sample received within 4°C ± 2°C*	6.	Y N	Sample received with Chain of Custody.
		Record temperature: 17	7.	Y N	Chain of Custody matches sample IDs on containers.
3.	Y N	Sample received with proper pH**. Soil N/A	8.	Y N	Custody seal received intact and tamper evident on cooler.
4.	Y N	Sample received in proper containers.	9.	Y N	Custody seal received intact and tamper evident on bottles.

* Temperature Variance Does Not Affect the Following Analyses: _____

** For DOE-AL (Pantex, LANL, Sandia, Timet) sites, remember to pH all containers received, except for VOA, TOX, and soils.

Notes: Blue ice melted - not enough to cool samples. All jars contaminated on outside with radioactive soil granules. We used Contrad solution to clean the outside of the jars. All jars were swiped as well as the inside of the cooler. After swiping found no contamination.
Also, shipping container is expired and should not be used. Mfg. date is 1998

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor (or designate) Review: [signature] Date: 8.29.01

Project Management Review: [signature] Date: 8.29.01

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE
THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED
IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIALS AND THE DATE NEXT TO THAT ITEM

PSL20300
Page 1

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 9/04/01
Time: 8:50:22
User Id.: CLARKEJ

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 200-TW-1&2SOIL
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B01-058
AMOUNT REC"D: 60G,120G,250G
STORAGE LOC: S137
LOT COMMENTS: Metals: CRDL standard required +/-25%
MATRIX: SOLID
SAMPLE ID: B12ML7
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 43018
LAB ID: F-1H310250-001
WORK ORDER: EJXPC
RECEIVING DATE: 8/31/01
SAMPLING DATE: 8/28/01
ANALYTICAL DUE DATE: 10/01/01N
REPORT DUE DATE: 10/15/01
PRIORITY: 30
SAMPLING TIME: 1:00
RECEIVING TIME: 9:20
SDG# :

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Chloride (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-CX-01) EJXPC-1-AC Protocol: A QC Program: STANDARD TEST SET	06	8/31/01	12/05/01	1/02/02
Moisture, Percent (160.3) NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION (A-88-WM-01) EJXPC-1-AA Protocol: A QC Program: STANDARD TEST SET	06	8/31/01	0/00/00	12/05/01
Fluoride (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-C8-01) EJXPC-1-AD Protocol: A QC Program: STANDARD TEST SET	06	8/31/01	12/05/01	1/02/02
Nitrate as N (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-C9-01) EJXPC-1-AE Protocol: A QC Program: STANDARD TEST SET	06	8/31/01	12/05/01	12/07/01
Nitrite as N (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-GO-01) EJXPC-1-AF Protocol: A QC Program: STANDARD TEST SET	06	8/31/01	12/05/01	12/07/01
Sulfate (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-CY-01) EJXPC-1-AG Protocol: A QC Program: STANDARD TEST SET	06	8/31/01	12/05/01	1/02/02
Phosphate as P, Ortho (300.0, Ion Chroma LEACHATE, DI (Routine) (A-82-DO-01) EJXPC-1-AH Protocol: A QC Program: STANDARD TEST SET	06	8/31/01	12/05/01	12/07/01
Nitrogen, Ammonia (350.1, Automated) LEACHATE, DI (Routine) (A-82-VM-01) EJXPC-1-AJ Protocol: A QC Program: STANDARD TEST SET	06	8/31/01	0/00/00	9/25/01
Nitrate-Nitrite (353.1) LEACHATE, DI (Routine) -> REDUCTION (A-0R-HN-01) EJXPC-1-AK Protocol: A QC Program: STANDARD TEST SET	06	8/31/01	9/25/01	9/25/01

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 9/04/01
Time: 8:50:22
User Id.: CLARKEJ

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 200-TW-1&2SOIL
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B01-058
AMOUNT REC"D: 60G,120G,250G
STORAGE LOC: S137
LOT COMMENTS: Metals: CRDL standard required +/-25%
MATRIX: SOLID
SAMPLE ID: B12ML7
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 43018
LAB ID: F-1H310250-001
WORK ORDER: EJXPC
RECEIVING DATE: 8/31/01
SAMPLING DATE: 8/28/01
ANALYTICAL DUE DATE: 10/01/01N
REPORT DUE DATE: 10/15/01
PRIORITY: 30
SAMPLING TIME: 1:00
RECEIVING TIME: 9:20
SDG# :

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Cyanide, Total (9010) DISTILLATION, MICRO/MIDI - Acid (A-06-RV-01) EJXPC-1-AL Protocol: A QC Program: STANDARD TEST SET	06	8/31/01	0/00/00	9/11/01
pH (9045) - Non-Aqueous LEACHATE, DI (Routine) (A-82-FK-01) EJXPC-1-AM Protocol: A QC Program: STANDARD TEST SET	06	8/31/01	0/00/00	8/30/01
Carbon, Total Organic "TOC" (9060) NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION (A-88-FM-01) EJXPC-1-AN Protocol: A QC Program: STANDARD TEST SET	06	8/31/01	0/00/00	9/25/01
Inductively Coupled Plasma (6010B) METALS, TOTAL - Soils M6010_S AG,CD,CR,CU,NI,PB (A-46-QO-01) EJXPC Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	2/24/02
Mercury in Solids by Modified 7470A METALS, TOTAL (Method Exclusive) - Solids M7470A_S HG (A-70-0G-01) EJXPC Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	9/25/01	9/25/01

PSL20300
Page 1

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 9/04/01
Time: 8:50:22
User Id.: WARDM

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 200-TW-1&2SOIL
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B01-058
AMOUNT REC"D: 60G,120G,250G
STORAGE LOC: S137
LOT COMMENTS: Metals: CRDL standard required +/-25%
MATRIX: SOLID
SAMPLE ID: B12ML4
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 43018
LAB ID: F-1H310250-002
WORK ORDER: EJXPV
RECEIVING DATE: 8/31/01
SAMPLING DATE: 8/26/01
ANALYTICAL DUE DATE: 10/01/01N
REPORT DUE DATE: 10/15/01
PRIORITY: 30
SAMPLING TIME: 23:45
RECEIVING TIME: 9:20
SDG# :

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B) METALS, TOTAL - Soils M6010_S AG,CD,CR,CU,NI,PB (A-46-QO-01) EJXPV Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	2/22/02
Mercury in Solids by Modified 7470A METALS, TOTAL (Method Exclusive) - Solids M7470A_S HG (A-70-0G-01) EJXPV Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	9/23/01	9/23/01
Moisture, Percent (160.3) NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION (A-88-WM-01) EJXPV-1-AM Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	12/03/01
Chloride (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-CX-01) EJXPV-1-AN Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/03/01	12/31/01
Fluoride (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-C8-01) EJXPV-1-AP Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/03/01	12/31/01
Nitrate as N (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-C9-01) EJXPV-1-AQ Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/03/01	12/05/01
Nitrite as N (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-GO-01) EJXPV-1-AR Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/03/01	12/05/01
Sulfate (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-CY-01) EJXPV-1-AT Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/03/01	12/31/01

PSL20300
Page 2

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 9/04/01
Time: 8:50:22
User Id.: CLARKEJ

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 200-TW-1&2SOIL
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B01-058
AMOUNT REC"D: 60G,120G,250G
STORAGE LOC: S137
LOT COMMENTS: Metals: CRDL standard required +/-25%
MATRIX: SOLID
SAMPLE ID: B12ML4
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 43018
LAB ID: F-1H310250-002
WORK ORDER: EJXPV
RECEIVING DATE: 8/31/01
SAMPLING DATE: 8/26/01
ANALYTICAL DUE DATE: 10/01/01N
REPORT DUE DATE: 10/15/01
PRIORITY: 30
SAMPLING TIME: 23:45
RECEIVING TIME: 9:20
SDG# :

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Phosphate as P, Ortho (300.0, Ion Chroma LEACHATE, DI (Routine) (A-82-DO-01) EJXPV-1-AU Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/03/01	12/05/01
Nitrogen, Ammonia (350.1, Automated) LEACHATE, DI (Routine) (A-82-VM-01) EJXPV-1-AV Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	9/23/01
Nitrate-Nitrite (353.1) LEACHATE, DI (Routine) -> REDUCTION (A-0R-HN-01) EJXPV-1-AW Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	9/23/01	9/23/01
Cyanide, Total (9010) DISTILLATION, MICRO/MIDI - Acid (A-06-RV-01) EJXPV-1-AX Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	9/09/01
pH (9045) - Non-Aqueous LEACHATE, DI (Routine) (A-82-FK-01) EJXPV-1-A0 Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	8/28/01
Carbon, Total Organic "TOC" (9060) NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION (A-88-FM-01) EJXPV-1-A1 Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	9/23/01

PSL20300
Page 1

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 9/04/01
Time: 8:50:22
User Id.: WARDM

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 200-TW-1&2SOIL
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B01-058
AMOUNT REC"D: 60G,120G,250G
STORAGE LOC: S137
LOT COMMENTS: Metals: CRDL standard required +/-25%
MATRIX: SOLID
SAMPLE ID: B12ML5
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 43018
LAB ID: F-1H310250-003
WORK ORDER: EJXP7
RECEIVING DATE: 8/31/01
SAMPLING DATE: 8/27/01
ANALYTICAL DUE DATE: 10/01/01N
REPORT DUE DATE: 10/15/01
PRIORITY: 30
SAMPLING TIME: 1:15
RECEIVING TIME: 9:20
SDG# :

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B) METALS, TOTAL - Soils M6010_S AG,CD,CR,CU,NI,PB (A-46-QO-01) EJXP7 Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	2/23/02
Mercury in Solids by Modified 7470A METALS, TOTAL (Method Exclusive) - Solids M7470A_S HG (A-70-0G-01) EJXP7 Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	9/24/01	9/24/01
Moisture, Percent (160.3) NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION (A-88-WM-01) EJXP7-1-AM Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	12/04/01
Chloride (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-CX-01) EJXP7-1-AN Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/04/01	1/01/02
Fluoride (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-C8-01) EJXP7-1-AP Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/04/01	1/01/02
Nitrate as N (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-C9-01) EJXP7-1-AQ Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/04/01	12/06/01
Nitrite as N (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-GO-01) EJXP7-1-AR Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/04/01	12/06/01
Sulfate (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-CY-01) EJXP7-1-AT Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/04/01	1/01/02

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 9/04/01
Time: 8:50:22
User Id.: CLARKEJ

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 200-TW-1&2SOIL
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B01-058
AMOUNT REC"D: 60G,120G,250G
STORAGE LOC: S137
LOT COMMENTS: Metals: CRDL standard required +/-25%
MATRIX: SOLID
SAMPLE ID: B12ML5
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 43018
LAB ID: F-1H310250-003
WORK ORDER: EJXP7
RECEIVING DATE: 8/31/01
SAMPLING DATE: 8/27/01
ANALYTICAL DUE DATE: 10/01/01N
REPORT DUE DATE: 10/15/01
PRIORITY: 30
SAMPLING TIME: 1:15
RECEIVING TIME: 9:20
SDG# :

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Phosphate as P, Ortho (300.0, Ion Chroma LEACHATE, DI (Routine) (A-82-DO-01) EJXP7-1-AU Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/04/01	12/06/01
Nitrogen, Ammonia (350.1, Automated) LEACHATE, DI (Routine) (A-82-VM-01) EJXP7-1-AV Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	9/24/01
Nitrate-Nitrite (353.1) LEACHATE, DI (Routine) -> REDUCTION (A-0R-HN-01) EJXP7-1-AW Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	9/24/01	9/24/01
Cyanide, Total (9010) DISTILLATION, MICRO/MIDI - Acid (A-06-RV-01) EJXP7-1-AX Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	9/10/01
pH (9045) - Non-Aqueous LEACHATE, DI (Routine) (A-82-FK-01) EJXP7-1-A0 Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	8/29/01
Carbon, Total Organic "TOC" (9060) NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION (A-88-FM-01) EJXP7-1-A1 Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	9/24/01

PSL20300
Page 1

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 9/04/01
Time: 8:50:22
User Id.: WARDM

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 200-TW-1&2SOIL
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B01-058
AMOUNT REC"D: 60G,120G,250G
STORAGE LOC: S137
LOT COMMENTS: Metals: CRDL standard required +/-25%
MATRIX: SOLID
SAMPLE ID: B12ML6
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 43018
LAB ID: F-1H310250-004
WORK ORDER: EJXQC
RECEIVING DATE: 8/31/01
SAMPLING DATE: 8/27/01
ANALYTICAL DUE DATE: 10/01/01N
REPORT DUE DATE: 10/15/01
PRIORITY: 30
SAMPLING TIME: 4:30
RECEIVING TIME: 9:20
SDG# :

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B) METALS, TOTAL - Soils M6010_S AG,CD,CR,CU,NI,PB (A-46-QO-01) EJXQC Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	2/23/02
Mercury in Solids by Modified 7470A METALS, TOTAL (Method Exclusive) - Solids M7470A_S HG (A-70-0G-01) EJXQC Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	9/24/01	9/24/01
Moisture, Percent (160.3) NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION (A-88-WM-01) EJXQC-1-AM Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	12/04/01
Chloride (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-CX-01) EJXQC-1-AN Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/04/01	1/01/02
Fluoride (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-C8-01) EJXQC-1-AP Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/04/01	1/01/02
Nitrate as N (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-C9-01) EJXQC-1-AQ Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/04/01	12/06/01
Nitrite as N (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-GO-01) EJXQC-1-AR Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/04/01	12/06/01
Sulfate (300.0, Ion Chromatography) LEACHATE, DI (Routine) (A-82-CY-01) EJXQC-1-AT Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/04/01	1/01/02

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 9/04/01
Time: 8:50:22
User Id.: CLARKEJ

CLIENT: 127642 BECHTEL HANFORD, INC.
PROJECT MANAGER: MARTI WARD
PROJECT #: 200-TW-1&2SOIL
REPORT TO: Joan Kessner
P.O. NUMBER: MRC-SBB-A-19981
SITE: B01-058
AMOUNT REC"D: 60G,120G,250G
STORAGE LOC: S137
LOT COMMENTS: Metals: CRDL standard required +/-25%
MATRIX: SOLID
SAMPLE ID: B12ML6
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 43018
LAB ID: F-1H310250-004
WORK ORDER: EJXQC
RECEIVING DATE: 8/31/01
SAMPLING DATE: 8/27/01
ANALYTICAL DUE DATE: 10/01/01N
REPORT DUE DATE: 10/15/01
PRIORITY: 30
SAMPLING TIME: 4:30
RECEIVING TIME: 9:20
SDG# :

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Phosphate as P, Ortho (300.0, Ion Chroma LEACHATE, DI (Routine) (A-82-DO-01) EJXQC-1-AU Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	12/04/01	12/06/01
Nitrogen, Ammonia (350.1, Automated) LEACHATE, DI (Routine) (A-82-VM-01) EJXQC-1-AV Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	9/24/01
Nitrate-Nitrite (353.1) LEACHATE, DI (Routine) -> REDUCTION (A-0R-HN-01) EJXQC-1-AW Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	9/24/01	9/24/01
Cyanide, Total (9010) DISTILLATION, MICRO/MIDI - Acid (A-06-RV-01) EJXQC-1-AX Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	9/10/01
pH (9045) - Non-Aqueous LEACHATE, DI (Routine) (A-82-FK-01) EJXQC-1-A0 Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	8/29/01
Carbon, Total Organic "TOC" (9060) NO SAMPLE PREPARATION PERFORMED / DIRECT INJECTION (A-88-FM-01) EJXQC-1-A1 Protocol: A QC Program: STANDARD TEST SET	06	9/04/01	0/00/00	9/24/01

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-252	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. — Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N — Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	Air Quality ☐
Ice Chest No.: ERC-01-026	Field Logbook No.: EL-1518-1 — COA B20TW2A44C ~~B20TW2674C~~ HT	Method of Shipment: Fed EX	
Shipped To: Severn Trent Incorporated - ST. LOUIS	Offsite Property No.: A010288 8/28/01	Bill of Lading/Air Bill No.: 4235795469965	

POSSIBLE SAMPLE HAZARDS/REMARKS: Radiological. Field Instruments Reading background

Special Handling and/or Storage

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	120mL	60mL	60mL	250mL	60mL	250mL	250mL	60mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions. DJW 08/28/01	See item (4) in Special Instructions.	Activity Scan	ME TO	
Sample No.	Matrix *	Sample Date	Sample Time							
B12ML7	SOIL	08/28/01	0100	X	X	X			B12MK4	

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	8/28/01 0930	Ref 1B 3728	8/28/01 0930
Ref 1B 3728	8-30-01 0930	R Thorp	8-30-01 0930
R Thorp	8-30-01 0930	FED EX	
FED EX			

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; ~~TPH-Diesel Range - WTPH-D~~
(4) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 - Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8/28/01. Collector not available to relinquish samples on 8/30/01 for shipment. RT 8-30-01

Matrix *: S=Soil, SD=Sediment, SO=Solid, SL=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
	[signature]		08-31-01 / 0920
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

3/22/2018 REV.1

ERC Radiological Counting Facility Analysis Report

RCF Number RCF9635 Sample Date & Time 8/28/01 0100

Project ID: 200E B-7A SAF Number: B01-058 Date Analyzed 8/29/01 8:49:3

Sample ID: B12MK4

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40		2.5E+01	+/-	9.2E+00	5.9E+00
Co-60	<	5.3E-01			5.3E-01
Cs-137		1.4E+01	+/-	2.6E+00	6.4E-01
Eu-152	<	1.8E+00			1.8E+00
Eu-154	<	2.1E+00			2.1E+00
Eu-155	<	1.6E+00			1.6E+00
Tl-208	<	1.5E+00			1.5E+00
Pb-212	<	6.7E+00			6.7E+00
Bi-214		4.4E+00	+/-	2.4E+00	3.1E+00
Pb-214		4.4E+00	+/-	1.3E+00	1.4E+00
Ra-226	<	8.4E+00			8.4E+00
Ac-228	<	1.7E+00			1.7E+00
Pa-234	<	1.1E+00			1.1E+00
Th-234	<	6.7E+00			6.7E+00
U-235		2.8E+00	+/-	1.8E+00	2.8E+00
Am-241	<	9.2E-01			9.2E-01

TIE TO B12MC

Total GEA (pCi/g)	5.1E+01	+/-	1.7E+01

	Activity (pCi/g)		Error (pCi/g)	Alpha MDC (pCi/g)	Beta MDC (pCi/g)
Gross Alpha**	1.8E+00	+/-	5.7E-01	7.7E-01	3.0E+01
Gross Beta	5.6E+01	+/-	2.7E+00		

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDC = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorption
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst: C. W. Landes 8/29/01

Report To	Fax
CB Cantrell	372-9292
SJ Trent	372-9292
Joan Kasmer	372-9487

Report Printed: Wednesday, August 29, 2001

W03587

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-249	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.R.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E		SAF No.: B01-058	Air Quality ☐
Ice Chest No.: VIKING S/N 08/98050012	Field Logbook No.: EL-1518-1	COA B20TW2A44C B20TW2674C	Method of Shipment: Fed EX	Data Turnaround: 45 Days
Shipped To: Severn Trent Incorporated - ST. Louis	Offsite Property No.: RSTR 107053 8/27/01		Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

15 dpm/g } on contact
800 cpm/g
100 mR/h

Samples stored in Ref. Tw2 at the 3728 Shipping Facility on 8/27/01. Collector not available to relinquish samples on 8/30/01 for shipment. RT 8.30.01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	120mL	60mL	60mL	250mL	60mL	250mL	250mL	60mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Activity Scan		

Sample No.	Matrix *	Sample Date	Sample Time									Tie to
B12ML4	SOIL	8/26/01	2345	X	X		X					B12MK1

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DG WATSON/	08/27/01 0845	REF TW2	08/27/01 0845
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RG TWIGT	8.30.01 0330	RT Thorey	8.30.01 0330
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
RT Thorey	8.30.01 0330	FED EX	
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
FED EX			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) ~~Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D~~
(4) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 - Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

08/15/01

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

LABORATORY SECTION	Received By	Title	Date/Time 08-31-01 / 0920
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

(2)

ERC Radiological Counting Facility Analysis Report

RCF Number RCF9609 Sample Date & Time 8/26/01 2345

Project ID: 200E B-7A SAF Number: B01-058 Date Analyzed 8/27/01 11:44:

Sample ID: B12MK1

Gamma Energy Analysis

Nuclide		Activity (pCi/g) EA		Error (pCi/g) EA	MDC (pCi/g) EA
K-40	<	2.0E+03			2.0E+03
Co-60	<	2.7E+02			2.7E+02
Cs-137		5.7E+05	+/-	1.1E+05	1.1E+03
Eu-152	<	3.8E+03			3.8E+03
Eu-154	<	7.6E+02			7.6E+02
Eu-155	<	6.1E+03			6.1E+03
Tl-208	<	2.5E+03			2.5E+03
Pb-212	<	1.7E+04			1.7E+04
Bi-214	<	2.4E+03			2.4E+03
Pb-214	<	2.7E+03			2.7E+03
Ra-226	<	3.5E+04			3.5E+04
Ac-228	<	1.4E+03			1.4E+03
Pa-234	<	5.1E+03			5.1E+03
Th-234	<	3.4E+04			3.4E+04
U-235	<	1.1E+04			1.1E+04
Am-241	<	4.0E+03			4.0E+03

QUALITATIVE ONLY
DUE TO HIGH DEAD TIME
SAMPLE COUNTED
3" ABOVE DETECTOR

GH
8/28/01

TIE TO B12MC4

ADD ON:
Am = 4x10^3
Pu239 = 1x10^4 Sr-90 = 6x10^5

Total GEA (pCi/g) EA	5.7E+05	+/-	1.1E+05	

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = L
All GEA results reported as "<" list the Minimum Dete
Rounding error may result in the reported total GEA ac

For soils and natural samples, the following ap

The analysis of U-238 is based on the activity of Pa-23
The analysis of Np-237 is based on the activity of Pa-2
U-238dau is the activity of Pb-214 and Bi-214, short li
probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-20
products may not exist in disturbed materials.
Other samples, not containing natural materials, may h
must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass ab
No peaks for this radionuclide were visible above bac

SAMPLE VOLUME
40g

pCi/g Conversion

Cs-137 = 1.4E+04 pCi/g
Am-241 = 1.0E+02 pCi/g
Pu239 = 2.5E+02 pCi/g
Sr90 = 1.5E+04 pCi/g

Analyst G. L. Hastings

Report Printed: Tuesday, August 28, 2001

SJ Trent 372-9292
Joan Kassner 372-9487

W03587

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-250	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E		SAF No.: B01-058	Air Quality ☐
Ice Chest No.: VIKING SN 08 98 050012	Field Logbook No.: EL-1518-1	COA: B20TW1A44C ~~B20TW2674C~~ LT	Method of Shipment: Fed EX	Data Turnaround: 45 Days
Shipped To: Severn Trent Incorporated - ST. LOUIS	Offsite Property No.: RSR 107053 8/27/01		Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS: FIELD RADIOLOGICAL INSTRUMENTS INDICATE 100 CPM & 20 mR/h } ON CONTACT <0.5 mR/h

Samples stored in Ref. # TW1&2 at the 3728 Shipping Facility on 8/27/01. Collector not available to relinquish samples on 8/30/01 for shipment. RT 8:30.01 SIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	120mL	60mL	60mL	250mL	60mL	250mL	250mL	60mL		
	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Activity Scan		

Sample No.	Matrix *	Sample Date	Sample Time									Tie to
(3) B12ML5	SOIL	8/27/01	0115	X	X		X					B12MK2

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DS WATSON/RTW	08/27/01 0645	REF. TW1&2	08/27/01 0645
Relinquished By/Removed From: Ref TW1&2	Date/Time 0330 8.30.01	Received By/Stored In: R Thorell	Date/Time 0330 8.30.01
Relinquished By/Removed From: R Thorell	Date/Time 0330 8.30.01	Received By/Stored In: FED EX	Date/Time
Relinquished By/Removed From: FED EX	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
~~(3) Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D~~
~~(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium, Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 - Total-Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

Matrix *: S=Soil, SD=Sediment, SO=Solid, SL=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, WI=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time 08-31-01 / 0920
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

REV.1

ERC Radiological Counting Facility Analysis Report

(3)

38 of 167

RCF Number RCF9610 **Sample Date & Time** 8/27/01 0115

Project ID: 200E B-7A **SAF Number:** B01-058 **Date Analyzed** 8/28/01 8:33:2

Sample ID: B12MK2

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40		9.6E+02	+/-	4.3E+02	3.7E+02
Co-60	<	6.0E+01			6.0E+01
Cs-137		2.7E+05	+/-	4.6E+04	2.2E+02
Eu-152	<	9.0E+02			9.0E+02
Eu-154	<	1.7E+02			1.7E+02
Eu-155	<	1.1E+03			1.1E+03
Tl-208	<	6.3E+02			6.3E+02
Pb-212	<	3.7E+03			3.7E+03
Bi-214	<	5.6E+02			5.6E+02
Pb-214	<	6.5E+02			6.5E+02
Ra-226	<	6.9E+03			6.9E+03
Ac-228	<	3.8E+02			3.8E+02
Pa-234	<	8.7E+02			8.7E+02
Th-234	<	7.4E+03			7.4E+03
U-235	<	1.9E+03			1.9E+03
Am-241		1.2E+03	+/-	4.6E+02	7.3E+02
Total GEA (pCi/g)		2.7E+05	+/-	4.7E+04	

ADD ON:
Sr^{90} - 3X10 5
Pa^{239} = 6X10 3
TIETO
B12MK2

3/22/2018

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) values for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDA GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
† No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst G. L. Hastings 8/28/01

Report To	Fax
CS Cusick	372-9292
SJ Trent	372-9292
Joan Kessner	372-9487

Report Printed: Tuesday, August 28, 2001

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B01-058-251	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E		SAF No.: B01-058	Air Quality ☐
Ice Chest No.: VIKING S/N 08/980500	Field Logbook No.: EL-1518-1	COA B20TW2 A4H4 ~~B20TW2674C~~ JT	Method of Shipment: Fed EX	Data Turnaround: 45 Days
Shipped To: Severn Trent Incorporated - ST. LOUIS	Offsite Property No.: RSR 107053 8/27/01		Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS
FIELD RADIOLOGICAL INSTRUMENTS INDICATE gross alpha, TRACE, LOW ALPHA } ON CONTACT

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8/27/01. Collector not available to relinquish samples on 8/30/01 for shipment. RT 8.30.01

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	120mL	60mL	60mL	250mL	60mL	250mL	250mL	60mL		
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Activity Scan		
Sample No.	Matrix *	Sample Date	Sample Time							TIE	TO
B12ML6	SOIL	8/27/01	0430	X	X		X			B12MK3	

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: DG WATSON/	08/27/01 0745	REF. 1B	08/27/01 0745
Relinquished By/Removed From: Ref 1B 3728	8.30.01 0430	Received By/Stored In: R.Thorell R.T	8.30.01 0430
Relinquished By/Removed From: R.T R.Thorell	8.30.01 0500	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
~~(3) Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D~~
~~(4) Gamma Spectroscopy {Cerium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium~~

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

LABORATORY SECTION	Received By	Title	Date/Time
			08-31-01 / 0920

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

REV.1

ERC Radiological Counting Facility Analysis Report

RCF Number RCF9611

Sample Date & Time 8/27/01 0430

Project ID: 200E B-7A **SAF Number:** B01-058 **Date Analyzed** 8/27/01 12:42:

Sample ID: B12MK3

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40		1.1E+01	+/-	1.0E+01	9.0E+00
Co-60	<	9.5E-01			9.5E-01
Cs 137		9.0E+03	+/-	1.5E+03	5.1E+00
Eu-152	<	2.5E+01			2.5E+01
Eu-154	<	3.5E+00			3.5E+00
Eu-155	<	1.3E+01			1.3E+01
Tl-208	<	1.5E+01			1.5E+01
Pb-212	<	9.5E+01			9.5E+01
Pb-214	<	1.8E+01			1.8E+01
Bi-214	<	7.5E+00			7.5E+00
Pa-234	<	1.1E+01			1.1E+01
Th-234	<	6.4E+01			6.4E+01
U-235	<	3.2E+01			3.2E+01
Am-241	<	8.6E+00			8.6E+00

ADDON

Sr 90 1.2 X 10^4

TIETO

B12MC6

3/22/2018

40 of 167

Total GEA (pCi/g)	9.0E+03	+/-	1.5E+03

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	3.9E+01	+/-	2.2E+00
Gross Beta	2.5E+03	+/-	4.6E+01

Alpha MDC (pCi/g)	Beta MDC (pCi/g)
1.4E+01	1.3E+03

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDC = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide. .
Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst G.L. Hastings 8/28/01

Report Printed: Tuesday, August 28, 2001

Report To	Fax
CS Cearlock	372-9292
SJ Treat	372-9292
Joan Kessner	372-9487

STL

SEVERN TRENT SERVICES

3/22/2018 REV.1

Lot No.:_____

Condition Upon Receipt Form
St. Louis Laboratory

Client: Bechtel Hanford

Date: 08-31-01 Time: 0920

Quote No: 43018

Initiated by: [signature]

Shipper/No: FedEx 4235 7954 6965

COC/RFA Numbers: B01-058-252

Condition/Variance (Circle "Y" for yes and "N" for no. If "N" is circled, see notes for explanation):

1.	Y N	Sample received in undamaged condition.	5.	Y N	Sample volume sufficient for analysis.
2.	Y N	Sample received within 4°C ± 2°C*	6.	Y N	Sample received with Chain of Custody.
		Record temperature: 5	7.	Y N	Chain of Custody matches sample IDs on containers.
3.	Y N N/A	Sample received with proper pH**.	8.	Y N	Custody seal received intact and tamper evident on cooler.
4.	Y N	Sample received in proper containers.	9.	Y N	Custody seal received intact and tamper evident on bottles.

*** Temperature Variance Does Not Affect the Following Analyses:** _____

**** For DOE-AL (Pantex, LANL, Sandia, Timet) sites, remember to pH all containers received, except for VOA, TOX, and soils.**

Notes:

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor (or designate) Review: [signature] Date: 08-31-01

Project Management Review: [signature] Date: 9.4.01

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE
THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED
IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIALS AND THE DATE NEXT TO THAT ITEM

STL

SEVERN TRENT SERVICES

3/22/2018

REV.1

Lot No.: FIH310250

Condition Upon Receipt Form
St. Louis Laboratory

Client: Hanford

Date: 083101 Time: 0920

Quote No: 43018

Initiated by: [illegible]

Shipper/No: 4476544152 Fed Ex

COC/RFA Numbers: B01-058-249 -250 -251

Condition/Variance (Circle "Y" for yes and "N" for no. If "N" is circled, see notes for explanation):

1.	Y N	Sample received in undamaged condition.	5.	Y N	Sample volume sufficient for analysis.
2.	Y N	Sample received within 4°C ± 2°C*	6.	Y N	Sample received with Chain of Custody.
		Record temperature: 18°	7.	Y N	Chain of Custody matches sample IDs on containers.
3.	Y N N/A	Sample received with proper pH**.	8.	Y N	Custody seal received intact and tamper evident on cooler.
4.	Y N	Sample received in proper containers.	9.	Y N	Custody seal received intact and tamper evident on bottles.

*** Temperature Variance Does Not Affect the Following Analyses:** _____

**** For DOE-AL (Pantex, LANL, Sandia, Tinnet) sites, remember to pH all containers received, except for VOA, TOX, and soils.**

Notes:

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor (or designate) Review: Jill Clarke Date: 083101

Project Management Review: MWard Date: 9.4.01

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE
THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED
IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIALS AND THE DATE NEXT TO THAT ITEM

BECHTEL HANFORD, INC.

Client Sample ID: B12DC1-A

TOTAL Metals

Lot-Sample #...: F1H290206-001 Matrix.....: SOLID
Date Sampled...: 08/24/01 Date Received..: 08/29/01
% Moisture.....: 10

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1247187						
Silver	1.9	1.1	mg/kg	SW846 6010B	09/04-09/14/01	EJQX81CJ
		Dilution Factor: 1		MDL.....: 0.11		
Aluminum	9630	22.2	mg/kg	SW846 6010B	09/04-09/07/01	EJQX81CM
		Dilution Factor: 1		MDL.....: 2.7		
Calcium	11900	556	mg/kg	SW846 6010B	09/04-09/07/01	EJQX81CQ
		Dilution Factor: 1		MDL.....: 10.7		
Cadmium	ND	0.56	mg/kg	SW846 6010B	09/04-09/07/01	EJQX81CU
		Dilution Factor: 1		MDL.....: 0.022		
Chromium	73.2	1.1	mg/kg	SW846 6010B	09/04-09/07/01	EJQX81CX
		Dilution Factor: 1		MDL.....: 0.10		
Copper	20.5	2.8	mg/kg	SW846 6010B	09/04-09/07/01	EJQX81C2
		Dilution Factor: 1		MDL.....: 0.42		
Iron	34900	11.1	mg/kg	SW846 6010B	09/04-09/14/01	EJQX81C5
		Dilution Factor: 1		MDL.....: 2.5		
Magnesium	6460	556	mg/kg	SW846 6010B	09/04-09/14/01	EJQX81C8
		Dilution Factor: 1		MDL.....: 10.4		
Manganese	1650	1.7	mg/kg	SW846 6010B	09/04-09/07/01	EJQX81DC
		Dilution Factor: 1		MDL.....: 0.067		
Molybdenum	ND	4.4	mg/kg	SW846 6010B	09/04-09/07/01	EJQX81DF
		Dilution Factor: 1		MDL.....: 0.97		
Nickel	66.6	4.4	mg/kg	SW846 6010B	09/04-09/07/01	EJQX81DJ
		Dilution Factor: 1		MDL.....: 0.96		
Lead	308	0.33	mg/kg	SW846 6010B	09/04-09/07/01	EJQX81DM
		Dilution Factor: 1		MDL.....: 0.17		
Vanadium	88.4	5.6	mg/kg	SW846 6010B	09/04-09/07/01	EJQX81DQ
		Dilution Factor: 1		MDL.....: 0.43		
Zinc	127	2.2	mg/kg	SW846 6010B	09/04-09/07/01	EJQX81DU
		Dilution Factor: 1		MDL.....: 0.76		

(Continued on next page)

BECHTEL HANFORD, INC.

Client Sample ID: B12DC1-A

TOTAL Metals

Lot-Sample #...: F1H290206-001 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Potassium	1900	556	mg/kg	SW846 6010B	09/04-09/14/01	EJQX81D2
		Dilution Factor: 1		MDL.....: 314		
Sodium	1310	556	mg/kg	SW846 6010B	09/04-09/14/01	EJQX81D5
		Dilution Factor: 1		MDL.....: 10.8		
Prep Batch #...: 1248153						
Mercury	0.42	0.11	mg/kg	SW846 Hg Mod 7470	09/05/01	EJQX81AX
		Dilution Factor: 1		MDL.....: 0.027		
Prep Batch #...: 1268526						
Bismuth	3300	22.2	mg/kg	SW846 6010B	09/25-10/01/01	EJQX82DX
		Dilution Factor: 1		MDL.....: 2.3		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1H290206 **Matrix.....:** SOLID
Date Sampled...: 08/24/01 **Date Received..:** 08/29/01

MS Lot-Sample #: F1H290206-001 **Prep Batch #...:** 1247187

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Aluminum									
	9630	222	11100 N	mg/kg	651		SW846 6010B	09/04-09/07/01	EJQX81CN
	9630	222	11400 N	mg/kg	784	2.6	SW846 6010B	09/04-09/07/01	EJQX81CP
			Dilution Factor: 1						
Cadmium									
	ND	5.56	3.55 N	mg/kg	64		SW846 6010B	09/04-09/07/01	EJQX81CV
	ND	5.56	3.52 N	mg/kg	63	0.88	SW846 6010B	09/04-09/07/01	EJQX81CW
			Dilution Factor: 1						
Calcium									
	11900	5560	17000	mg/kg	93		SW846 6010B	09/04-09/07/01	EJQX81CR
	11900	5560	15000 N	mg/kg	57	12	SW846 6010B	09/04-09/07/01	EJQX81CT
			Dilution Factor: 1						
Chromium									
	73.2	22.2	158 N	mg/kg	383		SW846 6010B	09/04-09/07/01	EJQX81C0
	73.2	22.2	93.6 *	mg/kg	92	51	SW846 6010B	09/04-09/07/01	EJQX81C1
			Dilution Factor: 1						
Copper									
	20.5	27.8	45.4	mg/kg	89		SW846 6010B	09/04-09/07/01	EJQX81C3
	20.5	27.8	49.5	mg/kg	104	8.8	SW846 6010B	09/04-09/07/01	EJQX81C4
			Dilution Factor: 1						
Iron									
	34900	111	34500 N	mg/kg	0.0		SW846 6010B	09/04-09/14/01	EJQX81C6
	34900	111	34000 N	mg/kg	0.0	0.0	SW846 6010B	09/04-09/14/01	EJQX81C7
			Dilution Factor: 1						
Lead									
	308	55.6	307 N	mg/kg	0.0		SW846 6010B	09/04-09/07/01	EJQX81DN
	308	55.6	273 N	mg/kg	0.0	0.0	SW846 6010B	09/04-09/07/01	EJQX81DP
			Dilution Factor: 1						
Magnesium									
	6460	5560	16300 N	mg/kg	178		SW846 6010B	09/04-09/14/01	EJQX81C9
	6460	5560	15500 N	mg/kg	162	5.5	SW846 6010B	09/04-09/14/01	EJQX81DA
			Dilution Factor: 1						

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1H290206 **Matrix.....:** SOLID
Date Sampled...: 08/24/01 **Date Received..:** 08/29/01

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Manganese									
	1650	55.6	1750 N	mg/kg	187		SW846 6010B	09/04-09/07/01	EJQX81DD
	1650	55.6	1420 N,*	mg/kg	0.0	200	SW846 6010B	09/04-09/07/01	EJQX81DE
			Dilution Factor: 1						
Molybdenum									
	ND	111	105	mg/kg	95		SW846 6010B	09/04-09/07/01	EJQX81DG
	ND	111	103	mg/kg	92	2.6	SW846 6010B	09/04-09/07/01	EJQX81DH
			Dilution Factor: 1						
Nickel									
	66.6	55.6	140 N	mg/kg	132		SW846 6010B	09/04-09/07/01	EJQX81DK
	66.6	55.6	113 *	mg/kg	84	21	SW846 6010B	09/04-09/07/01	EJQX81DL
			Dilution Factor: 1						
Silver									
	1.9	5.56	8.19	mg/kg	114		SW846 6010B	09/04-09/14/01	EJQX81CK
	1.9	5.56	7.56	mg/kg	103	8.0	SW846 6010B	09/04-09/14/01	EJQX81CL
			Dilution Factor: 1						
Vanadium									
	88.4	55.6	147	mg/kg	105		SW846 6010B	09/04-09/07/01	EJQX81DR
	88.4	55.6	145	mg/kg	102	0.93	SW846 6010B	09/04-09/07/01	EJQX81DT
			Dilution Factor: 1						
Zinc									
	127	55.6	175	mg/kg	87		SW846 6010B	09/04-09/07/01	EJQX81DV
	127	55.6	153 N	mg/kg	48	13	SW846 6010B	09/04-09/07/01	EJQX81DW
			Dilution Factor: 1						
Potassium									
	1900	5560	7300	mg/kg	97		SW846 6010B	09/04-09/14/01	EJQX81D3
	1900	5560	6890	mg/kg	90	5.8	SW846 6010B	09/04-09/14/01	EJQX81D4
			Dilution Factor: 1						
Sodium									
	1310	5560	7000	mg/kg	102		SW846 6010B	09/04-09/14/01	EJQX81D6
	1310	5560	7190	mg/kg	106	2.8	SW846 6010B	09/04-09/14/01	EJQX81D7
			Dilution Factor: 1						

MS Lot-Sample #: F1H290206-001 **Prep Batch #...:** 1248153

(Continued on next page)

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1H290206 **Matrix.....:** SOLID
Date Sampled...: 08/24/01 **Date Received..:** 08/29/01

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Mercury									
	0.42	0.556	1.08	mg/kg	119		SW846 Hg Mod	09/05/01	EJQX81A0
	0.42	0.556	0.962	mg/kg	97	12	SW846 Hg Mod	09/05/01	EJQX81A1

Dilution Factor: 1

MS Lot-Sample #: F1H290206-001 **Prep Batch #...:** 1268526

Bismuth									
	3300	222	3680 N	mg/kg	168		SW846 6010B	09/25-10/01/01	EJQX81EQ
	3300	222	3180 N,*	mg/kg	0.0	200	SW846 6010B	09/25-10/01/01	EJQX81ER

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

N Spiked analyte recovery is outside stated control limits.

* Relative percent difference (RPD) is outside stated control limits.

BECHTEL HANFORD, INC.

Client Sample ID: B12C89-B

TOTAL Metals

Lot-Sample #...: F1H290206-002 Matrix.....: SOLID
Date Sampled...: 08/23/01 Date Received..: 08/29/01
% Moisture.....: 13

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1247187						
Silver	3.1	1.1	mg/kg	SW846 6010B	09/04-09/14/01	EJQ4N1AH
		Dilution Factor: 1		MDL.....: 1.1		
Cadmium	ND	0.57	mg/kg	SW846 6010B	09/04-09/07/01	EJQ4N1AC
		Dilution Factor: 1		MDL.....: 0.20		
Chromium	142	1.1	mg/kg	SW846 6010B	09/04-09/07/01	EJQ4N1AD
		Dilution Factor: 1		MDL.....: 0.34		
Copper	13.6	2.9	mg/kg	SW846 6010B	09/04-09/07/01	EJQ4N1AE
		Dilution Factor: 1		MDL.....: 0.44		
Nickel	22.7	4.6	mg/kg	SW846 6010B	09/04-09/07/01	EJQ4N1AG
		Dilution Factor: 1		MDL.....: 0.99		
Lead	349	11.5	mg/kg	SW846 6010B	09/04-09/07/01	EJQ4N1AF
		Dilution Factor: 1		MDL.....: 3.7		
Prep Batch #...: 1248153						
Mercury	0.12	0.11	mg/kg	SW846 Hg Mod 7470	09/05/01	EJQ4N1AQ
		Dilution Factor: 1		MDL.....: 0.028		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

BECHTEL HANFORD, INC.

Client Sample ID: B12ML7

TOTAL Metals

Lot-Sample #...: F1H310250-001 **Matrix.....:** SOLID
Date Sampled...: 08/28/01 **Date Received..:** 08/31/01
% Moisture.....: 13

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1248153						
Mercury	ND	0.11	mg/kg	SW846 Hg Mod 7470	09/05/01	EJXPC1AP
		Dilution Factor: 1		MDL.....: 0.028		
Prep Batch #...: 1254213						
Cadmium	ND	0.57	mg/kg	SW846 6010B	09/11-09/20/01	EJXPC1AQ
		Dilution Factor: 1		MDL.....: 0.20		
Chromium	9.3	1.1	mg/kg	SW846 6010B	09/11-09/20/01	EJXPC1AR
		Dilution Factor: 1		MDL.....: 0.34		
Copper	11.1	2.9	mg/kg	SW846 6010B	09/11-09/20/01	EJXPC1AT
		Dilution Factor: 1		MDL.....: 0.44		
Lead	ND	11.5	mg/kg	SW846 6010B	09/11-09/20/01	EJXPC1AU
		Dilution Factor: 1		MDL.....: 3.7		
Nickel	10.1	4.6	mg/kg	SW846 6010B	09/11-09/20/01	EJXPC1AV
		Dilution Factor: 1		MDL.....: 0.99		
Silver	ND	1.1	mg/kg	SW846 6010B	09/11-09/20/01	EJXPC1AW
		Dilution Factor: 1		MDL.....: 1.1		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

BECHTEL HANFORD, INC.

Client Sample ID: B12ML4-A

TOTAL Metals

Lot-Sample #...: F1H310250-002 Matrix.....: SOLID
Date Sampled...: 08/26/01 Date Received..: 08/31/01
% Moisture.....: 18

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1248153						
Mercury	0.13	0.12	mg/kg	SW846 Hg Mod 7470	09/05/01	EJXPV1A2
		Dilution Factor: 1		MDL.....: 0.029		
Prep Batch #...: 1254213						
Cadmium	ND	0.61	mg/kg	SW846 6010B	09/11-09/20/01	EJXPV1A3
		Dilution Factor: 1		MDL.....: 0.21		
Chromium	46.2	1.2	mg/kg	SW846 6010B	09/11-09/20/01	EJXPV1A4
		Dilution Factor: 1		MDL.....: 0.37		
Copper	23.4	3.1	mg/kg	SW846 6010B	09/11-09/20/01	EJXPV1A5
		Dilution Factor: 1		MDL.....: 0.46		
Lead	285	12.2	mg/kg	SW846 6010B	09/11-09/20/01	EJXPV1A6
		Dilution Factor: 1		MDL.....: 4.0		
Nickel	39.6	4.9	mg/kg	SW846 6010B	09/11-09/20/01	EJXPV1A7
		Dilution Factor: 1		MDL.....: 1.1		
Silver	ND	1.2	mg/kg	SW846 6010B	09/11-09/20/01	EJXPV1A8
		Dilution Factor: 1		MDL.....: 1.1		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

BECHTEL HANFORD, INC.

Client Sample ID: B12ML5-A

TOTAL Metals

Lot-Sample #...: F1H310250-003 Matrix.....: SOLID
Date Sampled...: 08/27/01 Date Received..: 08/31/01
% Moisture.....: 15

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1248153						
Mercury	0.051 B	0.12	mg/kg	SW846 Hg Mod 7470	09/05/01	EJXP71A2
		Dilution Factor: 1		MDL.....: 0.028		
Prep Batch #...: 1254213						
Cadmium	ND	0.59	mg/kg	SW846 6010B	09/11-09/20/01	EJXP71A3
		Dilution Factor: 1		MDL.....: 0.20		
Chromium	27.4	1.2	mg/kg	SW846 6010B	09/11-09/20/01	EJXP71A4
		Dilution Factor: 1		MDL.....: 0.35		
Copper	16.6	2.9	mg/kg	SW846 6010B	09/11-09/20/01	EJXP71A5
		Dilution Factor: 1		MDL.....: 0.45		
Lead	76.5	11.7	mg/kg	SW846 6010B	09/11-09/20/01	EJXP71A6
		Dilution Factor: 1		MDL.....: 3.8		
Nickel	13.9	4.7	mg/kg	SW846 6010B	09/11-09/20/01	EJXP71A7
		Dilution Factor: 1		MDL.....: 1.0		
Silver	ND	1.2	mg/kg	SW846 6010B	09/11-09/20/01	EJXP71A8
		Dilution Factor: 1		MDL.....: 1.1		

NOTE(S):

B Estimated result. Result is less than RL.

Results and reporting limits have been adjusted for dry weight.

BECHTEL HANFORD, INC.

Client Sample ID: B12ML6-A

TOTAL Metals

Lot-Sample #...: F1H310250-004 Matrix.....: SOLID
Date Sampled...: 08/27/01 Date Received..: 08/31/01
% Moisture.....: 11

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1248153						
Mercury	ND	0.11	mg/kg	SW846 Hg Mod 7470	09/05/01	EJXQC1A2
		Dilution Factor: 1		MDL.....: 0.027		
Prep Batch #...: 1254213						
Cadmium	ND	0.56	mg/kg	SW846 6010B	09/11-09/20/01	EJXQC1A3
		Dilution Factor: 1		MDL.....: 0.19		
Chromium	12.4	1.1	mg/kg	SW846 6010B	09/11-09/20/01	EJXQC1A4
		Dilution Factor: 1		MDL.....: 0.34		
Copper	15.0	2.8	mg/kg	SW846 6010B	09/11-09/20/01	EJXQC1A5
		Dilution Factor: 1		MDL.....: 0.43		
Lead	5.6 B	11.3	mg/kg	SW846 6010B	09/11-09/20/01	EJXQC1A6
		Dilution Factor: 1		MDL.....: 3.6		
Nickel	10	4.5	mg/kg	SW846 6010B	09/11-09/20/01	EJXQC1A7
		Dilution Factor: 1		MDL.....: 0.97		
Silver	ND	1.1	mg/kg	SW846 6010B	09/11-09/20/01	EJXQC1A8
		Dilution Factor: 1		MDL.....: 1.0		

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1H290206 Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1I040000-187 Prep Batch #...: 1247187						
Aluminum	3.2 B	20.0	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AC
		Dilution Factor: 1				
Cadmium	ND	0.50	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AE
		Dilution Factor: 1				
Cadmium	ND	0.50	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AV
		Dilution Factor: 1				
Calcium	127 B	500	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AD
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AF
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AW
		Dilution Factor: 1				
Copper	ND	2.5	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AG
		Dilution Factor: 1				
Copper	ND	2.5	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AX
		Dilution Factor: 1				
Iron	14.2	10.0	mg/kg	SW846 6010B	09/04-09/14/01	EJ09D1AH
		Dilution Factor: 1				
Lead	0.21 B	0.30	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AN
		Dilution Factor: 1				
Lead	ND	10.0	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1A0
		Dilution Factor: 1				
Magnesium	ND	500	mg/kg	SW846 6010B	09/04-09/14/01	EJ09D1AJ
		Dilution Factor: 1				
Manganese	0.15 B	1.5	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AK
		Dilution Factor: 1				
Molybdenum	ND	4.0	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AL
		Dilution Factor: 1				
Nickel	ND	4.0	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AM
		Dilution Factor: 1				

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METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1H290206 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Nickel	ND	4.0	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1A1
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	09/04-09/14/01	EJ09D1AA
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	09/04-09/14/01	EJ09D1A2
		Dilution Factor: 1				
Vanadium	ND	5.0	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AP
		Dilution Factor: 1				
Zinc	5.2	2.0	mg/kg	SW846 6010B	09/04-09/07/01	EJ09D1AQ
		Dilution Factor: 1				
Potassium	ND	500	mg/kg	SW846 6010B	09/04-09/14/01	EJ09D1AT
		Dilution Factor: 1				
Sodium	ND	500	mg/kg	SW846 6010B	09/04-09/14/01	EJ09D1AU
		Dilution Factor: 1				

MB Lot-Sample #: F1I050000-153 **Prep Batch #...:** 1248153

Mercury	ND	0.10	mg/kg	SW846 Hg Mod 7470	09/05/01	EJ2GF1AA
		Dilution Factor: 1				

MB Lot-Sample #: F1I250000-526 **Prep Batch #...:** 1268526

Bismuth	ND	20.0	mg/kg	SW846 6010B	09/25-10/01/01	EK3NA1AA
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1H310250 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1I050000-153 **Prep Batch #...:** 1248153						
Mercury	ND	0.10	mg/kg	SW846 Hg Mod 7470	09/05/01	EJ2GF1AA
		Dilution Factor: 1				
MB Lot-Sample #: F1I110000-213 **Prep Batch #...:** 1254213						
Cadmium	ND	0.50	mg/kg	SW846 6010B	09/11-09/20/01	EKAR31AA
		Dilution Factor: 1				
Chromium	ND	1.0	mg/kg	SW846 6010B	09/11-09/20/01	EKAR31AC
		Dilution Factor: 1				
Copper	ND	2.5	mg/kg	SW846 6010B	09/11-09/20/01	EKAR31AD
		Dilution Factor: 1				
Lead	ND	10.0	mg/kg	SW846 6010B	09/11-09/20/01	EKAR31AE
		Dilution Factor: 1				
Nickel	ND	4.0	mg/kg	SW846 6010B	09/11-09/20/01	EKAR31AF
		Dilution Factor: 1				
Silver	ND	1.0	mg/kg	SW846 6010B	09/11-09/20/01	EKAR31AG
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1H290206 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F1I040000-187 **Prep Batch #...:** 1247187							
Silver	84.3	96.3	mg/kg	114	SW846 6010B	09/04-09/14/01	EJ09D1A3
			Dilution Factor: 1				
Aluminum	9200	9680	mg/kg	105	SW846 6010B	09/04-09/07/01	EJ09D1A4
			Dilution Factor: 1				
Calcium	11700	12300	mg/kg	105	SW846 6010B	09/04-09/07/01	EJ09D1A5
			Dilution Factor: 1				
Cadmium	157	166	mg/kg	105	SW846 6010B	09/04-09/07/01	EJ09D1A6
			Dilution Factor: 1				
Chromium	51.4	55.3	mg/kg	108	SW846 6010B	09/04-09/07/01	EJ09D1A7
			Dilution Factor: 1				
Copper	69.5	75.5	mg/kg	109	SW846 6010B	09/04-09/07/01	EJ09D1A8
			Dilution Factor: 1				
Iron	13700	15700	mg/kg	114	SW846 6010B	09/04-09/14/01	EJ09D1A9
			Dilution Factor: 1				
Magnesium	3070	3420	mg/kg	111	SW846 6010B	09/04-09/14/01	EJ09D1CA
			Dilution Factor: 1				
Manganese	674	716	mg/kg	106	SW846 6010B	09/04-09/07/01	EJ09D1CC
			Dilution Factor: 1				
Molybdenum	62.7	72.8	mg/kg	116	SW846 6010B	09/04-09/07/01	EJ09D1CD
			Dilution Factor: 1				
Nickel	112	116	mg/kg	104	SW846 6010B	09/04-09/07/01	EJ09D1CE
			Dilution Factor: 1				
Lead	186	187	mg/kg	101	SW846 6010B	09/04-09/07/01	EJ09D1CF
			Dilution Factor: 1				
Vanadium	136	153	mg/kg	112	SW846 6010B	09/04-09/07/01	EJ09D1CG
			Dilution Factor: 1				
Zinc	289	309	mg/kg	107	SW846 6010B	09/04-09/07/01	EJ09D1CH
			Dilution Factor: 1				

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LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1H290206 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Cadmium	157	166	mg/kg	105	SW846 6010B	09/04-09/07/01	EJ09D1CM
			Dilution Factor: 1				
Chromium	51.4	55.3	mg/kg	108	SW846 6010B	09/04-09/07/01	EJ09D1CN
			Dilution Factor: 1				
Copper	69.5	75.5	mg/kg	109	SW846 6010B	09/04-09/07/01	EJ09D1CP
			Dilution Factor: 1				
Lead	186	187	mg/kg	101	SW846 6010B	09/04-09/07/01	EJ09D1CQ
			Dilution Factor: 1				
Nickel	112	116	mg/kg	104	SW846 6010B	09/04-09/07/01	EJ09D1CR
			Dilution Factor: 1				
Silver	84.3	96.3	mg/kg	114	SW846 6010B	09/04-09/14/01	EJ09D1CT
			Dilution Factor: 1				
Potassium	3640	3750	mg/kg	103	SW846 6010B	09/04-09/14/01	EJ09D1CK
			Dilution Factor: 1				
Sodium	863	866	mg/kg	100	SW846 6010B	09/04-09/14/01	EJ09D1CL
			Dilution Factor: 1				
LCS Lot-Sample#: F1I250000-526 **Prep Batch #...:** 1268526							
Bismuth	200	192	mg/kg	96	SW846 6010B	09/25-10/01/01	EK3NA1AC
			Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F1H310250 Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F1I110000-213 Prep Batch #...: 1254213							
Cadmium	157	162	mg/kg	103	SW846 6010B	09/11-09/20/01	EKAR31AH
			Dilution Factor: 1				
Chromium	51.4	51.5	mg/kg	100	SW846 6010B	09/11-09/20/01	EKAR31AJ
			Dilution Factor: 1				
Copper	69.5	76.9	mg/kg	111	SW846 6010B	09/11-09/20/01	EKAR31AK
			Dilution Factor: 1				
Lead	186	187	mg/kg	101	SW846 6010B	09/11-09/20/01	EKAR31AL
			Dilution Factor: 1				
Nickel	112	114	mg/kg	102	SW846 6010B	09/11-09/20/01	EKAR31AM
			Dilution Factor: 1				
Silver	84.3	95.3	mg/kg	113	SW846 6010B	09/11-09/20/01	EKAR31AN
			Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: F1H310250 Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Mercury	6.21	5.32	mg/kg	86		SW846 Hg Mod 7470	09/05/01	1248153
	6.21	5.32	mg/kg	86	0.0	SW846 Hg Mod 7470	09/05/01	1248153

Dilution Factor: 5

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

WET CHEMISTRY

BECHTEL HANFORD, INC.

Client Sample ID: B12DC1-A

General Chemistry

Lot-Sample #...: F1H290206-001 Work Order #...: EJQX8 Matrix.....: SOLID
Date Sampled...: 08/24/01 Date Received..: 08/29/01
% Moisture.....: 10

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Phosphate as P, Ortho	28.2	5.6	mg/kg	MCAWW 300.0A	09/05/01	1248337
		Dilution Factor: 1		MDL.....: 0.39		
pH (solid)	8.6		No Units	SW846 9045A	08/31/01	1243396
		Dilution Factor: 1		MDL.....:		
Chloride	9.9	2.2	mg/kg	MCAWW 300.0A	09/05/01	1248332
		Dilution Factor: 1		MDL.....: 0.11		
Fluoride	38.8	1.1	mg/kg	MCAWW 300.0A	09/05/01	1248333
		Dilution Factor: 1		MDL.....: 0.067		
Nitrate	21.2	0.22	mg/kg	MCAWW 300.0A	09/06/01	1248334
		Dilution Factor: 1		MDL.....: 0.022		
Nitrate/Nitrite as N	ND	0.56	mg/kg	MCAWW 353.1	09/18/01	1262180
		Dilution Factor: 1		MDL.....: 0.040		
Nitrite	ND	0.22	mg/kg	MCAWW 300.0A	09/05/01	1248335
		Dilution Factor: 1		MDL.....: 0.022		
Nitrogen, as Ammonia	0.61 B	2.8	mg/kg	MCAWW 350.1	09/08/01	1251215
		Dilution Factor: 1		MDL.....: 0.14		
Percent Moisture	10.0	0.10	%	MCAWW 160.3 MOD	08/31/01	1248248
		Dilution Factor: 1		MDL.....:		
Sulfate	48.2	5.6	mg/kg	MCAWW 300.0A	09/05/01	1248336
		Dilution Factor: 1		MDL.....: 0.32		
Total Cyanide	0.31 B	0.56	mg/kg	SW846 9010A	09/05/01	1249192
		Dilution Factor: 1		MDL.....: 0.14		
Total Organic Carbon	847	27.8	mg/kg	SW846 9060	09/19/01	1262471
		Dilution Factor: 1		MDL.....: 17.2		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: F1H290206 **Matrix.....:** SOLID
Date Sampled...: 08/24/01 **Date Received..:** 08/29/01

Percnt Moisture: 0.0

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
ortho-Phosphate			Work Order #...:		EJQX81AV	MS Lot-Sample #: F1H290206-001		
	28.2	206	232	mg/kg	99	MCAWW 300.0A	09/06/01	1248337
			Dilution Factor: 46.3					
Chloride			Work Order #...:		EJQX81EL	MS Lot-Sample #: F1H290206-001		
	9.9	103	107	mg/kg	94	MCAWW 300.0A	09/05/01	1248332
			Dilution Factor: 1					
Fluoride			Work Order #...:		EJQX81AG	MS Lot-Sample #: F1H290206-001		
	38.8	103	137	mg/kg	95	MCAWW 300.0A	09/06/01	1248333
			Dilution Factor: 1					
Nitrate			Work Order #...:		EJQX81AK	MS Lot-Sample #: F1H290206-001		
	21.2	20.6	41.5	mg/kg	99	MCAWW 300.0A	09/06/01	1248334
			Dilution Factor: 1					
Nitrate/Nitrite as N			Work Order #...:		EJQX81A6	MS Lot-Sample #: F1H290206-001		
	ND	27.8	33.8	mg/kg	122	MCAWW 353.1	09/18/01	1262180
			Dilution Factor: 1					
Nitrite			Work Order #...:		EJQX81AN	MS Lot-Sample #: F1H290206-001		
	ND	5.15	5.17	mg/kg	100	MCAWW 300.0A	09/06/01	1248335
			Dilution Factor: 1					
Nitrite			Work Order #...:		EJQ4N1AX	MS Lot-Sample #: F1H290206-002		
	ND	47.8	44.1	mg/kg	92	MCAWW 300.0A	09/10/01	1248335
			Dilution Factor: 1					
Nitrogen, as Ammonia			Work Order #...:		EJQX81A3	MS Lot-Sample #: F1H290206-001		
	0.61	34.3	37.1	mg/kg	106	MCAWW 350.1	09/08/01	1251215
			Dilution Factor: 1					
Sulfate			Work Order #...:		EJQX81AR	MS Lot-Sample #: F1H290206-001		
	48.2	206	241	mg/kg	93	MCAWW 300.0A	09/06/01	1248336
			Dilution Factor: 46.3					
Total Cyanide			Work Order #...:		EJQX81A9	MS Lot-Sample #: F1H290206-001		
	0.31	5.56		mg/kg	0	SW846 9010A	09/05/01	1249192
			Dilution Factor: 1					

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MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: F1H290206 **Matrix.....:** SOLID
Date Sampled...: 08/24/01 **Date Received..:** 08/29/01

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Organic Carbon			Work Order #...:		EJQX81CG		MS Lot-Sample #:	F1H290206-001
	847	667	607 N	mg/kg	0	SW846 9060	09/19/01	1262471
			Dilution Factor: 1					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

N Spiked analyte recovery is outside stated control limits.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1H290206 **Work Order #...:** EJQX8-SMP EJQX8-DUP **Matrix.....:** SOLID

Date Sampled...: 08/24/01 **Date Received..:** 08/29/01

% Moisture.....: 10

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chloride						SD Lot-Sample #:	F1H290206-001	
	9.9	9.6	mg/kg	3.4	(0-35)	MCAWW 300.0A	09/05/01	1248332
			Dilution Factor: 1					
Fluoride						SD Lot-Sample #:	F1H290206-001	
	38.8	37.7	mg/kg	3.1	(0-35)	MCAWW 300.0A	09/05/01	1248333
			Dilution Factor: 1					
Nitrate						SD Lot-Sample #:	F1H290206-001	
	21.2	23.7	mg/kg	11	(0-35)	MCAWW 300.0A	09/06/01	1248334
			Dilution Factor: 1					
Nitrite						SD Lot-Sample #:	F1H290206-001	
	ND	ND	mg/kg	0	(0-35)	MCAWW 300.0A	09/05/01	1248335
			Dilution Factor: 1					
Sulfate						SD Lot-Sample #:	F1H290206-001	
	48.2	48.8	mg/kg	1.2	(0-20)	MCAWW 300.0A	09/05/01	1248336
			Dilution Factor: 1					
Phosphate as P, Ortho						SD Lot-Sample #:	F1H290206-001	
	28.2	31.5	mg/kg	11	(0-35)	MCAWW 300.0A	09/05/01	1248337
			Dilution Factor: 1					
Nitrogen, as Ammonia						SD Lot-Sample #:	F1H290206-001	
	0.61 B	0.42	mg/kg	38	(0-35)	MCAWW 350.1	09/08/01	1251215
			Dilution Factor: 1					
Nitrate/Nitrite as N						SD Lot-Sample #:	F1H290206-001	
	ND	ND	mg/kg	0	(0-35)	MCAWW 353.1	09/18/01	1262180
			Dilution Factor: 1					
Total Cyanide						SD Lot-Sample #:	F1H290206-001	
	0.31 B	ND	mg/kg	200	(0-35)	SW846 9010A	09/05/01	1249192
			Dilution Factor: 1					
pH (solid)						SD Lot-Sample #:	F1H290206-001	
	8.6	8.5	No Units	1.5	(0-20)	SW846 9045A	08/31/01	1243396
			Dilution Factor: 1					
Total Organic Carbon						SD Lot-Sample #:	F1H290206-001	
	847	825	mg/kg	2.7	(0-30)	SW846 9060	09/19/01	1262471
			Dilution Factor: 1					

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SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Lot-Sample #...: F1H290206-000 **Work Order #...:** EJQX8-SMP EJQX8-DUP **Matrix.....:** SOLID

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B12C89-B

General Chemistry

Lot-Sample #...: F1H290206-002 Work Order #...: EJQ4N Matrix.....: SOLID
Date Sampled...: 08/23/01 Date Received..: 08/29/01
% Moisture.....: 13

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Phosphate as P, Ortho	22.4	5.7	mg/kg	MCAWW 300.0A	09/06/01	1248337
		Dilution Factor: 1		MDL.....: 0.40		
pH (solid)	8.5		No Units	SW846 9045A	08/31/01	1243396
		Dilution Factor: 1		MDL.....:		
Chloride	7.4	2.3	mg/kg	MCAWW 300.0A	09/06/01	1248332
		Dilution Factor: 1		MDL.....: 0.11		
Fluoride	23.6	1.1	mg/kg	MCAWW 300.0A	09/06/01	1248333
		Dilution Factor: 1		MDL.....: 0.069		
Nitrate	22.9	0.23	mg/kg	MCAWW 300.0A	09/06/01	1248334
		Dilution Factor: 1		MDL.....: 0.023		
Nitrate/Nitrite as N	30.1	0.57	mg/kg	MCAWW 353.1	09/18/01	1262180
		Dilution Factor: 1		MDL.....: 0.041		
Nitrite	ND	2.3	mg/kg	MCAWW 300.0A	09/10/01	1248335
		Dilution Factor: 10		MDL.....: 0.23		
Nitrogen, as Ammonia	ND	2.9	mg/kg	MCAWW 350.1	09/08/01	1251215
		Dilution Factor: 1		MDL.....: 0.15		
Percent Moisture	13.0	0.10	%	MCAWW 160.3 MOD	08/31/01	1248248
		Dilution Factor: 1		MDL.....:		
Sulfate	40.0	5.7	mg/kg	MCAWW 300.0A	09/06/01	1248336
		Dilution Factor: 1		MDL.....: 0.33		
Total Cyanide	0.80	0.57	mg/kg	SW846 9010A	09/05/01	1249192
		Dilution Factor: 1		MDL.....: 0.14		
Total Organic Carbon	1590	28.7	mg/kg	SW846 9060	09/19/01	1262471
		Dilution Factor: 1		MDL.....: 17.8		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

BECHTEL HANFORD, INC.

Client Sample ID: B12ML7

General Chemistry

Lot-Sample #...: F1H310250-001 Work Order #...: EJXPC Matrix.....: SOLID
Date Sampled...: 08/28/01 Date Received..: 08/31/01
% Moisture.....: 13

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Phosphate as P, Ortho	12.7	5.7	mg/kg	MCAWW 300.0A	09/06/01	1248337
		Dilution Factor: 1		MDL.....: 0.40		
pH (solid)	10.1		No Units	SW846 9045A	09/04/01	1247385
		Dilution Factor: 1		MDL.....:		
Chloride	5.4	2.3	mg/kg	MCAWW 300.0A	09/06/01	1248332
		Dilution Factor: 1		MDL.....: 0.11		
Fluoride	28.8	1.1	mg/kg	MCAWW 300.0A	09/06/01	1248333
		Dilution Factor: 1		MDL.....: 0.069		
Nitrate	5.4	0.23	mg/kg	MCAWW 300.0A	09/06/01	1248334
		Dilution Factor: 1		MDL.....: 0.023		
Nitrate/Nitrite as N	10.2	0.57	mg/kg	MCAWW 353.1	09/18/01	1262180
		Dilution Factor: 1		MDL.....: 0.041		
Nitrite	ND	2.3	mg/kg	MCAWW 300.0A	09/10/01	1248335
		Dilution Factor: 10		MDL.....: 0.23		
Nitrogen, as Ammonia	5.3	2.9	mg/kg	MCAWW 350.1	09/08/01	1251215
		Dilution Factor: 1		MDL.....: 0.15		
Percent Moisture	13.0	0.10	%	MCAWW 160.3 MOD	09/07/01	1255422
		Dilution Factor: 1		MDL.....:		
Sulfate	20.4	5.7	mg/kg	MCAWW 300.0A	09/06/01	1248336
		Dilution Factor: 1		MDL.....: 0.33		
Total Cyanide	0.47 B	0.57	mg/kg	SW846 9010A	09/10/01	1254269
		Dilution Factor: 1		MDL.....: 0.14		
Total Organic Carbon	2680	28.7	mg/kg	SW846 9060	09/19/01	1262471
		Dilution Factor: 1		MDL.....: 17.8		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

B *Estimated result. Result is less than RL.*

BECHTEL HANFORD, INC.

Client Sample ID: B12ML4-A

General Chemistry

Lot-Sample #...: F1H310250-002 Work Order #...: EJXPV Matrix.....: SOLID
Date Sampled...: 08/26/01 Date Received..: 08/31/01
% Moisture.....: 18

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Phosphate as P, Ortho	66.5	6.1	mg/kg	MCAWW 300.0A	09/06/01	1248337
		Dilution Factor: 1		MDL.....: 0.43		
pH (solid)	8.6		No Units	SW846 9045A	09/04/01	1247385
		Dilution Factor: 1		MDL.....:		
Chloride	7.6	2.4	mg/kg	MCAWW 300.0A	09/06/01	1248332
		Dilution Factor: 1		MDL.....: 0.12		
Fluoride	38.6	1.2	mg/kg	MCAWW 300.0A	09/06/01	1248333
		Dilution Factor: 1		MDL.....: 0.073		
Nitrate	22.1	0.24	mg/kg	MCAWW 300.0A	09/06/01	1248334
		Dilution Factor: 1		MDL.....: 0.024		
Nitrate/Nitrite as N	24.9	0.61	mg/kg	MCAWW 353.1	09/18/01	1262180
		Dilution Factor: 1		MDL.....: 0.044		
Nitrite	ND	2.4	mg/kg	MCAWW 300.0A	09/10/01	1248335
		Dilution Factor: 10		MDL.....: 0.24		
Nitrogen, as Ammonia	1.7 B	3.1	mg/kg	MCAWW 350.1	09/08/01	1251215
		Dilution Factor: 1		MDL.....: 0.16		
Percent Moisture	18.1	0.10	%	MCAWW 160.3 MOD	09/07/01	1255422
		Dilution Factor: 1		MDL.....:		
Sulfate	25.0	6.1	mg/kg	MCAWW 300.0A	09/06/01	1248336
		Dilution Factor: 1		MDL.....: 0.35		
Total Cyanide	ND	0.61	mg/kg	SW846 9010A	09/10/01	1254269
		Dilution Factor: 1		MDL.....: 0.15		
Total Organic Carbon	541	30.5	mg/kg	SW846 9060	09/19/01	1262471
		Dilution Factor: 1		MDL.....: 18.9		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B12ML5-A

General Chemistry

Lot-Sample #...: F1H310250-003 Work Order #...: EJXP7 Matrix.....: SOLID
Date Sampled...: 08/27/01 Date Received..: 08/31/01
% Moisture.....: 15

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Phosphate as P, Ortho	30.4	5.9	mg/kg	MCAWW 300.0A	09/06/01	1248337
		Dilution Factor: 1		MDL.....: 0.41		
pH (solid)	9.6		No Units	SW846 9045A	09/04/01	1247385
		Dilution Factor: 1		MDL.....:		
Chloride	6.3	2.3	mg/kg	MCAWW 300.0A	09/06/01	1248332
		Dilution Factor: 1		MDL.....: 0.12		
Fluoride	70.0	1.2	mg/kg	MCAWW 300.0A	09/06/01	1248333
		Dilution Factor: 1		MDL.....: 0.070		
Nitrate	11.5	0.23	mg/kg	MCAWW 300.0A	09/06/01	1248334
		Dilution Factor: 1		MDL.....: 0.023		
Nitrate/Nitrite as N	14.8	0.59	mg/kg	MCAWW 353.1	09/18/01	1262180
		Dilution Factor: 1		MDL.....: 0.042		
Nitrite	ND	2.3	mg/kg	MCAWW 300.0A	09/10/01	1248335
		Dilution Factor: 10		MDL.....: 0.23		
Nitrogen, as Ammonia	1.8 B	2.9	mg/kg	MCAWW 350.1	09/08/01	1251215
		Dilution Factor: 1		MDL.....: 0.15		
Percent Moisture	14.7	0.10	%	MCAWW 160.3 MOD	09/07/01	1255422
		Dilution Factor: 1		MDL.....:		
Sulfate	35.4	5.9	mg/kg	MCAWW 300.0A	09/06/01	1248336
		Dilution Factor: 1		MDL.....: 0.34		
Total Cyanide	0.56 B	0.59	mg/kg	SW846 9010A	09/10/01	1254269
		Dilution Factor: 1		MDL.....: 0.15		
Total Organic Carbon	668	29.3	mg/kg	SW846 9060	09/19/01	1262471
		Dilution Factor: 1		MDL.....: 18.2		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

BECHTEL HANFORD, INC.

Client Sample ID: B12ML6-A

General Chemistry

Lot-Sample #...: F1H310250-004 Work Order #...: EJXQC Matrix.....: SOLID
Date Sampled...: 08/27/01 Date Received..: 08/31/01
% Moisture.....: 11

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Phosphate as P, Ortho	105	5.6	mg/kg	MCAWW 300.0A	09/06/01	1248337
		Dilution Factor: 1		MDL.....: 0.39		
pH (solid)	9.5		No Units	SW846 9045A	09/04/01	1247385
		Dilution Factor: 1		MDL.....:		
Chloride	7.4	2.3	mg/kg	MCAWW 300.0A	09/05/01	1248332
		Dilution Factor: 1		MDL.....: 0.11		
Fluoride	205	1.1	mg/kg	MCAWW 300.0A	09/05/01	1248333
		Dilution Factor: 1		MDL.....: 0.068		
Nitrate	28.5	0.23	mg/kg	MCAWW 300.0A	09/06/01	1248334
		Dilution Factor: 1		MDL.....: 0.023		
Nitrate/Nitrite as N	33.4	0.56	mg/kg	MCAWW 353.1	09/18/01	1262180
		Dilution Factor: 1		MDL.....: 0.040		
Nitrite	ND	2.3	mg/kg	MCAWW 300.0A	09/10/01	1248335
		Dilution Factor: 10		MDL.....: 0.23		
Nitrogen, as Ammonia	5.3	2.8	mg/kg	MCAWW 350.1	09/08/01	1251215
		Dilution Factor: 1		MDL.....: 0.15		
Percent Moisture	11.2	0.10	%	MCAWW 160.3 MOD	09/07/01	1255422
		Dilution Factor: 1		MDL.....:		
Sulfate	42.9	5.6	mg/kg	MCAWW 300.0A	09/05/01	1248336
		Dilution Factor: 1		MDL.....: 0.33		
Total Cyanide	0.38 B	0.56	mg/kg	SW846 9010A	09/10/01	1254269
		Dilution Factor: 1		MDL.....: 0.14		
Total Organic Carbon	771	28.2	mg/kg	SW846 9060	09/19/01	1262471
		Dilution Factor: 1		MDL.....: 17.5		

NOTE(S):

RL Reporting Limit

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F1H310250 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chloride		Work Order #: EJ3ER1AA		MB Lot-Sample #:	F1I050000-332	
	ND	2.0	mg/kg	MCAWW 300.0A	09/05/01	1248332
		Dilution Factor: 1				
Fluoride		Work Order #: EJ3EV1AA		MB Lot-Sample #:	F1I050000-333	
	ND	1.0	mg/kg	MCAWW 300.0A	09/05/01	1248333
		Dilution Factor: 1				
Nitrate		Work Order #: EJ3E31AA		MB Lot-Sample #:	F1I050000-334	
	ND	0.20	mg/kg	MCAWW 300.0A	09/06/01	1248334
		Dilution Factor: 1				
Nitrate/Nitrite as N		Work Order #: EKNP61AA		MB Lot-Sample #:	F1I190000-180	
	ND	0.50	mg/kg	MCAWW 353.1	09/18/01	1262180
		Dilution Factor: 1				
Nitrite		Work Order #: EJ3E51AA		MB Lot-Sample #:	F1I050000-335	
	ND	0.20	mg/kg	MCAWW 300.0A	09/05/01	1248335
		Dilution Factor: 1				
Nitrogen, as Ammonia		Work Order #: EJ8791AA		MB Lot-Sample #:	F1I080000-215	
	ND	2.5	mg/kg	MCAWW 350.1	09/08/01	1251215
		Dilution Factor: 1				
Phosphate as P, Ortho		Work Order #: EJ3E91AA		MB Lot-Sample #:	F1I050000-337	
	ND	5.0	mg/kg	MCAWW 300.0A	09/05/01	1248337
		Dilution Factor: 1				
Sulfate		Work Order #: EJ3E81AA		MB Lot-Sample #:	F1I050000-336	
	ND	5.0	mg/kg	MCAWW 300.0A	09/05/01	1248336
		Dilution Factor: 1				
Total Cyanide		Work Order #: EKA481AA		MB Lot-Sample #:	F1I110000-269	
	ND	0.50	mg/kg	SW846 9010A	09/10/01	1254269
		Dilution Factor: 1				
Total Organic Carbon		Work Order #: EKRTN1AA		MB Lot-Sample #:	F1I190000-471	
	ND	25.0	mg/kg	SW846 9060	09/19/01	1262471
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F1H290206 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chloride		Work Order #: EJ3ER1AA		MB Lot-Sample #:	F1I050000-332	
	ND	2.0	mg/kg	MCAWW 300.0A	09/05/01	1248332
		Dilution Factor: 1				
Fluoride		Work Order #: EJ3EV1AA		MB Lot-Sample #:	F1I050000-333	
	ND	1.0	mg/kg	MCAWW 300.0A	09/05/01	1248333
		Dilution Factor: 1				
Nitrate		Work Order #: EJ3E31AA		MB Lot-Sample #:	F1I050000-334	
	ND	0.20	mg/kg	MCAWW 300.0A	09/06/01	1248334
		Dilution Factor: 1				
Nitrate/Nitrite as N		Work Order #: EKNP61AA		MB Lot-Sample #:	F1I190000-180	
	ND	0.50	mg/kg	MCAWW 353.1	09/18/01	1262180
		Dilution Factor: 1				
Nitrite		Work Order #: EJ3E51AA		MB Lot-Sample #:	F1I050000-335	
	ND	0.20	mg/kg	MCAWW 300.0A	09/05/01	1248335
		Dilution Factor: 1				
Nitrogen, as Ammonia		Work Order #: EJ8791AA		MB Lot-Sample #:	F1I080000-215	
	ND	2.5	mg/kg	MCAWW 350.1	09/08/01	1251215
		Dilution Factor: 1				
Phosphate as P, Ortho		Work Order #: EJ3E91AA		MB Lot-Sample #:	F1I050000-337	
	ND	5.0	mg/kg	MCAWW 300.0A	09/05/01	1248337
		Dilution Factor: 1				
Sulfate		Work Order #: EJ3E81AA		MB Lot-Sample #:	F1I050000-336	
	ND	5.0	mg/kg	MCAWW 300.0A	09/05/01	1248336
		Dilution Factor: 1				
Total Cyanide		Work Order #: EJ4D51AA		MB Lot-Sample #:	F1I060000-192	
	ND	0.50	mg/kg	SW846 9010A	09/05/01	1249192
		Dilution Factor: 1				
Total Organic Carbon		Work Order #: EKRTN1AA		MB Lot-Sample #:	F1I190000-471	
	ND	25.0	mg/kg	SW846 9060	09/19/01	1262471
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Lot-Sample #...: F1H310250 Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Chloride			WO#:EJ3ER1AC-LCS/EJ3ER1AD-LCSD			LCS Lot-Sample#: F1I050000-332		
	10.0	9.58	mg/kg	96		MCAWW 300.0A	09/05/01	1248332
	10.0	9.67	mg/kg	97	0.93	MCAWW 300.0A	09/05/01	1248332
			Dilution Factor: 1					
Fluoride			WO#:EJ3EV1AC-LCS/EJ3EV1AD-LCSD			LCS Lot-Sample#: F1I050000-333		
	10.0	9.17	mg/kg	92		MCAWW 300.0A	09/05/01	1248333
	10.0	9.32	mg/kg	93	1.6	MCAWW 300.0A	09/05/01	1248333
			Dilution Factor: 1					
Nitrate			WO#:EJ3E31AC-LCS/EJ3E31AD-LCSD			LCS Lot-Sample#: F1I050000-334		
	2.00	1.96	mg/kg	98		MCAWW 300.0A	09/06/01	1248334
	2.00	1.95	mg/kg	98	0.51	MCAWW 300.0A	09/06/01	1248334
			Dilution Factor: 1					
Nitrate/Nitrite as N			WO#:EKNP61AC-LCS/EKNP61AD-LCSD			LCS Lot-Sample#: F1I190000-180		
	20.0	22.8	mg/kg	114		MCAWW 353.1	09/18/01	1262180
	20.0	22.5	mg/kg	112	1.3	MCAWW 353.1	09/18/01	1262180
			Dilution Factor: 1					
Nitrite			WO#:EJ3E51AC-LCS/EJ3E51AD-LCSD			LCS Lot-Sample#: F1I050000-335		
	0.800	0.690	mg/kg	86		MCAWW 300.0A	09/05/01	1248335
	0.800	0.780	mg/kg	98	12	MCAWW 300.0A	09/05/01	1248335
			Dilution Factor: 1					
Nitrogen, as Ammonia			WO#:EJ8791AC-LCS/EJ8791AD-LCSD			LCS Lot-Sample#: F1I080000-215		
	4.00	3.93	mg/kg	98		MCAWW 350.1	09/08/01	1251215
	4.00	3.98	mg/kg	100	1.3	MCAWW 350.1	09/08/01	1251215
			Dilution Factor: 1					
Phosphate as P, Ortho			WO#:EJ3E91AC-LCS/EJ3E91AD-LCSD			LCS Lot-Sample#: F1I050000-337		
	40.0	41.8	mg/kg	104		MCAWW 300.0A	09/05/01	1248337
	40.0	41.6	mg/kg	104	0.55	MCAWW 300.0A	09/05/01	1248337
			Dilution Factor: 1					
Sulfate			WO#:EJ3E81AC-LCS/EJ3E81AD-LCSD			LCS Lot-Sample#: F1I050000-336		
	40.0	39.2	mg/kg	98		MCAWW 300.0A	09/05/01	1248336
	40.0	39.0	mg/kg	98	0.30	MCAWW 300.0A	09/05/01	1248336
			Dilution Factor: 1					

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Lot-Sample #...: F1H290206 Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Cyanide		WO#:EJ4D51AC-LCS/EJ4D51AD-LCSD				LCS Lot-Sample#: F1I060000-192		
	5.00	5.26	mg/kg	105		SW846 9010A	09/05/01	1249192
	5.00	5.13	mg/kg	103	2.5	SW846 9010A	09/05/01	1249192
		Dilution Factor: 1						
Total Organic Carbon		WO#:EKRTN1AC-LCS/EKRTN1AD-LCSD				LCS Lot-Sample#: F1I190000-471		
	600	573	mg/kg	95		SW846 9060	09/19/01	1262471
	600	580	mg/kg	97	1.3	SW846 9060	09/19/01	1262471
		Dilution Factor: 1						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Client Lot #...: F1H310250 Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (solid)			Work Order #:	EJ1T21AD	LCS Lot-Sample#:	F1I040000-385	
	7.00	7.00	No Units	100	SW846 9045A	09/04/01	1247385
			Dilution Factor: 1				
Total Cyanide			Work Order #:	EKA481AC	LCS Lot-Sample#:	F1I110000-269	
	5.00	4.69	mg/kg	94	SW846 9010A	09/10/01	1254269
			Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Client Lot #...: F1H290206 Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (solid)			Work Order #: EJX0X1AA		LCS Lot-Sample#: F1H310000-396		
	7.00	7.00	No Units	100	SW846 9045A	08/31/01	1243396
			Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

3/22/2018 ORIGINAL Dayes

SDR # B01-101 REV. 1
Revision #: 1
Date Initiated: 08/09/01

SAMPLE DISPOSITION RECORD

SAF: B01-058
OU: 200-TW-1/2
Project ID: 200 TW 1&2
Task ID: 1
Sampling Event: 200-TW-1 & 2 - Soil

Laboratory: TMA/RECRA; RCF; Severn Trent, Inc.

Task Manager: M. E. Todd

Sampling Information:
Number of Samples: 23
ID Numbers: B12DC0, B12DC1, B12DB8, B12DB9, B12C88, B12C89, B12C63, B12C64, B12ML4, B12ML5, B12ML6, B12DC0-A, B12DC1-A, B12DB8-A, B12DB9-A, B12C88-A, B12C89-A, B12C89-B, B12C63-A, B12C64-A, B12ML4-A, B12ML5-A, B12ML6-A
Matrix: SOIL
Collection Date: 08/03/01 – 08/27/01

Issue Background:

Class: ☐ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☒ Sample Management Direction

Type: Other

Description: Samples Directed to Different Laboratory and Relabeled

Disposition:

Description: The chemical analyses for the listed samples were originally intended to be performed at the Lionville Laboratory. However because of the radioactivity associated with the samples, they were directed to the Severn Trent – St. Louis Laboratory. Samples redirected to the Severn Trent – St. Louis Laboratory were relabeled as follows:

Original Sample Number	New Sample Number
B12DC0	B12DC0-A
B12DC1	B12DC1-A
B12DB8	B12DB8-A
B12DB9	B12DB9-A
B12C88	B12C88-A
B12C63	B12C63-A
B12C64	B12C64-A
B12ML4	B12ML4-A

Original Sample Number	New Sample Number
B12ML5	B12ML5-A
B12ML6	B12ML6-A

3/22/2018 REV.1

C Dayes 1/7/02

C Dayes 1/7/02

In addition, for sample number B12~~D~~89, the bottle for Cr-VI analysis was relabeled as B12~~D~~89-A and routed to the RCF for radiological screening analyses. This same bottle was subsequently relabeled as B12~~D~~89-B and routed to the Severn Trent – Richland Laboratory for Cr-VI analysis.

C Dayes 1/7/02

Justification: The listed samples did not meet the sample acceptance criteria at the Lionville Laboratory, requiring that they be redirected to the Severn Trent – St. Louis Laboratory for chemical analysis. In addition, relabeling of the samples was necessary because a sample cannot be assigned to more than one laboratory due to SDT referential integrity rules.

Approval Signatures:

S. J. Trent — 1/3/02
Project Coordinator (Print/Sign Name) — Date

M. E. Todd — 1/7/02
Task Manager (Print/Sign Name) — Date

BHI-EE-109 (02/99)

3/22/2018 ORIGINAL Dayes

SDR # B02-053 REV.1
Revision #: 0
Date Initiated: 08/30/01

SAMPLE DISPOSITION RECORD

SAF: B01-058
OU: 200-TW-1/2
Project ID: 200 TW 1&2
Task ID: 1
Sampling Event: 200-TW-1 & 2 - Soil

Laboratory: Severn Trent, Inc.

Task Manager: M. E. Todd

Sampling Information:
Number of Samples: 1
ID Numbers: B12ML4-A
Matrix: SOIL
Collection Date: 08/26/01

Issue Background:

Class: ☐ Project Data Use ☒ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Cancellation of Analyses

Description: Cr-VI Analysis Cancelled

Disposition:

Description: Because of radiological characteristics of the listed sample, laboratories that perform an ERC-approved Cr-VI analytical method could not accept the bottle for Cr-VI analysis (see SDR B02-052). As a result, the Cr-VI analysis was cancelled.

Justification: The laboratories capable of performing the approved Cr-VI analytical method could not accept the sample for analysis due to the radiological characteristics of the sample.

Approval Signatures:

S. J. Trent — 1/14/02
Project Coordinator (Print/Sign Name) — Date

M. E. Todd — 1/14/02
Task Manager (Print/Sign Name) — Date

BHI-EE-109 (02/99)

3/22/2018 ORIGINAL Daynes

SDR # B02-052 REV.1
Revision #: 0
Date Initiated: 08/30/01

SAMPLE DISPOSITION RECORD

SAF: B01-058
OU: 200-TW-1/2
Project ID: 200 TW 1&2
Task ID: 1
Sampling Event: 200-TW-1 & 2 - Soil

Laboratory: Severn Trent, Inc.

Task Manager: M. E. Todd

Sampling Information:
Number of Samples: 1
ID Numbers: B12ML4-A
Matrix: SOIL
Collection Date: 08/26/01

Issue Background:

Class: ☒ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Other

Description: Radiological Characteristics of Sample Preclude Cr-VI Analysis

Disposition:

Description: Because of radiological characteristics of the listed sample, laboratories that perform an ERC-approved Cr-VI analytical method could not accept the bottle for Cr-VI analysis. As a result, the Cr-VI analysis was cancelled (see SDR B02-053) and the sample bottle was returned to the Groundwater/Vadose Zone Integration project for disposal.

Justification: The laboratories capable of performing the approved Cr-VI analytical method could not accept the sample for analysis due to the radiological characteristics of the sample.

Approval Signatures:

S. J. Trent — 1/14/02
Project Coordinator (Print/Sign Name) — Date

M. E. Todd — 1/14/02
Task Manager (Print/Sign Name) — Date

BHI-EE-109 (02/99)

3/22/2006 ORIGINAL
Dayes

SDR # B02-042 REV.1
Revision #: 0
Date Initiated: 08/30/01

SAMPLE DISPOSITION RECORD

SAF: B01-058
OU: 200-TW-1/2
Project ID: 200 TW 1&2
Task ID: 1
Sampling Event: 200-TW-1 & 2 - Soil

Laboratory: Severn Trent, Inc.

Task Manager: M. E. Todd

Sampling Information:
Number of Samples: 1
ID Numbers: B12ML5-A
Matrix: SOIL
Collection Date: 08/27/01

Issue Background:

Class: ☐ Project Data Use ☒ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Cancellation of Analyses

Description: Cr-VI Analysis Cancelled

Disposition:

Description: After performing the radiological screening analysis, the Severn Trent – Richland laboratory determined that the Cr-VI analysis bottle for the listed sample exceeded their radiological sample acceptance criteria (see SDR B02-041). As a result, the Cr-VI sample bottle was returned to the ERC and the Cr-VI analysis was subsequently cancelled for the listed sample.

Justification: The Cr-VI analysis was cancelled because neither laboratory that performs a Cr-VI analysis method accepted by the ERC could accept the listed sample.

Approval Signatures:

S. J. Trent — 1/3/02
Project Coordinator (Print/Sign Name) — Date

M. E. Todd — 1/7/02
Task Manager (Print/Sign Name) — Date

BHI-EE-109 (02/99)

3/22/2018 ORIGINAL Dayes

SDR # B02-041 REV 1
Revision #: 0
Date Initiated: 08/30/01

SAMPLE DISPOSITION RECORD

SAF: B01-058
OU: 200-TW-1/2
Project ID: 200 TW 1&2
Task ID: 1
Sampling Event: 200-TW-1 & 2 - Soil

Laboratory: Severn Trent, Inc.

Task Manager: M. E. Todd

Sampling Information:
Number of Samples: 1
ID Numbers: B12ML5-A
Matrix: SOIL
Collection Date: 08/27/01

Issue Background:

Class: ☒ Project Data Use ☐ General Laboratory Direction ☐ Validation Direction ☐ Sample Management Direction

Type: Other

Description: Sample Refused by Laboratory

Disposition:

Description: After performing the radiological screening analysis, the Severn Trent – Richland laboratory determined that the Cr-VI analysis bottle for the listed sample exceeded their radiological sample acceptance criteria. As a result, the Cr-VI sample bottle was returned to the ERC and the Cr-VI analysis was subsequently cancelled (see SDR B02-042) for the listed sample.

Justification: The Cr-VI analysis bottle for the listed sample could not be accepted by either laboratory that performs a Cr-VI analysis method accepted by the ERC.

Approval Signatures:

S. J. Trent — 1/3/02
Project Coordinator (Print/Sign Name) — Date

M. E. Todd — 1/7/02
Task Manager (Print/Sign Name) — Date

BHI-EE-109 (02/99)

Analytical Data Package Prepared For

Bechtel Hanford

Radiochemical Analysis By

STL Richland

2800 G.W. Way, Richland, Wa 99352, (509) 375-3131

Assigned Laboratory Code: STLRL

Data Package Contains 120 *Pages*

Report No.: 18500

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W03587	B01-058	B12C89-B	J1I100167-		9EJ95M20	1267165
		B12DC1-A	J1I100167-		9EJ95K20	1267165
		B12ML6-A	J1H300271-	EJT9N1AA	9EJT9N10	1247459
		B12ML7	J1H300187-	EJTF11AA	9EJTF110	1242487
		B12ML7	J1H300187-	EJTF11AF	9EJTF110	1263498
		B12ML7	J1H300187-	EJTF11AG	9EJTF110	1263500
		B12ML7	J1H300187-	EJTF11AC	9EJTF110	1263506
		B12ML7	J1H300187-	EJTF11AK	9EJTF110	1263508
		B12ML7	J1H300187-	EJTF11AJ	9EJTF110	1263510
		B12ML7	J1H300187-	EJTF11AP	9EJTF110	1263511
		B12ML7	J1H300187-	EJTF11AE	9EJTF110	1263512
		B12ML7	J1H300187-	EJTF11AL	9EJTF110	1263515
		B12ML7	J1H300187-	EJTF11AM	9EJTF110	1263519
		B12ML7	J1H300187-	EJTF11AD	9EJTF110	1263520
		B12ML7	J1H300187-	EJTF11AV	9EJTF110	1263522
		B12ML7	J1H300187-	EJTF11AQ	9EJTF110	1263524

JAN 2002 RECEIVED

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

December 31, 2001

Attention: Joan Kessner

SAF Number	:	B01-058
Date SDG Closed	:	September 13, 2001
Number of Samples	:	Five (5)
Sample Type	:	Soil
SDG Number	:	W03587
Data Deliverable	:	45-Day / Summary

I. Introduction

On Between August 30 and September 10, 2001, five soil samples were received at STL Richland (STLR) for chemical analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

STLR ID#	BHI ID#	MATRIX	DATE OF RECEIPT
EJTF1	B12ML7	SOIL	8/30/01
EJT8D	B12ML5-A	SOIL	8/30/01
EJT9N	B12ML6-A Daynes	SOIL	8/30/01
EJ95K	B12DC1-A 1/7/02	SOIL	9/10/01
EJ95M	B12C89-B	SOIL	9/10/01

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy
Americium-241 by method RICH-RC-5080
Neptunium-237 by method RICH-RC-5009
Plutonium-238, -239/40 by method RICH-RC-5010

Thorium-228, 230, 232 by method RICH-RC-5084
Uranium-234, -235, -238 by method RICH-RC-5079
Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017
Gas Proportional Counting
Total Strontium by method RICH-RC-5006
Liquid Scintillation Counting
Carbon-14 by method RICH-RC-5022
Nickel-63 by method RICH-RC-5069
Technetium-99 by method RICH-RC-5078
Tritium by method RICH-RC-5007
Total Uranium
Total Uranium by method RICH-RC-5058
Chemical Analyses
Chromium Hex by EPA method 7196

III. Quality Control

The analytical results for each analysis performed under SDG W03587 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Alpha Spectroscopy
Americium-241 by method RICH-RC-5080:
The reagent LCS was accidentally spilled during preparation. The tracer yield is low (19.5%) however, the radiochemical recovery is acceptable. The matrix LCS tracer yield and radiochemical recovery is acceptable. Except as noted, the LCS, batch blank, sample and sample duplicate (B12ML7) results are within contractual requirements.

Neptunium-237 by method RICH-RC-5009:
The LCS was recounted to verify radiochemical recovery. The recount was acceptable. The LCS, batch blank, sample and sample duplicate (B12ML7) results are within contractual requirements.

Plutonium-238, -239/40 by method RICH-RC-5010:
The reagent LCS was accidentally spilled during preparation. The tracer yield is low (15.7%) however, the radiochemical recovery is acceptable. The matrix LCS tracer yield and radiochemical recovery is acceptable. Except as noted, the LCS, batch blank, sample and sample duplicate (B12ML7) results are within contractual requirements.

Thorium-228, 230, 232 by method RICH-RC-5084:
The LCS, batch blank, sample and sample duplicate (B12ML7) results are within contractual requirements.

Uranium-234, -235, -238 by method RICH-RC-5079:
The LCS, batch blank, sample and sample duplicate (B12ML7) results are within contractual requirements.

Gamma Spectroscopy
Gamma Scan by method RICH-RC-5017:
The LCS, batch blank, sample and sample duplicate (B12ML7) results are within contractual requirements.

Gas Proportional Counting
Total Strontium by method RICH-RC-5006:
The LCS, batch blank, sample and sample duplicate (B12ML7) results are within contractual requirements.

Liquid Scintillation Counting
Carbon-14 by method RICH-RC-5022:
For solid matrices, the laboratory control and batch blank samples are direct count analyses. The LCS, batch blank, sample and sample duplicate (B12ML7) results are within contractual requirements.

Nickel-63 by method RICH-RC-5069:
The LCS, batch blank, sample, sample duplicate (B12ML7) and sample matrix spike (B12ML7) results are within contractual requirements.

Technetium-99 by method RICH-RC-5078:
The LCS, batch blank, sample, sample duplicate (B12ML7) and sample matrix spike (B12ML7) results are within contractual requirements.

Tritium by method RICH-RC-5007:
The LCS, batch blank, sample and sample duplicate (B12ML7) results are within contractual requirements.

Total Uranium
Total Uranium by method RICH-RC-5058:
The LCS, batch blank, sample, sample duplicate (B12ML7) and sample matrix spike (B12ML7) results are within contractual requirements.

Chemical Analyses
Chromium Hex by EPA method 7196:
The samples were prepared as three analytical batches. The sample and sample duplicate agreement was unacceptable for the analytical batch containing B12DC1 and B12C89. The batch was reanalyzed and accepted. The LCS, batch blank, samples, sample duplicate (B12ML7, B12ML6 and B12DC1) and sample matrix spike (B12ML7, B12ML6 and B12DC1) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Jackie Waddell
Project Manager

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**STL Richland's SOP number**
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/vn), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c - Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, ***u_c the combined uncertainty***. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

Date: 02-Jan-02

STL Richland STLRL

Ordered by Client Sample ID, Batch No.

Report No. : 18500 **SDG No:** W03587

Client ID	Work Order Number	Parameter	Result	+- Uncertainty	Qual	Units	Yield	MDC|MDA	RER
B12C89-B	9EJ95M20	HEXCHROME	1.51E+01	+- 0.0E+00 (2s)		mg/kg	N/A	8.00E-02	
B12DC1-A	9EJ95K20	HEXCHROME	1.78E+01	+- 0.0E+00 (2s)		mg/kg	N/A	8.00E-02	
B12DC1-A DUP	EJ95K1AH	HEXCHROME	1.68E+01	+- 0.0E+00 (2s)		mg/kg	N/A	8.00E-02	
B12ML6-A	EJT9N1AA	HEXCHROME	8.00E-02	+- 0.0E+00 (2s)	U	mg/kg	N/A	8.00E-02	
B12ML6-A DUP	EJT9N1AE	HEXCHROME	8.00E-02	+- 0.0E+00 (2s)	U	mg/L	N/A	8.00E-02	
B12ML7	EJTF11AA	HEXCHROME	8.00E-02	+- 0.0E+00 (2s)	U	mg/kg	N/A	8.00E-02	
B12ML7	EJTF11AF	PU-238	-4.03E-04	+- 8.1E-04 (2s)	U	pCi/g	61.19%	2.03E-02	
		PU239/40	4.51E-01	+- 1.2E-01 (2s)		pCi/g	61.19%	2.29E-02	
B12ML7	EJTF11AG	AM-241	7.64E-02	+- 4.0E-02 (2s)		pCi/g	84.68%	2.07E-02	
B12ML7	EJTF11AC	U-234	8.84E-01	+- 2.7E-01 (2s)		pCi/g	49.51%	4.81E-02	
		U-235	6.98E-02	+- 6.0E-02 (2s)		pCi/g	49.51%	5.46E-02	
		U-238	7.89E-01	+- 2.5E-01 (2s)		pCi/g	49.51%	3.24E-02	
B12ML7	EJTF11AK	TOTAL-URANIUM	2.02E+00	+- 3.3E-01 (2s)		ug/g		9.78E-06	
B12ML7	EJTF11AJ	TH-228	6.93E-01	+- 1.7E-01 (2s)		pCi/g	82.20%	6.18E-02	
		TH-230	5.16E-01	+- 1.4E-01 (2s)		pCi/g	82.20%	2.92E-02	
		TH-232	5.62E-01	+- 1.4E-01 (2s)		pCi/g	82.20%	1.73E-02	
B12ML7	EJTF11AP	C-14	-2.47E-02	+- 5.0E-01 (2s)	U	pCi/g	100.00%	7.84E-01	
B12ML7	EJTF11AE	NI-63	-1.29E-01	+- 4.4E+00 (2s)	U	pCi/g	84.65%	6.87E+00	
B12ML7	EJTF11AL	TC-99	-4.41E-01	+- 5.0E-01 (2s)	U	pCi/g	100.00%	7.45E-01	
B12ML7	EJTF11AM	H-3	1.68E+00	+- 1.9E+00 (2s)	U	pCi/g	100.00%	2.82E+00	
B12ML7	EJTF11AD	STRONTIUM	3.95E+01	+- 1.1E+01 (2s)		pCi/g	50.60%	2.49E-01	
B12ML7	EJTF11AV	CO-60	1.11E-02	+- 2.6E-02 (2s)	U	pCi/g		4.63E-02	
		CS-137	5.06E+00	+- 6.1E-01 (2s)		pCi/g		3.89E-02	
		EU-152	2.24E-02	+- 7.5E-02 (2s)	U	pCi/g		1.15E-01	
		EU-154	1.77E-02	+- 7.1E-02 (2s)	U	pCi/g		1.25E-01	
		EU-155	-4.25E-02	+- 5.2E-02 (2s)	U	pCi/g		8.39E-02	
		RA-226	5.75E-01	+- 1.0E-01 (2s)		pCi/g		7.13E-02	
		RA-228	9.71E-01	+- 2.0E-01 (2s)		pCi/g		1.51E-01	
B12ML7	EJTF11AQ	NP-237	0.00E+00	+- 1.4E-02 (2s)	U	pCi/g	68.90%	1.60E-02	
B12ML7 DUP	EJTF11AT	HEXCHROME	8.00E-02	+- 0.0E+00 (2s)	U	mg/kg	N/A	8.00E-02	
B12ML7 DUP	EJTF11AW	PU-238	4.20E-03	+- 1.0E-02 (2s)	U	pCi/g	61.24%	2.29E-02	
		PU239/40	5.33E-01	+- 1.4E-01 (2s)		pCi/g	61.24%	2.28E-02	

STL Richland

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RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

Sample Results Summary

Date: 02-Jan-02

STL Richland STLRL

Ordered by Client Sample ID, Batch No.

Report No. : 18500 **SDG No:** W03587

Client ID	Work Order Number	Parameter	Result	+-	Uncertainty	Qual	Units	Yield	MDC/MDA	RER
B12ML7 DUP	EJTF11AX	AM-241	1.72E-01	+-	5.6E-02 (2s)		pCi/g	93.98%	1.52E-02	
B12ML7 DUP	EJTF11A0	U-234	9.17E-01	+-	2.8E-01 (2s)		pCi/g	53.09%	3.15E-02	
		U-235	2.32E-02	+-	3.3E-02 (2s)	U	pCi/g	53.09%	3.15E-02	
		U-238	6.14E-01	+-	2.1E-01 (2s)		pCi/g	53.09%	4.67E-02	
B12ML7 DUP	EJTF11A2	TOTAL-URANIUM	2.18E+00	+-	3.5E-01 (2s)		ug/g		9.78E-06	
B12ML7 DUP	EJTF11A3	TH-228	8.16E-01	+-	2.0E-01 (2s)		pCi/g	78.64%	6.21E-02	
		TH-230	5.32E-01	+-	1.4E-01 (2s)		pCi/g	78.64%	2.78E-02	
		TH-232	6.16E-01	+-	1.6E-01 (2s)		pCi/g	78.64%	1.87E-02	
B12ML7 DUP	EJTF11A4	C-14	1.27E-01	+-	5.1E-01 (2s)	U	pCi/g	100.00%	7.84E-01	
B12ML7 DUP	EJTF11A6	NI-63	-1.44E+00	+-	3.6E+00 (2s)	U	pCi/g	90.59%	5.73E+00	
B12ML7 DUP	EJTF11A7	TC-99	-3.19E-01	+-	5.0E-01 (2s)	U	pCi/g	100.00%	7.48E-01	
B12ML7 DUP	EJTF11A9	H-3	3.43E-01	+-	1.7E+00 (2s)	U	pCi/g	100.00%	2.84E+00	
B12ML7 DUP	EJTF11CA	STRONTIUM	3.86E+01	+-	1.0E+01 (2s)		pCi/g	47.20%	2.58E-01	
B12ML7 DUP	EJTF11CC	CO-60	8.73E-03	+-	2.9E-02 (2s)	U	pCi/g		5.06E-02	
		CS-137	5.97E+00	+-	7.1E-01 (2s)		pCi/g		4.45E-02	
		EU-152	-8.90E-02	+-	8.6E-02 (2s)	U	pCi/g		1.15E-01	
		EU-154	-1.17E-01	+-	8.6E-02 (2s)	U	pCi/g		1.35E-01	
		EU-155	-1.94E-02	+-	5.9E-02 (2s)	U	pCi/g		9.86E-02	
		RA-226	5.86E-01	+-	1.1E-01 (2s)		pCi/g		8.11E-02	
		RA-228	1.16E+00	+-	2.3E-01 (2s)	U	pCi/g		2.54E-01	
B12ML7 DUP	EJTF11CD	NP-237	0.00E+00	+-	1.3E-02 (2s)	U	pCi/g	80.61%	1.41E-02	

Number of Results: 53

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

U Qual - Analyzed for, but the result is less than the Mdc/Mda[Total Uncert or gamma scan software did not identify the nuclide.

QC Results Summary

STL Richland STLRL

Ordered by QC Type, Batch No.

Date: 02-Jan-02 REV 1

Report No. : 18500

SDG No.: W03587

QC Type	Work Order Number	Parameter	Result +- Uncertainty	Qual	Units	Yield	Recovery	Bias	MDC|MDA
LCS	EJ95K1AG	HEXCHROME	5.80E+01 +- 0.0E+00 (2s)		mg/kg	N/A	145.60%	0.5	8.00E-02
	EJT8D1AA	HEXCHROME	8.00E-02 +- 0.0E+00 (2s)		mg/L	N/A			8.00E-02
MATRIX SPIK	EJT9N1AD	HEXCHROME	3.55E+01 +- 0.0E+00 (2s)		mg/kg	N/A	89.20%	-0.1	8.00E-02
MATRIX SPIK	EJT9N1AF	HEXCHROME	6.61E+02 +- 0.0E+00 (2s)		mg/kg	N/A	95.53%	0.0	8.00E-02
MATRIX SPIK	EJTF11A1	TOTAL-URANIUM	8.97E+00 +- 2.6E+00 (2s)		ug/g		92.67%	-0.1	9.78E-06
MATRIX SPIK	EJTF11A5	NI-63	4.51E+02 +- 3.3E+01 (2s)		pCi/g	83.86%	95.94%	0.0	6.35E+00
MATRIX SPIK	EJTF11A8	TC-99	1.57E+02 +- 9.8E+00 (2s)		pCi/g	100.00%	69.66%	-0.3	7.45E-01
MATRIX SPIK	EJTF11AR	HEXCHROME	3.39E+01 +- 0.0E+00 (2s)		mg/kg	N/A	84.97%	-0.1	8.00E-02
MATRIX SPIK	EJTF11AU	HEXCHROME	6.51E+02 +- 0.0E+00 (2s)		mg/kg	N/A	92.22%	-0.1	8.00E-02
BLANK QC	EJVQ11AA	HEXCHROME	2.00E-03 +- 0.0E+00 (2s)		mg/L	N/A			2.00E-03
BLANK QC	EJ1211AA	HEXCHROME	2.00E-03 +- 0.0E+00 (2s)	U	mg/L	N/A			2.00E-03
BLANK QC	EKORC1AA	HEXCHROME	0.00E+00 +- 0.0E+00 (2s)	U	mg/L	N/A			2.00E-03
LCS	EJVQ11AC	HEXCHROME	9.61E-01 +- 0.0E+00 (2s)		mg/L	N/A	96.10%	0.0	2.00E-03
LCS	EJ1211AC	HEXCHROME	9.57E-01 +- 0.0E+00 (2s)		mg/L	N/A	95.70%	0.0	2.00E-03
LCS	EKORC1AC	HEXCHROME	9.53E-01 +- 0.0E+00 (2s)		mg/L	N/A	95.30%	0.0	2.00E-03
BLANK QC	EKTQX1AA	PU-238	-8.24E-04 +- 1.2E-03 (2s)	U	pCi/g	56.97%			2.35E-02
		PU239/40	-1.23E-03 +- 1.4E-03 (2s)	U	pCi/g	56.97%			2.56E-02
BLANK QC	EKTQX1AD	PU-238	-1.98E-03 +- 2.8E-03 (2s)	U	pCi/g	24.90%			5.64E-02
		PU239/40	2.07E-02 +- 3.5E-02 (2s)	U	pCi/g	24.90%			6.57E-02
BLANK QC	EKTQ71AA	AM-241	3.67E-03 +- 9.8E-03 (2s)	U	pCi/g	78.75%			2.41E-02
BLANK QC	EKTQ71AD	AM-241	9.07E-03 +- 1.8E-02 (2s)	U	pCi/g	45.41%			2.46E-02
BLANK QC	EKTRG1AA	U-234	2.30E-02 +- 3.0E-02 (2s)	U	pCi/g	76.74%			4.59E-02
		U-235	-6.87E-04 +- 1.4E-03 (2s)	U	pCi/g	76.74%			3.46E-02
		U-238	7.90E-03 +- 1.7E-02 (2s)	U	pCi/g	76.74%			3.46E-02
BLANK QC	EKTRM1AA	TOTAL-URANIUM	1.22E-02 +- 2.9E-03 (2s)		ug/g				9.78E-06
BLANK QC	EKTRX1AA	TH-228	2.83E-02 +- 3.0E-02 (2s)	U	pCi/g	77.18%			3.75E-02
		TH-230	1.34E-02 +- 1.9E-02 (2s)	U	pCi/g	77.18%			1.81E-02
		TH-232	0.00E+00 +- 1.6E-02 (2s)	U	pCi/g	77.18%			1.81E-02

STL Richland

rptSTLRchQcSum V3.81 A97

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

QC Results Summary

STL Richland STLRL

Ordered by QC Type, Batch No.

Date: 02-Jan-02 REV 1

Report No. : 18500

SDG No.: W03587

QC Type	Work Order Number	Parameter	Result +- Uncertainty	Qual	Units	Yield	Recovery	Bias	MDC|MDA
BLANK QC	EKTR51AE	C-14	3.29E-01 +- 5.2E-01 (2s)	U	pCi/g	100.00%			7.89E-01
BLANK QC	EKTR61AA	NI-63	-9.92E-01 +- 4.1E+00 (2s)	U	pCi/g	90.44%			6.46E+00
BLANK QC	EKTR71AA	TC-99	-2.50E-01 +- 5.1E-01 (2s)	U	pCi/g	100.00%			7.45E-01
BLANK QC	EKTT21AE	H-3	2.59E-02 +- 1.7E-01 (2s)	U	pCi/g	100.00%			2.81E-01
BLANK QC	EKTT71AA	STRONTIUM	4.06E-02 +- 6.8E-02 (2s)	U	pCi/g	89.10%			1.49E-01
BLANK QC	EKTT81AA	CO-60	9.42E-03 +- 2.0E-02 (2s)	U	pCi/g				3.69E-02
		CS-137	-8.84E-03 +- 1.8E-02 (2s)	U	pCi/g				3.08E-02
		EU-152	-2.14E-02 +- 4.4E-02 (2s)	U	pCi/g				7.29E-02
		EU-154	1.68E-02 +- 5.5E-02 (2s)	U	pCi/g				9.92E-02
		EU-155	-1.74E-03 +- 3.6E-02 (2s)	U	pCi/g				5.99E-02
		RA-226	1.63E-02 +- 1.1E-01 (2s)	U	pCi/g				8.86E-02
		RA-228	-1.82E-02 +- 1.4E-01 (2s)	U	pCi/g				1.66E-01
BLANK QC	EKTVC1AA	NP-237	-5.85E-04 +- 1.2E-03 (2s)	U	pCi/g	57.96%			2.94E-02
LCS	EKTQX1AC	PU239/40	3.35E+00 +- 6.0E-01 (2s)		pCi/g	64.15%	100.17%	0.0	2.38E-02
LCS	EKTQX1AE	PU239/40	3.57E+00 +- 1.0E+00 (2s)		pCi/g	15.70%	105.37%	0.1	8.51E-02
LCS	EKTQ71AC	AM-241	4.45E+00 +- 8.2E-01 (2s)		pCi/g	82.50%	99.54%	0.0	1.86E-02
LCS	EKTQ71AE	AM-241	5.58E+00 +- 1.5E+00 (2s)		pCi/g	19.49%	123.11%	0.2	5.62E-02
LCS	EKTRG1AC	U-234	3.38E+00 +- 7.5E-01 (2s)		pCi/g	69.10%	102.71%	0.0	2.54E-02
		U-235	1.22E-01 +- 7.2E-02 (2s)		pCi/g	69.10%	81.07%	-0.2	2.54E-02
		U-238	3.13E+00 +- 7.0E-01 (2s)		pCi/g	69.10%	90.74%	-0.1	2.54E-02
LCS	EKTRM1AC	TOTAL-URANIUM	1.03E+01 +- 1.7E+00 (2s)		ug/g		101.77%	0.0	9.78E-06
LCS	EKTRX1AC	TH-230	1.06E+00 +- 2.3E-01 (2s)		pCi/g	77.47%	92.33%	-0.1	1.90E-02
LCS	EKTR51AC	C-14	1.66E+01 +- 1.3E+00 (2s)		pCi/g	100.00%	91.58%	-0.1	7.88E-01
LCS	EKTR61AC	NI-63	4.78E+02 +- 3.5E+01 (2s)		pCi/g	93.16%	94.65%	-0.1	6.25E+00
LCS	EKTR71AC	TC-99	4.74E+01 +- 3.3E+00 (2s)		pCi/g	100.00%	69.97%	-0.3	7.45E-01
LCS	EKTT21AC	H-3	1.64E+00 +- 3.0E-01 (2s)		pCi/g	100.00%	118.99%	0.2	2.85E-01
LCS	EKTT71AC	STRONTIUM	1.12E+00 +- 3.3E-01 (2s)		pCi/g	89.90%	98.15%	0.0	1.59E-01
LCS	EKTT81AC	CS-137	9.78E-01 +- 1.5E-01 (2s)		pCi/g		103.60%	0.0	7.83E-02

STL Richland

rptSTLRchQcSum V3.81 A97

Bias - *(Result/Expected)-1 as defined by ANSI N13.30.*

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

QC Results Summary

STL Richland STLRL

Ordered by QC Type, Batch No.

Date: 02-Jan-02 REV 1

Report No. : *18500*

SDG No.: *W03587*

QC Type	Work Order Number	Parameter	Result +- Uncertainty	Qual	Units	Yield	Recovery	Bias	MDC|MDA
LCS	EKTT81AC	RA-226	1.59E+00 +- 2.6E-01 (2s)		pCi/g		74.27%	-0.3	1.40E-01
LCS	EKTVC2AC	NP-237	8.70E-01 +- 2.1E-01 (2s)		pCi/g	63.24%	96.47%	0.0	1.80E-02

Number of Results: 58

FORM I

Date: 02-Jan-02

SAMPLE RESULTS

Lab Name:	STL Richland	**SDG:**	W03587	**Collection Date:**	8/23/01 1:30:00 PM
Lot-Sample No.:	J1I100167-	**Report No. :**	18500	**Received Date:**	9/10/01 12:30:00 PM
Client Sample ID:	B12C89-B Sayles 1/7/02	**COC No. :**	B01-058-206	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1267165	Work Order:			Report DB ID: 9EJ95M20								
HEXCHROME	1.51E+01			0.0E+00	8.00E-02	mg/kg	N/A	*(188.7)*	9/27/01		3.0	EPA7196
							3.00E-02	*N/A*			G	

Number of Results: 1

Comments:

0013

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

FORM I

Date: 02-Jan-02

SAMPLE RESULTS

Lab Name:	STL Richland	**SDG:**	W03587	**Collection Date:**	8/24/01 2:00:00 PM
Lot-Sample No.:	J1I100167-	**Report No. :**	18500	**Received Date:**	9/10/01 12:30:00 PM
Client Sample ID:	B12DC1-A Dayes 1/7/02	**COC No. :**	B01-058-206	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1267165	Work Order:			Report DB ID:	9EJ95K20							
HEXCHROME	1.78E+01			0.0E+00	8.00E-02	mg/kg	N/A	(222.)	9/27/01		2.8	EPA7196
							3.00E-02	N/A			G	

Number of Results: 1

Comments:

0014

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

FORM I

Date: 02-Jan-02

SAMPLE RESULTS

Lab Name:	STL Richland	**SDG:**	W03587	**Collection Date:**	8/27/01 4:30:00 AM
Lot-Sample No.:	J1H300271-	**Report No. :**	18500	**Received Date:**	8/30/01 12:10:00 PM
Client Sample ID:	B12ML6-A Dayes 1/7/02	**COC No. :**	B01-058-251	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1247459	Work Order: EJT9N1AA			Report DB ID: 9EJT9N10								
HEXCHROME	8.00E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	(1.)	9/9/01		2.835	EPA7196
							3.00E-02	N/A			G	

Number of Results: 1

Comments:

0015

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 02-Jan-02

SAMPLE RESULTS

Lab Name:	STL Richland	SDG:	W03587	Collection Date:	8/28/01
Lot-Sample No.:	J1H300187-	Report No. :	18500	Received Date:	8/30/01 8:55:00 AM
Client Sample ID:	B12ML7	COC No. :	B01-058-252	Matrix:	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1242487	Work Order: EJTF11AA			Report DB ID: 9EJTF110								
HEXCHROME	8.00E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	(1.)	9/9/01		2.59	EPA7196
							3.00E-02	N/A			G	
Batch: 1263498	Work Order: EJTF11AF			Report DB ID: 9EJTF110								
PU-238	-4.03E-04	U	8.1E-04	8.1E-04	2.03E-02	pCi/g	61.19%	-0.02	12/22/01 12:01 p		2.02	RICHRC5010
						3.31E-03	1.00E+00	-1.			G	ALP17
PU239/40	4.51E-01		9.5E-02	1.2E-01	2.29E-02	pCi/g	61.19%	(19.7)	12/22/01 12:01 p		2.02	RICHRC5010
						4.67E-03	1.00E+00	(7.5)			G	ALP17
Batch: 1263500	Work Order: EJTF11AG			Report DB ID: 9EJTF110								
AM-241	7.64E-02		3.7E-02	4.0E-02	2.07E-02	pCi/g	84.68%	(3.7)	12/27/01 12:55 p		2.02	RICHRC5080
						4.22E-03	1.00E+00	(3.8)			G	ALP17
Batch: 1263506	Work Order: EJTF11AC			Report DB ID: 9EJTF110								
U-234	8.84E-01		2.1E-01	2.7E-01	4.81E-02	pCi/g	49.51%	(18.4)	12/19/01 08:38 p		1.01	RICHRC5079
						7.87E-03	1.00E+00	(6.5)			G	ALP9
U-235	6.98E-02		5.9E-02	6.0E-02	5.46E-02	pCi/g	49.51%	(1.3)	12/19/01 08:38 p		1.01	RICHRC5079
						1.11E-02	1.00E+00	(2.3)			G	ALP9
U-238	7.89E-01		1.9E-01	2.5E-01	3.24E-02	pCi/g	49.51%	(24.4)	12/19/01 08:38 p		1.01	RICHRC5079
							1.00E+00	(6.3)			G	ALP9
								Ratio U-234/238 = 1.1				
Batch: 1263508	Work Order: EJTF11AK			Report DB ID: 9EJTF110								
TOTAL-URANIUM	2.02E+00		0.0E+00	3.3E-01	9.78E-06	ug/g		(206451.6)	12/11/01 05:29 p	1.0	1.0	RICHRC5015
						3.46E-06	1.00E+00	(12.4)		ML	ML	LIP3

STL Richland
rptSTLRchSample V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 02-Jan-02

SAMPLE RESULTS

Lab Name:	STL Richland	**SDG:**	W03587	**Collection Date:**	8/28/01
Lot-Sample No.:	J1H300187-	**Report No. :**	18500	**Received Date:**	8/30/01 8:55:00 AM
Client Sample ID:	B12ML7	**COC No. :**	B01-058-252	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263510	**Work Order: EJTF11AJ**			**Report DB ID: 9EJTF110**								
TH-228	6.93E-01		1.4E-01	1.7E-01	6.18E-02	pCi/g	82.20%	*(11.2)*	12/19/01 10:21 a		2.02	RICHRC5011
						2.12E-02	1.00E+00	*(8.)*			G	ALP117
TH-230	5.16E-01		1.1E-01	1.4E-01	2.92E-02	pCi/g	82.20%	*(17.7)*	12/19/01 10:21 a		2.02	RICHRC5011
						5.94E-03	1.00E+00	*(7.6)*			G	ALP117
TH-232	5.62E-01		1.2E-01	1.4E-01	1.73E-02	pCi/g	82.20%	*(32.5)*	12/19/01 10:21 a		2.02	RICHRC5011
							1.00E+00	*(7.8)*			G	ALP117
Batch: 1263511	**Work Order: EJTF11AP**			**Report DB ID: 9EJTF110**								
C-14	-2.47E-02	U	3.2E-01	5.0E-01	7.84E-01	pCi/g	100.00%	*-0.03*	11/7/01 10:18 p		2.017	C14_LSC
						3.75E-01	5.00E+01	*-0.1*			G	LSC3
Batch: 1263512	**Work Order: EJTF11AE**			**Report DB ID: 9EJTF110**								
Ni-63	-1.29E-01	U	2.8E+00	4.4E+00	6.87E+00	pCi/g	84.65%	*-0.02*	12/11/01 07:31 p		0.25	NI63LSC
						3.33E+00	3.00E+01	*-0.06*			G	LSC6
Batch: 1263515	**Work Order: EJTF11AL**			**Report DB ID: 9EJTF110**								
TC-99	-4.41E-01	U	3.0E-01	5.0E-01	7.45E-01	pCi/g	100.00%	*-0.59*	11/12/01 02:06 p		2.0	RICHRC5078
						3.62E-01	1.50E+01	*-(1.8)*			G	LSC3
Batch: 1263519	**Work Order: EJTF11AM**			**Report DB ID: 9EJTF110**								
H-3	1.68E+00	U	1.2E+00	1.9E+00	2.82E+00	pCi/g	100.00%	*0.6*	11/7/01 10:29 p		5.017	906.0_H3_LCS
						1.30E+00	4.00E+02	*(1.8)*			G	LSC4
Batch: 1263520	**Work Order: EJTF11AD**			**Report DB ID: 9EJTF110**								
STRONTIUM	3.95E+01		1.0E+00	1.1E+01	2.49E-01	pCi/g	50.60%	*(158.7)*	12/28/01 07:21 p		6.02	SRTOT_SEP_PRECIP
						1.16E-01	1.00E+00	*(7.5)*			G	GPC32A

STL Richland
rptSTLRchSample V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
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FORM I

Date: 02-Jan-02

SAMPLE RESULTS

Lab Name:	STL Richland	SDG:	W03587	Collection Date:	8/28/01
Lot-Sample No.:	J1H300187-	Report No. :	18500	Received Date:	8/30/01 8:55:00 AM
Client Sample ID:	B12ML7	COC No. :	B01-058-252	Matrix:	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263522	Work Order: EJTF11AV			Report DB ID: 9EJTF110								
CO-60	1.11E-02	U	2.6E-02	2.6E-02	4.63E-02	pCi/g		0.24	11/19/01 01:11 p		56.7	RICHRC5017
							5.00E-02	0.84			g	GER5$1
CS-137	5.06E+00		6.1E-01	6.1E-01	3.89E-02	pCi/g		(130.)	11/19/01 01:11 p		56.7	RICHRC5017
							1.00E-01	(16.7)			g	GER5$1
EU-152	2.24E-02	U	7.5E-02	7.5E-02	1.15E-01	pCi/g		0.19	11/19/01 01:11 p		56.7	RICHRC5017
							1.00E-01	0.59			g	GER5$1
EU-154	1.77E-02	U	7.1E-02	7.1E-02	1.25E-01	pCi/g		0.14	11/19/01 01:11 p		56.7	RICHRC5017
							1.00E-01	0.5			g	GER5$1
EU-155	-4.25E-02	U	5.2E-02	5.2E-02	8.39E-02	pCi/g		-0.51	11/19/01 01:11 p		56.7	RICHRC5017
							1.00E-01	-(1.6)			g	GER5$1
RA-226	5.75E-01		1.0E-01	1.0E-01	7.13E-02	pCi/g		(8.1)	11/19/01 01:11 p		56.7	RICHRC5017
							1.00E-01	(11.3)			g	GER5$1
RA-228	9.71E-01		2.0E-01	2.0E-01	1.51E-01	pCi/g		(6.4)	11/19/01 01:11 p		56.7	RICHRC5017
							2.00E-01	(9.6)			g	GER5$1
Batch: 1263524	Work Order: EJTF11AQ			Report DB ID: 9EJTF110								
NP-237	0.00E+00	U	0.0E+00	1.4E-02	1.60E-02	pCi/g	68.90%	0.	12/14/01 10:24 a		2.02	D3XW
							1.00E+00	0.			G	ALP129

Number of Results: 24

Comments:

0018

STL Richland

rptSTLRchSample V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM I

Date: 02-Jan-02

SAMPLE RESULTS

Lab Name:	STL Richland	**SDG:**	W03587	**Collection Date:**	8/28/01
Lot-Sample No.:	J1H300187-	**Report No. :**	18500	**Received Date:**	8/30/01 8:55:00 AM
Client Sample ID:	B12ML7	**COC No. :**	B01-058-252	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector

0019

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

FORM II

Date: 02-Jan-02

DUPLICATE RESULTS

Lab Name:	STL Richland	SDG:	W03587	Collection Date:	8/24/01 2:00:00 PM
Lot-Sample No.:	J1I100167-	Report No. :	18500	Received Date:	9/10/01 12:30:00 PM
Client Sample ID:	B12DC1 DUP -A Dayes 1/7/02	COC No. :	B01-058-206	Matrix:	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1267165	Work Order:			Report DB ID: EJ95K1AH		Orig Sa DB ID: 9EJ95K20						
HEXCHROME	1.68E+01			0.0E+00	8.00E-02	mg/kg	N/A	(209.5)	9/27/01		2.8	EPA7196
	1.78E+01	RPD	0.1			3.00E-02		N/A			G	

Number of Results: 1

Comments:

0020

STL Richland
rptSTLRchDupV3.81 A97

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

FORM II

Date: 02-Jan-02

DUPLICATE RESULTS

Lab Name:	STL Richland	SDG:	W03587	Collection Date:	8/27/01 4:30:00 AM
Lot-Sample No.:	J1H300271-	Report No. :	18500	Received Date:	8/30/01 12:10:00 PM
Client Sample ID:	B12ML6 -A DUP A Dayes 1/7/02	COC No. :	B01-058-251	Matrix:	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1247459	Work Order: EJT9N1AE			Report DB ID: EJT9N1ER			Orig Sa DB ID: 9EJT9N10					
HEXCHROME	8.00E-02	U		0.0E+00	8.00E-02	mg/L	N/A	(1.)	9/9/01		2.835	EPA7196
	8.00E-02	RPD	0.0					N/A			G	

Number of Results: 1

Comments:

0021

STL Richland

rptSTLRchDupV3.81 A97

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

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FORM II

Date: 02-Jan-02

DUPLICATE RESULTS

Lab Name:	STL Richland	SDG:	W03587	Collection Date:	8/28/01
Lot-Sample No.:	J1H300187-	Report No. :	18500	Received Date:	8/30/01 8:55:00 AM
Client Sample ID:	B12ML7 DUP	COC No. :	B01-058-252	Matrix:	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1242487	Work Order:	EJTF11AT		Report DB ID:	EJTF11TR	Orig Sa DB ID:	9EJTF110					
HEXCHROME	8.00E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	(1.)	9/9/01		2.591	EPA7196
	8.00E-02	RPD	0.0			3.00E-02		N/A			G	
Batch: 1263498	Work Order:	EJTF11AW		Report DB ID:	EJTF11WR	Orig Sa DB ID:	9EJTF110					
PU-238	4.20E-03	U	1.0E-02	1.0E-02	2.29E-02	pCi/g	61.24%	0.18	12/22/01 12:01 p		2.03	RICHRC5010
	-4.03E-04	RER	0.9			1.00E+00		0.83			G	ALP37
PU239/40	5.33E-01		1.0E-01	1.4E-01	2.28E-02	pCi/g	61.24%	(23.4)	12/22/01 12:01 p		2.03	RICHRC5010
	4.51E-01	RER	0.9			1.00E+00		(7.9)			G	ALP37
										Alpha Spec Result Sum = 5.4E-01		
Batch: 1263500	Work Order:	EJTF11AX		Report DB ID:	EJTF11XR	Orig Sa DB ID:	9EJTF110					
AM-241	1.72E-01		4.8E-02	5.6E-02	1.52E-02	pCi/g	93.98%	(11.3)	12/27/01 12:56 p		2.03	RICHRC5080
	7.64E-02	RER	2.8			1.00E+00		(6.2)			G	ALP38
										Alpha Spec Result Sum = 7.1E-01		
Batch: 1263506	Work Order:	EJTF11A0		Report DB ID:	EJTF110R	Orig Sa DB ID:	9EJTF110					
U-234	9.17E-01		2.1E-01	2.8E-01	3.15E-02	pCi/g	53.09%	(29.2)	12/19/01 08:38 p		1.01	RICHRC5079
	8.84E-01	RER	0.2			1.00E+00		(6.6)			G	ALP10
U-235	2.32E-02	U	3.3E-02	3.3E-02	3.15E-02	pCi/g	53.09%	0.74	12/19/01 08:38 p		1.01	RICHRC5079
	6.98E-02	RER	1.4			1.00E+00		(1.4)			G	ALP10
U-238	6.14E-01		1.7E-01	2.1E-01	4.67E-02	pCi/g	53.09%	(13.1)	12/19/01 08:38 p		1.01	RICHRC5079
	7.89E-01	RER	1.1			1.00E+00		(5.9)			G	ALP10
								Ratio U-234/238 = 1.5		*Alpha Spec Result Sum = 2.3E+00*		
Batch: 1263508	Work Order:	EJTF11A2		Report DB ID:	EJTF112R	Orig Sa DB ID:	9EJTF110					
TOTAL-URANIUM	2.18E+00		0.0E+00	3.5E-01	9.78E-06	ug/g		(223149.4)	12/11/01 05:40 p	1.05	1.05	RICHRC5015
	2.02E+00	RER	0.7			1.00E+00		(12.4)		ML	ML	LIP3
										Alpha Spec Result Sum = 2.3E+00		

STL Richland
rptSTLRchDupV3.81 A97

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FORM II

Date: 02-Jan-02

DUPLICATE RESULTS

Lab Name:	STL Richland	SDG:	W03587	Collection Date:	8/28/01
Lot-Sample No.:	J1H300187-1	Report No. :	18500	Received Date:	8/30/01 8:55:00 AM
Client Sample ID:	B12ML7 DUP	COC No. :		Matrix:	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263510	Work Order: EJTF11A3			Report DB ID: EJTF113R		Orig Sa DB ID: 9EJTF110						
TH-228	8.16E-01		1.6E-01	2.0E-01	6.21E-02	pCi/g	78.64%	(13.1)	12/19/01 10:22 a		2.03	RICHRC5011
	6.93E-01	RER	0.9			1.00E+00		(8.2)			G	ALP118
TH-230	5.32E-01		1.2E-01	1.4E-01	2.78E-02	pCi/g	78.64%	(19.1)	12/19/01 10:22 a		2.03	RICHRC5011
	5.16E-01	RER	0.2			1.00E+00		(7.4)			G	ALP118
TH-232	6.16E-01		1.3E-01	1.6E-01	1.87E-02	pCi/g	78.64%	(32.8)	12/19/01 10:22 a		2.03	RICHRC5011
	5.62E-01	RER	0.5			1.00E+00		(7.8)			G	ALP118
										Alpha Spec Result Sum = 2.0E+00		
Batch: 1263511	Work Order: EJTF11A4			Report DB ID: EJTF114R		Orig Sa DB ID: 9EJTF110						
C-14	1.27E-01	U	3.3E-01	5.1E-01	7.84E-01	pCi/g	100.00%	0.16	11/7/01 11:00 p		2.014	C14_LSC
	-2.47E-02	RER	0.4			5.00E+01		0.5			G	LSC3
										Alpha Spec Result Sum = 2.0E+00		
Batch: 1263512	Work Order: EJTF11A6			Report DB ID: EJTF116R		Orig Sa DB ID: 9EJTF110						
Ni-63	-1.44E+00	U	2.3E+00	3.6E+00	5.73E+00	pCi/g	90.59%	-0.25	12/11/01 10:56 p		0.28	Ni63LSC
	-1.29E-01	RER	0.5			3.00E+01		-0.79			G	LSC6
										Alpha Spec Result Sum = 2.0E+00		
Batch: 1263515	Work Order: EJTF11A7			Report DB ID: EJTF117R		Orig Sa DB ID: 9EJTF110						
TC-99	-3.19E-01	U	3.0E-01	5.0E-01	7.48E-01	pCi/g	100.00%	-0.43	11/12/01 03:08 p		2.0	RICHRC5078
	-4.41E-01	RER	0.3			1.50E+01		-(1.3)			G	LSC3
										Alpha Spec Result Sum = 2.0E+00		
Batch: 1263519	Work Order: EJTF11A9			Report DB ID: EJTF119R		Orig Sa DB ID: 9EJTF110						
H-3	3.43E-01	U	1.2E+00	1.7E+00	2.84E+00	pCi/g	100.00%	0.12	11/7/01 11:11 p		5.018	906.0_H3_LCS
	1.68E+00	RER	1.0			4.00E+02		0.39			G	LSC4
										Alpha Spec Result Sum = 2.0E+00		
Batch: 1263520	Work Order: EJTF11CA			Report DB ID: EJTF11AR		Orig Sa DB ID: 9EJTF110						

STL Richland

rptSTLRchDupV3.81 A97

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FORM II

Date: 02-Jan-02

DUPLICATE RESULTS

Lab Name:	STL Richland	SDG:	W03587	Collection Date:	8/28/01
Lot-Sample No.:	J1H300187-1	Report No. :	18500	Received Date:	8/30/01 8:55:00 AM
Client Sample ID:	B12ML7 DUP	COC No. :		Matrix:	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
STRONTIUM	3.86E+01		1.0E+00	1.0E+01	2.58E-01	pCi/g	47.20%	(149.6)	12/28/01 07:21 p		6.01	SRTOT_SEP_PRECIP
	3.95E+01	RER	0.1			1.00E+00		(7.5)			G	GPC32B
Batch: 1263522	Work Order: EJTF11CC			Report DB ID: EJTF11CR		Orig Sa DB ID: 9EJTF110						
CO-60	8.73E-03	U	2.9E-02	2.9E-02	5.06E-02	pCi/g		0.17	11/19/01 01:12 p		54.2	RICHRC5017
	1.11E-02	RER	0.1			5.00E-02		0.59			g	GER1$1
CS-137	5.97E+00		7.1E-01	7.1E-01	4.45E-02	pCi/g		(134.3)	11/19/01 01:12 p		54.2	RICHRC5017
	5.06E+00	RER	1.9			1.00E-01		(16.7)			g	GER1$1
EU-152	-8.90E-02	U	8.6E-02	8.6E-02	1.15E-01	pCi/g		-0.78	11/19/01 01:12 p		54.2	RICHRC5017
	2.24E-02	RER	2.0			1.00E-01		-(2.1)			g	GER1$1
EU-154	-1.17E-01	U	8.6E-02	8.6E-02	1.35E-01	pCi/g		-0.87	11/19/01 01:12 p		54.2	RICHRC5017
	1.77E-02	RER	2.4			1.00E-01		-(2.7)			g	GER1$1
EU-155	-1.94E-02	U	5.9E-02	5.9E-02	9.86E-02	pCi/g		-0.2	11/19/01 01:12 p		54.2	RICHRC5017
	-4.25E-02	RER	0.6			1.00E-01		-0.65			g	GER1$1
RA-226	5.86E-01		1.1E-01	1.1E-01	8.11E-02	pCi/g		(7.2)	11/19/01 01:12 p		54.2	RICHRC5017
	5.75E-01	RER	0.2			1.00E-01		(10.7)			g	GER1$1
RA-228	1.16E+00	U	2.3E-01	2.3E-01	2.54E-01	pCi/g		(4.5)	11/19/01 01:12 p		54.2	RICHRC5017
	9.71E-01	RER	1.2			2.00E-01		(9.8)			g	GER1$1
Batch: 1263524	Work Order: EJTF11CD			Report DB ID: EJTF11DR		Orig Sa DB ID: 9EJTF110						
NP-237	0.00E+00	U	0.0E+00	1.3E-02	1.41E-02	pCi/g	80.61%	0.	12/14/01 10:25 a		2.01	D3XW
	0.00E+00	RER	0.0			1.00E+00		0.			G	ALP130

Number of Results: 24

Comments:

STL Richland
rptSTLRchDupV3.81 A97

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MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
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0024

FORM II

Date: 02-Jan-02

BLANK RESULTS

Lab Name: STL Richland SDG: W03587

Lot-Sample No.: J1H300000- Report No. : 18500 Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1242487	Work Order: EJVQ11AA			Report DB ID: EJVQ11AB								
HEXCHROME	2.00E-03			0.0E+00	2.00E-03	mg/L	N/A	1. N/A	9/9/01		100.0 ML	EPA7196

Number of Results: 1

Comments:

0025

STL Richland

rptSTLRchBlank V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

FORM II

BLANK RESULTS

Date: 02-Jan-02

Lab Name: STL Richland SDG: W03587

Lot-Sample No.: J1I040000- Report No. : 18500 Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1247459	Work Order: EJ1211AA			Report DB ID: EJ1211AB								
HEXCHROME	2.00E-03	U		0.0E+00	2.00E-03	mg/L	N/A	1. N/A	9/9/01		100.0 ML	EPA7196

Number of Results: 1

Comments:

0026

STL Richland

rptSTLRchBlank V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 02-Jan-02

BLANK RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-498 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263498	Work Order: EKTQX1AA			Report DB ID: EKTQX1AX								
PU-238	-8.24E-04	U	1.2E-03	1.2E-03	2.35E-02	pCi/g	56.97%	-0.04	12/22/01 12:02 p		2.01	RICHRC5010
					4.79E-03	1.00E+00		-(1.4)			G	ALP38
PU239/40	-1.23E-03	U	1.4E-03	1.4E-03	2.56E-02	pCi/g	56.97%	-0.05	12/22/01 12:02 p		2.01	RICHRC5010
					5.86E-03	1.00E+00		-(1.7)			G	ALP38
Batch: 1263498	Work Order: EKTQX1AD			Report DB ID: EKTQX1DB								
PU-238	-1.98E-03	U	2.8E-03	2.8E-03	5.64E-02	pCi/g	24.90%	-0.04	12/22/01 12:02 p		2.0	RICHRC5010
					1.15E-02	1.00E+00		-(1.4)			G	ALP41
PU239/40	2.07E-02	U	3.5E-02	3.5E-02	6.57E-02	pCi/g	24.90%	0.31	12/22/01 12:02 p		2.0	RICHRC5010
					1.62E-02	1.00E+00		(1.2)			G	ALP41

Number of Results: 4

Comments:

0027

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 02-Jan-02

BLANK RESULTS

Lab Name: STL Richland SDG: W03587

Lot-Sample No.: J1I200000-500 Report No. : 18500 Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263500	Work Order: EKTQ71AA			Report DB ID: EKTQ71AX								
AM-241	3.67E-03	U	9.8E-03	9.8E-03	2.41E-02	pCi/g	78.75%	0.15	12/27/01 12:56 p		2.01	RICHRC5080
					5.52E-03	1.00E+00		0.75			G	ALP37
Batch: 1263500	Work Order: EKTQ71AD			Report DB ID: EKTQ71DB								
AM-241	9.07E-03	U	1.8E-02	1.8E-02	2.46E-02	pCi/g	45.41%	0.37	12/27/01 12:58 p		2.0	RICHRC5080
						1.00E+00		1.			G	ALP47

Number of Results: 2

Comments:

0028

STL Richland

rptSTLRchBlank V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 02-Jan-02

BLANK RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-506 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263506	Work Order: EKTRG1AA			Report DB ID: EKTRG1AB								
U-234	2.30E-02	U	3.0E-02	3.0E-02	4.59E-02	pCi/g	76.74%	0.5	12/19/01 08:39 p		1.0	RICHRC5079
					1.13E-02	1.00E+00		(1.5)			G	ALP11
U-235	-6.87E-04	U	1.4E-03	1.4E-03	3.46E-02	pCi/g	76.74%	-0.02	12/19/01 08:39 p		1.0	RICHRC5079
					5.65E-03	1.00E+00		-1.			G	ALP11
U-238	7.90E-03	U	1.7E-02	1.7E-02	3.46E-02	pCi/g	76.74%	0.23	12/19/01 08:39 p		1.0	RICHRC5079
					5.65E-03	1.00E+00		0.91			G	ALP11

Ratio U-234/238 = 2.9

Number of Results: 3

Comments:

0029

STL Richland
rptSTLRchBlank V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 02-Jan-02

BLANK RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-508 **Report No. :** 18500 **Matrix:** WATER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263508	Work Order:	EKTRM1AA		Report DB ID:	EKTRM1AB							
TOTAL-URANIUM	1.22E-02		0.0E+00	2.9E-03	9.78E-06	ug/g		(1245.4)	12/11/01 05:44 p	1.0	1.0	RICHRC5015
					3.46E-06			(8.3)		ML	ML	LIP3

Number of Results: 1

Comments:

0030

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

FORM II

Date: 02-Jan-02

BLANK RESULTS

Lab Name: STL Richland SDG: W03587

Lot-Sample No.: J1I200000-510 Report No. : 18500 Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263510	Work Order: EKTRX1AA			Report DB ID: EKTRX1AB								
TH-228	2.83E-02	U	3.0E-02	3.0E-02	3.75E-02	pCi/g	77.18%	0.75	12/19/01 10:22 a		2.0	RICHRC5011
					8.58E-03	1.00E+00		(1.9)			G	ALP119
TH-230	1.34E-02	U	1.9E-02	1.9E-02	1.81E-02	pCi/g	77.18%	0.74	12/19/01 10:22 a		2.0	RICHRC5011
						1.00E+00		(1.4)			G	ALP119
TH-232	0.00E+00	U	0.0E+00	1.6E-02	1.81E-02	pCi/g	77.18%	0.	12/19/01 10:22 a		2.0	RICHRC5011
						1.00E+00		0.			G	ALP119

Number of Results: 3

Comments:

0031

STL Richland
rptSTLRchBlank V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 02-Jan-02

BLANK RESULTS

Lab Name: STL Richland SDG: W03587

Lot-Sample No.: J1I200000-511 Report No. : 18500 Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263511	Work Order:	EKTR51AE		Report DB ID:	EKTR51EB							
C-14	3.29E-01	U	3.4E-01	5.2E-01	7.89E-01	pCi/g	100.00%	0.42	11/7/01 08:53 p		2.0	C14_LSC
					3.78E-01	5.00E+01		(1.3)			G	LSC3

Number of Results: 1

Comments:

0032

STL Richland

rptSTLRchBlank V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 02-Jan-02

BLANK RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-512 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263512	Work Order:	EKTR61AA		Report DB ID:	EKTR61AB							
NI-63	-9.92E-01	U	2.6E+00	4.1E+00	6.46E+00	pCi/g	90.44%	-0.15	12/12/01 12:38 a		0.25	NI63LSC
					3.13E+00	3.00E+01		-0.48			G	LSC6

Number of Results: 1

Comments:

0033

STL Richland
rptSTLRchBlank V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 02-Jan-02

BLANK RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-515 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263515	Work Order:	EKTR71AA		Report DB ID:	EKTR71AB							
TC-99	-2.50E-01	U	3.0E-01	5.1E-01	7.45E-01	pCi/g	100.00%	-0.34	11/12/01 05:12 p		2.0	RICHRC5078
					3.62E-01	1.50E+01		-0.99			G	LSC3

Number of Results: 1

Comments:

0034

STL Richland
rptSTLRchBlank V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

BLANK RESULTS

Date: 02-Jan-02

Lab Name: STL Richland SDG: W03587

Lot-Sample No.: J1I200000-519 Report No. : 18500 Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263519	Work Order: EKTT21AE			Report DB ID: EKTT21EB								
H-3	2.59E-02	U	1.1E-01	1.7E-01	2.81E-01	pCi/g	100.00%	0.09	11/7/01 09:04 p		10.0	906.0_H3_LCS
					1.30E-01	4.00E+02		0.3			G	LSC4

Number of Results: 1

Comments:

0035

STL Richland

rptSTLRchBlank V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 02-Jan-02

BLANK RESULTS

Lab Name: STL Richland SDG: W03587

Lot-Sample No.: J1I200000-520 Report No. : 18500 Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263520	Work Order:	EKTT71AA		Report DB ID:	EKTT71AB							
STRONTIUM	4.06E-02	U	6.7E-02	6.8E-02	1.49E-01	pCi/g	89.10%	0.27	12/28/01 07:21 p		6.0	SRTOT_SEP_PRECIP
					6.91E-02	1.00E+00		(1.2)			G	GPC32C

Number of Results: 1

Comments:

0036

STL Richland

rptSTLRchBlank V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 02-Jan-02

BLANK RESULTS

Lab Name: STL Richland SDG: W03587

Lot-Sample No.: J1I200000-522 Report No. : 18500 Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263522	Work Order: EKTT81AA			Report DB ID: EKTT81AX								
CO-60	9.42E-03	U	2.0E-02	2.0E-02	3.69E-02	pCi/g		0.26	11/19/01 01:13 p		52.0	RICHRC5017
						5.00E-02		0.94			g	GER7$1
CS-137	-8.84E-03	U	1.8E-02	1.8E-02	3.08E-02	pCi/g		-0.29	11/19/01 01:13 p		52.0	RICHRC5017
						1.00E-01		-0.97			g	GER7$1
EU-152	-2.14E-02	U	4.4E-02	4.4E-02	7.29E-02	pCi/g		-0.29	11/19/01 01:13 p		52.0	RICHRC5017
						1.00E-01		-0.97			g	GER7$1
EU-154	1.68E-02	U	5.5E-02	5.5E-02	9.92E-02	pCi/g		0.17	11/19/01 01:13 p		52.0	RICHRC5017
						1.00E-01		0.61			g	GER7$1
EU-155	-1.74E-03	U	3.6E-02	3.6E-02	5.99E-02	pCi/g		-0.03	11/19/01 01:13 p		52.0	RICHRC5017
						1.00E-01		-0.1			g	GER7$1
RA-226	1.63E-02	U	1.1E-01	1.1E-01	8.86E-02	pCi/g		0.18	11/19/01 01:13 p		52.0	RICHRC5017
						1.00E-01		0.31			g	GER7$1
RA-228	-1.82E-02	U	1.4E-01	1.4E-01	1.66E-01	pCi/g		-0.11	11/19/01 01:13 p		52.0	RICHRC5017
						2.00E-01		-0.26			g	GER7$1

Number of Results: 7

Comments:

0037

STL Richland
rptSTLRchBlank V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the *Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.*

FORM II

Date: 02-Jan-02

BLANK RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-524 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1263524	Work Order: EKTVC1AA			Report DB ID: EKTVC1AB								
NP-237	-5.85E-04	U	1.2E-03	1.2E-03	2.94E-02	pCi/g	57.96%	-0.02	12/14/01 10:25 a		2.0	D3XW
					4.81E-03	1.00E+00		-1.			G	ALP131

Number of Results: 1

Comments:

0038

STL Richland
rptSTLRchBlank V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

BLANK RESULTS

Date: 02-Jan-02

Lab Name: STL Richland SDG: W03587

Lot-Sample No.: J1I240000- Report No. : 18500 Matrix: WATER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 1267165	Work Order:			Report DB ID:	EKORC1AA							
HEXCHROME	0.00E+00	U		0.0E+00	2.00E-03	mg/L	N/A	0. N/A	9/27/01		100.0 ML	EPA7196

Number of Results: 1

Comments:

0039

STL Richland
rptSTLRchBlank V3.81 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1H300000- **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1242487	Work Order: EJVQ11AC			Report DB ID: EJVQ11CS									
HEXCHROME	9.61E-01			0.0E+00	2.00E-03	mg/L	N/A	1.00E+00		96.10%	9/9/01	100.0	EPA7196
							Rec Limits:	85.	115.	0.0		ML	

Number of Results: 1

Comments:

0010

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland SDG: W03587

Lot-Sample No.: J1I040000- Report No. : 18500 Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1247459	Work Order: EJ1211AC			Report DB ID: EJ1211CS									
HEXCHROME	9.57E-01			0.0E+00	2.00E-03	mg/L	N/A	1.00E+00		95.70%	9/9/01	100.0	EPA7196
							Rec Limits:	85.	115.	0.0		ML	

Number of Results: 1

Comments:

0041

STL Richland

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs V3.81 A97

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I100167- **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1267165	Work Order:			Report DB ID: EJ95K1AG									
HEXCHROME	5.80E+01			0.0E+00	8.00E-02	mg/kg	N/A	3.98E+01		145.60%	9/27/01	2.8	EPA7196
							Rec Limits:	85.	115.	0.5		G	

Number of Results: 1

Comments:

0042

STL Richland

rptSTLRchLcs V3.81 A97

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland SDG: W03587

Lot-Sample No.: J1I200000-498 Report No. : 18500 Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1263498	Work Order: EKTQX1AC			Report DB ID: EKTQX1CM									
PU239/40	3.35E+00		2.5E-01	6.0E-01	2.38E-02	pCi/g	64.15%	3.35E+00	1.0E-01	100.17%	12/22/01 12:02 p	2.03	RICHRC5010
							Rec Limits:	70.	130.	0.0		G	ALP39
Batch: 1263498	Work Order: EKTQX1AE			Report DB ID: EKTQX1ES									
PU239/40	3.57E+00		5.5E-01	1.0E+00	8.51E-02	pCi/g	15.70%	3.39E+00	1.1E-01	105.37%	12/22/01 12:03 p	2.0	RICHRC5010
							Rec Limits:	70.	130.	0.1		G	ALP47

Number of Results: 2

Comments:

0043

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs V3.81 A97

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-500 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1263500	Work Order: EKTQ71AC			Report DB ID: EKTQ71CM									
AM-241	4.45E+00		2.9E-01	8.2E-01	1.86E-02	pCi/g	82.50%	4.47E+00	3.7E-02	99.54%	12/27/01 12:57 p	2.03	RICHRC5080
							Rec Limits:	70.	130.	0.0		G	ALP39
Batch: 1263500	Work Order: EKTQ71AE			Report DB ID: EKTQ71ES									
AM-241	5.58E+00		6.8E-01	1.5E+00	5.62E-02	pCi/g	19.49%	4.53E+00	3.8E-02	123.11%	12/27/01 12:58 p	2.0	RICHRC5080
							Rec Limits:	70.	130.	0.2		G	ALP48

Number of Results: 2

Comments:

0044

STL Richland

rptSTLRchLcs V3.81 A97

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J11200000-506 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1263506	Work Order: EKTRG1AC			Report DB ID: EKTRG1CS									
U-234	3.38E+00		3.6E-01	7.5E-01	2.54E-02	pCi/g	69.10%	3.29E+00	2.0E-02	102.71%	12/19/01 08:39 p	1.0	RICHRC5079
							Rec Limits:	70.	130.	0.0		G	ALP12
U-235	1.22E-01		6.8E-02	7.2E-02	2.54E-02	pCi/g	69.10%	1.50E-01	9.0E-04	81.07%	12/19/01 08:39 p	1.0	RICHRC5079
							Rec Limits:	70.	130.	-0.2		G	ALP12
U-238	3.13E+00		3.4E-01	7.0E-01	2.54E-02	pCi/g	69.10%	3.45E+00	2.1E-02	90.74%	12/19/01 08:39 p	1.0	RICHRC5079
							Rec Limits:	70.	130.	-0.1		G	ALP12

Number of Results: 3

Comments:

0045

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-508 **Report No. :** 18500 **Matrix:** WATER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1263508	Work Order: EKTRM1AC			Report DB ID: EKTRM1CS									
TOTAL-URANIUM	1.03E+01		0.0E+00	1.7E+00	9.78E-06	ug/g		1.01E+01	6.3E-02	101.77%	12/11/01 05:49 p	1.0	RICHRC5015
							Rec Limits:	70.	130.	0.0		ML	LIP3

Number of Results: 1

Comments:

0046

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-510 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1263510	Work Order: EKTRX1AC			Report DB ID: EKTRX1CS									
TH-230	1.06E+00		1.7E-01	2.3E-01	1.90E-02	pCi/g	77.47%	1.15E+00	3.4E-02	92.33%	12/19/01 10:22 a	2.0	RICHRC5011
							Rec Limits:	70.	130.	-0.1		G	ALP120

Number of Results: 1

Comments:

0047

STL Richland

rptSTLRchLcs V3.81 A97

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-511 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1263511	Work Order: EKTR51AC			Report DB ID: EKTR51CS									
C-14	1.66E+01		7.2E-01	1.3E+00	7.88E-01	pCi/g	100.00%	1.81E+01	6.2E-01	91.58%	11/7/01 09:36 p	2.0	C14_LSC
							Rec Limits:	70.	130.	-0.1		G	LSC3

Number of Results: 1

Comments:

0048

STL Richland

rptSTLRchLcs V3.81 A97

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-512 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1263512	Work Order: EKTR61AC			Report DB ID: EKTR61CS									
NI-63	4.78E+02		8.5E+00	3.5E+01	6.25E+00	pCi/g	93.16%	5.05E+02	1.7E+01	94.65%	12/12/01 02:20 a	0.25	NI63LSC
							Rec Limits:	70.	130.	-0.1		G	LSC6

Number of Results: 1

Comments:

0049

STL Richland

rptSTLRchLcs V3.81 A97

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-515 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1263515	Work Order: EKTR71AC			Report DB ID: EKTR71CS									
TC-99	4.74E+01		9.0E-01	3.3E+00	7.45E-01	pCi/g	100.00%	6.78E+01	1.1E+00	69.97%	11/12/01 06:14 p	2.0	RICHRC5078
							Rec Limits:	70.	130.	-0.3		G	LSC3

Number of Results: 1

Comments:

0050

STL Richland

rptSTLRchLcs V3.81 A97

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-519 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1263519	Work Order: EKTT21AC			Report DB ID: EKTT21CS									
H-3	1.64E+00		2.0E-01	3.0E-01	2.85E-01	pCi/g	100.00%	1.38E+00	4.8E-02	118.99%	11/7/01 09:46 p	10.0	906.0_H3_LCS
							Rec Limits:	70.	130.	0.2		G	LSC4

Number of Results: 1

Comments:

0051

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-520 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1263520	Work Order: EKTT71AC			Report DB ID: EKTT71CS									
STRONTIUM	1.12E+00		1.5E-01	3.3E-01	1.59E-01	pCi/g	89.90%	1.14E+00	1.4E-02	98.15%	12/28/01 07:21 p	6.0	SRTOT_SEP_PRECIP
							Rec Limits:	70.	130.	0.0		G	GPC32D

Number of Results: 1

Comments:

0052

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland

SDG: W03587

Lot-Sample No.: J1I200000-522

Report No. : 18500

Matrix: SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1263522	Work Order: EKTT81AC			Report DB ID: EKTT81CM									
CS-137	9.78E-01		1.5E-01	1.5E-01	7.83E-02	pCi/g		9.44E-01	1.0E+00	103.60%	11/19/01 01:14 p	26.61	RICHRC5017
							Rec Limits:	70.	130.	0.0		g	GER3$1
RA-226	1.59E+00		2.6E-01	2.6E-01	1.40E-01	pCi/g		2.14E+00	2.5E+00	74.27%	11/19/01 01:14 p	26.61	RICHRC5017
							Rec Limits:	70.	130.	-0.3		g	GER3$1

Number of Results: 2

Comments:

0053

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I200000-524 **Report No. :** 18500 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1263524	Work Order: EKTVC2AC			Report DB ID: EKTVC2CS									
NP-237	8.70E-01		1.5E-01	2.1E-01	1.80E-02	pCi/g	63.24%	9.02E-01	2.7E-02	96.47%	12/18/01 03:29 p	2.0	D3XW
							Rec Limits:	70.	130.	0.0		G	ALP127

Number of Results: 1

Comments:

0054

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

LCS RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1I240000- **Report No. :** 18500 **Matrix:** WATER

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1267165	Work Order:			Report DB ID: EKORC1AC									
HEXCHROME	9.53E-01			0.0E+00	2.00E-03	mg/L	N/A	1.00E+00		95.30%	9/27/01	100.0	EPA7196
							Rec Limits:	.	.	0.0		ML	

Number of Results: 1

Comments:

0055

STL Richland

rptSTLRchLcs V3.81 A97

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

MATRIX SPIKE RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1H300187- **Report No. :** 18500 **Matrix:** SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Rpt Unit, CRDL	Yield	Rec-overy	Exp-ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1242487	Work Order: EJTF11AR			Report DB ID: EJTF11RW			Orig Sa DB ID: 9EJTF110						
HEXCHROME	3.39E+01			0.0E+00	8.00E-02	mg/kg	N/A	84.97%	3.99E+01		9/9/01	2.591	EPA7196
	8.00E-02	RPD	2.0									G	
Batch: 1242487	Work Order: EJTF11AU			Report DB ID: EJTF11UW			Orig Sa DB ID: 9EJTF110						
HEXCHROME	6.51E+02			0.0E+00	8.00E-02	mg/kg	N/A	92.22%	7.06E+02		9/9/01	2.593	EPA7196
	8.00E-02	RPD	2.0									G	

Number of Results: 2

Comments:

0056

STL Richland
rptSTLRchMs V3.81 A97

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

MATRIX SPIKE RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1H300187-1 **Report No. :** 18500 **Matrix:** SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Rpt Unit, CRDL	Yield	Rec-overy	Exp-ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1263508	Work Order:	EJTF11A1		Report DB ID:	EJTF111W		Orig Sa DB ID:	9EJTF110					
TOTAL-URANIUM	8.97E+00		0.0E+00	2.6E+00	9.78E-06	ug/g		92.67%	9.68E+00	6.1E-02	12/11/01 05:34 p	1.04	RICHRC5015
	2.02E+00	RER	5.2									ML	LIP3
Batch: 1263512	Work Order:	EJTF11A5		Report DB ID:	EJTF115W		Orig Sa DB ID:	9EJTF110					
NI-63	4.51E+02		8.3E+00	3.3E+01	6.35E+00	pCi/g	83.86%	95.94%	4.70E+02	.6E+01	12/11/01 09:13 p	0.27	NI63LSC
	-1.29E-01	RER	27.0									G	LSC6
Batch: 1263515	Work Order:	EJTF11A8		Report DB ID:	EJTF118W		Orig Sa DB ID:	9EJTF110					
TC-99	1.57E+02		1.6E+00	9.8E+00	7.45E-01	pCi/g	100.00%	69.66%	2.26E+02	.8E+00	11/12/01 04:10 p	2.0	RICHRC5078
	-4.41E-01	RER	32.2									G	LSC3

Number of Results: 3

Comments:

0057

STL Richland
rptSTLRchMs V3.81 A97

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
Bias - (Result/Expected)-1 as defined by ANSI N13.30.

FORM II

Date: 02-Jan-02

MATRIX SPIKE RESULTS

Lab Name: STL Richland **SDG:** W03587

Lot-Sample No.: J1H300271- **Report No. :** 18500 **Matrix:** SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Rpt Unit, CRDL	Yield	Rec-overy	Exp-ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 1247459	Work Order: EJT9N1AD			Report DB ID: EJT9N1DW			Orig Sa DB ID: 9EJT9N10						
HEXCHROME	3.55E+01			0.0E+00	8.00E-02	mg/kg	N/A	89.20%	3.98E+01		9/9/01	2.836	EPA7196
	8.00E-02	RPD	2.0									G	
Batch: 1247459	Work Order: EJT9N1AF			Report DB ID: EJT9N1FW			Orig Sa DB ID: 9EJT9N10						
HEXCHROME	6.61E+02			0.0E+00	8.00E-02	mg/kg	N/A	95.53%	6.92E+02		9/9/01	2.834	EPA7196
	8.00E-02	RPD	2.0									G	

Number of Results: 2

Comments:

0058

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
Bias - (Result/Expected)-1 as defined by ANSI N13.30.

W-27038 3/22/2018 REV.1

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-252	Page 1 of 1
Collector: Thomas G./Watson D.	Company Contact: Todd, M.E. Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ	Price Code: 8N Data Turnaround: 45 Days
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	Air Quality ☐
Ice Chest No: SmL 1320	Field Logbook No.: EL-1518-1	COA: B20TW2444C ~~B20TW2674C~~ BT 8/28/01	Method of Shipment: ~~Fed Ex~~ HAND Delivery 8/30/01
Shipped To: Severn Trent Incorporated - RICHLAND	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Radiological. Field Instruments Reading Background

Samples stored in Ref.# B at the 3728 Shipping Facility on 8/28/01. Collector not available to relinquish samples on 8/30/01 for shipment. RT 8/30/01 SIS

SDG W03587 JIH300187

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	120mL	60mL	60mL	250mL	60mL	250mL	250mL	60mL		
	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Activity Scan		
Sample No.	Matrix *	Sample Date	Sample Time							
B12ML7 EJTF1	SOIL	08/28/01	0900			X			X	X	B12MK4

TIE TO

CHAIN OF POSSESSION / Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Greg Thomas/Greg Thomas	0900 8/28/01	RF TB	0900 8/28/01
Rof TB 3728	0930 8/30/01	R L Rhore	0930 8/30/01
R L Rhore	0830 8/30/01	Greg Thomas/Greg Thomas	0830 8/30/01
Greg Thomas/Greg Thomas	0855 8/30/01	Shelley	8/30/01 0855
		L200	

SPECIAL INSTRUCTIONS

~~(1) ICP Metals - 6010A (TAL) (Cadmium, Chromium, Copper, Nickel, Silver); ICP Metals - 6010A (Add-on) (Lead)~~
(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrite, Nitrogen in Nitrite, Phosphate, Sulfate); ~~Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060;~~ pH (Soil) - 9045
~~(3) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH-Diesel Range - WTPH-D~~
(4) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 – Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium

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

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

BHI-EE-011 (10/99)

ERC Radiological Counting Facility Analysis Report

RCF Number RCF9635 — Sample Date & Time 8/28/01 0100

Project ID: 200E B-7A — SAF Number: B01-058 — Date Analyzed 8/29/01 8:49:3

Sample ID: B12MK4

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40		2.5E+01	+/-	9.2E+00	5.9E+00
Co-60	<	5.3E-01			5.3E-01
Cs-137		1.4E+01	+/-	2.6E+00	6.4E-01
Eu-152	<	1.8E+00			1.8E+00
Eu-154	<	2.1E+00			2.1E+00
Eu-155	<	1.6E+00			1.6E+00
Tl-208	<	1.5E+00			1.5E+00
Pb-212	<	6.7E+00			6.7E+00
Bi-214		4.4E+00	+/-	2.4E+00	3.1E+00
Pb-214		4.4E+00	+/-	1.3E+00	1.4E+00
Ra-226	<	8.4E+00			8.4E+00
Ac-228	<	1.7E+00			1.7E+00
Pa-234	<	1.1E+00			1.1E+00
Th-234	<	6.7E+00			6.7E+00
U-235		2.8E+00	+/-	1.8E+00	2.8E+00
Am-241	<	9.2E-01			9.2E-01

TIE TO B12MC1

Total GEA (pCi/g)	5.1E+01	+/-	1.7E+01

	Activity (pCi/g)		Error (pCi/g)	Alpha MDC (pCi/g)	Beta MDC (pCi/g)
Gross Alpha**	1.8E+00	+/-	5.7E-01	7.7E-01	
Gross Beta	5.6E+01	+/-	2.7E+00		3.0E+01

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDC = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst: C. W. Landes 8/29/01

Report To	Fax
CS Cearlock	372-9292
SJ Trent	372-9292
Joan Kessner	372-9487

Report Printed: Wednesday, August 29, 2001

SEVERN TRENT SERVICES

STL Richland
Sample Check-in List

Date/Time Received: 8-30 0855

Client: BHI SDG #: W03587 NA [ ]

Work Order Number: J1H300187 SAF #: B01-058 NA [ ]

Shipping Container ID: SML 1320 Chain Of Custody #: B01-058-252

1. Custody Seals on shipping container intact? NA [ ] Yes [ ] No [✓]
2. Custody Seals dated and signed? NA [ ] Yes [ ] No [✓]
3. Chain of Custody record present? Yes [✓] No [ ]
4. Cooler temperature: 4° NA [ ]
5. Vermiculite/packing materials is NA [✓] Wet [ ] Dry [ ]
6. Number of samples in shipping container: 3
7. Sample holding times exceeded? NA [ ] Yes [✓] No [ ]
8. Samples have:
   ___ tape
   ✓ custody seals
   ✓ hazard labels
   ✓ appropriate samples labels
9. Samples are:
   ✓ in good condition
   ___ broken
   ___ leaking
   ___ have air bubbles
   (Only for samples requiring head space)
10. Sample pH taken? NA [✓] pH<2 [ ] pH>2 [ ]
11. Were any anomalies identified in sample receipt? Yes [✓] No [ ]
12. Description of anomalies (include sample numbers): CRL out of hold time - Sample time unreadable

Sample Custodian: [signature] Date: 8-30-01

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 6/01, Rev. 3

Client Sample Screening Results

30-Aug-01

(R) 8/30/01

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI	B12ML7EJTF1		8/30/01 11:15:00 AM	QUAD21A	8/30/01 12:25:58 PM	B12ML7EJTF1	30	10	0.25666667	413	12.818333
	EJTF1	SOIL		Bkg:	8/30/01 4:43:28 AM		600	46	0.07666667	569	0.9483333

Anl Date: 8/30/01 Tot Sa, Alq: 3.44E+02 , 9.22E+01 Alp; (Dpm/ 7.58E-01 (uCi/ 1.27E-03 (pCi/ 3.70E+00 ± 5.4E+00 CAT 1 1.4E+01 Lab Alq Lig

Ppt mg: 92.2 Units: g , mg Bet; Alq): 2.93E+01 Sa): 4.93E-02 Lig): 1.43E+02 ± 7.6E+00 7.0E-01

Q-27038 WO 3587 JIH 3/22/2018 Due 9-20-01 REV.1

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B01-058-250 | Page 1 of 1

Collector Thomas G./Watson D.	**Company Contact** Todd, M.E.	**Telephone No.** (509) 372-9631
Project Coordinator TRENT, SJ	**Price Code** 8N	**Data Turnaround** 45 Days
Project Designation 200-TW-1 & 2 - Soil Sampling	**Sampling Location** B-7A/200 E	**SAF No.** B01-058
Air Quality ☐		
Ice Chest No. Viking S/N 08 98 050090	**Field Logbook No.** EL-1518-1	COA B20TW2944C ~~B20TW2674C~~ BT 8/27/01
Method of Shipment Fed EX		
Shipped To Severn Trent Incorporated ~RICHLAND	**Offsite Property No.** RSR 106949	**Bill of Lading/Air Bill No.** NA

POSSIBLE SAMPLE HAZARDS/REMARKS
FIELD RADIOLOGICAL INSTRUMENTS INDICATE
100CPM
20mR/B } 0.1 CONTACT
<0.5mR/γ }

Samples stored in Ref. TW1 & 2 at the 3728 Shipping Facility on 8/27/01. Collector not available to relinquish samples on 8/30/01 for shipment. RT 8/30/01

SAMPLE ANALYSIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None RT 8/30/01	None		
Type of Container	sG	sG	sG	sG	sG	sG	sG	sG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	120mL	60mL	60mL	250mL	60mL	250mL	250mL	60mL		
	See item (1) in Special Instructions.	Mercury - 7470 - (CV)	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Activity Scan		

Sample No.	Matrix *	Sample Date	Sample Time								Tie to
B12ML5 ~~AEJT8D~~	SOIL	8/27/01	0115			X				X	X	B12MK2
Dayes 1/7/02											

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
OS Watson / [signature]	08/27/01 0645	REF. TW1&2	08/27/01 0645
Ref TW1&2	0330 8.30.01	R. Thore	0330 8.30.01
R. Thore	0500 8.30.01	[signature]	8.30.01
R. Thore	1210 8.30.01	Pam Kaufman	1210 8-30-01
		0.2000 mr/hr	

SPECIAL INSTRUCTIONS

~~(1) ICP Metals - 6010A (TAL) (Cadmium, Chromium, Copper, Nickel, Silver); ICP Metals - 6010A (Add-on) (Lead).~~
~~(2) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate); Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045~~
~~(3) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH Diesel Range - WTPH-D~~
~~(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium (Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89/90 - Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium.~~

106949 ~~rsd~~

RT 8.30.01

Cooling Req May not be met

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

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

BHI-EE-011 (10/99)

8600

Bechtel Hanford Inc. — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B01-058-251 | Page 1 of 1

Collector	Thomas G./Watson D.
Company Contact	Todd, M.E.
Telephone No.	(509) 372-9631
Project Coordinator	TRENT, SJ
Price Code	8N
Data Turnaround	45 Days
Air Quality	☐
Project Designation	200-TW-1 & 2 - Soil Sampling
Sampling Location	B-7A/200 E
SAF No.	B01-058
Ice Chest No.	Viking S/N 08 98 05000
Field Logbook No.	EL-1518-1
COA	B20TW2-A44C ~~B20TW2674C~~ JT
Method of Shipment	Fed EX
Shipped To	Severn Trent Incorporated – RICHLAND
Offsite Property No.	RSR 106940 8/27/01
Bill of Lading/Air Bill No.	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
FIELD RADIOLOGICAL INSTRUMENTS INDICATE 20CPM, 1MR/B, <0.5MR/B ON CONTACT

Samples stored in Ref.# 1B at the 3728 Shipping Facility on 8/27/01
Collector not available to relinquish samples on 8/30/01 for shipment. RT 8.30.01
SIS

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	8.30.01	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	120mL	60mL	60mL	250mL	60mL	250mL	250mL	60mL		
	See item (1) in Special Instructions.	Mercury - 7470 - (CV) DJW 08/15/01	Chromium Hex - 7196	See item (2) in Special Instructions.	VOA - 8260A (TCL)	See item (3) in Special Instructions. DJW 08/15/01	See item (4) in Special Instructions.	Activity Scan		

Sample No.	Matrix *	Sample Date	Sample Time								
B12ML6 A EJT9N	SOIL	8/27/01	0430			X			X	X	B12MK3
D Hynes 1/7/02											

Tie To

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
DS WATSON	08/27/01 0745	REF 1B	08/27/01 0745
Ref 1B 3728	8.30.01 0430	R Thorell	8.30.01 0430
R Thorell	8.30.01 0600	~~[illegible]~~	~~8.30.01~~
R Thorell	8.30.01 1210	R Kenchyl	8-30-01 1210

SPECIAL INSTRUCTIONS

(1) ~~ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}~~
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphate, Sulfate}; ~~Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045~~
(3) ~~Semi-VOA - 8270A (Add-On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D~~
(4) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 - Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium.~~

Cooling Req may not be met

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

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

BHI-EE-011 (10/99)

0099

ERC Radiological Counting Facility Analysis Report

3/22/2018 REV.1

RCF Number RCF9610 Sample Date & Time 8/27/01 0115

Project ID: 200E B-7A SAF Number: B01-058 Date Analyzed 8/28/01 8:33:2

Sample ID: B12MK2

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40		9.6E+02	+/-	4.3E+02	3.7E+02
Co-60	<	6.0E+01			6.0E+01
Cs-137		2.7E+05	+/-	4.6E+04	2.2E+02
Eu-152	<	9.0E+02			9.0E+02
Eu-154	<	1.7E+02			1.7E+02
Eu-155	<	1.1E+03			1.1E+03
Tl-208	<	6.3E+02			6.3E+02
Pb-212	<	3.7E+03			3.7E+03
Bi-214	<	5.6E+02			5.6E+02
Pb-214	<	6.5E+02			6.5E+02
Ra-226	<	6.9E+03			6.9E+03
Ac-228	<	3.8E+02			3.8E+02
Pa-234	<	8.7E+02			8.7E+02
Th-234	<	7.4E+03			7.4E+03
U-235	<	1.9E+03			1.9E+03
Am-241		1.2E+03	+/-	4.6E+02	7.3E+02

ADD ON:

Sr^{90} - 3×10^5

Tl e To

B12MK5

Pu^{239} = 6×10^3

Total GEA (pCi/g)	2.7E+05	+/-	4.7E+04

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDA GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
† No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst G. L. Hastings 8/28/01

Report Printed: Tuesday, August 28, 2001

Report To	Fax
CS Cearlock	372-0292
SJ Trent	372-9292
Joan Kessner	372-9487

0100

ERC Radiological Counting Facility Analysis Report

8/22/2018 REV.1

RCF Number RCF9611

Sample Date & Time 8/27/01 0430

Project ID: 200E B-7A

SAF Number: B01-058

Date Analyzed 8/27/01 12:42:

Sample ID: B12MK3

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
K-40		1.1E+01	+/-	1.0E+01	9.0E+00
Co-60	<	9.5E-01			9.5E-01
Cs-137		9.0E+03	+/-	1.5E+03	5.1E+00
Eu-152	<	2.5E+01			2.5E+01
Eu-154	<	3.5E+00			3.5E+00
Eu-155	<	1.3E+01			1.3E+01
Tl-208	<	1.5E+01			1.5E+01
Pb-212	<	9.5E+01			9.5E+01
Pb-214	<	1.8E+01			1.8E+01
Bi-214	<	7.5E+00			7.5E+00
Pa-234	<	1.1E+01			1.1E+01
Th-234	<	6.4E+01			6.4E+01
U-235	<	3.2E+01			3.2E+01
Am-241	<	8.6E+00			8.6E+00

ADDON

Sr 90 1.2 X10^4

TIETO

B12ML6

Total GEA (pCi/g)	9.0E+03	+/-	1.5E+03

	Activity (pCi/g)		Error (pCi/g)	Alpha MDC (pCi/g)	Beta MDC (pCi/g)
Gross Alpha**	3.9E+01	+/-	2.2E+00	1.4E+01	1.3E+03
Gross Beta	2.5E+03	+/-	4.6E+01		

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDC = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst G.L. Hastings 8/28/01

Report To	Fax
CS Cearlock	372-9292
SJ Treat	372-9292
Joan Kessner	372-9487

Report Printed: Tuesday, August 28, 2001

RADIOACTIVE SHIPMENT RECORD

106949 REV 1 — Page 1 of 2

3/22/2018

1. SHIP FROM U.S. DEPT. OF ENERGY C/O
Company: Pu. Hanford
Address: 200 Building-300 Area
City, State, Zip: Richland WA 99352
Contact: Rick Thorsen
Phone: 509 521-7005

2. SHIP TO
Company: Severn Trent Inc
Address: 2800 George Washington Way
City, State, Zip: Richland WA 99352
Attention: Karen Hahtenberg
Phone: 509-372-7501

Ship: ☑ Prepaid ☐ Collect
Via: ☑ Motor ☐ Air Psgr ☐ UPS ☐ Rail ☐ Air Cargo ☐ Site Carrier
SHIPMENT AUTHORIZATION NUMBER

Markings Applied 6.
- Radioactive - LSA ☐
- Radioactive - SCO ☐
- Type A ☐ N/A
- Type B with trefoil ☐

LSA Description 8.
- LSA-I ☐
- LSA-II ☐
- LSA-III ☐ N/A
- SCO-I ☐
- SCO-II ☐

Labels Applied 10.
- Empty ☐
- Radioactive White - I ☐
- Radioactive Yellow - II ☐
- Radioactive Yellow - III ☐ N/A
- Subsidiary Hazard ☐

For Normal Form only 7.
Identify
Physical Form: ☐ Liquid ☐ Gas ☑ Solid
Chemical Form: ☑ Elemental ☐ Metal ☐ Nitrate ☐ Oxide ☐ Mixture ☐ Other

EMERGENCY RESPONSE 9.
Telephone: 1-888-766-0771
Emergency Response Guide(s): 161

Highway Route Controlled Quantity ☐
Exclusive Use Shipment with instructions ☐
Placards Applied ☐
If Rail Specify:
Fissile Excepted, Grams: <15g ☑
Excepted Package Statement ☑

5. HM Proper Shipping Name: _____ Radioactive Material,

	excepted package - empty packaging	7	UN2910
	excepted package - instruments or articles	7	UN2910
✓	excepted package - limited quantity of material	7	UN2910
	excepted package - articles manufactured from natural or depleted uranium or natural thorium	7	UN2910
	Special Form, n.o.s.	7	UN2974
	Low Specific Activity, n.o.s.	7	UN2912
	n.o.s.	7	UN2982
	Fissile, n.o.s.	7	UN2918
	Surface Contaminated Object	7	UN2913

Warning – Fissile Material Controlled Shipment. Do Not Load More Than _____ Packages Per Vehicle. In Loading and Storage Areas, Keep at Least 20 Feet From Other Packages Bearing Radioactive Labels.

11.

No. Pkg.	Model Package	COC/Spec	Serial No.	Seal No.	Isotopes	T.I.	Bq/Package	Gr. Wt. Kg.
1	Plastic Box	4H2V	[illegible]	[illegible]	Pu-239, Am-241, Sr-90	N/A	3.7E+10	45 kg
	Dikey							
Glass Jars, polybagged in Foam								
Inserts, lined in absorbent pad in Dikey								
(Shipper may describe package in detail on one of the unused lines above)					TOTALS	N/A	3.7E+10	45 kg

12. This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.
Certifier's Signature: [signature] On behalf of DOE-RL | Date: 8-30-01 | Organization: SPA-FS | Complete Cost Code (Inc. End Function): B20 T02 AUC

13. Surface Dose Rate of Package: ☑ <0.005 or _____ mSv/hr; <0.5 or _____ mrem/hr (N+ß γ)
Dose Rate @ 1 Meter from Surface of Package: ☑ <0.005 or _____ mSv/hr; <0.5 or _____ mrem/hr (N+ß γ)
Smears of Outer Container: ☑ <0.41 Bq (22 dpm) ß γ /cm²; ☑ <0.04 Bq (2.2 dpm) α /cm²; ☑ <Tbl. 2-2 HSRCM Onsite Limits
TRUCK LOAD OR EXCLUSIVE USE: Surface ☑ <2 mSv/hr (200 mrem/hr); @ 2 meters ☑ <0.1 mSv/hr (10 mrem/hr); @ Cab or sleeper ☑ <0.02 mSv/hr (2 mrem/hr) (Using N+ß γ)
Additional Data and Instructions (inc. Readings on Internal Packaging)
Signature - Radiation Monitoring: Jerry Duffey | Bldg. 3728 | Survey No. RCG-01-0330 | Date 8-30-01

14. TRANSPORTER: Vehicle Number 8G1-D6052 | DRIVER SIGNATURE [signature]
RECEIVER: RECEIVER SIGNATURE | Date

15. OFFSITE AUTHORIZATION
Shipment has been inspected and verified to be in compliance with DOT regulations
Authorized Signature [signature] | Printed Name Kevin R. Smith | Date 8-30-01

16. AUTHORIZATION FOR SHIPMENT
AIR TRANSPORT CERTIFICATION: ☐ N/A
CARGO AIRCRAFT: ☐ Cargo Aircraft Only, Labels Applied
PASSENGER AIRCRAFT: ☑ LQ/Qty ☐ Research/Medical Diagnosis ☐ <3 T.I. ☐ Human Medical Research
Pkg. Dimensions (cm): N/A

17. OFFSITE AUTHORIZATION
Tracking No. NWRH-4107 | Date Shipped 8-30-01 | Routing | ETA
Surveyed By | Date | Approved for Shipment Offsite | Date

54-6000-088 (06/97)

HAND [illegible]

0102

SEVERN TRENT SERVICES

STL Richland
Sample Check-in List

Date/Time Received: 8-30-01 11:50am

Client: BHI SDG #: WQ3587 NA [ ]

Work Order Number: JIH300271 SAF #: B01058 NA [ ]

Shipping Container ID: Hiking s/w09 980500.0 Chain Of Custody #: B01058 250 251

1. Custody Seals on shipping container intact? NA [ ] Yes [✓] No [ ]
2. Custody Seals dated and signed? NA [ ] Yes [✓] No [ ]
3. Chain of Custody record present? Yes [✓] No [ ]
4. Cooler temperature: 17° NA [ ]
5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [✓]
6. Number of samples in shipping container: 6
7. Sample holding times exceeded? NA [ ] Yes [ ] No [ ]
8. Samples have:
   - ✓ tape
   - ____ custody seals
   - ____ hazard labels
   - ✓ appropriate samples labels
9. Samples are:
   - ✓ in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles (Only for samples requiring head space)
10. Sample pH taken? NA [✓] pH<2 [ ] pH>2 [ ]
11. Were any anomalies identified in sample receipt? Yes [✓] No [ ]
12. Description of anomalies (include sample numbers): 2 bottles 1 warm sample (sent back) temp out

Sample Custodian: Pam Kenitzer Date: 8-30-01

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on ____ by ____ Person contacted ____

[ ] No action necessary; process as is.

Project Manager ____ Date ____

LS-023, 6/01, Rev. 3

Client Sample Screening Results

31-Aug-01

8/31/01

CLIENT CODE	ID	MATRIX	RECEIVED	DETECTOR	ACQ DATE	SAMPLE	MINUTES	CNTS A	NET CPM A	CNTS B	NET CPM B
BHI	B12ML5EJT8D		8/31/01 10:30:00 AM	QUAD21C	8/31/01 3:21:36 PM	B12ML5EJT8D	30	8251	274.96	604524	20149.918
	EJT8D	SOIL		Bkg:	8/31/01 2:33:34 AM		600	44	0.07333333	529	0.8816667

Anl Date: 8/31/01 Tot Sa, Alq: 2.42E+01 , 6.24E+01 Alp; (Dpm/ 3.26E+02 (uCi/ 5.70E-02 (pCi/ 2.35E+03 ± 5.1E+01 CAT 2.1E-02 Lab
Ppt mg: 62.4 Units: g , mg Bet; Alq): 4.32E+04 Sa): 7.55E+00 L|g): 3.12E+05 ± 4.0E+02 III 3.2E-04 Alq L|g

BHI	B12ML6EJT9N		8/31/01 10:30:00 AM	QUAD22A	8/31/01 3:21:29 PM	B12ML6EJT9N	30	311	10.2616667	15757	524.23
	EJT9N	SOIL		Bkg:	8/31/01 2:33:28 AM		600	63	0.105	602	1.0033333

Anl Date: 8/31/01 Tot Sa, Alq: 3.40E+01 , 1.11E+02 Alp; (Dpm/ 3.80E+01 (uCi/ 5.24E-03 (pCi/ 1.54E+02 ± 1.1E+01 CAT 3.2E-01 Lab
Ppt mg: 111 Units: g , mg Bet; Alq): 1.14E+03 Sa): 1.57E-01 L|g): 4.62E+03 ± 3.7E+01 II 2.2E-02 Alq L|g

0104

X-210.50

3/22/2018 REV.1

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B01-058-206	Page 1 of 1 8-28-6

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: VIKING SN 08/98 050011	Field Logbook No.: EL-1518-1	COA: B20TW2A44K ~~B20TW2674C~~ SJT	Method of Shipment: Fed EX
Shipping Company: Seventrent RT 8.28.01 ~~Seven Trent Incorporated RICHLAND~~ ~~ST Louis~~	Offsite Property No.: PSP 196563 8/24/01		Bill of Lading/Air Bill No.: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Radiological Field Instruments Reading 35mR B 2mR γ on bottles. Possible α.

Samples stored in Ref.# Site Trailer at the 3728 Shipping Facility on 8.28.01. Collector not available to relinquish samples on 8.28.01 RT 8.28.01 for shipment.

SDG W03587

SAMPLE ANALYSIS J1I100167

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None		
Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
No. of Container(s)	1	1	1	1	1	1	1	1		
Volume	60mL	60mL	250mL	60mL	250mL	120mL	250mL	60mL		
	Mercury - 7470 - (CV) PTW 08/30/01	Chromium Hex - 7196	See item (1) in Special Instructions. JTW 08/30/01	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.	Activity Scan		
Sample No.	Matrix *	Sample Date	Sample Time							
B12DC1-A EJ95K	SOIL	8/24/01	0200		X			X	X	B12 4K0
Returning 1/7/02 Dawes 1 60ml jar for Hexcr QL 090501										
4 oz on 2nd Unit										

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Greg Thomas/Greg Thomas 8/24/01	0600	Received By/Stored In: 200TW1&2 Site Trailer 8/24/01	0600
Relinquished By/Removed From: 200TW1&2 Site Trailer 8.28.01	0415	Received By/Stored In: R.T. Thorer 8.28.01	0415
Relinquished By/Removed From: R.T. Thorer 8.28.01	0450	Received By/Stored In: FEDEX	
Relinquished By/Removed From		Received By/Stored In: 8.29.01	0852
Relinquished By/Removed From: Jeff Clarke 090501	1700	Received By/Stored In: 09/10/01	12:30
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) IC Anions - 300.0 (Chloride, Fluoride, Nitrogen-in Nitrate, Nitrogen-in Nitrite, Phosphate, Sulfate); Ammonia - 350.1; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(2) Semi-VOA - 8270A (Add-On) (Tributyl phosphate); TPH Diesel Range - WTPH-D
(3) ICP Metals - 6010TR (Client List) (Aluminum, Bismuth, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Silver, Sodium, Vanadium, Zinc)
(4) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Gamma Spec - Add-on (Radium-226, Radium-228); Isotopic Plutonium; Isotopic Thorium (Thorium-230, Thorium-232); Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90 -- Total Sr; Technetium-99; Total Uranium; Tritium - H3; Isotopic Uranium

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

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

BHI-EE-011 (10/99)

Page 1 of 2 RT

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

3/22/2018 REV 1

B01-058-166

Page 1 of 2

Collector: Thomas G./Watson D.	Company Contact: Todd, M.E.	Telephone No.: (509) 372-9631	Project Coordinator: TRENT, SJ
Price Code: 8N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 200-TW-1 & 2 - Soil Sampling	Sampling Location: B-7A/200 E	SAF No.: B01-058	
Ice Chest No.: Viking Sn 08/98 050011	Field Logbook No.: EL-1518-1	COA: B20TW22 A4/4C ~~B20TW2674C~~	Method of Shipment: Fed EX
Shipped To: ~~TMA/RECRA~~ SEVERN TRENT	Offsite Property No.: RSR 106563		Bill of Lading/Air Bill No.: NA

POSSIBLE SAMPLE HAZARDS/REMARKS

Radiological Field Instrument Readings on bottles ranged from 1.5MRB/1.5MRY to 3.0MRB/1.3MRY. Possible 0.01 (mercury) of this sample

sample originally sent to RCL for on site analysis. Page 2 of 2 represents custody transfer to RCL for off-site analysis. A new chain of custody was started at the appropriate off site custody transfer point. Page 1 of 2 represents custody transfer from the original chain of custody for directed analysis.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1	1	1
Volume	60mL	60mL	60mL	120mL	250mL	250mL	250mL
	Chromium Hex - 7196	Mercury - 7470 - (CV)	VOA - 8260A (TCL)	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	See item (4) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time									Tie to
B12C89 BEJ95M	SOIL	8-23-01	0130	X	X		X	X				~~B12C84A~~ B12MJ8
2 of 2												
Returning 1x60ml jar for Hex Cr @ 090501												

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By	Date/Time
Relinquished By: Greg Thomas/Greg Thomas	0815 8/23/01	Received By: Stored in 200 TW1&2 site Trailer	0815 8/23/01
Relinquished By: 200 TW1&2 Trailer Site	0415 8.28.01	Received By: R. Thoren	0415 8.28.01
Relinquished By: R. Thoren	0450 8.28.01	Received By: FED EX	
Relinquished By		Received By:	8.29.01 0850
Relinquished By: Jill Clarke	090501 1700	Received By:	09/10/01 12:30
Relinquished By		Received By	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (TAL) {Cadmium, Chromium, Copper, Nickel, Silver}; ICP Metals - 6010A (Add-on) {Lead}
(2) IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Ammonia - 350.3; NO2/NO3 - 353.1; Total Cyanide - 9010; TOC - 9060; pH (Soil) - 9045
(3) ~~Semi-VOA - 8270A (Add On) {Tributyl phosphate}; TPH-Diesel Range - WTPH-D~~
(4) ~~Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Radium-226, Radium-228}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241; Carbon-14; Neptunium-237; Nickel-63; Strontium-89,90~~

Samples stored in Ref.# Site Trailer at the 3728 Shipping Facility on 8/29/01. Collector not available to relinquish samples on 8/28/01 for shipment.

RT 8.28.01

Matrix *: S=Soil; SD=Sediment; SO=Solid; S=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

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

BHI-EE-011 (10/99)

SAF#: AUG 30 '01 02:05PM BHI S&D MANAGEMENT 509 372 9487
VIKING CONTAINER: S/N 09/08/05001

MEDIA: SOLID

3/22/2018

REV.1

[redacted]

SAMPLE#: B12MK0
SAMPLE VOLUME: 40 grams Radscreen Result
PACKAGE MASS: 802 grams

HAVE	Pci/sample	Pci/gram	Ci/gram	Ci/pkg	TBq/pkg	MBq/pkg
Cs-137	1.60E+06	4.00E+04	4.00E-08	2.01E-05	7.43E-07	7.43E-01
Th-234	6.30E+04	1.58E+03	1.58E-09	7.91E-07	2.93E-08	2.93E-02
Pu-239	8.00E+04	2.00E+03	2.00E-09	1.00E-06	3.71E-08	3.71E-02
Am-241	1.60E+04	4.00E+02	4.00E-10	2.01E-07	7.43E-09	7.43E-03
Sr-90	1.80E+06	4.50E+04	4.50E-08	2.26E-05	8.36E-07	8.36E-01
TOTALS:	3.56E+06	8.90E+04	8.90E-08	4.47E-05	1.65E-06	1.65

SAMPLE #: B12MJ8
SAMPLE VOLUME: 35 grams Radscreen result
PACKAGE MASS: 486 grams

HAVE	Pci/sample	Pci/gram	Ci/gram	Ci/pkg	TBq/pkg	MBq/pkg
Cs-137	1.30E+06	3.71E+04	3.71E-08	1.80E-05	6.67E-07	6.67E-01
Pu-239	2.00E+05	5.71E+03	5.71E-09	2.77E-06	1.03E-07	1.03E-01
Am-241	4.80E+04	1.37E+03	1.37E-09	6.65E-07	2.46E-08	2.46E-02
Sr-90	1.50E+06	4.29E+04	4.29E-08	2.08E-05	7.69E-07	7.69E-01
TOTALS:	3.05E+06	8.71E+04	8.71E-08	4.22E-05	1.56E-06	1.56

ACCUMULATED ACTIVITY FOR ENTIRE PACKAGE

HAVE	Ci/pkg	TBq/pkg	MBq/pkg
Cs-137	3.81E-05	1.41E-06	1.41E+00
Th-234	7.91E-07	2.93E-08	2.93E-02
Pu-239	3.78E-06	1.40E-07	1.40E-01
Am-241	8.66E-07	3.20E-08	3.20E-02
Sr-90	4.34E-05	1.60E-06	1.60E+00
Totals:	8.69E-05	3.22E-06	3.22

ON RSR

LIMITED QUANTITY SHIPMENT (TBq/PKG)

HAVE	TBq/pkg	A2 VALUES	LTD.QTY A2(10-3) solid normal form	Derived Value Have/A2 Values	
Cs-137	1.41E-06	0.5	5.00E-04	2.82E-03	0.00
Th-234	2.93E-08	0.2	2.00E-04	1.46E-04	0.00
Pu-239	1.40E-07	2.00E-04	2.00E-07	6.98E-01	0.70
Am-241	3.20E-08	2.00E-04	2.00E-07	1.60E-01	0.16
Sr-90	1.60E-06	0.1	1.00E-04	1.60E-02	0.02
			UNITY TOTAL:	8.75E-01	0.88

Radioactive material, excepted package, limited quantity of material
UN2910
No RQ
Fissile Excepted

0107

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 09/10/01 12:30

Client: BHI SDG #: W03587 NA [ ] SAF #: B01-058 NA [ ]

Work Order Number: JI100167 Chain of Custody # B01-058-206, -166

Shipping Container ID: N/A Air Bill # _____

1. Custody Seals on shipping container intact? NA [ ] Yes [X] No [ ]
2. Custody Seals dated and signed? NA [ ] Yes [X] No [ ]
3. Chain of Custody record present? Yes [X] No [ ]
4. Cooler temperature: 2-4°C NA [ ] 5. Vermiculite/packing materials is NA [ ] Wet [X] Dry [ ]
6. Number of samples in shipping container: 2
7. Sample holding times exceeded? NA [X] Yes [ ] No [ ]
8. Samples have:
   - ____ tape
   - X custody seals
   - X hazard labels
   - X appropriate samples labels
9. Samples are:
   - X in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles (Only for samples requiring head space)
10. Sample pH taken? NA [X] pH<2 [ ] pH>2 [ ]
11. Sample Location, Sample Collector Listed? * Yes [X] No [ ]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [X]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: April Rhinehart / Richard Date: 09/10/01

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ *by* _____ *Person contacted* _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 9/01, Rev. 4

ICOC Fraction Transfer/Status Report

3/22/2018

REV.1

ByDate: 9/28/01, 12/29/01, Batch: '1263500', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
1263500						
AC		InSep2	SAUCEDAV	11/6/01 11:30:09 AM		
SC			SAUCEDAV	InPrep	11/6/01 11:30:09 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	12/6/01 4:17:06 PM	RICH-RC-5019 REVISION 2
SC			GILLIAMT	InSep1	12/18/01 2:12:34 PM	RICH-RC-5080 REVISION 0
SC			HAMMERL	InSep1	12/21/01 9:59:00 AM	RICH-RC-5080 REVISION 0
SC			ManisD	InSep2	12/27/01 10:49:28 AM	RICH-RC-5003 REVISION 4
SC			BlackCL	InCnt1	12/27/01 10:56:09 AM	RICH-RD-0008 REVISION 2
AC			WAGNERJ	12/6/01 4:17:06 PM		
AC			GILLIAMT	12/18/01 2:12:34 PM		
AC			HAMMERL	12/21/01 9:59:00 AM		
AC			ManisD	12/27/01 10:49:28		
AC			BlackCL	12/27/01 10:56:09		

0109

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt:6

ICOCFractions v4.4.3

12/27/01 12:30:28 PM

ICOC Fraction Transfer/Status Report

3/22/2018

REV.1

ByDate: 11/27/01, 12/28/01, Batch: '1263498', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
1263498						
AC		InCnt1	WAGNERJ	12/6/01 4:17:10 PM		
SC			SAUCEDAV	InPrep	11/6/01 11:30:13 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	12/6/01 4:17:10 PM	RICH-RC-5019 REVISION 2
SC			GILLIAMT	InSep1	12/18/01 2:12:39 PM	RICH-RC-5080 REVISION 0
SC			HAMMERL	InSep1	12/21/01 9:58:13 AM	RICH-RC-5080 REVISION 0
SC			KALLSEND	InSep2	12/21/01 6:08:13 PM	RICH-RC-5039 REVISION 3
SC			DAWKINSO	InCnt1	12/21/01 6:56:38 PM	RICH-RD-0008 REVISION 2
AC			GILLIAMT	12/18/01 2:12:39 PM		
AC			HAMMERL	12/21/01 9:58:13 AM		
AC			KALLSEND	12/21/01 6:08:13 PM		
AC			DAWKINSO	12/21/01 6:56:38 PM		

0110

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 5

ICOCFractions v4.4.3

ICOC Fraction Transfer/Status Report

3/22/2018

REV.1

ByDate: 11/19/01, 12/20/01, Batch: '1263524', User: 'All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
1263524						
AC		InCnt2	WAGNERJ	12/6/01 3:04:11 PM		
SC			SAUCEDAV	InPrep	11/6/01 11:30:19 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	12/6/01 3:04:11 PM	RICH-RC-5077 REVISION 1
SC			ManisD	InSep1	12/13/01 10:39:51 AM	RICH-RC-5009 REVISION 1
SC			BlackCL	InCnt1	12/13/01 11:48:34 AM	RICH-RD-0008 REVISION 2
SC			WagarR	IsBatched	12/18/01 1:08:16 PM	ICOC_RADCALC v4.4.3
SC			IOVINC	InCnt2	12/18/01 1:27:53 PM	RICH-RD-0008 REVISION 2
AC			**ManisD**	12/13/01 10:39:51		
AC			**BlackCL**	12/13/01 11:48:34		
AC			**IOVINC**	12/18/01 1:27:53 PM		

0111

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 4

ICOCFractions v4.4.3

12/21/01 9:23:09 AM

ICOC Fraction Transfer/Status Report

3/22/2018

REV.1

ByDate: 11/21/01, 12/22/01, Batch: '1263510', User: 'All' Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
1263510						
AC		InSep1	WAGNERJ	12/6/01 4:17:01 PM		
SC			SAUCEDAV	InPrep	11/6/01 11:30:05 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	12/6/01 4:17:01 PM	RICH-RC-5019 REVISION 2
SC			HAMMERL	InSep1	12/16/01 9:20:39 AM	RICH-RC-5084 REVISION 0
SC			KenitzerP	IsBatched	12/17/01 1:23:11 PM	ICOC_RADCALC v4.4.3
SC			McPHERONC	InSep2	12/18/01 1:02:28 PM	RICH-RC-5003 REVISION 4
SC			DAWKINSO	InCnt1	12/18/01 7:23:52 PM	RICH-RD-0008 REVISION 2
AC			HAMMERL	12/16/01 9:20:39 AM		
AC			McPHERONC	12/18/01 1:02:28 PM		
AC			DAWKINSO	12/18/01 7:23:52 PM		

0112

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 4

ICOCFractions v4.4.3

ICOC Fraction Transfer/Status Report

3/22/2018

REV.1

ByDate: 11/21/01, 12/22/01, Batch: '1263506', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
1263506						
AC		InCnt1	WAGNERJ	12/6/01 4:16:43 PM		
SC			SAUCEDAV	InPrep	11/6/01 11:30:42 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	12/6/01 4:16:43 PM	RICH-RC-5019 REVISION 2
SC			McPHERONC	InSep2	12/19/01 1:59:51 PM	RICH-RC-5039 REVISION 3
SC			BlackCL	InCnt1	12/19/01 2:44:47 PM	RICH-RD-0008 REVISION 2
AC			McPHERONC	12/19/01 1:59:51 PM		
AC			BlackCL	12/19/01 2:44:47 PM		

0113

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 3

ICOCFractions v4.4.3

ICOC Fraction Transfer/Status Report

ByDate: 10/21/01, 11/21/01, Batch: '1263522', User: All, Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

3/22/2018

REV.1

Q Batch	Work Ord	CurStatus	Accepting			Comments
1263522						
AC		InCnt1	SAUCEDAV	11/6/01 11:30:46 AM		
SC			SAUCEDAV	1263515	11/6/01 11:30:46 AM	RICH-RC-5013 REVISION 4
SC			SAUCEDAV	1263515	11/6/01 11:30:49 AM	RICH-RC-5017 REVISION 3
SC			DAWKINSO	InCnt1	11/9/01 5:05:04 PM	RICH-RD-0007 REVISION 2
AC			SAUCEDAV	11/6/01 11:30:49 AM		
AC			DAWKINSO	11/9/01 5:05:04 PM		

0114

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 3

ICOCFractions v4.4.1

ICOC Fraction Transfer/Status Report

3/22/2018

REV.1

ByDate: 12/1/01, 1/1/02, Batch: '1263520', User: 'All' Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
1263520						
AC		InCnt1	WAGNERJ	12/6/01 4:16:15 PM		
SC			SAUCEDAV	InPrep	11/6/01 11:31:13 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	12/6/01 4:16:15 PM	RICH-RC-5013 REVISION 4
SC			SMITHP	InSep1	12/6/01 5:21:56 PM	RICH-RC-5006 REVISION 4
SC			SteffensB	InPrep	12/28/01 1:46:40 PM	RICH-RC-5006 REVISION 4
SC			SteffensB	InSep1	12/28/01 1:47:04 PM	RICH-RC-5006 REVISION 4
SC			DAWKINSO	InCnt1	12/28/01 6:00:34 PM	RICH-RD-0003 REVISION 2
AC			SMITHP	12/6/01 5:21:56 PM		
AC			DAWKINSO	12/28/01 6:00:34 PM		

0115

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 3

ICOCFractions v4.4.3

ICOC Fraction Transfer/Status Report

3/22/2018

REV.1

ByDate: 10/9/01, 11/9/01, Batch: '1263511', User: * All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
1263511						
AC		InCnt1	SAUCEDAV	11/6/01 11:31:27 AM		
SC			SAUCEDAV	1263515	11/6/01 11:31:27 AM	RICH-RC-5013 REVISION 4
SC			McDowellD	InSep1	11/7/01 9:02:53 AM	RICH-RC-5022 REVISION 3
SC			BlackCL	InCnt1	11/7/01 1:58:05 PM	RICH-RD-0001 REVISION 1
AC			McDowellD	11/7/01 9:02:53 AM		
AC			BlackCL	11/7/01 1:58:05 PM		

0116

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 3

ICOCFractions v4.4.1

12/13/01 12:04:51 PM

ICOC Fraction Transfer/Status Report

3/22/2018

REV.1

ByDate: 11/13/01, 12/14/01, Batch: '1263512', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
1263512						
AC		InCnt1	**WAGNERJ**	12/6/01 4:16:54 PM		
SC			SAUCEDAV	*InPrep*	11/6/01 11:30:00 AM	RICH-RC-5013 REVISION 4
SC			WAGNERJ	InPrep2	12/6/01 4:16:54 PM	RICH-RC-5019 REVISION 2
SC			SMITHP	InSep1	12/10/01 11:34:16 AM	RICH-RC-5069 REVISION 3
SC			BlackCL	InCnt1	12/11/01 11:25:55 AM	RICH-RD-0001 REVISION 1
AC			**SMITHP**	12/10/01 11:34:16		
AC			**BlackCL**	12/11/01 11:25:55		

0117

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 3

ICOCFractions v4.4.3

ICOC Fraction Transfer/Status Report

3/22/2018

REV.1

ByDate: 10/14/01, 11/14/01, Batch: '1263515', User: 'All' Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
1263515						
AC		InCnt1	SAUCEDAV	11/6/01 11:29:51 AM		
SC			SAUCEDAV	1263515	11/6/01 11:29:51 AM	RICH-RC-5013 REVISION 4
SC			BOYDR	InSep1	11/8/01 1:02:48 PM	RICH-RC-5078 REVISION 1
SC			IOVINC	InCnt1	11/10/01 10:55:07 AM	RICH-RD-0001 REVISION 1
SC			IOVINC	InCnt1	11/10/01 10:58:44 AM	RICH-RD-0001 REVISION 1
AC			BOYDR	11/8/01 1:02:48 PM		
AC			IOVINC	11/10/01 10:55:07		
AC			IOVINC	11/10/01 10:58:44		

0118

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 4

ICOCFractions v4.4.1

ICOC Fraction Transfer/Status Report

ByDate: 10/9/01, 11/9/01, Batch: '1263519', User: All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

3/22/2018

REV.1

Q Batch	Work Ord	CurStatus	Accepting			Comments
1263519						
AC		InCnt1	SAUCEDAV	11/6/01 11:31:20 AM		
SC			SAUCEDAV	1263515	11/6/01 11:31:20 AM	RICH-RC-5013 REVISION 4
SC			McDowellD	InSep1	11/7/01 9:03:35 AM	RICH-RC-5037 REVISION 3
SC			BlackCL	InCnt1	11/7/01 1:57:58 PM	RICH-RD-0001 REVISION 1
AC			McDowellD	11/7/01 9:03:35 AM		
AC			BlackCL	11/7/01 1:57:58 PM		

0119

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 3

ICOCFractions v4.4.1

12/13/01 12:04:21 PM

ICOC Fraction Transfer/Status Report

3/22/2018

REV.1

ByDate: 11/13/01, 12/14/01, Batch: '1263508', User: 'All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting			Comments
1263508							
AC			InPrep2	WAGNERJ	12/6/01 4:16:38 PM		
SC				SAUCEDAV	InPrep	11/6/01 11:30:36 AM	RICH-RC-5013 REVISION 4
SC				WAGNERJ	InPrep2	12/6/01 4:16:38 PM	RICH-RC-5019 REVISION 2
AC				WAGNERJ	12/6/01 4:17:15 PM		

0120

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt:2

ICOCFractions v4.4.3