REF: 01-DOE-01741; Ø00625-RF-01

Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

BUILDINGS 702, 703, 712, 712A, 713, 713A

(Building 776/777'S Cooling Towers and Support Buildings)

776/777 CLOSURE PROJECT

REVISION 1

September 7, 2001

1/642

ADMIN RECORD
B776-A-000077

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(Building 776/777'S Cooling Towers and Support Structures)

776/777 CLOSURE PROJECT

REVISION 1

September 7, 2001

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ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
$DCGL_{EMC}$	Derived Concentration Guideline Level – elevated measurement comparison
$DCGL_W$	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U.S. Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U.S. Environmental Protection Agency
FDPM	Facility Disposition Program Manual
K-H	Kaiser-Hill
LBP	Lead-based paint
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
MDL	Minimum detection
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSA	Removable surface activity
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TBD	Technical Basis Document
TSA	Total surface activity
VOCs	Volatile organic compounds
V&V	Verification and validation

EXECUTIVE SUMMARY

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Buildings 702, 703, 712, 712A, 713, and 713A (Building 776/777's Cooling Towers and satellite buildings). The PDS encompassed radiological characterization pursuant to the D&D Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The characterization built upon physical, chemical and radiological hazards identified in the *Building 776 / 777 Reconnaissance Level Characterization Report,* August 28, 1998.

Results indicate that no radiological contamination exists in excess of the prescribed release limits of DOE Order 5400.5. Asbestos containing insulation exists on piping associated with the cooling tower pumps, and will be removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Facility surfaces may contain paints with PCBs and metals. All demolition debris will be managed in compliance with regulations governing potential PCB bulk product wastes (40 CFR 761), and RFETS Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal* as applicable.

To ensure that the facility remains free of contamination and that PDS data remain valid, isolation controls will be established and posted accordingly. Demolition shall not occur until the PDS Report is submitted to and approved by the Colorado Department of Public Health and Environment (CDPHE).

Additional post-demolition radiological surveys must be performed on the upper reaches of Buildings 712 and 713 prior to their free release; safety considerations precluded access during this PDS. Process knowledge strongly indicates that these surveys will allow free release of materials for off-site disposal.

All buildings surveyed may be classified as Type I buildings under the Rocky Flats Cleanup Agreement (RFCA).

1 INTRODUCTION

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Buildings 702, 703, 712, 712A, 713, and 713A (Building 776/777's Cooling Towers and satellite buildings), or "the buildings subject to this report". These facilities no longer support the RFETS mission and need to be removed to reduce Site infrastructure, risks and/or operating costs. The location of the buildings subject to this report is shown in Attachment A.

This document presents the PDS results. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS built upon physical, chemical and radiological hazards identified in the *Building 776/777 Reconnaissance Level Characterization Report,* dated August 28, 1998.

1.1 Purpose

The purpose of this report is to communicate and document the results of the PDS. PDSs are performed before building demolition to define the final radiological and chemical conditions of a facility. Final conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

1.2 Scope

This report presents the final radiological and chemical conditions of Buildings 702, 703, 712, 712A, 713, and 713A (Building 776/777's Cooling Towers and satellite buildings), or "the buildings subject to this report". These buildings' debris will be dispositioned pursuant to the Rocky Flats Cleanup Agreement (RFCA). Soil samples were not obtained, because the planned decommissioning of these structures will not involve excavation of any sub-surface structures.

Sample locations were, when possible, photo-documented, and are included in Attachment A.

1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this PDS were the same DQOs identified in the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to Section 2.0 of MAN-127-PDSP for these DQOs.

2 RECONNAISSANCE LEVEL CHARACTERIZATION

A facility-specific Reconnaissance Level Characterization (RLC) was conducted to understand the facility history and related hazards. The RLC consisted of a facility walkdown, interviews, document review, including review of the Historical Release Report, radiological surveys, and chemical sampling and analysis. The RLC for the buildings subject to this report was performed as part of the RLC for Building 776/777

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cluster in FY 1998; no radiological and chemical hazards were identified in the buildings subject to this report. Results are documented in the *Building 776/777 Reconnaissance Level Characterization Report,* August 28, 1998.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

The buildings subject to this report were characterized to confirm that the structures meet unrestricted release criteria per the PDSP. Section 3.1 describes the radiological characterization process that was performed, and Section 3.2 summarizes the radiological hazards that were identified, if any.

3.1 Radiological Characterization

Radiological characterization was performed to define the nature and extent of radioactive materials that may be present in the buildings subject to this report. Measurements were performed to evaluate the contaminants of concern. Based upon a review of the RLCR, historical and process knowledge, building walkdowns, and MARSSIM guidance, a characterization package was developed during the planning phase that describes how the facility was broken down into survey units and the minimum survey requirements. This package was discussed with the Department of Energy – Rocky Flats Field Office (DOE-RFFO) and CDPHE representatives so as to obtain concurrence prior to sampling. The characterization package is included in Attachment B to this report.

Radiological survey unit packages were developed for each survey unit in accordance with Radiological Safety Practices (RSP) 16.01, "Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure." Total Surface Activity (TSA), removable and scan measurements were collected in accordance with RSP 16.02 "Radiological Surveys of Surfaces and Structures." Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, "Radiological Survey/Sample Data Analysis." Quality Control measures were implemented through the survey and sampling process in accordance with RSP 16.05, "Radiological Survey/Sample Quality Control."

The radiological characterization was completed consistent with the requirements of the characterization package, with no exceptions. Investigations for elevated readings for two survey units are described in the radiological section of Attachment C.

Radiological survey data, statistical analysis results, and survey locations are presented in Attachment C, Radiological Data Summaries and Survey Maps. Radiological survey unit packages are maintained in the Buildings 776/777 Characterization Project files.

3.2 Radiological Hazards Summary

The PDS confirmed that the buildings subject to this report do not contain radiological contamination above the surface contamination guidelines provided in DOE Order 5400.5 and the RFETS Radiological Control Manual. Isolation control postings will be displayed on the structure to ensure no radioactive materials are introduced.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

The buildings subject to this report were characterized for chemical hazards per the PDSP. Section 4.1 describes the chemical characterization process that was performed, and Section 4.2 summarizes the chemical hazards that were identified, if any.

4.1 Chemical Characterization

Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on or in the buildings subject to this report. Based upon a review of the RLCR, historical and process knowledge, visual inspections, and PDSP data quality objectives (DQOs), additional characterization needs were determined. A characterization package was developed during the planning phase that describes additional characterization requirements. This package was discussed with DOE-RFFO and CDPHE representatives so as to obtain concurrence prior to sampling. The characterization package is included in Attachment B to this report.

4.1.1 Asbestos

An asbestos inspection of the B776/777 complex was previously performed by a CDPHE-certified asbestos inspector. The results of the characterization are available as a separate package, and has been filed as part of the 776 / 777 Project's CERCLA administrative record. Asbestos is present on piping and as insulation repair media in the buildings subject to this report.

4.1.2 Beryllium (Be)

As required, beryllium swipes were obtained from vertical and horizontal surfaces most likely to harbor beryllium contamination. No beryllium was detected above the method detection limit, where the detection limit was below the most recently published DOE beryllium standards.

4.1.3 RCRA/CERCLA Constituents [including metals and volatile and semi-volatile organic compounds (VOCs & SVOCs)]

Based on process knowledge and personnel interviews, there is no reasonable likelihood for RCRA/CERCLA volatile or semivolatile organic constituents to have contaminated the buildings subject to this report. In contrast, the redwoods comprising the cooling tower infrastructure had the potential to have been treated with heavy metals – based wood preservation (such as copper chromium arsenate). As required by the characterization package, chip samples were obtained of the wooden infrastructure and analyzed for leachable heavy metals. Leachable heavy metals were not detected above the characteristic hazardous waste regulatory threshold.

RFETS Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based paint Debris Disposal*, states that LBP debris generated outside of currently identified high contamination areas shall be managed as non-hazardous (solid) wastes, and additional analysis for characteristics of hazardous waste derived from LBP is not a

requirement for disposal. Therefore, no sampling for heavy metals based paints was needed or conducted.

Observation allows the conclusion that fluorescent and incandescent lights are present in the buildings subject to this report. Fluorescent lights can be universal hazardous wastes if mercury is present, and incandescent lights are universal hazardous wastes if lead is present. Building 776 / 777's Operations Order for the Management of Light Bulbs directs that light bulbs be removed, segregated, and if possible, crushed for eventual recycling off – site. Current plans are to move the lamps to Building 776's northwest loading dock for processing as CERCLA remediation wastes per the substantive aspects of the universal hazardous waste requirements.

4.1.4 Polychlorinated Biphenyls (PCBs)

Based on process knowledge and personnel interviews, there is no reasonable likelihood for PCBs (except for PCB bulk product wastes) to be present. Therefore, no PCB sampling and analysis was conducted.

Historical data and process knowledge give no reason to suspect that any specialized paints or coatings containing PCBs were applied to any of the painted surfaces on the buildings subject to this report. However, RFETS Environmental Waste Compliance Guidance #25, *Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition*, has directed that applied dried paints, varnishes, waxes, or other similar coatings or sealants are acceptable for disposal (with notification) in a non-hazardous solid waste landfill as PCB Bulk Product Waste under 40 CFR 761.3 and 40 CFR 761.62 paragraph (b), and therefore, need not be sampled as long as restrictions outlined in 40 CFR 761.62 regarding their disposition are met. Current plans are to dispose of the demolition debris in an off-site, non-hazardous solid waste landfill as potential PCB Bulk Product Waste.

Observation allows the conclusion that PCB ballasts are likely associated with fluorescent lighting found in the buildings subject to this report. Building 776 / 777's Operations Order for the Management of PCBs directs that PCB ballasts be removed, segregated, and managed as PCB bulk product wastes for possible recycling and/or destruction at a TSCA permitted facility, or alternatively be packaged for landfill disposal at a facility carrying either TSCA or a TSCA functionally equivalent permit status. Current plans are to move the fluorescent light fixtures and manage the ballasts as PCB bulk product wastes at either a recycling or incineration facility.

4.2 Chemical Hazards Summary

4.2.1 Asbestos

Asbestos containing insulation exists on piping associated with the cooling tower pumps. This insulation will be removed and disposed of in compliance with Environmental Protection Agency (EPA) and CDPHE regulations.

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4.2.2 Beryllium

Based on sampling results, process knowledge, and personnel interviews (RLC), there is no reasonable likelihood for Be to be present.

4.2.3 RCRA/CERCLA Constituents

Based on process knowledge and personnel interviews (RLC), there are no hazards associated with historical spills/releases of RCRA/CERCLA constituents.

4.2.4 PCBs

Based on process knowledge and personnel interviews (RLC), there are no hazards associated with any historical PCB spills/releases. It is not suspected that any specialized paints or coatings containing PCBs were applied to surfaces of the buildings subject to this report; however, plans are to dispose of demolition debris in an off-site, non-hazardous solid waste landfill as PCB Bulk Product Waste.

5 PHYSICAL HAZARDS

Physical hazards associated with the buildings subject to this report consist of those common to standard industrial environments and include hazards associated with energized systems, utilities, and trips and falls. In addition, the facility has deteriorated over time and is in poor condition. In fact, the cooling tower structures have been condemned, and close access is restricted. Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

It was these physical hazards that precluded access to the upper reaches of the cooling towers (Buildings 712 and 713). Additional post demolition radiological surveys must be conducted prior to this material's free release for off-site disposal as non-radiological waste.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of the buildings subject to this report, and consequent waste management, are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments A – D) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original DQOs of the project.

Adequate data quality for decision-making is required by the Kaiser-Hill Team Quality Assurance Program (K-H, 1997, §7.1.4 and 7.2.2), the DOE (Order 414.1, Quality Assurance, §4.b.(2)(b)), and the Regulators (EPA Region VIII and the CDPHE). The data and consequent environmental decisions must be technically and legally defensible. Verification and validation (V&V) of the data, in concert with the DQO process, ensure that data used in decisions resulting from the PDS are usable and defensible.

V&V of the data are the primary components of the DQA, and are attached to this report in Appendix E. A summary of the decisions and uncertainties resulting from the DQO process specific to this project are displayed in Attachment E, Table E-1. DQA for radiological data drew heavily from guidance provided in the MARSSIM (NUREG-1575) and Radiological Safety Practices (RSPs) 16.04 and 16.05. V&V of non-radiological data drew from a number of requirements and guidance documents, including EPA QA/G-4 (EPA, 1994) and QA/G-9 (EPA, 1998). Other applicable guidance and requirements documents are referenced within the 776 / 777 Characterization Project files.

In summary, the V&V process corroborates that the following elements of the characterization process are adequate:

- the *number* of samples and surveys;
- the *types* of samples and surveys;
- the sampling/survey process, in the field; and,
- the laboratory analytical process, relative to accuracy and precision considerations.

7 CONCLUSIONS

The PDS of Buildings 702, 703, 712, 712A, 713, and 713A was performed in accordance with the DDCP and PDSP. All PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. The buildings subject to this report do not contain radiological or hazardous wastes, with the exception of non-radiological lighting (lead, mercury, and PCBs) and asbestos. Waste lamps, if not reusable, will be managed as CERCLA remediation wastes per the substantive aspects of the universal hazardous waste standards. All potential PCB bearing demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761), as applicable, in accordance with the Decommissioning Program Plan, Section 3.3.5. Asbestos containing material will be removed and disposed of in compliance with EPA and CDPHE regulations. To ensure that the buildings subject to this report remain free of contamination and that PDS data remain valid, isolation controls will be established, and the facility will be posted accordingly.

Additional post-demolition radiological surveys must be conducted on materials from the upper reaches of the cooling towers (Buildings 712 and 713) prior to their free release for off-site disposal as non-radiological waste.

Absent indications of radiological contamination, this PDSR meets all DDCP expectations. If the post demolition surveys allow free release, the radiological results will be placed in Building 776 / 777 Project's administrative record.

8 REFERENCES

DOE/RFFO, CDPHE, EPA, 1996. Rocky Flats Cleanup Agreement (RFCA), July 19, 1996.

DOE Order 5400.5, "Radiation Protection of the Public and the Environment."

DOE Order 414.1A, "Quality Assurance."

EPA, 1994. "The Data Quality Objective Process," EPA QA/G-4.

K-H, 1997. "Kaiser-Hill Team Quality Assurance Program", Rev. 5, December, 1997.

K-H, 1998. Facility Disposition Program Manual, MAN-076-FDPM, Rev. 1, September 1999.

K-H, 1999. Decontamination and Decommissioning Characterization Protocol, MAN-077-DDCP, Rev. 1, June 19, 2000.

K-H, 1999. Decommissioning Program Plan, June 21, 1999.

K-H, 2000. Pre-Demolition Survey Plan, MAN-127-PDSP, Rev. 0, March 26, 2001.

MARSSIM - Multi-Agency Radiation Survey and Site Investigation Manual, December 1997 (NUREG-1575, EPA 402-R-97-016).

PRO-475-RSP-16.01, Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure

PRO-476-RSP-16.02, Radiological Surveys of Surfaces and Structures

PRO-477-RSP-16.03, Radiological Samples of Building Media

PRO-478-RSP-16.04, Radiological Survey/Sample Data Analysis

PRO-479-RSP-16.05, Radiological Survey/Sample Quality Control

PRO-563-ACPR, Asbestos Characterization Procedure, Revision 0

PRO-536-BCPR, Beryllium Characterization Procedure, Revision 0.

RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition, April 14, 1999.

RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal, June 4, 1999.

776 / 777 Reconnaissance Level Characterization Report, Rev 0, August 28, 1998

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Best Available Copy

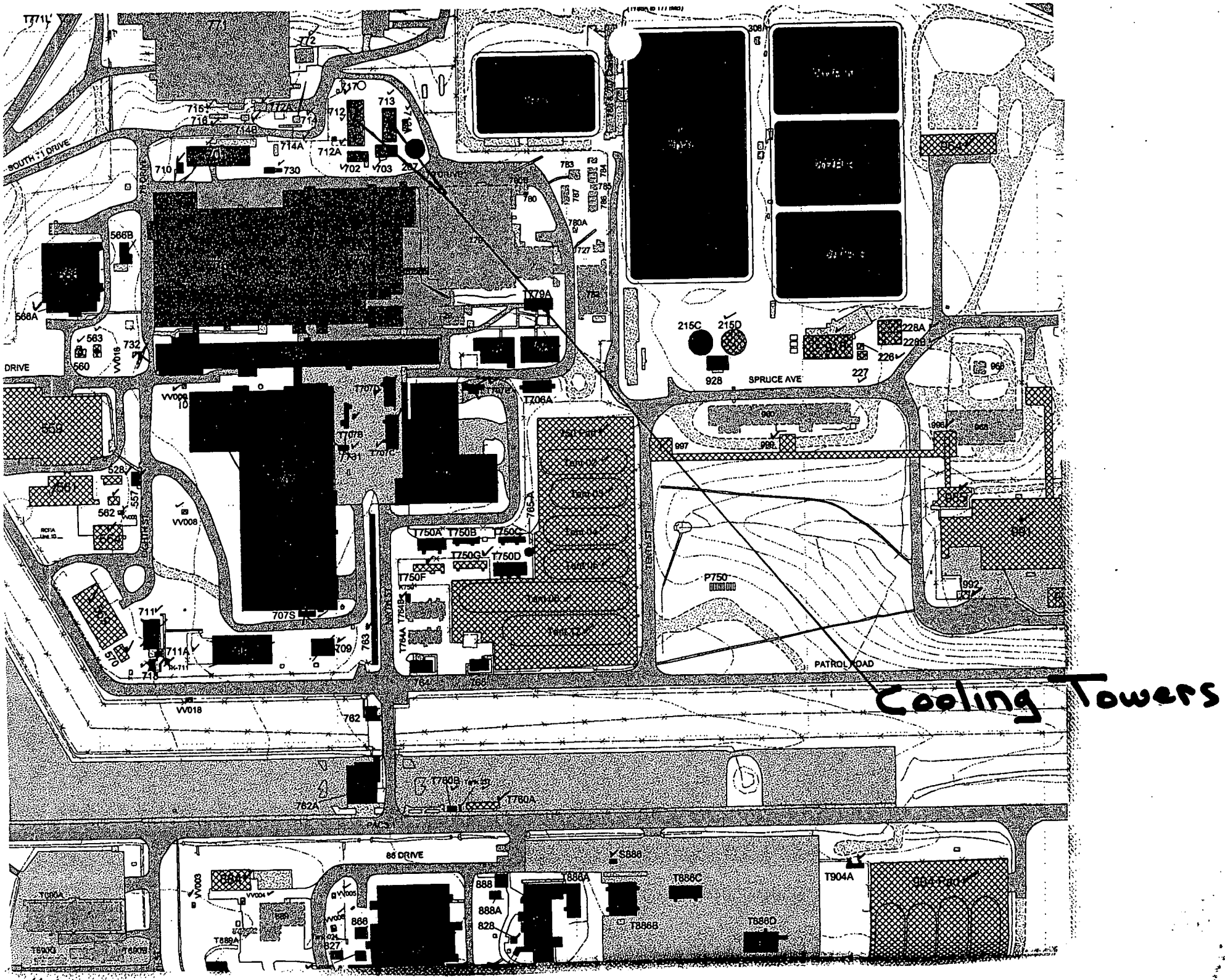
ATTACHMENT A

Facility Location Map

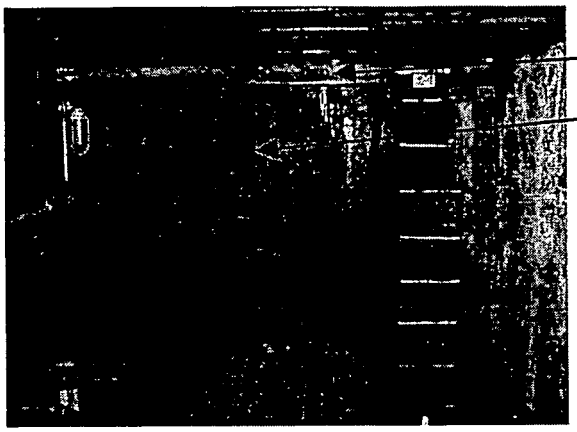
And

Sample Location Photographs

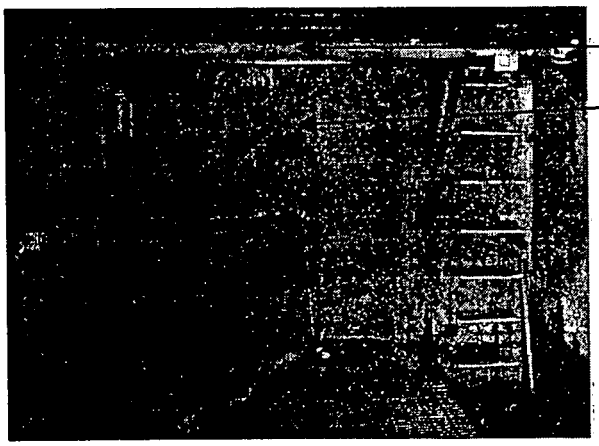
Best Available Copy


SOUTH 71 DRIVE
SPRUCE AVE
PATROL ROAD
86 DRIVE
DRIVE
Cooling Towers

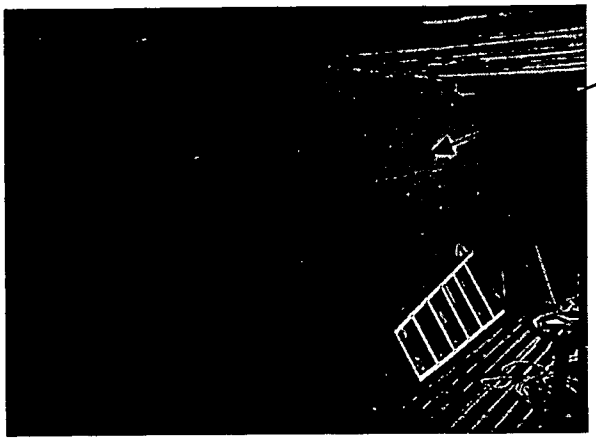
West wall, Building 713A
Be sample 007.001
Be sample on horizontal surface of valve (not pictured) 006.001



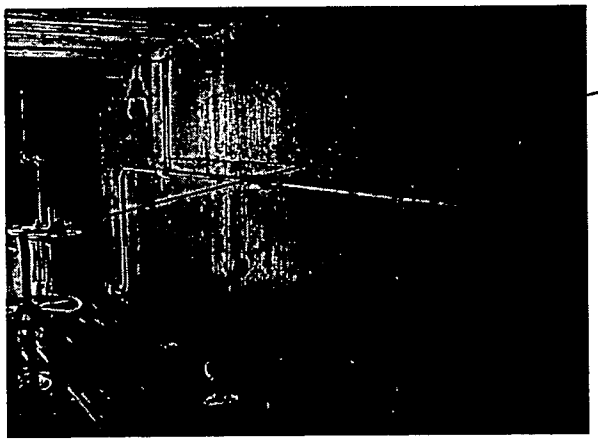
North wall, Building 713A
Be sample 008.001
Be sample 009.001



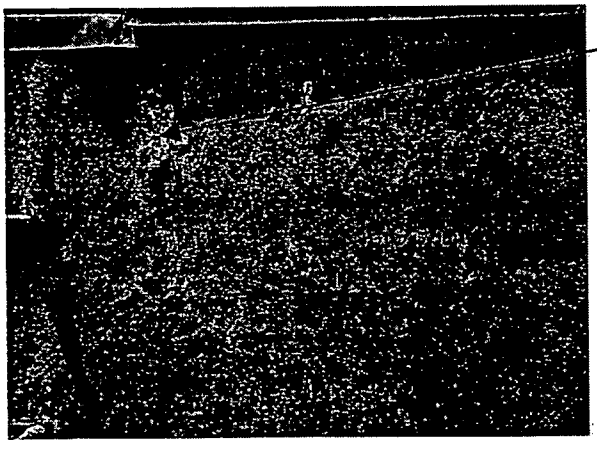
North wall, Building 713A
Be sample 008.001
Be sample 009.001



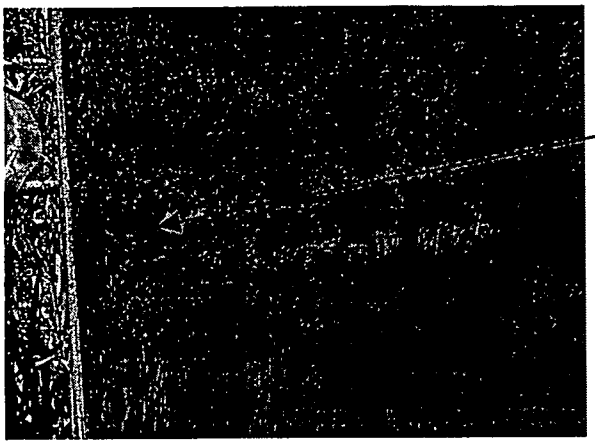
East wall, Building 713A
Be sample 010.001



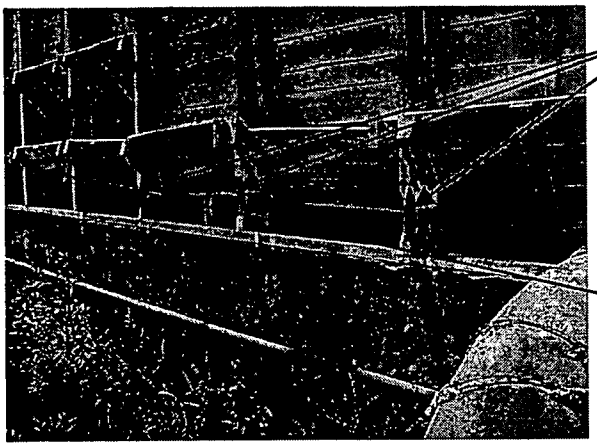
West wall, Building 713A
Be sample 006.001 (horizontal surface of valve)



Exterior, Building 713A
Rad chip

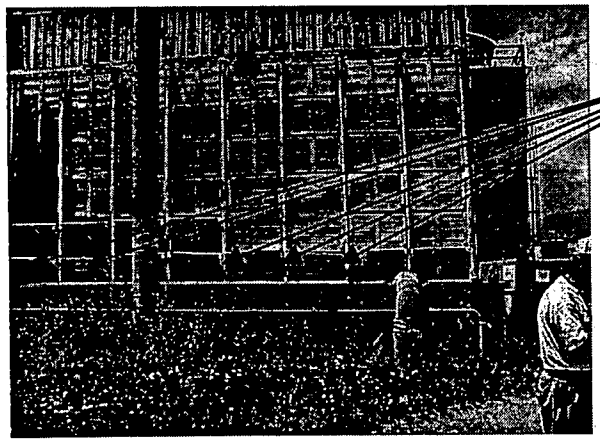


Exterior, Building 713A
Rad chip



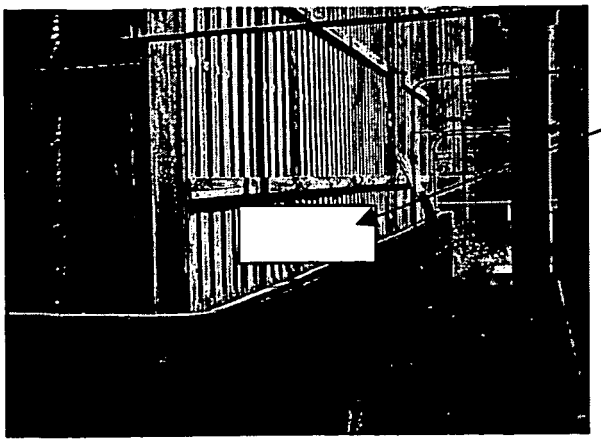
East side Cooling Tower 713
009.001, 2, and 3 (on structural members)

008,001, 2, and 3 (on slats)



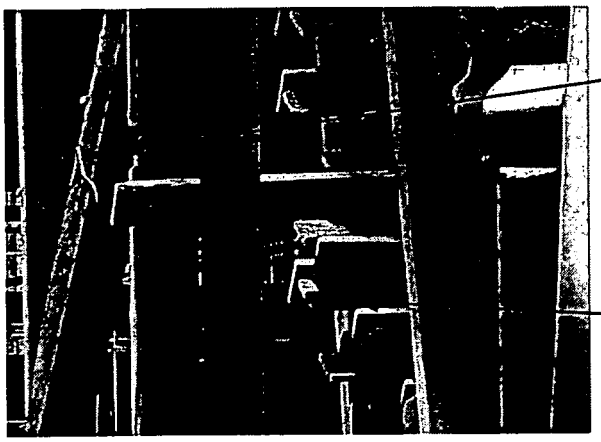
East side Cooling Tower 713

As above, 009.001, 2, and 3



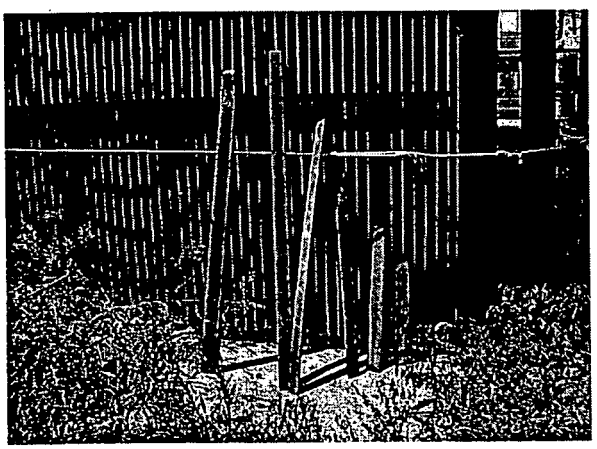
South side Cooling Tower 713

006.01, 2, and 3
Taken from slabs in blocked out area
(marks not visible in photograph)

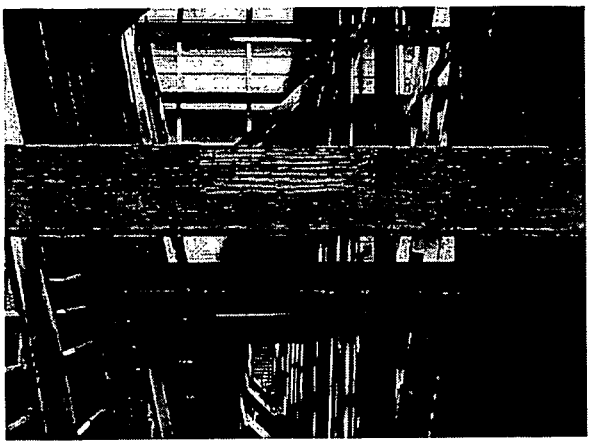


South side Cooling Tower 712
001.001, 2, and 3 (framework)

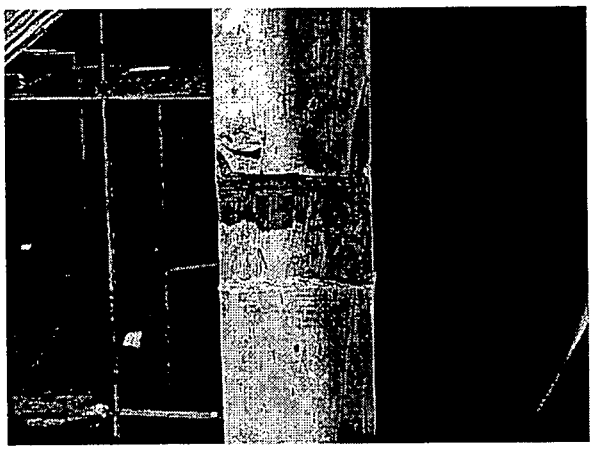
002,001, 2, and 3 (slats)



Slats from South side Cooling Tower
712
002.001, 2, and 3



South side Cooling Tower 712
Details of framework samples
001.001, 2, and 3



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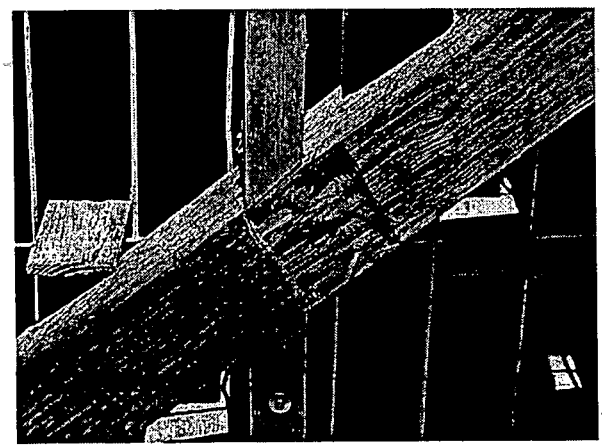

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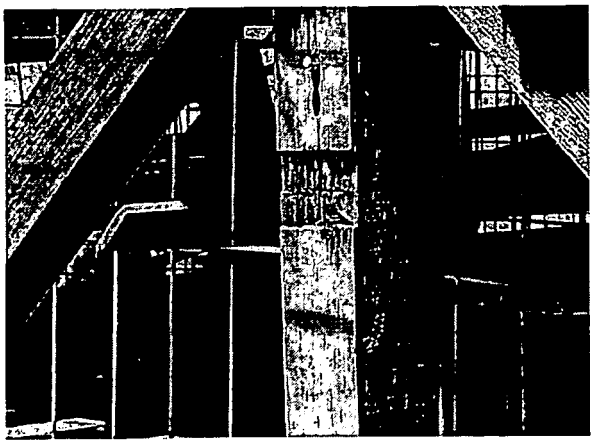
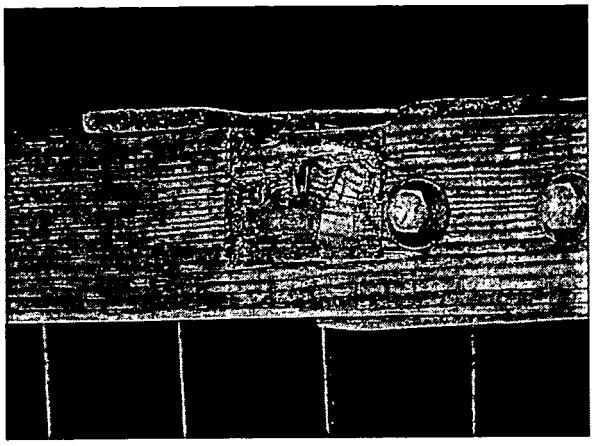
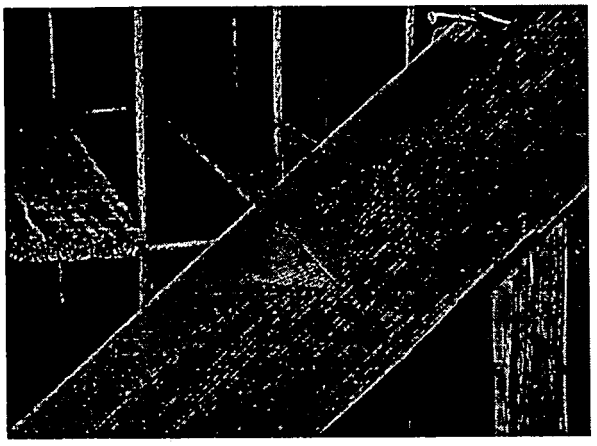


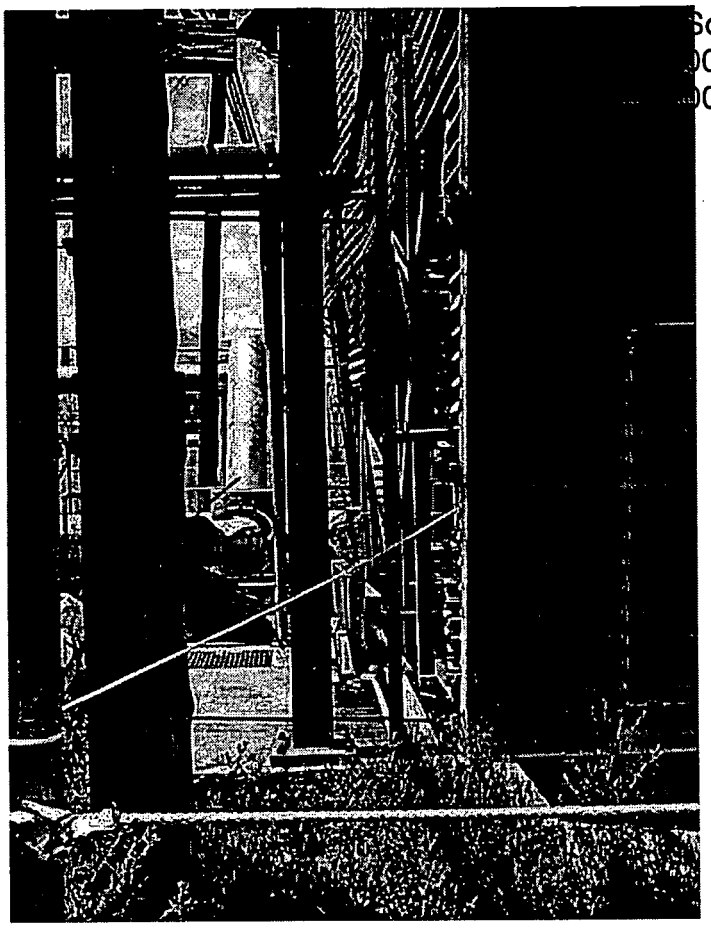
South side Cooling Tower 712
Details of framework samples
001.001, 2, and 3



See above.

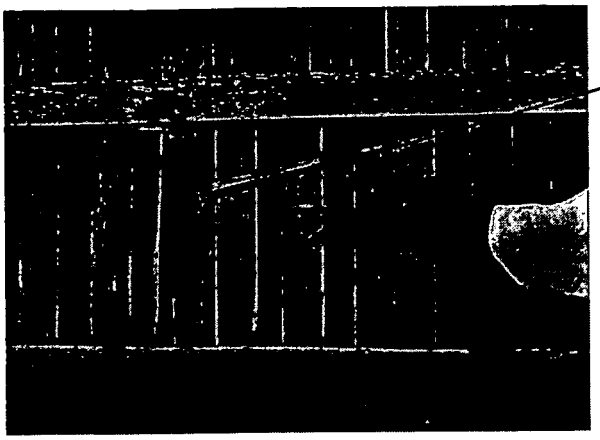


See above.

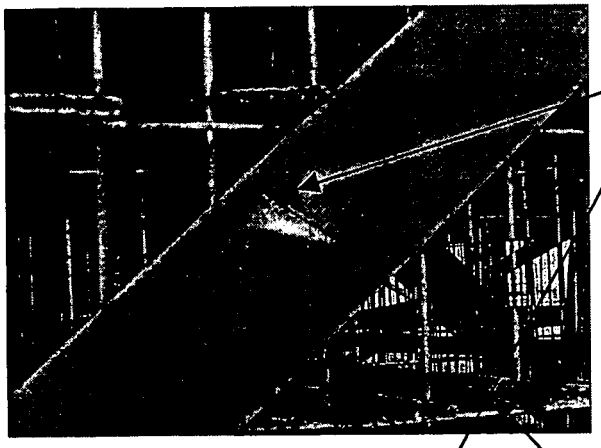


South side Cooling Tower 712
002.001, 2, and 3 (slats)
001.001, 2, and 3 (framework)

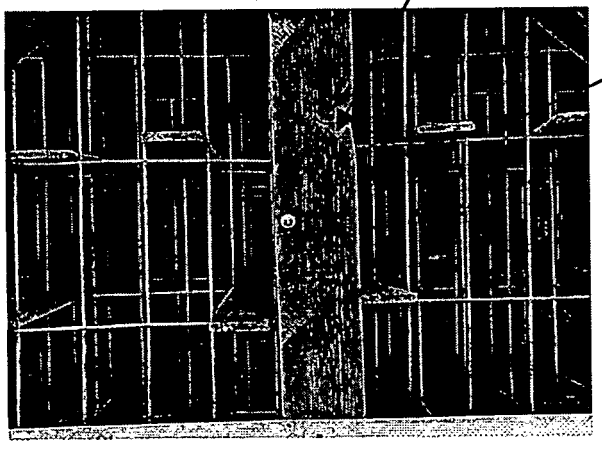
North side, Cooling Tower 713
07.001, 2, and 3 (slats)



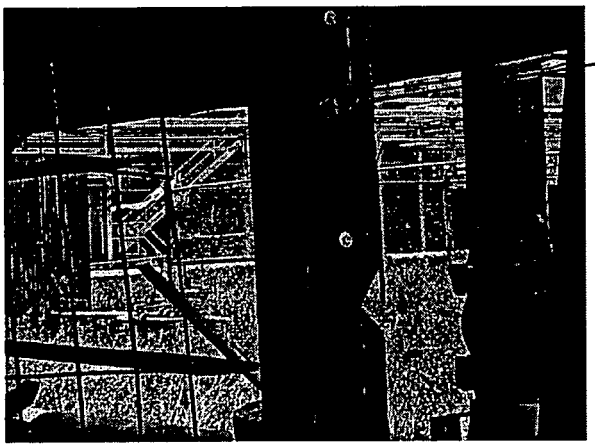
North side Cooling Tower 713
007.001, 2, and 3 (slats)



North side Cooling Tower 712
005.001, 2, and 3 (framwork)

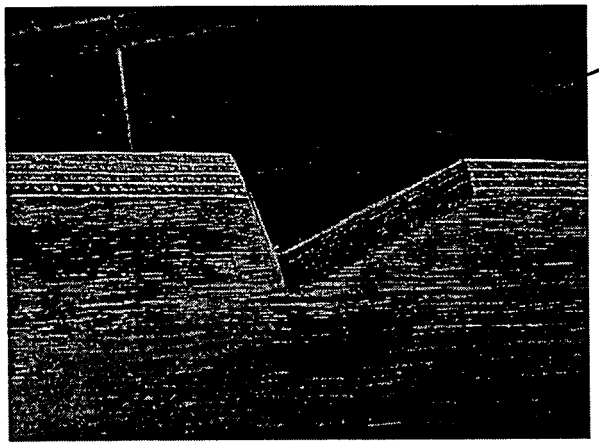


North side Cooling Tower 712
003.001, 2, and 3 (slats)

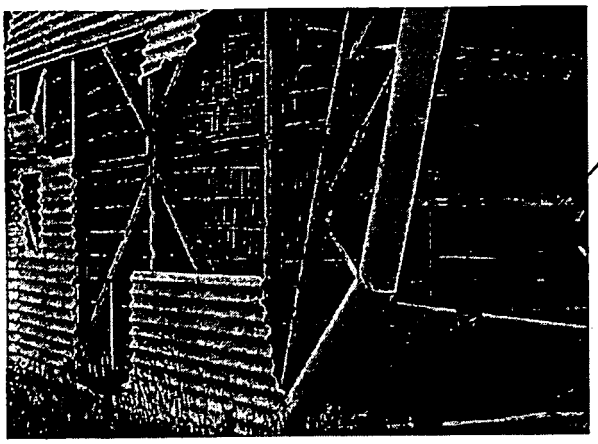


North side Cooling Tower 712
005.001, 2, and 3 (framework)

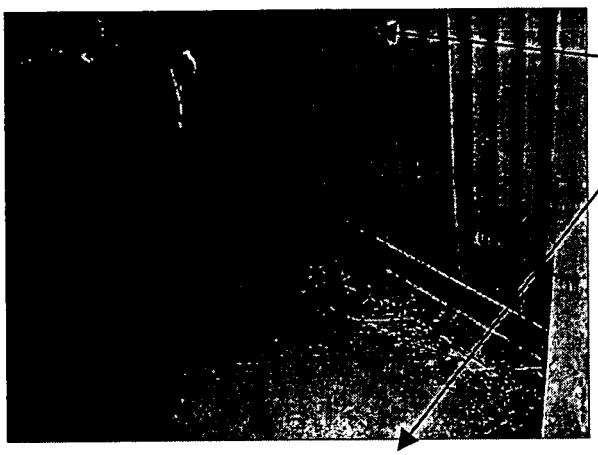
Northwest Corner, Cooling Tower 712
004.001, 2, and 3 (plywood)



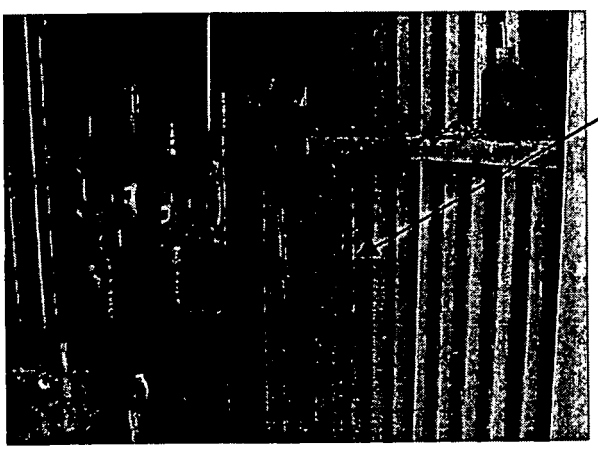
Northwest Corner, Cooling Tower 712
004.001, 2, and 3 (plywood)



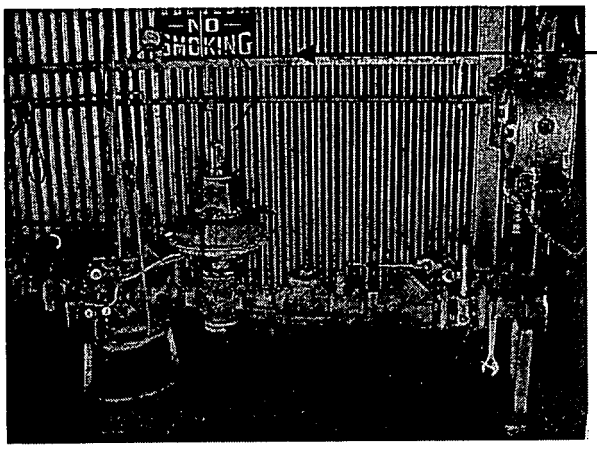
Northwest Corner, Cooling Tower 712
004.001, 2, and 3 (plywood)



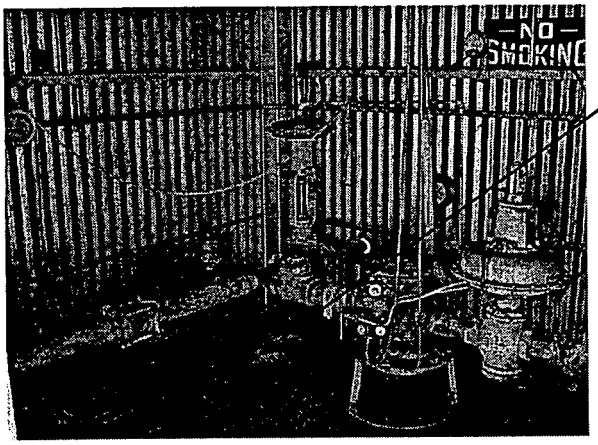
North side Building 712A
Be sample 019.001
Be sample 006.001 (not in picture)



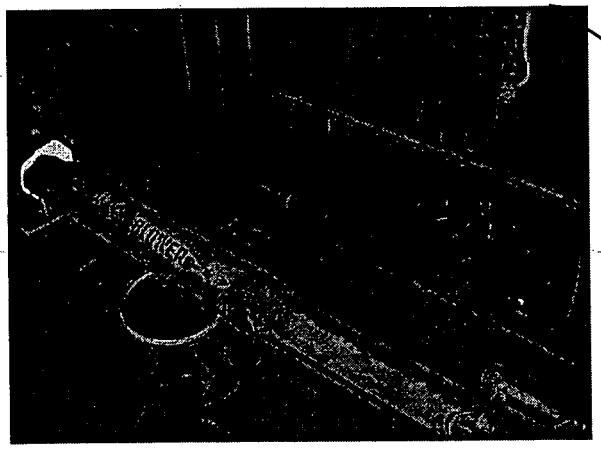
North wall Building 712A
019.001



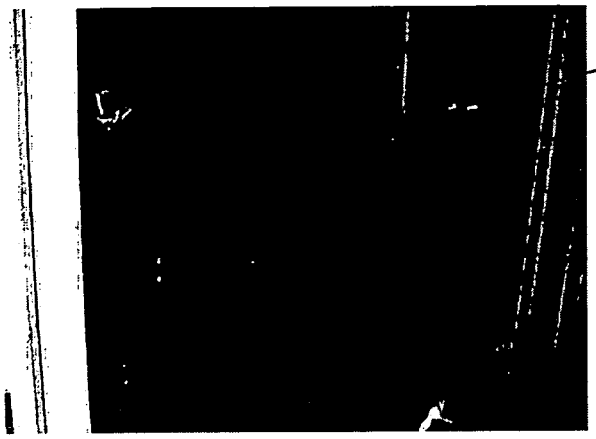
West wall Building 712A
Be sample 018.001



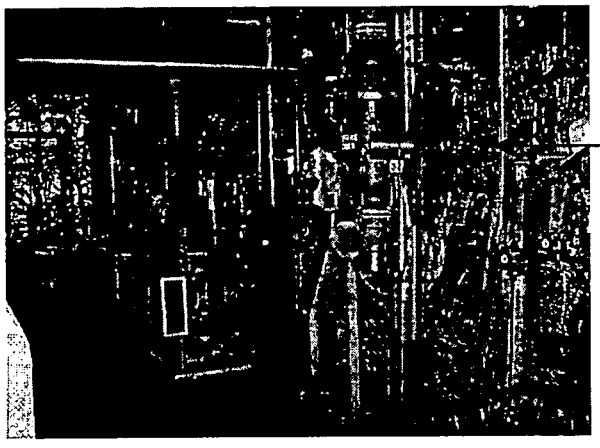
Southwest corner Building 712A
Be sample 020.001



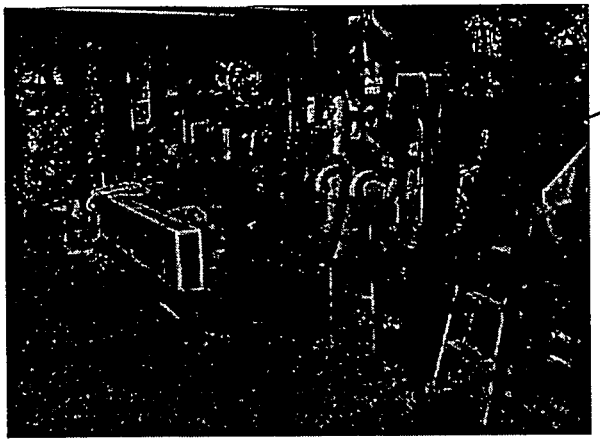
Building 712A, Southeast Corner
Be sample 017.001 (on top of beam, just out of picture)



South east Corner Building 712A
Be sample 017.001

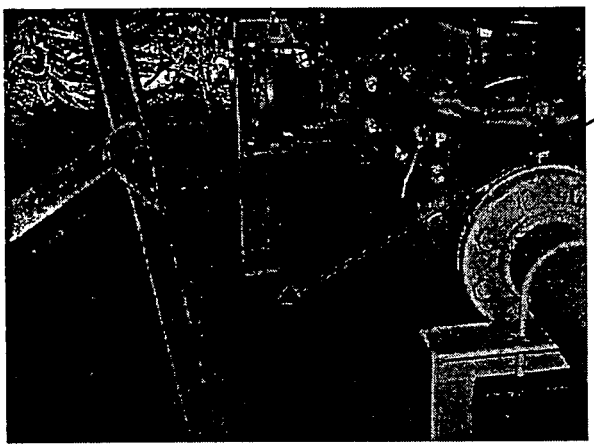


South wall Building 702
Be sample 014.001 (on floor behind equipment)
Be sample 015.001

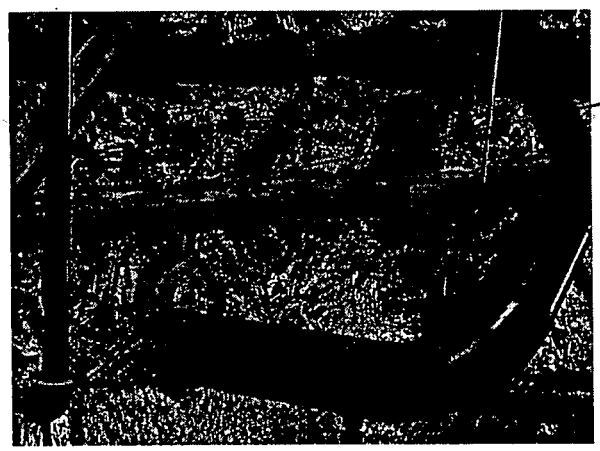


South wall Building 702
Be sample 014.001 (on floor behind equipment)

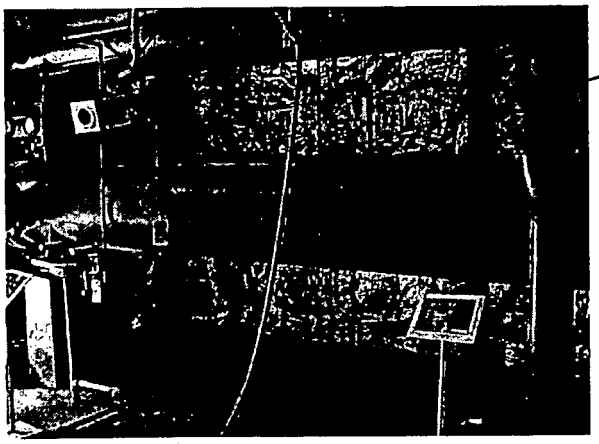
North west corner, Building 702
Be sample 011.001



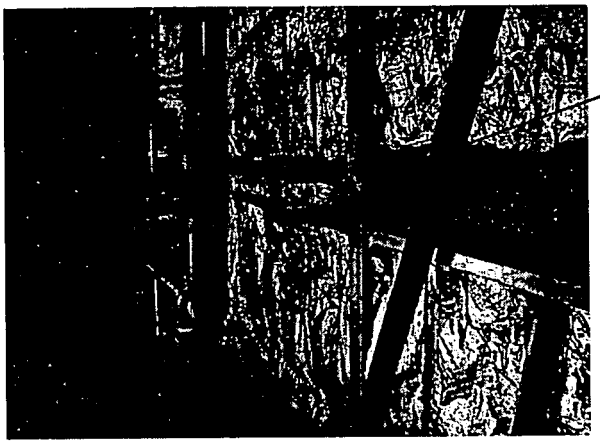
South west corner Building 703
Be sample 001.001



South wall Building 703
Be sample 003.001



North wall Building 703
Be sample 004.001



North wall Building 703
Be sample 05.001

North wall Building 703
Be sample 005.001 (see above)

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ATTACHMENT B

Radiological And Chemical Characterization Package

Best Available Copy

Sample ID: **082101 sample#9 bld 703** **Type:** **Unknown**

Batch ID: unknowns
Acquisition Start: August 21, 2001 17:14:46
Analysis Date: August 22, 2001 06:27:24
Procedure: Po210 count
Device: Oasis:01:02
Analysis Method: ROI Analysis
Spectrum File: 00007211.OXS LiveTime: 43,200.00

Calibrations:
Energy = -1.083E+01 +2.813E+00 * Chn Coeff. of Correlation: -0.998
Calibration Date: July 28, 2001 08:38:33 Std: TS4189
Shape not Calibrated.
Efficiency = 3.133E-01 ± 4.187E-03
Calibration Date: July 30, 2001 07:11:59 Std: TS4189b

External Recovery No Ext.Recovery

Original Sample Amount:
1.000 ± 0.000 samp
Aliquot Amount: 1.000 ± 0.000 samp

ROI DATA

ROI ID #		ASSOCIATED NUCLIDE	EXTENTS START	EXTENTS END	PK EN (keV)	FWHM (keV)
1	ROI # 2	Po218	5556.4	6103.7	6067.9	3.3
2	ROI # 3	Po214	6589.7	7877.5	7232.4	2.8
3	ROI # 4	Po212	8394.4	8749.3	8571.4	2.8
4	ROI # 4	Po210	2521.2	5333.5	5072.1	14.6

ROI ANALYSIS RESULTS

ROI ID	NET COUNTS	BKG/INTERF	CPM	ROI TYPE
ROI # 2	54.4 ± 7.6	2.60	0.076 ± 0.011	Unknown
ROI # 3	24.6 ± 5.1	1.40	0.034 ± 7.12E-03	Unknown
ROI # 4	21.0 ± 4.6	0.00	0.029 ± 6.36E-03	Unknown
ROI # 4	6,342.0 ± 79.8	17.00	8.808 ± 0.111	Unknown

NUCLIDE ANALYSIS RESULTS

ROI ID	ASSOC NUC	EMM. PROB	ACTIVITY (dpm/samp)	MDA (dpm)
ROI # 2	Po218	1.000	0.241 ± 0.034	3.78E-02
ROI # 3	Po214	1.000	0.109 ± 0.023	3.09E-02
ROI # 4	Po212	1.000	0.093 ± 0.020	1.20E-02
ROI # 4	Po210	1.000	28.111 ± 0.516	7.79E-02

Activity reported as of August 21, 2001 17:14:46

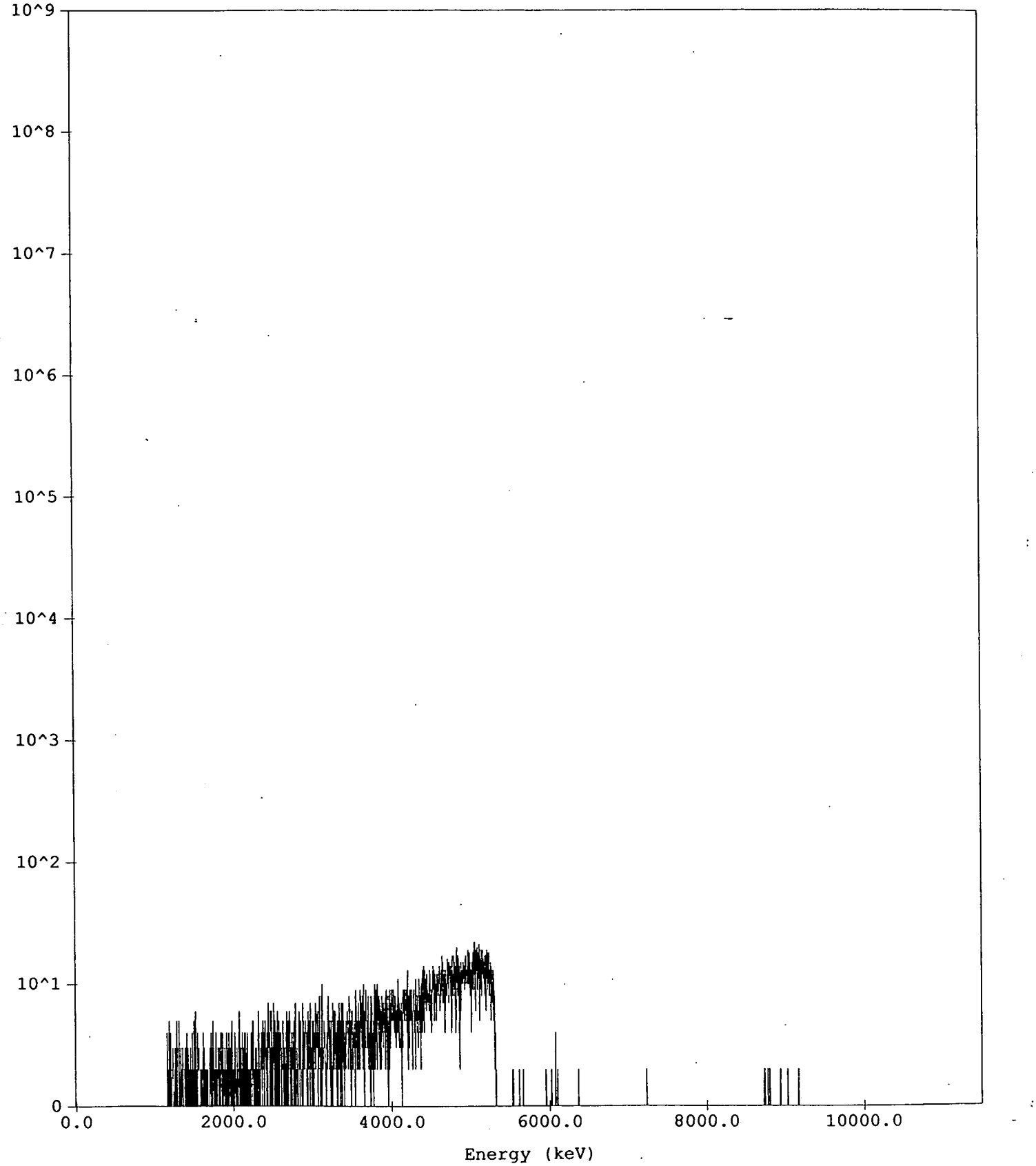
G A HAAS

ANALYSIS REVIEWED BY: 515855 Gary A Haas

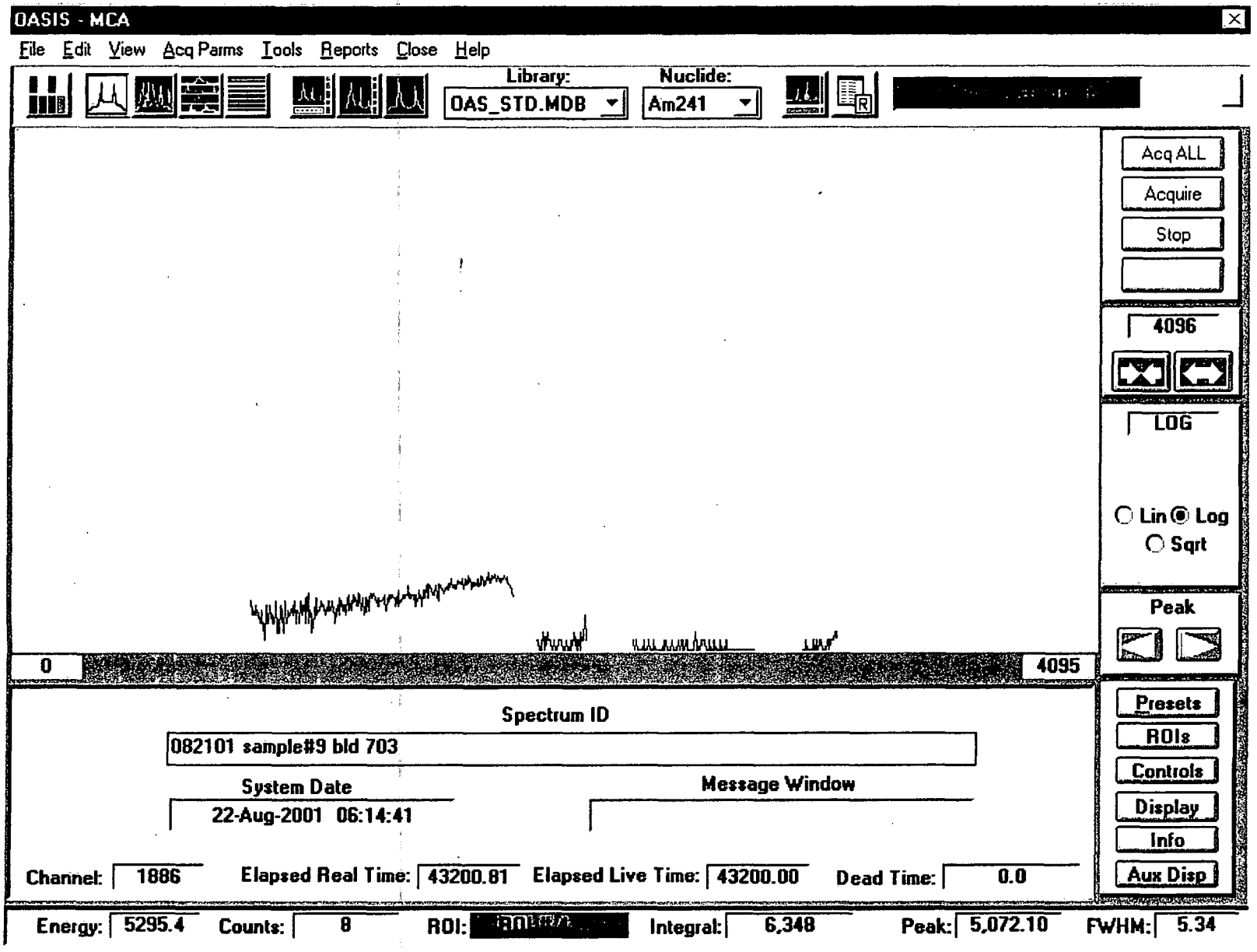
APPROVED BY: CJ BIANCONI 520358 CJB 8.22.01

DOE added nuclides not indicated CJB 8.22.01

File(2): 00007211.OXS Date: 21-Aug-2001 17:14:46 LT: 43,200.00 RT: 43,200.81
ID(2): 082101 sample#9 bld 703



3\


OASIS - MCA
File Edit View Acq Parms Tools Reports Close Help
Library:
OAS_STD.MDB
Nuclide:
Am241
Acq ALL
Acquire
Stop
4096
LOG
Lin Log
Sqrt
Peak
0
4095
Spectrum ID
082101 sample#9 bld 703
System Date
22-Aug-2001 06:14:41
Message Window
Presets
ROIs
Controls
Display
Info
Aux Disp
Channel: 1886
Elapsed Real Time: 43200.81
Elapsed Live Time: 43200.00
Dead Time: 0.0
Energy: 5295.4
Counts: 8
ROI:
Integral: 6,348
Peak: 5,072.10
FWHM: 5.34

Sample ID: **082101 sample#9 bld 702** **Type:** **Unknown**

Batch ID: unknowns
Acquisition Start: August 21, 2001 17:14:45
Analysis Date: August 22, 2001 06:29:09
Procedure: Po210 count
Device: Oasis:01:01
Analysis Method: ROI Analysis
Spectrum File: 00007210.OXS LiveTime: 43,200.00

Calibrations:
Energy = 4.873E+01 +2.768E+00 * Chn Coeff. of Correlation: -0.998
Calibration Date: July 05, 2001 13:47:16 Std: TS4189b
Shape not Calibrated.
Efficiency = 3.157E-01 ± 4.216E-03
Calibration Date: July 05, 2001 15:46:51 Std: TS4189b

External Recovery No Ext.Recovery

Original Sample Amount:
1.000 ± 0.000 samp
Aliquot Amount: 1.000 ± 0.000 samp

ROI DATA

ROI ID #		ASSOCIATED NUCLIDE	EXTENTS START	EXTENTS END	PK EN (keV)	FWHM (keV)
1	ROI # 2	Po218	5556.4	6103.7	5828.9	2.8
2	ROI # 3	Po214	6589.7	7877.5	7232.4	2.8
3	ROI # 4	Po212	8394.4	8749.3	8735.5	5.5
4	ROI # 4	Po210	2521.2	5333.1	5064.8	467.8

ROI ANALYSIS RESULTS

ROI ID	NET COUNTS	BKG/INTERF	CPM	ROI TYPE
ROI # 2	41.8 ± 6.8	4.20	0.058 ± 9.51E-03	Unknown
ROI # 3	13.8 ± 4.1	2.20	0.019 ± 5.63E-03	Unknown
ROI # 4	37.2 ± 6.2	0.80	0.052 ± 8.58E-03	Unknown
ROI # 4	6,691.8 ± 81.9	15.20	9.294 ± 0.114	Unknown

NUCLIDE ANALYSIS RESULTS

ROI ID	ASSOC NUC	EMM. PROB	ACTIVITY (dpm/samp)	MDA (dpm)
ROI # 2	Po218	1.000	0.184 ± 0.030	4.44E-02
ROI # 3	Po214	1.000	0.061 ± 0.018	3.54E-02
ROI # 4	Po212	1.000	0.164 ± 0.027	2.61E-02
ROI # 4	Po210	1.000	29.436 ± 0.533	7.37E-02

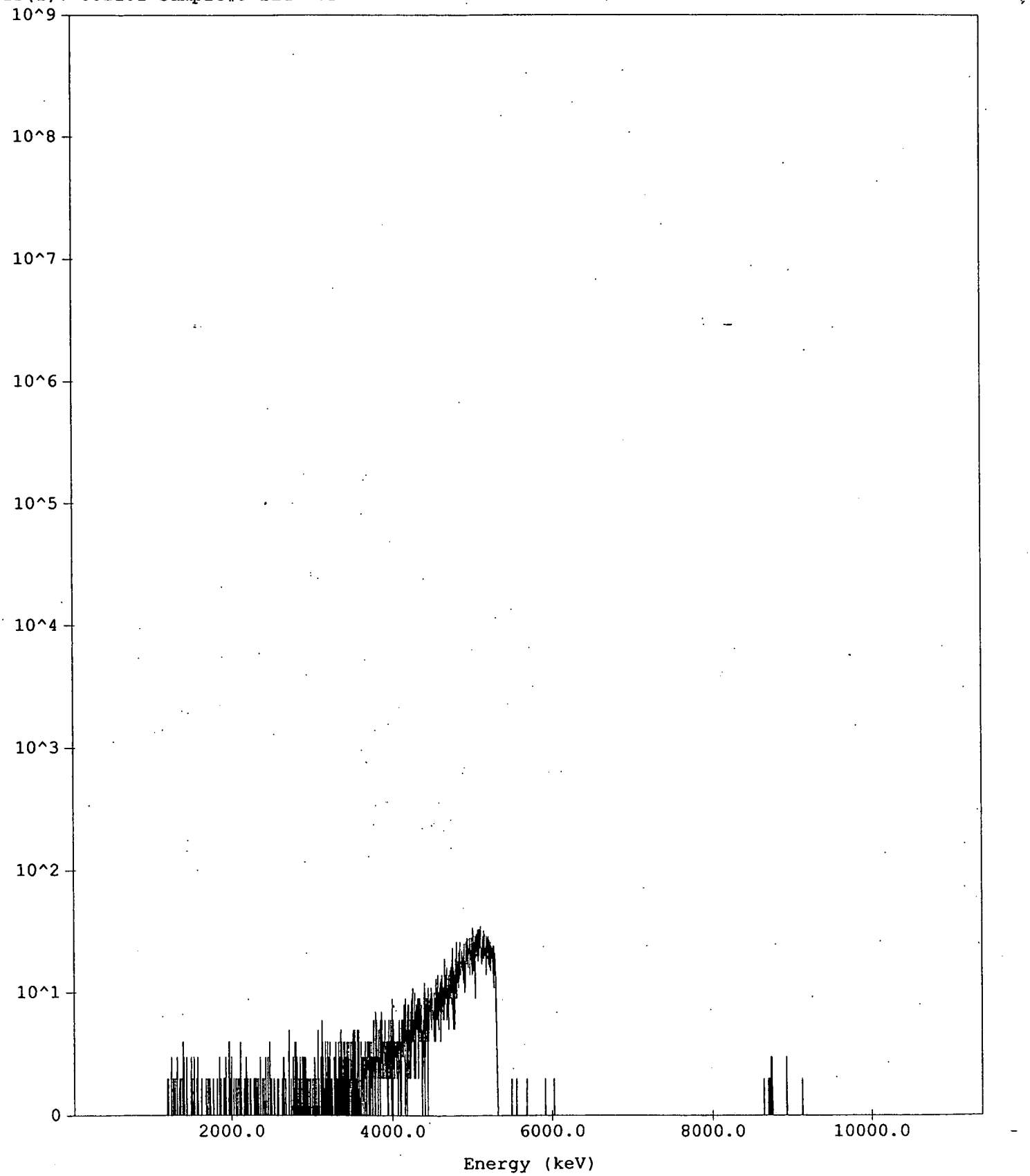
Activity reported as of August 21, 2001 17:14:45

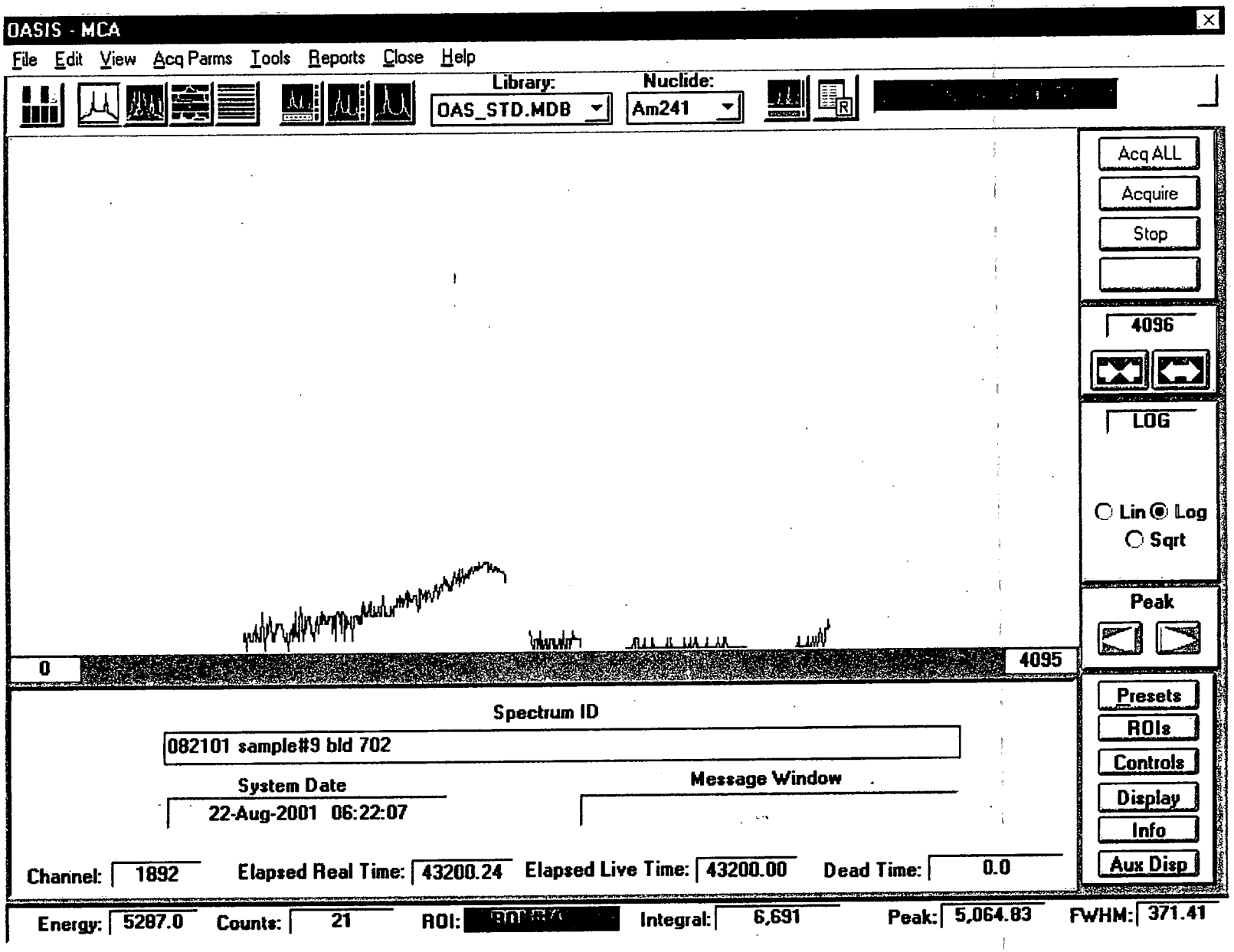
ANALYSIS REVIEWED BY: G A HAAS 515855 G A Haas

APPROVED BY: C J BIANCONI 520358 CJB 8.22.01

DOE added nuclides not indicated CJB 8-22-01

File(1): 00007210.OXS Date: 21-Aug-2001 17:14:45 LT: 43,200.00 RT: 43,200.24
ID(1): 082101 sample#9 bld 702




OASIS - MCA
File Edit View Acq Parms Tools Reports Close Help
Library:
OAS_STD.MDB
Nuclide:
Am241
Acq ALL
Acquire
Stop
4096
LOG
Lin Log
Sqrt
Peak
0
4095
Spectrum ID
082101 sample#9 bld 702
System Date
22-Aug-2001 06:22:07
Message Window
Presets
ROIs
Controls
Display
Info
Aux Disp
Channel: 1892
Elapsed Real Time: 43200.24
Elapsed Live Time: 43200.00
Dead Time: 0.0
Energy: 5287.0
Counts: 21
ROI:
Integral: 6,691
Peak: 5,064.83
FWHM: 371.41

Probability Plots

Based on the distribution modeled here, there is no visual or statistical evidence of DOE-added materials.

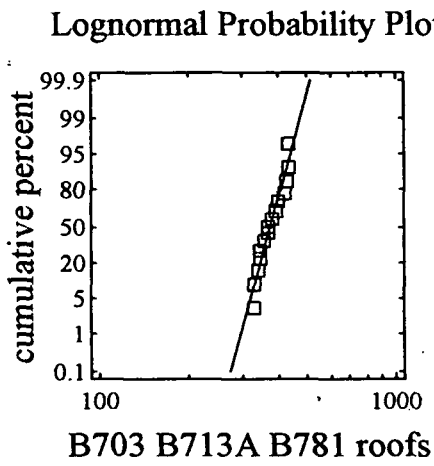
›ability Plots

Data variable: B703 B713A B781 roofs

Number of observations: 15
Number of values below minimum: 0
Number of values above maximum: 0

The StatAdvisor

This procedure creates seven different types of probability plots to help you determine whether B703 B713A B781 roofs comes from a particular type of distribution. After examining these plots, you may fit a distribution to the data by selecting the Distribution Fitting procedure.



Uncensored Data - B703 B713A B781 roofs

Goodness-of-Fit Tests for B703 B713A B781 roofs

Chi-Square Test

	Lower Limit	Upper Limit	Observed Frequency	Expected Frequency	Chi-Square
	at or below	344.247	3	2.50	0.10
	344.247	362.327	3	2.50	0.10
	362.327	377.521	2	2.50	0.10
	377.521	393.352	2	2.50	0.10
	393.352	414.01	1	2.50	0.90
above	414.01		4	2.50	0.90

Chi-Square = 2.20006 with 3 d.f. P-Value = 0.531933

Estimated Kolmogorov statistic DPLUS = 0.136711
Estimated Kolmogorov statistic DMINUS = 0.13489
Estimated overall statistic DN = 0.136711
Approximate P-Value = 0.941911

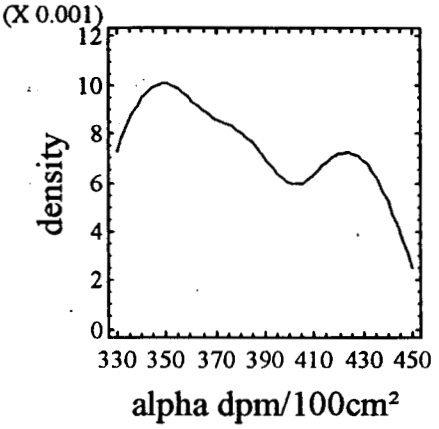
EDF Statistic	Value	Modified Form	P-Value
Kolmogorov-Smirnov D	0.136711	0.549769	>=0.10
Kuiper V	0.271601	1.11084	>=0.10
Cramer-Von Mises W^2	0.0475864	0.0251588	>=0.10
;on U^2	0.0469878	0.0429398	>=0.10
ɜrson-Darling A^2	0.359787	0.359787	>=0.10

*Indicates that the P-Value has been compared to tables of critical values specially constructed for fitting the currently selected distribution. Other P-values are based on general tables and may be very conservative.

The StatAdvisor

This pane shows the results of tests run to determine whether B703 B713A B781 roofs can be adequately modeled by a lognormal distribution. The chi-square test divides the range of B703 B713A B781 roofs into nonoverlapping intervals and compares the number of observations in each class to the number expected based on the fitted distribution. The Kolmogorov-Smirnov test computes the maximum distance between the cumulative distribution of B703 B713A B781 roofs and the CDF of the fitted lognormal distribution. In this case, the maximum distance is 0.136711. The other EDF statistics compare the empirical distribution function to the fitted CDF in different ways.

Since the smallest P-value amongst the tests performed is greater than or equal to 0.10, we can not reject the idea that B703 B713A B781 roofs comes from a lognormal distribution with 90% or higher confidence.



Survey Unit 776005 B703 Total Surface Contamination Investigation Results for Measurement #9

Total Surface Activity Survey						Quality Control Survey				
Meter Model:	NE Electra w/ DP6 Probe				Local Area Bkgd (cpm)	NE Electra w/ DP6 Probe			Local Area Bkgd (cpm)	
Instrument #:	1280	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Cal. Due Date:	9/13/01	N/A	N/A	N/A		N/A	N/A	N/A		
Efficiency (c/d):	0.210	N/A	N/A	N/A		N/A	N/A	N/A		

	Total Surface Activity Measurements (Note 1)					Quality Control Measurements				
Sample Location Number	Instrument #	Date	(cpm)	MDA (dpm/100 cm^2)	(dpm/100 cm^2)	Instrument #	Date	(cpm)	MDA (dpm/100 cm^2)	(dpm/100 cm^2)
1	1280	06/13/01	72.7	N/A	436.2					
2	1280	06/13/01	66.7	N/A	400.2					
3	1280	06/13/01	60.0	N/A	360.0					
4	1280	06/13/01	55.6	N/A	333.6					
5	1280	06/13/01	65.5	N/A	393.0					
6	1280	06/13/01	62.0	N/A	372.0					
7	1280	06/13/01	55.3	N/A	331.8					
8	1280	06/13/01	57.7	N/A	346.2					
9	1280	06/13/01	58	N/A	348.0					
10	1280	06/13/01	71.8	N/A	430.8					
11	1280	06/13/01	56.7	N/A	340.2					
12	1280	06/13/01	62.0	N/A	372.0					
13	1280	06/13/01	70.7	N/A	424.2					
14	1280	06/13/01	70.0	N/A	420.0					
15	1280	06/13/01	63.3	N/A	379.8					
				MIN	331.8					
				MAX	436.2					
				MEAN	379.2					
				SD	36.5					
				Transuranic DCGL$_W$	100					

Note 1 - An elevated reading of 60.1 cpm was present at this survey measurement location. An investigation was performed, and the above 15 survey measurments were obtained in accordance with TBD-00156 to verify log-normal distribution. As requested, in addition to the log-normal evaluation, a coupon sample was obtained. The activity was verified by alpha spec. analysis to be Po-210 vs. transuranic activity.

SC&A S. COHEN & ASSOCIATES
AN EMPLOYEE-OWNED COMPANY

COPY

July 3, 2001

Mr. Mike Salmans
Contract Technical Representative
Analytical Services
Kaiser-Hill Company, L.L.C.
Rocky Flats Environmental Technology Site
Building 881, Room 214
State Highway 93 and Cactus
Rocky Flats, CO 80007

Dear Mr. Salmans:

On June 22, 2001, two waste samples, (RIN 01C0159) were received for analysis at the Sanford Cohen and Associates (SC&A) Southeastern Environmental Laboratory. The chain-of-custody accompanying the samples requested they be analyzed on a "rush" basis. Enclosed is the Sample Data Package containing the items specified in Table B2 of the "Statement of Work for Analytical Measurements, Isotopic Determinations by Alpha Spectrometry, Module RC01-B.3", dated April 24, 1998, and Modification 09, dated July 16, 1998.

If you have any questions please do not hesitate to call.

Sincerely,

Charles Phillips
Vice President

1000 MONTICELLO COURT • MONTGOMERY, ALABAMA • 36117 • 334.272.2234 • FAX 334-213-0407

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COVER PAGE

Sanford Cohen & Associates
Southeastern Environmental Laboratory
1000 Monticello Court
Montgomery, Alabama 36117

Laboratory Code: SCA Subcontract Number: KH700325EP6

RIN: 01C0159
LIC: RC01B004

Laboratory Report Identification Code: 2397

Sample Matrix: Waste

Site Sample Numbers	Laboratory Sample Number		
	Uranium	Plutonium	Americium
01C0159-001.001 B709, B713A	KH101-2397-01	KH101-2397-01	KH101-2397-01
01C0159-002.001 B709, B713A	KH101-2397-02	KH101-2397-02	KH101-2397-02
Laboratory Control Sample (LC)	SCAQC-2397-LC1	SCAQC-2397-LC1	SCAQC-2397-LC1
Duplicate (LD)	SCAQC-2397-LD1	SCAQC-2397-LD1	SCAQC-2397-LD1
Preparation Blank (PB)	SCAQC-2397-PB	SCAQC-2397-PB	SCAQC-2397-PB

Comments: There were no problems encountered during sample receiving.

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the laboratory Manager or the Manager's designee, as verified by the following signature."

Signature

Joe Stinson	Laboratory Manager	7/3/01
Name	Title	Date

Commodore Advanced Sciences, Inc.
RFETS

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# 01C0159#001

Page 1 of 1

Sampler(s) S Towell 512570	Contact/Requester TRICE, CONRAD/BOB CATHEL	Telephone No. 2490/6880
RIN 01C0159	Sampling Origin B709, B713A	Purchase Order/Charge Code DAD01ANA
Project Title B709, B713A	Logbook No. N/A 94 Dorce	Ice Chest No. N/A Temp. n/a
To (Lab) S. Cohen & Associates	Method of Shipment Commodore Advanved Sciences Sample Team	Bill of Lading/Air Bill No. n/a
Protocol CAS SOP-003 Rev. 3	Related COC (if any) N/A	PRE N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
KH01-2397-

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0159-001.001	B709	WASTE	6/18/01	10:25	B709, B713A	40-G / P/G /1	RC01B004 (Isotopic Waste) [Rush] 01	None None
01C0159-002.001	B713A	WASTE	6/18/01	9:10	B709, B713A	40-G / P/G /1	RC01B004 (Isotopic Waste) [Rush] 02	None None

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	6/18/01 1440	Tisoa Fridle #2	6/18/01 1440	Fridge #2	6/21/01 1400	[signature]	6/21/01 1400
Relinquished By: [signature]	6/21/01 1500	Received By: Fed Ex	Date/Time	Relinquished By:	Date/Time	Received By: JS Chung/SC&A	6-22-01 1015
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time

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

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CASE NARRATIVE
RIN 01C0159
Laboratory Report Identification Number: 2397
PSA Module RC01B.3

July 3, 2001

I. Introduction

On June 22, 2001, two waste samples, (RIN 01C0159), were received for analysis at the Sanford Cohen and Associates (SC&A) Southeastern Environmental Laboratory, located in Montgomery, Alabama. The chain-of-custody accompanying the samples requested they be analyzed on a "rush" basis. The samples were analyzed in accordance with Kaiser-Hill specifications stated in the "Statement of Work for Analytical Measurements, Isotopic Determinations by Alpha Spectrometry, Module RCO1-B.3", dated April 24, 1998, and Modification 09, dated July 16, 1998.

II. Analytical Methodology

The radioanalytical results reported for each sample include the site and laboratory sample identification numbers, collection date, method of analysis, and the quality control samples that were analyzed concurrently. All samples were analyzed by an Eichrom Industries, Inc. extraction chromatography method (ACW03) for isotopic uranium, plutonium, and americium.

III. Analytical Results

Deficiencies

No deficiencies to report.

Matrix Interferences

There were no indications of matrix interference.

Dilutions

No dilutions were required.

Detection Limits

The required detection limits (RDL) were met for all sample analyses.

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Reanalysis

There were no reanalysis.

Deviations from Protocols

There were no deviations from the written protocols and analytical methods.

Contacts with the CTR

There were no contacts with the contract technical representative (CTR) regarding these samples.

IV. Quality Control

Site Samples Used for Quality Control Samples:

Site Sample Number	Laboratory Sample Number	Type of Quality Control Analysis Sample
Laboratory Type II Water	SCAQC-2397-LC1	Laboratory Control Sample
01C0159-001.001	SCAQC-2397-LD1	Laboratory Duplicate Sample
Laboratory Type II Water	SCAQC-2397-PB	Preparation Blank

The analytical results of all quality control samples met the acceptance criteria specified in the SOW.

Sincerely,

Joe Stinson
Laboratory Manager

7/5/2001
Date

Sample and QC Sample Results Summary

Specified Identifier	Identifier Used
Analytical Batch ID	Batch ID

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Sanford Cohen & Associates
Southeastern Environmental Laboratory

Radioanalytical Results

Report Identification Number: 01C0159

Project Name: Kaiser-Hill	Chain-of-Custody Number: 01C0159#001		Matrix: Waste
Site Sample ID: 001.001			
Other Sample ID: B709 B713A	Collection Date: 6/18/01 Batch Number: 2397	Date Received: 6/22/01 Laboratory Code: SCA	

Method Number	Radionuclide	Laboratory Sample ID	Activity (pCi/g)	2 σ Counting Error (pCi/g)	Total Error (pCi/g)	MDA (pCi/g)
ACW03	U-233/234	KH101-2397-01	2.60	0.564	0.768	0.069
ACW03	U-235	KH101-2397-01	0.126	0.126	0.132	0.085
ACW03	U-238	KH101-2397-01	2.97	0.609	0.851	0.069
ACW03	PU-238	KH101-2397-01	-0.012	0.024	0.024	0.144
ACW03	PU-239/240	KH101-2397-01	0.160	0.148	0.153	0.081
ACW03	AM-241	KH101-2397-01	-0.027	0.039	0.039	0.192

Quality Control Samples			
Radionuclide	Laboratory Control Sample (LC)	Laboratory Duplicate Analysis (LD)	Preparation Blank (PB)
U	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB
Pu	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB
Am	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB

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Sanford Cohen & Associates
Southeastern Environmental Laboratory

Radioanalytical Results

Report Identification Number: 01C0159

Project Name:	Kaiser-Hill	Chain-of-Custody Number:	01C0159#001	Matrix:	Waste
Site Sample ID:	002.001				
Other Sample ID:	B709 B713A	Collection Date:	6/18/01	Date Received:	6/22/01
		Batch Number:	2397	Laboratory Code:	SCA

Method Number	Radionuclide	Laboratory Sample ID	Activity (pCi/g)	2 σ Counting Error (pCi/g)	Total Error (pCi/g)	MDA (pCi/g)
ACW03	U-233/234	KH101-2397-02	2.00	0.480	0.625	0.119
ACW03	U-235	KH101-2397-02	0.122	0.123	0.128	0.083
ACW03	U-238	KH101-2397-02	1.85	0.458	0.589	0.067
ACW03	PU-238	KH101-2397-02	0.014	0.051	0.051	0.113
ACW03	PU-239/240	KH101-2397-02	0.047	0.067	0.068	0.064
ACW03	AM-241	KH101-2397-02	0.125	0.126	0.129	0.085

Quality Control Samples			
Radionuclide	Laboratory Control Sample (LC)	Laboratory Duplicate Analysis (LD)	Preparation Blank (PB)
U	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB
Pu	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB
Am	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB

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Southeastern Environmental Laboratory

Radioanalytical Results

Quality Control Sample
Laboratory Control (LC1)

Report Identification Number: 01C0159

Project Name: Kaiser-Hill	Chain-of-Custody Number: None		Matrix: Water
Site Sample ID: N/A			
Other Sample ID: LC1	Collection Date: 6/22/01	Date Received:	6/22/01
		Laboratory Code:	SCA

Method Number	Radionuclide	Laboratory Sample ID	Activity (dpm/Sample)	2 σ Counting Error (dpm/Sample)	Total Error (dpm/Sample)	MDA (dpm/Sample)
ACW03	U-233/234	SCAQC-2397-LC1	8.09	0.997	1.90	0.039
ACW03	U-238	SCAQC-2397-LC1	8.39	1.02	1.97	0.100
ACW03	PU-239/240	SCAQC-2397-LC1	4.79	0.823	1.26	0.045
ACW03	AM-241	SCAQC-2397-LC1	3.84	0.677	1.02	0.041

Quality Control Samples			
Radionuclide	Laboratory Control Sample (LC)	Laboratory Duplicate Analysis (LD)	Preparation Blank (PB)
U	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB
Pu	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB
Am	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB

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Southeastern Environmental Laboratory

Radioanalytical Results

Quality Control Sample
Preparation Blank (PB)

Report Identification Number: 01C0159

Project Name: Kaiser-Hill	Chain-of-Custody Number: None	Matrix: Water
Site Sample ID: N/A		
Other Sample ID: PB	Collection Date: 6/22/01	Date Received: 6/22/01
		Laboratory Code: SCA

Method Number	Radionuclide	Laboratory Sample ID	Activity (dpm/Sample)	2 σ Counting Error (dpm/Sample)	Total Error (dpm/Sample)	MDA (dpm/Sample)
ACW03	U-233/234	SCAQC-2397-PB	-0.016	0.019	0.019	0.085
ACW03	U-235	SCAQC-2397-PB	0.000	0.000	0.000	0.045
ACW03	U-238	SCAQC-2397-PB	-0.011	0.015	0.015	0.076
ACW03	PU-238	SCAQC-2397-PB	0.000	0.000	0.000	0.043
ACW03	PU-239/240	SCAQC-2397-PB	0.031	0.045	0.045	0.043
ACW03	AM-241	SCAQC-2397-PB	0.047	0.054	0.055	0.042

Quality Control Samples			
Radionuclide	Laboratory Control Sample (LC)	Laboratory Duplicate Analysis (LD)	Preparation Blank (PB)
U	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB
Pu	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB
Am	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB

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Southeastern Environmental Laboratory

Radioanalytical Results

Quality Control Sample
Duplicate (LD1)

Report Identification Number: 01C0159

Project Name:	Kaiser-Hill	Chain-of-Custody Number:	01C0159#001	Matrix:	Waste
Site Sample ID:	001.001				
Other Sample ID:	B709 B713A	Collection Date:	6/18/01	Date Received:	6/22/01
				Laboratory Code:	SCA

Method Number	Radionuclide	Laboratory Sample ID	Activity (pCi/g)	2 σ Counting Error (pCi/g)	Total Error (pCi/g)	MDA (pCi/g)
ACW03	U-233/234	SCAQC-2397-LD1	2.78	0.579	0.603	0.119
ACW03	U-235	SCAQC-2397-LD1	0.123	0.123	0.129	0.083
ACW03	U-238	SCAQC-2397-LD1	2.28	0.515	0.688	0.067
ACW03	PU-238	SCAQC-2397-LD1	0.000	0.000	0.000	0.073
ACW03	PU-239/240	SCAQC-2397-LD1	0.107	0.108	0.110	0.073
ACW03	AM-241	SCAQC-2397-LD1	0.059	0.084	0.085	0.080

Laboratory Samples for Duplicates

Radionuclide	Laboratory Sample ID	Duplicate of Sample ID
U-233/234	SCAQC-2397-LD1	KH101-2397-01
U-235	SCAQC-2397-LD1	KH101-2397-01
PU-238	SCAQC-2397-LD1	KH101-2397-01
U-238	SCAQC-2397-LD1	KH101-2397-01
PU-239/240	SCAQC-2397-LD1	KH101-2397-01
AM-241	SCAQC-2397-LD1	KH101-2397-01

Quality Control Samples

Radionuclide	Laboratory Control Sample (LC)	Laboratory Duplicate Analysis (LD)	Preparation Blank (PB)
U	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB
Pu	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB
Am	SCAQC-2397-LC1	SCAQC-2397-LD1	SCAQC-2397-PB

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Southeastern Environmental Laboratory

Radioanalytical Results

Quality Control Sample Evaluation

Report Identification Number: 01C0159

Project Name: Kaiser-Hill Laboratory Code: SCA

Laboratory Contol Sample (LC1) Evaluation

Method Number	Radionuclide	Laboratory Sample ID	(CV) Decay Corrected Activity of Spike Added (dpm/Sample)	(OV) Laboratory Control Sample Activity (dpm/Sample)	Laboratory Control Sample % Recovery (Accuracy)	Number of σ Between CV and OV
ACW03	AM-241	SCAQC-2397-LC1	4.80 ∓ 0.456	3.84 ∓ 1.02	80.1	1.21
ACW03	PU-239/240	SCAQC-2397-LC1	4.37 ∓ 0.218	4.79 ∓ 1.26	110	0.508
ACW03	U-233/234	SCAQC-2397-LC1	8.02 ∓ 0.321	8.09 ∓ 1.90	101	0.048
ACW03	U-238	SCAQC-2397-LC1	8.02 ∓ 0.321	8.39 ∓ 1.97	105	0.275

Laboratory Duplicate Sample (LD1) Evaluation

Method Number	Radionuclide	Laboratory Sample ID	Original Sample Activity (pCi/g)	Duplicate Sample Activity (pCi/g)	Difference Between Original Activity and Duplicate Sample Activity (F)	Ratio of the Difference Between the Sample Activities and the Propagated Measurement Original Activity and Uncertainty of the Difference at 2 σ (F/E)
ACW03	U-233/234	SCAQC-2397-LD1	2.60 ∓ 0.768	2.78 ∓ 0.803	0.178	0.160
ACW03	U-235	SCAQC-2397-LD1	0.126 ∓ 0.132	0.123 ∓ 0.129	0.003	0.016
ACW03	PU-238	SCAQC-2397-LD1	-0.012 ∓ 0.024	0.000 ∓ 0.000	0.012	0.496
ACW03	U-238	SCAQC-2397-LD1	2.97 ∓ 0.851	2.28 ∓ 0.688	0.691	0.631
ACW03	PU-239/240	SCAQC-2397-LD1	0.180 ∓ 0.153	0.107 ∓ 0.110	0.073	0.386
ACW03	AM-241	SCAQC-2397-LD1	-0.027 ∓ 0.039	0.059 ∓ 0.085	0.086	0.924

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Radioanalytical Results

Quality Control Tracer Yield

Report Identification Number: 01C0159

Project Name: Kaiser-Hill

Laboratory Code: SCA

Laboratory Sample ID	Am-243	Pu-242	U-232
KH101-2397-01	79.9	82.1	92.81
KH101-2397-02	82.77	104.31	94.7
SCAQC-2397-LC1	99.88	90.78	93.25
SCAQC-2397-LD1	93.68	100	92.06
SCAQC-2397-PB	90.42	97.79	98.7

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Commodore Advanced Sciences RFETS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # 01D0696#001
		Page 1 of 2

Sampler(s) 5/2570 (time/date)	Contact/Requester JOHNSEN, SHELLY/DABOLL, DAVID	Telephone No. 6401/4985
RIN 01D0696	Sampling Origin 712 & 713 COOLING TOWER	Purchase Order/Charge Code EBB422AN
Project Title 712, 713 COOLING TOWER (IW 01050, 01051, 01052) 572633	Logbook No. 94 Doble	Ice Chest No. N/A Temp. N/A
To (Lab) Building 559 Laboratory	Method of Shipment Sample Team	Bill of Lading/Air Bill No. N/A
Protocol CAS 508-003 Rev 3	Related COC (if any) 01D0696#002	PRE N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
IDC 1988

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01D0696-001.001	IW01050	AQUEOUS	4/18/01	1350	712 COOLING TOWER	40-ML / G /1	See Item 1	None None
01D0696-001.002	IW01050	AQUEOUS	↓	↓	712 COOLING TOWER	40-ML / G /1	PA03A026 (Metal Screen) [Rush]	None None
01D0696-002.001	IW01051	AQUEOUS		1340	713 COOLING TOWER	40-ML / G /1	See Item 1	None None
01D0696-002.002	IW01051	AQUEOUS		↓	713 COOLING TOWER	40-ML / G /1	PA03A026 (Metal Screen) [Rush]	None None
01D0696-003.001	IW01052	AQUEOUS		1330	713A VALVE PIT	40-ML / G /1	See Item 1	None None
01D0696-003.002	IW01052	AQUEOUS	↓	↓	713A VALVE PIT	40-ML / G /1	PA03A026 (Metal Screen) [Rush]	None None
							4/18/01	

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
	1420 4/18/01	Johnson	4/18/01 1430				
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time		
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time		
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time		

LABORATORY USE ONLY

	Initials/Date	Y/N
Cooler Custody Seal Intact:		☐
Outer TID Intact:		☐
TID # (if applicable):		☐
TID Removed by/Date:		☐
Sample Custody Seals Intact:		☐
Labels & COC Agree:	4/18/01	☐

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process)	Disposed By

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Commodor[illegible] Advanced Sciences	CHAIN OF CUSTODY/S[illegible]MPLE ANALYSIS REQUEST	01D0696#001 Page 2 of 2

RIN	Contact/Requestor	Telephone No.
01D0696	JOHNSEN, SHELLY/DABOLL, DAVID	6401/4985

Item 1 PA03A005 (Fingerprint) [Rush]; PA04A003 (Pu g/l Radiochemistry) [Rush]; PA04A004 (U g/l Radiochemistry) [Rush]; PA04A005 (Am g/l Radiochemistry) [Rush]

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time

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

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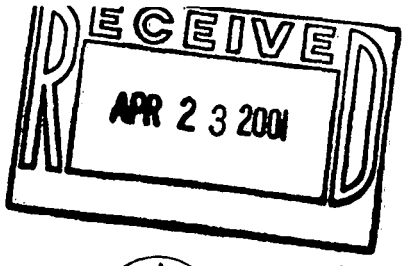
COMPANY



INTEROFFICE MEMORANDUM

DATE: April 20, 2001

TO: V. Ideker, Analytical Projects Office, Bldg. T130C, X3437/d-212-3191

FROM: M. S. Brugh, Radiological Inorganic Lab, Bldg. 559, x7709/d-212-4547

SUBJECT: SAMPLE DATA PACKAGE COVER PAGE

The enclosed aqueous samples were received in Building 559 Radiological Laboratory for Total Metals Analysis.

Sample ID#	APO#	Sample ID#	APO#
01D0696	001		
01D0696	002		
01D0696	003		

Please see the Summary Narrative for all information pertaining to any anomalies for the sample.

Comments:

"I certify that this data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature."

Mark S. Brugh — 4/20/01
Date
Manager, Radiological Inorganic Laboratory

Kaiser Hill Company
Rocky Flats Environmental Technology Site

ICP ATOMIC EMISSION SPECTROSCOPY REPORT TOTAL METALS BY ICP
Date : (4/20/01)
Lab #'s : 01D0696-001.002, 01D0696-002.002, and 01D0696-003.002

Narrative for Incidental Waters 01D0696-001.002, 01D0696-002.002, and 01D0696-003.002 collected from 712 CTW, 713 CTW, and 713A VP

The aqueous samples were prepared for total metals, outside of glovebox containment, in accordance with EPA Reference SW-846 "Test Methods for Evaluating Solid Waste", Method 3010. A total metals sweep for the elements of interest was performed on the total metals digest by ICP atomic emission spectroscopy.

Sample Storage Considerations:

The samples were stored within a designated refrigerator at 4°C prior to preparation and analysis for total metals.

Total Metals Method Selection and Preparation Considerations:

The total metals digestion method was performed on a representative 30.0 ml aliquot of each sample, in accordance with EPA Reference SW-846, Method 3010. The final total metals digest for each sample was made up to a 30.0 ml final volumes in a 50 ml capacity calibrated polypropylene disposable screw-cap vessels.

EPA Method Exceptions:

The analytical methods utilized to chemically prepare a representative aliquot for the samples follow the guidelines of the EPA Reference *SW-846* (Test Methods for Evaluating Solid Waste) Method 3010, "Acid Digestion of Aqueous Samples and Extracts for Analysis by Flame AA and ICP Spectroscopy"; and Method 6010, "Inductively Coupled Plasma-Atomic Emission Spectroscopy", with the following deviations noted below:

Method 3010 Deviations:

1) Smaller sample aliquots of 30.0 ml and final sample digest volumes of 30.0 ml are utilized to comply with waste minimization and criticality safety concerns. *2)* Reduced volume 50 ml centrifuge tubes are utilized in place of graduate cylinders for the final sample digest. A final dilution accuracy of $\pm$0.5% has been demonstrated with these centrifuge tubes. *3)* The concentration of HCl in the final digest is approximately 25%. This has been done to allow for increased solubilization of the silver (Ag) present in samples as $AgCl_2^-$, thus resulting in more quantitative recovery for this element. The larger excess of chloride ion in the final total metals digest also helps to maintain silver as the soluble species $AgCl_2^-$, thus preventing accidental conversion into the unwanted insoluble silver salt, AgCl. The alternative to utilization of only 5% HCl in the final digest is the use of EPA Method 7761 which

requires an aliquot of the total metals digest to be complexed with cyanogen iodide to solubilize silver prior to separate analysis. Accidental formation of hydrogen cyanide is a possibility both inside and outside of glovebox containment with utilization of Method 7761 and is an extreme safety hazard since acids are routinely utilized in all of these areas. The accuracy of analyses for several different aqueous and solid reference standards has been demonstrated for silver and all other elements covered in this procedure. Utilization of ratios of HCL:HNO_3 of greater than 10:1 is also documented in other references as a means of increasing the solubility of silver, as described above.

Method 6010 Deviations:

1) Reduced volume 50-ml centrifuge tubes are utilized in place of Class A volumetric flasks for the final sample digest. A final dilution accuracy of ±0.5% has been demonstrated with these centrifuge tubes. *2)* Calibrated macro-pipettes and micro-pipettes, in combination with trace metals grade polypropylene pipette tips, are utilized instead of Class A glass volumetric pipettes, to prepare ICP standards. *3)* See deviation for Method 3010 #3 - same for Method 3010. *4)* Since the requested analyses required only an ICP sweep of the elements, a full QA/QC run was not required on the ICP.

The method deviations *1)* through *3)* have been done to comply with the current operational safety, industrial safety, criticality safety, waste minimization, and hazardous waste requirements at the Rocky Flats Plant. The method deviations listed in *4)* were done since all that was required was an ICP sweep for the elements of interest.

Additional Method 6010 QA/QC Sample Information:

Since the original sample request was for a total metals digestion followed by only a simple total metals screen by ICP, no pre-digestion spike, duplicate sample, or 5X serial dilution, or the usual QA/QC associated with the EPA Method 3010 and Method 6010 Protocols was performed during the analysis of this sample. **Thus, the data may be utilized only as a total metals screen and cannot be strictly validated by EPA protocols and guidelines.**

Data Reporting Information:

The final Form 1 analytical results and the raw data, corresponding to the sample analyte results, are located in Analytical Services Division, sample file 01D0696-001.002 (SD041901.SWP).

Kaiser Hill Company
Rocky Flats Environmental Technology Site

ICP ATOMIC EMISSION SPECTROSCOPY REPORT TOTAL METALS BY ICP
Date : (4/20/01)
Lab #'s : 01D0696-001.002, 01D0696-002.002, and 01D0696-003.002

The September 1994 RCRA Standard Hazardous Waste Regulatory Limits for each of the TCLP Extract Elements are listed below, for reference.

Element	1994 RCRA TCLP Hazardous Waste Regulatory Limit (mg/L)
Aluminum	-------
Antimony	-------
Arsenic	5.000
Barium	100.000
Beryllium	-------
Cadmium	1.000
Calcium	-------
Chromium	5.000
Cobalt	-------
Copper	-------
Iron	-------
Lead	5.000
Magnesium	-------
Manganese	-------
Mercury	0.200
Molybdenum	-------
Nickel	-------
Phosphorus	-------
Selenium	1.000
Silver	5.000
Strontium	-------
Thallium	-------
Titanium	-------
Vanadium	-------
Zinc	-------

If there are any questions regarding these results, please feel free to contact Russ C. Keller at extension 2260 or digital pager 212-4434.

Chemist Approval : R.C. Keller Date: 4/20/01
R. C. Keller

Second Reviewer : Date: 4/20/01

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

ICP ATOMIC EMISSION SPECTROSCOPY REPORT TOTAL METALS BY ICP
Date : (4/20/01)
Lab #'s : 01D0696-001.002, 01D0696-002.002, and 01D0696-003.002

The ICP reports can be expected to contain various combinations of these Forms, depending on the customer requirements for sample preparation and analysis. If the customer requires additional information, he or she should contact the responsible chemist for a review of the raw data.

Definitions of Data Qualifiers

Various data qualifiers may be utilized to provide an indication of the quality or deviation of standard or sample analyte results. Each of these data qualifiers and their definitions are listed below:

For a "C" (Concentration) Qualifier:

B - The absolute value of the reported analytical result is less than the Required Detection Limit (RDL), but greater than or equal to the Instrument Detection Limit (IDL).

U - The absolute value of the reported analytical result is less than the Instrument Detection Limit (IDL).

Definitions of Analytical Method Qualifiers
For the "M" (Quality) Qualifier:

P - The analytical method utilized for the determination of the reported result was ICP.

A - The analytical method utilized for the determination of the reported result was Flame Absorption Spectroscopy.

F - The analytical method utilized for the determination of the reported result was Graphite Furnace Absorption Spectroscopy.

C - The analytical method utilized for the determination of the reported result was Cold Vapor Absorption Spectroscopy.

H - The analytical method utilized for the determination of the reported result was Hydride Generation Absorption Spectroscopy.

NR - The analyte was not required to be analyzed.

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INORGANIC ANALYSIS DATA PACKAGE

Cover Page

Lab Name: Rocky Flats SDG No : APR19

QC Report Number : SD041901SWP

Lab Sample ID's beginning with "X" are TCLP Extracts.

No.	Lab Sample ID.	APO Sample ID.	Description	COC Customer No.
1	01D0696-001	01D0696-001.002	712 Cooling Tower Water, Metals Screen	none
2	01D0696-002	01D0696-002.002	713 Cooling Tower Water, Metals Screen	none
3	01D0696-003	01D0696-003.002	713A Valve Pit Water, Metals Screen	none

Were ICP interelement corrections applied? (y/n): YES Were ICP background corrections applied? (Y/N): YES

Comments:

I have reviewed the following data for the Samples listed above.

Signature: RC. Kelly 4/20/01
Analytical Chemist Date

Signature: [illegible] 4/20/01
Independent Technical Reviewer Date

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: 01D0696-001 (712 Cooling Tower Water, Metals Screen)

Matrix: AQUEOUS SDG No: APR19

Date Sampled: 04/18/2001 QC Report No: SD041901SWP

Receipt Date: 04/18/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	0.20	U		04/19/2001 14:55	04/19/2001	P
Antimony	0.10	U		04/19/2001 14:55	04/19/2001	P
Arsenic	0.10	U		04/19/2001 14:55	04/19/2001	P
Barium	0.050	U		04/19/2001 14:55	04/19/2001	P
Beryllium	0.0050	U		04/19/2001 14:55	04/19/2001	P
Cadmium	0.010	U		04/19/2001 14:55	04/19/2001	P
Calcium	180.			04/19/2001 14:55	04/19/2001	P
Chromium	0.050	U		04/19/2001 14:55	04/19/2001	P
Cobalt	0.050	U		04/19/2001 14:55	04/19/2001	P
Copper	0.31			04/19/2001 14:55	04/19/2001	P
Iron	0.35			04/19/2001 14:55	04/19/2001	P
Lead	0.050	U		04/19/2001 14:55	04/19/2001	P
Magnesium	31.			04/19/2001 14:55	04/19/2001	P
Manganese	0.13			04/19/2001 14:55	04/19/2001	P
Molybdenum	0.050	U		04/19/2001 14:55	04/19/2001	P
Nickel	0.040	U		04/19/2001 14:55	04/19/2001	P
Phosphorus	0.50	U		04/19/2001 14:55	04/19/2001	P
Selenium	0.10	U		04/19/2001 14:55	04/19/2001	P
Silver	0.030	U		04/19/2001 14:55	04/19/2001	P
Strontium	0.89			04/19/2001 14:55	04/19/2001	P
Thallium	0.10	U		04/19/2001 14:55	04/19/2001	P
Titanium	0.020	U		04/19/2001 14:55	04/19/2001	P
Vanadium	0.050	U		04/19/2001 14:55	04/19/2001	P
Zinc	0.17			04/19/2001 14:55	04/19/2001	P

Color Before: colorless Clarity Before: clear

Color After: colorless Clarity After: clear

Texture: Artifacts:

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: 01D0696-002 (713 Cooling Tower Water, Metals Screen)

Matrix: AQUEOUS **SDG No:** APR19

Date Sampled: 04/18/2001 **QC Report No:** SD041901SWP

Receipt Date: 04/18/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	0.20	U		04/19/2001 14:57	04/19/2001	P
Antimony	0.10	U		04/19/2001 14:57	04/19/2001	P
Arsenic	0.10	U		04/19/2001 14:57	04/19/2001	P
Barium	0.054	B		04/19/2001 14:57	04/19/2001	P
Beryllium	0.0050	U		04/19/2001 14:57	04/19/2001	P
Cadmium	0.010	U		04/19/2001 14:57	04/19/2001	P
Calcium	50.			04/19/2001 14:57	04/19/2001	P
Chromium	0.050	U		04/19/2001 14:57	04/19/2001	P
Cobalt	0.050	U		04/19/2001 14:57	04/19/2001	P
Copper	0.073	B		04/19/2001 14:57	04/19/2001	P
Iron	0.10	U		04/19/2001 14:57	04/19/2001	P
Lead	0.050	U		04/19/2001 14:57	04/19/2001	P
Magnesium	11.			04/19/2001 14:57	04/19/2001	P
Manganese	0.010	U		04/19/2001 14:57	04/19/2001	P
Molybdenum	0.050	U		04/19/2001 14:57	04/19/2001	P
Nickel	0.040	U		04/19/2001 14:57	04/19/2001	P
Phosphorus	0.50	U		04/19/2001 14:57	04/19/2001	P
Selenium	0.10	U		04/19/2001 14:57	04/19/2001	P
Silver	0.030	U		04/19/2001 14:57	04/19/2001	P
Strontium	0.37	B		04/19/2001 14:57	04/19/2001	P
Thallium	0.10	U		04/19/2001 14:57	04/19/2001	P
Titanium	0.020	U		04/19/2001 14:57	04/19/2001	P
Vanadium	0.074	B		04/19/2001 14:57	04/19/2001	P
Zinc	0.050	U		04/19/2001 14:57	04/19/2001	P

Color Before: colorless **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: 01D0696-003 (713A Valve Pit Water, Metals Screen)

Matrix: AQUEOUS **SDG No:** APR19

Date Sampled: 04/18/2001 **QC Report No:** SD041901SWP

Receipt Date: 04/18/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	0.20	U		04/19/2001 14:58	04/19/2001	P
Antimony	0.10	U		04/19/2001 14:58	04/19/2001	P
Arsenic	0.10	U		04/19/2001 14:58	04/19/2001	P
Barium	0.050	U		04/19/2001 14:58	04/19/2001	P
Beryllium	0.0050	U		04/19/2001 14:58	04/19/2001	P
Cadmium	0.010	U		04/19/2001 14:58	04/19/2001	P
Calcium	34.			04/19/2001 14:58	04/19/2001	P
Chromium	0.050	U		04/19/2001 14:58	04/19/2001	P
Cobalt	0.050	U		04/19/2001 14:58	04/19/2001	P
Copper	0.050	U		04/19/2001 14:58	04/19/2001	P
Iron	0.14	B		04/19/2001 14:58	04/19/2001	P
Lead	0.050	U		04/19/2001 14:58	04/19/2001	P
Magnesium	8.2	B		04/19/2001 14:58	04/19/2001	P
Manganese	0.010	U		04/19/2001 14:58	04/19/2001	P
Molybdenum	0.050	U		04/19/2001 14:58	04/19/2001	P
Nickel	0.040	U		04/19/2001 14:58	04/19/2001	P
Phosphorus	0.50	U		04/19/2001 14:58	04/19/2001	P
Selenium	0.10	U		04/19/2001 14:58	04/19/2001	P
Silver	0.030	U		04/19/2001 14:58	04/19/2001	P
Strontium	0.21	B		04/19/2001 14:58	04/19/2001	P
Thallium	0.10	U		04/19/2001 14:58	04/19/2001	P
Titanium	0.020	U		04/19/2001 14:58	04/19/2001	P
Vanadium	0.058	B		04/19/2001 14:58	04/19/2001	P
Zinc	0.050	U		04/19/2001 14:58	04/19/2001	P

Color Before: colorless **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 13

SAMPLE PREPARATION LOG

Lab Name: Rocky Flats

SDG No: APR19

QC Report No: SD041901SWP

Prep Batch: 041901 P

No.	Sample ID Number	Preparation Date	Initial Sample Size	Final Volume (mL)	Sample Preparation Factor
1	01D0696-001	04/19/2001	30.00 mL	30.00	1.000
2	01D0696-002	04/19/2001	30.00 mL	30.00	1.000
3	01D0696-003	04/19/2001	30.00 mL	30.00	1.000

Form 14

ANALYSIS RUN LOG

Lab Name: Rocky Flats

QC Report No: SD041901SWP **SDG No:** APR19

Instrument ID No: JY48P ICP **Run No:** JY48P ICP:4/19/01 3:02:58 PM **Method:** P

Start Date: 04/19/2001 **End Date:** 04/19/2001

Time	Sample ID	Total DF*	Ag	Al	As	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	Mg	Mn	Mo	Ni	P	Pb	Sb	Se	Sr	Ti	Tl	V	Zn
13:16	ZZZZZ	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:24	ZZZZZ	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:26	ZZZZZ	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:32	ZZZZZ	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:34	ZZZZZ	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:37	ZZZZZ	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:39	ZZZZZ	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:41	ZZZZZ	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:43	ZZZZZ	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:45	ZZZZZ	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:48	ZZZZZ	5.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:50	ZZZZZ	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:55	ZZZZZ	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
14:00	ZZZZZ	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
14:02	ZZZZZ	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
14:03	ZZZZZ	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
14:05	ZZZZZ	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

0071

Form 14

ANALYSIS RUN LOG

Lab Name: Rocky Flats

QC Report No: SD041901SWP **SDG No:** APR19

			Ag	Al	As	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	Mg	Mn	Mo	Ni	P	Pb	Sb	Se	Sr	Ti	Tl	V	Zn
14:07	ZZZZZ	3.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14:09	ZZZZZ	3.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14:13	ZZZZZ	6.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14:16	ZZZZZ	3.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14:18	ZZZZZ	3.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14:40	ZZZZZ	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14:43	ZZZZZ	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14:45	ZZZZZ	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14:48	CCV2	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14:53	CCB2	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14:55	01D0696-001	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14:57	01D0696-002	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
14:58	01D0696-003	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15:00	CCV3	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15:02	CCB3	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

* Prep Factor x Analytical Dilution Factor

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TOTAL METALS SAMPLE PREPARATON FORM

PREP DATE : 4-19-01
QC DATA FILE : SD041901SWP.XLS
QC REPORT NO. : SD041901SWP.RPT
SAMPLE TYPE : Incidental Waters

ANALYST : D. Sapp
L-PROCEDURE USED: L-4150
CHEMIST APPROVAL : R.C. Kelly

NO.	SAMPLE I. D.	INITIAL (gm) or (ml)	FINAL VOLUME (ml)	SAMPLE DILUTION FACTOR	COLOR BEFORE	CLARITY BEFORE	COLOR AFTER	CLARITY AFTER
1	01D0696-001	30.0	30.0	1.000	COLORLESS	CLEAR	COLORLESS	CLEAR
2	01D0696-002	30.0	30.0	1.000	COLORLESS	CLEAR	COLORLESS	CLEAR
3	01D0696-003	30.0	30.0	1.000	COLORLESS	CLEAR	COLORLESS	CLEAR
4								
5								
6								
7								
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11								
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13								
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15								
16								
17								
18								
19								
20								

Comments : _____

ICP INITIAL INSTRUMENT ANALYSIS FORM

Analysis Date: 4-19-01 Analyst: D. Seipp

QC Data File: SD041901SUP.XLS L-Procedure: L-4153/6010

QC Report No: SD041901SUP.RPT Chemist Approval R.C. Kelly

No.	Calibration Standard or Sample ID	Standard or Sample Result mg/l	Standard Addition #1 mg/l	% Recovery of Standard Addition #1	Sample Dilution Factor mg/l	Final Result as mg/l or mg/kg
1	CCV2					
2	CCB2					
3	01D0696-001					
4	01D0696-002					
5	01D0696-003					
6	CCV3					
7	CCB3					
8						
9						
10						
11						
12						
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Comments:

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (BUILDING 559 LAB)

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R.C. Keech 4/19/01

CCV2/CN/DS 14:48:36 04-19-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	1742	1706	147	0	1577	10.21
3	U	3027	3030	3447	2950	-46	-.01
5	PU	2064	2067	2069	0	-4	.26
6	MG	15252	14927	83	0	15006	9.70
8	CA	2573	2545	485	0	2073	9.61
10	MN	8012	7828	291	0	7628	4.97
11	MO	5654	5545	0	929	4670	4.90
12	V	4693	4653	865	0	3808	4.91
13	AL	1868	1860	1105	0	759	10.56
14	NI	4119	4060	710	0	3379	5.01
16	BA	6027	5918	543	0	5429	4.92
17	SR	4474	4383	366	0	4062	1.95
18	CR	4333	4260	0	613	3683	4.95
21	SE	3752	3719	1622	0	2113	9.55
22	TI	1972	1933	408	0	1544	1.99
23	CU	3471	3427	1232	0	2217	4.84
26	CO	3256	3202	0	484	2745	4.98
28	AG	2994	2970	1748	0	1233	1.90
30	AS	3410	3359	992	0	2392	9.21
31	BE	29950	29400	0	581	29093	1.89
32	ZN	2807	2763	0	228	2557	5.04
34	CD	2421	2385	350	0	2052	2.00
36	PB	10345	10232	0	2544	7744	9.93
37	SB	3228	3182	1401	0	1803	10.04
38	TL	3333	3306	0	917	2402	9.41
39	P	3844	3804	0	537	3286	56.73

CCV2 / CN/DS REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	10.2111	MG/L		.0633	10
3	U	-.0875	MG/L	D: Conc<DL	.0109	1
5	PU	.2667	MG/L	D: Conc<DL	.2131	1
6	MG	9.7089	MG/L		.1370	10
8	CA	9.6062	MG/L		.0610	10
10	MN	4.9702	MG/L		.0305	10
11	MO	4.9033	MG/L		.0313	10
12	V	4.9131	MG/L		.0309	10
13	AL	10.3375	MG/L		.0890	10
14	NI	5.0217	MG/L		.0315	10
16	BA	4.9233	MG/L		.0307	10
17	SR	1.9547	MG/L		.0120	3
18	CR	4.9437	MG/L		.0310	10
21	SE	9.6394	MG/L		.0661	10
22	TI	1.9937	MG/L		.0124	3
23	CU	4.8438	MG/L		.0327	10
26	CO	4.9768	MG/L		.0311	10
28	AG	1.9102	MG/L		.0162	3
30	AS	9.1124	MG/L		.0592	10
31	BE	1.8863	MG/L		.0116	3
32	ZN	5.0010	MG/L		.0311	10
34	CD	2.0022	MG/L		.0124	3
36	PB	9.9184	MG/L		.0631	10
37	SB	9.8331	MG/L		.0890	10
38	TL	9.3742	MG/L		.0603	10
39	P	50.1826	MG/L		.3745	100

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

68

CCB2/CN/DS 14:53:25 04-19-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	144	144	135	0	8	.01
3	U	3046	3044	3475	2969	-51	-.18
5	PU	2063	2058	2070	0	-10	.09
6	MG	78	77	75	0	2	.00
8	CA	526	525	479	0	45	.07
10	MN	290	289	288	0	1	-.00
11	MO	933	931	0	911	20	.01
12	V	815	842	840	0	-12	.00
13	AL	1116	1112	1102	0	12	.03
14	NI	705	704	700	0	4	.00
16	BA	535	535	540	0	-6	.00
17	SR	355	358	365	0	-10	-.00
18	CR	627	626	0	612	15	.00
21	SE	1549	1542	1580	0	-35	-.09
22	TI	403	402	408	0	-5	.00
23	CU	1240	1241	1230	0	10	-.01
26	CO	482	482	0	479	2	.00
28	AG	1761	1762	1750	0	11	.00
30	AS	969	965	974	0	-7	.00
31	BE	565	565	0	533	32	.00
32	ZN	226	226	0	222	3	.01
34	CD	347	346	348	0	-2	.00
36	PB	2502	2510	0	2503	3	.03
37	SB	1375	1379	1374	0	3	.02
38	TL	900	897	0	895	3	.00
39	P	520	520	0	518	2	.01

CCB2 / CN/DS REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.0156	MG/L		.0033	1
3	U	-.1854	MG/L	D: Conc<DL	.5657	1
5	PU	.1129	MG/L	D: Conc<DL	.2131	1
6	MG	.0026	MG/L		.0008	1
8	CA	.0764	MG/L		.0086	1
10	MN	-.0015	MG/L	D: Conc<DL	.0006	1
11	MO	.0137	MG/L		.0035	1
12	V	.0022	MG/L	D: Conc<DL	.0038	1
13	AL	.0320	MG/L	D: Conc<DL	.0561	1
14	NI	.0053	MG/L	D: Conc<DL	.0037	1
16	BA	.0007	MG/L		.0000	1
17	SR	-.0013	MG/L	D: Conc<DL	.0006	1
18	CR	.0022	MG/L	D: Conc<DL	.0030	1
21	SE	-.0934	MG/L	D: Conc<DL	.0247	1
22	TI	.0028	MG/L	D: Conc<DL	.0018	1
23	CU	-.0105	MG/L	D: Conc<DL	.0097	1
26	CO	.0020	MG/L	D: Conc<DL	.0031	1
28	AG	.0067	MG/L	D: Conc<DL	.0097	1
30	AS	.0008	MG/L		.0001	1
31	BE	.0000	MG/L	D: Conc<DL	.0001	1
32	ZN	.0117	MG/L		.0015	1
34	CD	.0015	MG/L	D: Conc<DL	.0012	1
36	PB	.0322	MG/L	D: Conc<DL	.0114	1
37	SB	.0233	MG/L	D: Conc<DL	.0274	1
38	TL	.0095	MG/L	D: Conc<DL	.0123	1
39	P	.0033	MG/L		.0001	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

69

01D0696-001/CN/DS 14:55:33 04-19-2001

SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	195	195	134	0	61	.354
3	U	2997	2997	3420	2929	-55	-.325
5	PU	2032	2030	2045	0	-15	-.046
6	MG	47433	47680	97	0	47458	31.484
8	CA	38353	38853	568	0	38035	178.765
10	MN	482	481	283	0	198	.127
11	MO	929	929	0	900	28	.022
12	V	811	823	823	0	-6	.010
13	AL	1114	1114	1086	0	27	.253
14	NI	702	702	692	0	9	.013
16	BA	571	570	533	0	37	.039
17	SR	2216	2223	361	0	1859	.896
18	CR	668	665	0	607	59	.061
21	SE	1517	1527	1556	0	-34	-.086
22	TI	402	403	404	0	-2	.007
23	CU	1367	1367	1210	0	156	.312
26	CO	477	474	0	474	1	-.001
28	AG	1746	1745	1726	0	19	.019
30	AS	944	948	968	0	-23	-.058
31	BE	557	557	0	527	29	-.000
32	ZN	303	300	0	219	82	.166
34	CD	344	343	344	0	-1	.003
36	PB	2474	2465	0	2468	1	.030
37	SB	1375	1375	1359	0	15	.093
38	TL	891	886	0	878	10	.039
39	P	553	554	0	514	39	.654

01D0696-001 / CN/DS REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.3546	MG/L		.0040	1
3	U	-.3276	MG/L	D: Conc<DL	.5657	1
5	PU	-.0211	MG/L	D: Conc<DL	.2131	1
6	MG	31.4841	MG/L		.4445	30
8	CA	178.7424	MG/L		1.1143	100
10	MN	.1253	MG/L		.0010	1
11	MO	.0218	MG/L		.0035	1
12	V	.0093	MG/L	D: Conc<DL	.0038	1
13	AL	.1490	MG/L	D: Conc<DL	.0561	1
14	NI	.0135	MG/L		.0037	1
16	BA	.0378	MG/L		.0017	1
17	SR	.8899	MG/L		.0055	1
18	CR	.0499	MG/L		.0030	1
21	SE	-.0693	MG/L	D: Conc<DL	.0247	1
22	TI	.0050	MG/L	D: Conc<DL	.0018	1
23	CU	.3121	MG/L		.0100	1
26	CO	-.0014	MG/L	D: Conc<DL	.0000	1
28	AG	.0059	MG/L	D: Conc<DL	.0097	1
30	AS	-.0598	MG/L	D: Conc<DL	.0132	1
31	BE	-.0000	MG/L	D: Conc<DL	.0000	1
32	ZN	.1652	MG/L		.0018	1
34	CD	.0032	MG/L	D: Conc<DL	.0012	1
36	PB	.0272	MG/L	D: Conc<DL	.0114	1
37	SB	.0855	MG/L		.0274	1
38	TL	.0366	MG/L	D: Conc<DL	.0123	1
39	P	.4150	MG/L		.0323	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

01D0696-002/CN/DS 14:57:11 04-19-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	150	149	134	0	15	.058
3	U	3029	3036	3456	2960	-52	-.232
5	PU	2056	2056	2072	0	-16	-.093
6	MG	17035	16773	83	0	16820	10.897
8	CA	11247	11144	506	0	10688	50.138
10	MN	291	292	286	0	5	.001
11	MO	935	936	0	911	24	.017
12	V	881	882	838	0	43	.074
13	AL	1119	1120	1101	0	18	.113
14	NI	701	705	698	0	5	.006
16	BA	593	592	539	0	53	.054
17	SR	1148	1133	363	0	777	.376
18	CR	633	634	0	609	24	.014
21	SE	1531	1530	1560	0	-30	-.069
22	TI	401	402	410	0	-9	-.001
23	CU	1275	1276	1227	0	48	.073
26	CO	480	480	0	481	-2	-.005
28	AG	1757	1763	1746	0	13	.009
30	AS	970	979	973	0	1	.033
31	BE	565	565	0	536	29	-.000
32	ZN	232	231	0	222	10	.023
34	CD	345	345	346	0	-2	.002
36	PB	2505	2505	0	2512	-7	.019
37	SB	1375	1380	1381	0	-4	-.015
38	TL	877	893	0	876	8	.032
39	P	544	540	0	520	21	.349

01D0696-002 / CN/DS REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.Sl
2	FE	.0587	MG/L		.0033	1(
3	U	-.2331	MG/L	D: Conc<DL	.5657	1(
5	PU	-.0753	MG/L	D: Conc<DL	.2131	1(
6	MG	10.8974	MG/L		.1538	10(
8	CA	50.1305	MG/L		.3130	100(
10	MN	.0006	MG/L	D: Conc<DL	.0006	1(
11	MO	.0177	MG/L		.0035	1(
12	V	.0737	MG/L		.0038	1(
13	AL	.0830	MG/L	D: Conc<DL	.0561	1(
14	NI	.0065	MG/L	D: Conc<DL	.0037	1(
16	BA	.0536	MG/L		.0017	1(
17	SR	.3746	MG/L		.0023	1(
18	CR	.0108	MG/L		.0030	1(
21	SE	-.0643	MG/L	D: Conc<DL	.0247	1(
22	TI	-.0019	MG/L	D: Conc<DL	.0018	1(
23	CU	.0734	MG/L		.0098	1(
26	CO	-.0056	MG/L	D: Conc<DL	.0031	1(
28	AG	.0059	MG/L	D: Conc<DL	.0097	1(
30	AS	.0325	MG/L	D: Conc<DL	.0132	1(
31	BE	-.0002	MG/L	D: Conc<DL	.0001	1(
32	ZN	.0233	MG/L		.0015	1(
34	CD	.0021	MG/L	D: Conc<DL	.0012	1(
36	PB	.0184	MG/L	D: Conc<DL	.0114	1(
37	SB	-.0172	MG/L	D: Conc<DL	.0274	1(
38	TL	.0319	MG/L	D: Conc<DL	.0123	1(
39	P	.3193	MG/L		.0321	1(

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

01D0696-003/CN/DS 14:58:51 04-19-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	168	165	138	0	28	.139
3	U	3030	3034	3449	2950	-43	.075
5	PU	2051	2058	2060	0	-6	.214
6	MG	12945	12691	83	0	12734	8.225
8	CA	7809	7743	497	0	7278	34.097
10	MN	301	298	289	0	10	.004
11	MO	925	936	0	931	-1	-.008
12	V	864	885	844	0	30	.057
13	AL	1122	1124	1101	0	22	.171
14	NI	707	707	702	0	4	.005
16	BA	571	570	543	0	26	.029
17	SR	810	799	365	0	438	.213
18	CR	635	627	0	615	16	.004
21	SE	1532	1541	1559	0	-23	-.037
22	TI	406	404	407	0	-3	.005
23	CU	1241	1243	1223	0	18	.008
26	CO	483	481	0	478	4	.004
28	AG	1753	1755	1746	0	7	.000
30	AS	966	969	968	0	-1	.024
31	BE	564	564	0	536	28	-.000
32	ZN	248	246	0	225	21	.047
34	CD	349	347	347	0	0	.004
36	PB	2500	2507	0	2509	-5	.021
37	SB	1377	1373	1391	0	-16	-.081
38	TL	878	882	0	873	6	.024
39	P	549	548	0	519	29	.485

01D0696-003 / CN/DS REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.SA
2	FE	.1393	MG/L		.0034	1(
3	U	.0746	MG/L	D: Conc<DL	.5657	1(
5	PU	.2083	MG/L	D: Conc<DL	.2131	1(
6	MG	8.2255	MG/L		.1161	10(
8	CA	34.0917	MG/L		.2131	30(
10	MN	.0038	MG/L		.0006	1(
11	MO	-.0088	MG/L	D: Conc<DL	.0035	1(
12	V	.0577	MG/L		.0038	1(
13	AL	.1512	MG/L	D: Conc<DL	.0561	1(
14	NI	.0054	MG/L	D: Conc<DL	.0037	1(
16	BA	.0292	MG/L		.0017	1(
17	SR	.2126	MG/L		.0014	1(
18	CR	.0009	MG/L	D: Conc<DL	.0030	1(
21	SE	-.0342	MG/L	D: Conc<DL	.0247	1(
22	TI	.0050	MG/L	D: Conc<DL	.0018	1(
23	CU	.0083	MG/L	D: Conc<DL	.0097	1(
26	CO	.0040	MG/L	D: Conc<DL	.0031	1(
28	AG	-.0020	MG/L	D: Conc<DL	.0000	1(
30	AS	.0234	MG/L	D: Conc<DL	.0132	1(
31	BE	-.0003	MG/L	D: Conc<DL	.0001	1(
32	ZN	.0469	MG/L		.0015	1(
34	CD	.0040	MG/L		.0012	1(
36	PB	.0210	MG/L	D: Conc<DL	.0114	1(
37	SB	-.0824	MG/L	D: Conc<DL	.0274	1(
38	TL	.0238	MG/L	D: Conc<DL	.0123	1(
39	P	.4321	MG/L		.0322	1(

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

CCV/CN/DS 15:00:32 04-19-2001

Chan	SAMPLE Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	1687	1684	147	0	1538	9.96(
3	U	3027	3036	3457	2949	-45	-.00:
5	PU	2063	2070	2060	0	6	.55(
6	MG	14918	14895	84	0	14822	9.58{
8	CA	2530	2542	484	0	2051	9.51)
10	MN	7839	7817	295	0	7533	4.90{
11	MO	5527	5529	0	931	4596	4.83(
12	V	4598	4568	866	0	3716	4.79{
13	AL	1851	1856	1102	0	751	10.46:
14	NI	4050	4051	717	0	3333	4.94{
16	BA	5920	5913	548	0	5368	4.87)
17	SR	4386	4372	368	0	4011	1.93(
18	CR	4253	4251	0	617	3635	4.88(
21	SE	3718	3720	1583	0	2135	9.65(
22	TI	1939	1927	409	0	1523	1.96{
23	CU	3424	3411	1231	0	2186	4.77(
26	CO	3201	3195	0	491	2706	4.91{
28	AG	2972	2969	1749	0	1220	1.88(
30	AS	3373	3348	982	0	2378	9.15{
31	BE	29306	29243	0	582	28692	1.87)
32	ZN	2755	2752	0	227	2526	4.98:
34	CD	2381	2377	352	0	2026	1.97)
36	PB	10189	10181	0	2556	7628	9.78(
37	SB	3186	3182	1397	0	1787	9.94{
38	TL	3269	3266	0	895	2372	9.29)
39	P	3776	3781	0	537	3240	55.94(

CCV / CN/DS REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S:
2	FE	9.9604	MG/L		.0617	10(
3	U	-.0742	MG/L	D: Conc<DL	.0109	1(
5	PU	.5556	MG/L	D: Conc<DL	.2131	1(
6	MG	9.5885	MG/L		.1353	10(
8	CA	9.5017	MG/L		.0604	10(
10	MN	4.9079	MG/L		.0301	10(
11	MO	4.8255	MG/L		.0308	10(
12	V	4.7952	MG/L		.0301	10(
13	AL	10.2390	MG/L		.0884	10(
14	NI	4.9537	MG/L		.0311	10(
16	BA	4.8683	MG/L		.0303	10(
17	SR	1.9303	MG/L		.0119	3(
18	CR	4.8786	MG/L		.0305	10(
21	SE	9.7381	MG/L		.0667	10(
22	TI	1.9669	MG/L		.0122	3(
23	CU	4.7742	MG/L		.0323	10(
26	CO	4.9069	MG/L		.0307	10(
28	AG	1.8901	MG/L		.0161	3(
30	AS	9.0586	MG/L		.0589	10(
31	BE	1.8604	MG/L		.0115	3(
32	ZN	4.9401	MG/L		.0307	10(
34	CD	1.9766	MG/L		.0123	3(
36	PB	9.7700	MG/L		.0622	10(
37	SB	9.7424	MG/L		.0883	10(
38	TL	9.2582	MG/L		.0596	10(
39	P	49.4681	MG/L		.3693	100(

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

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CCB/CN/DS 15:02:20 04-19-2001

SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	112	113	120	0	-8	-.089
3	U	2560	2569	2890	2492	-27	.628
5	PU	1715	1716	1726	0	-11	.051
6	MG	61	61	70	0	-9	-.003
8	CA	410	410	409	0	0	-.134
10	MN	241	241	247	0	-7	-.006
11	MO	747	743	0	733	11	.004
12	V	691	679	698	0	-14	.000
13	AL	943	940	934	0	7	-.041
14	NI	590	589	585	0	4	.005
16	BA	441	444	449	0	-7	-.000
17	SR	313	310	319	0	-8	-.000
18	CR	525	524	0	510	14	.000
21	SE	1242	1236	1255	0	-16	-.006
22	TI	339	338	344	0	-6	.001
23	CU	1030	1029	1030	0	-1	-.033
26	CO	401	400	0	400	1	-.003
28	AG	1480	1476	1476	0	1	-.009
30	AS	780	778	796	0	-17	-.037
31	BE	475	474	0	452	23	-.000
32	ZN	189	189	0	192	-4	-.002
34	CD	292	291	294	0	-3	.003
36	PB	2078	2079	0	2065	14	.045
37	SB	1115	1119	1117	0	0	.007
38	TL	691	694	0	719	-26	-.103
39	P	435	434	0	432	2	.019

CCB / CN/DS REPLICATE 1

EXTERNAL STANDARD TCP2 (IECTCP2, BK)

REMARKS: Bldg 559 Inorganic Labs JY48P

Rocky Flats

WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	-.0892	MG/L	D: Conc<DL	.0033	1
3	U	.6295	MG/L	D: Conc<DL	.5657	1
5	PU	.0038	MG/L	D: Conc<DL	.2131	1
6	MG	-.0038	MG/L	D: Conc<DL	.0008	1
8	CA	-.1343	MG/L	D: Conc<DL	.0085	1
10	MN	-.0064	MG/L	D: Conc<DL	.0006	1
11	MO	.0044	MG/L	D: Conc<DL	.0035	1
12	V	.0027	MG/L		.0001	1
13	AL	-.0396	MG/L	D: Conc<DL	.0561	1
14	NI	.0053	MG/L	D: Conc<DL	.0037	1
16	BA	-.0004	MG/L	D: Conc<DL	.0000	1
17	SR	-.0006	MG/L	D: Conc<DL	.0006	1
18	CR	.0003	MG/L	D: Conc<DL	.0001	1
21	SE	-.0058	MG/L	D: Conc<DL	.0247	1
22	TI	.0016	MG/L	D: Conc<DL	.0018	1
23	CU	-.0333	MG/L	D: Conc<DL	.0097	1
26	CO	-.0014	MG/L	D: Conc<DL	.0000	1
28	AG	-.0097	MG/L	D: Conc<DL	.0097	1
30	AS	-.0376	MG/L	D: Conc<DL	.0132	1
31	BE	-.0004	MG/L	D: Conc<DL	.0001	1
32	ZN	-.0027	MG/L	D: Conc<DL	.0015	1
34	CD	.0015	MG/L	D: Conc<DL	.0012	1
36	PB	.0458	MG/L		.0114	1
37	SB	.0077	MG/L	D: Conc<DL	.0274	1
38	TL	-.1038	MG/L	D: Conc<DL	.0123	1
39	P	.0274	MG/L	D: Conc<DL	.0320	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

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Commodore Advanced Sciences

RFETS

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. 01D0696#001

Page 1 of 2

Sampler(s) 512570 (time/date)	Contact/Requester JOHNSEN, SHELLY/DABOLL, DAVID	Telephone No. 6401/4985
RIN 01D0696 JOHN GARCSEP	Sampling Origin 712 & 713 COOLING TOWER	Purchase Order/Charge Code EBB422AN
Project Title 712, 713 COOLING TOWER (IW 01050, 01051, 01052) 572632	Logbook No. 94 DODGE	Ice Chest No. N/A Temp. N/A
To (Lab) Building 559 Laboratory	Method of Shipment SAMPLE TEAM	Bill of Lading/Air Bill No. N/A
Protocol CAS SOP-003 REV.3	Related COC (if any) 01D0696#002	PRE N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
IDC 1988

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01D0696-001.001	IW01050	AQUEOUS	4/18/01	1350	712 COOLING TOWER	40-ML / G /1	See Item 1	None None
01D0696-001.002	IW01050	AQUEOUS			712 COOLING TOWER	40-ML / G /1	PA03A026 (Metal Screen) [Rush]	None None
01D0696-002.001	IW01051	AQUEOUS		1340	713 COOLING TOWER	40-ML / G /1	See Item 1	None None
01D0696-002.002	IW01051	AQUEOUS			713 COOLING TOWER	40-ML / G /1	PA03A026 (Metal Screen) [Rush]	None None
01D0696-003.001	IW01052	AQUEOUS		1330	713A VALVE PIT	40-ML / G /1	See Item 1	None None
01D0696-003.002	IW01052	AQUEOUS			713A VALVE PIT	40-ML / G /1	PA03A026 (Metal Screen) [Rush]	None None
							4/18/01	

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
CAS	1430 4/18/01	Johnson	4/18/01 1430				

LABORATORY USE ONLY

	Initials/Date	Y/N
Cooler Custody Seal Intact:		☐
Outer TID Intact:		☐
TID # (if applicable):		☐
TID Removed by/Date:		☐
Sample Custody Seals Intact:		☐
Labels & COC Agree:	4/18/01	☐

FINAL SAMPLE DISPOSITION | Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process) | Disposed By

RE 4/20/01 ~~0023~~ 002

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Commodore Advanced Sciences	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # 01D0696#001
		Page 2 of 2

RIN	Contact/Requestor	Telephone No.
01D0696	JOHNSEN, SHELLY/DABOLL, DAVID	6401/4985

Item 1 PA03A005 (Fingerprint) [Rush]; PA04A003 (Pu g/l Radiochemistry) [Rush]; PA04A004 (U g/l Radiochemistry) [Rush]; PA04A005 (Am g/l Radiochemistry) [Rush]

4/20/01 RK

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time

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

0023 - 0024

76

Safe Sites
OF COLORADO, L.L.C.
Rocky Flats Environmental Technology Site

COPY

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APR 24 2001

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INTEROFFICE CORRESPONDENCE

DATE: April 23, 2001

TO: V. Ideker, ASD, Bldg. 881, X3437

FROM: M. S. Brugh, Radiological Inorganic Lab Manager, Bldg. 559, X7709

SUBJECT: SAMPLE PACKAGE SUBMITTAL

Attached are reports which have been analyzed by the 559 Radiochemistry Laboratory. Analyses performed:

· fingerprint · pH · g/l Pu · g/l U · g/l Am · g/l Cl- · OH-/H+ · g/g Pu · g/g U · g/g Am · other _____

01D0696-001		
002		
003		

Please see the Summary Narrative for all information pertaining to any anomalies for these samples.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions details in the narrative summary. Release of the data contained in this hard copy data and package and in the computer-readable data submitted has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

Mark S. Brugh
Manager, Radiological Inorganic Laboratory

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559 Laboratories Analytical Report

This report provides g/l U-235, Am-241, and Pu values determined using procedures L-4184 and L-4182. All methods are Safeguards qualified. The Q column lists data qualifiers. A 'U' in this field indicates that the measured result is below the MDA for the method, and the MDA is given in the result field. SAN codes are provided when the results are within the Safeguards approved range for the method. Also included are g/l Cl- and M H+/OH- results, when requested. These are produced utilizing procedures L-4187 and L-4189, respectively. The LL/TRU field is filled when sufficient information is available to do so.

Sample Owner	Johnsen, S.	*Phone #*	6401/6751
Company		*Pager*	
APO Sample ID	01D0696-001.001	*Customer Sample ID*	
Date Received	4/18/01	*Location*	712-713 Cooling Tower
Date Analyzed	4/19/01		
Date Reported	4/19/01		
Case Narrative	This sample was received in the 559 Radiochemistry Laboratory for g/l Pu, U-235, Am-241 and fingerprint analysis. There were no anomalies during analysis. All QA/QC was within limits.		

				Q	MDA				
Pu g/l	1.98E-07	+/-	1.03E-07	U	2.81E-07	*Pu SAN Code*	RCPU		
Am g/l	1.53E-10	+/-	1.73E-10	U	2.82E-10	*Am SAN Code*	RCAM	*LL/TRU*	LL
U g/l		+/-		U	6.45E-04	*U SAN Code*	RCEU		
		Cl-							
		pH	6.00						
		H+							
		OH-							

Approval John S. Traer

Peer Review Rosen A. Henderson

559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Johnsen, S.	***Company***	
APO Sample ID	01D0696-001.001		
Date Received	4/18/01		
Date Analyzed	4/19/01		
Date Reported	4/19/01		
Case Narrative	This sample was received in the 559 Radiochemistry Laboratory for g/l Pu, U-235, Am-241 and fingerprint analysis. There were no anomalies during analysis. All QA/QC was within limits.		
Physical Description	Single phase transparent colorless non-viscous liquid.		
Water Test	Positive		
pH	6.00	***Standard pH units***	
Specific Gravity	0.9982	***Relative to water @ 20 C***	
Miscibility	Water		
Water Reactivity	No		
Ignitability	NA, Aqueous Sample	***degrees C***	
Chlorinated Solvents	NA, Aqueous Sample	***ppm***	

Approval John E. Jones

Peer Review Roger A. Henderson

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559 Laboratories Analytical Report

This report provides g/l U-235, Am-241, and Pu values determined using procedures L-4184 and L-4182. All methods are Safeguards qualified. The Q column lists data qualifiers. A 'U' in this field indicates that the measured result is below the MDA for the method, and the MDA is given in the result field. SAN codes are provided when the results are within the Safeguards approved range for the method. Also included are g/l Cl- and M H+/OH- results, when requested. These are produced utilizing procedures L-4187 and L-4189, respectively. The LL/TRU field is filled when sufficient information is available to do so.

Sample Owner	Johnsen, S.	*Phone #*	6401/6751
Company		*Pager*	
APO Sample ID	01D0696-002.001	*Customer Sample ID*	
Date Received	4/18/01	*Location*	712-713 Cooling Tower
Date Analyzed	4/19/01		
Date Reported	4/19/01		
Case Narrative	This sample was received in the 559 Radiochemistry Laboratory for g/l Pu, U-235, Am-241 and fingerprint analysis. There were no anomalies during analysis. All QA/QC was within limits.		

				Q	MDA				
Pu g/l	3.47E-07	+/-	1.41E-07	U	2.81E-07	*Pu SAN Code*	RCPU		
Am g/l		+/-		U	3.97E-10	*Am SAN Code*	RCAM	*LL/TRU*	LL
U g/l		+/-		U	6.35E-04	*U SAN Code*	RCEU		
		Cl-							
		pH	6.00						
		H+							
		OH-							

Approval John S. Trevino

Peer Review Roger A. Henderson

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559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Johnsen, S.	***Company***	
APO Sample ID	01D0696-002.001		
Date Received	4/18/01		
Date Analyzed	4/19/01		
Date Reported	4/19/01		
Case Narrative	This sample was received in the 559 Radiochemistry Laboratory for g/l Pu, U-235, Am-241 and fingerprint analysis. There were no anomalies during analysis. All QA/QC was within limits.		
Physical Description	Single phase transparent colorless non-viscous liquid.		
Water Test	Positive		
pH	6.00	***Standard pH units***	
Specific Gravity	0.9946	***Relative to water @ 20 C***	
Miscibility	Water		
Water Reactivity	No		
Ignitability	NA, Aqueous Sample	***degrees C***	
Chlorinated Solvents	NA, Aqueous Sample	***ppm***	

Approval John S. Trask

Peer Review Rosen A. Henderson

559 Laboratories Analytical Report

This report provides g/l U-235, Am-241, and Pu values determined using procedures L-4184 and L-4182. All methods are Safeguards qualified. The Q column lists data qualifiers. A 'U' in this field indicates that the measured result is below the MDA for the method, and the MDA is given in the result field. SAN codes are provided when the results are within the Safeguards approved range for the method. Also included are g/l Cl- and M H+/OH- results, when requested. These are produced utilizing procedures L-4187 and L-4189, respectively. The LL/TRU field is filled when sufficient information is available to do so.

Sample Owner	Johnsen, S.	*Phone #*	6401/6751
Company		*Pager*	
APO Sample ID	01D0696-003.001	*Customer Sample ID*	
Date Received	4/18/01	*Location*	712-713 Cooling Tower
Date Analyzed	4/19/01		
Date Reported	4/19/01		
Case Narrative	This sample was received in the 559 Radiochemistry Laboratory for g/l Pu, U-235, Am-241 and fingerprint analysis. There were no anomalies during analysis. All QA/QC was within limits.		

				Q	MDA				
Pu g/l	1.39E-07	+/-	8.83E-08	U	2.81E-07	*Pu SAN Code*	RCPU		
Am g/l		+/-		U	3.76E-10	*Am SAN Code*	RCAM	*LL/TRU*	LL
U g/l		+/-		U	6.56E-04	*U SAN Code*	RCEU		
		Cl-							
		pH	6.00						
		H+							
		OH-							

Approval John M. Fraser

Peer Review Roger A. Henderson

559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Johnsen, S.	***Company***	
APO Sample ID	01D0696-003.001		
Date Received	4/18/01		
Date Analyzed	4/19/01		
Date Reported	4/19/01		
Case Narrative	This sample was received in the 559 Radiochemistry Laboratory for g/l Pu, U-235, Am-241 and fingerprint analysis. There were no anomalies during analysis. All QA/QC was within limits.		
Physical Description	Single phase transparent colorless non-viscous liquid.		
Water Test	Positive		
pH	6.00	***Standard pH units***	
Specific Gravity	0.9965	***Relative to water @ 20 C***	
Miscibility	Water		
Water Reactivity	No		
Ignitability	NA, Aqueous Sample	***degrees C***	
Chlorinated Solvents	NA, Aqueous Sample	***ppm***	

Approval John S. Johnsen

Peer Review Roger A. Henderson

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Commodor 'dvanced Sciences

RFETS

CHAIN OF CUSTODY/. MPLE ANALYSIS REQUEST

C.O.C. # ( )0696#001

Page 1 of 2

Sampler(s) 512570 (time/date)	Contact/Requester JOHNSEN, SHELLY/DABOLL, DAVID	Telephone No. 6401/4985
RIN 01D0696 JOHN GARCSEY	Sampling Origin 712 & 713 COOLING TOWER	Purchase Order/Charge Code EBB422AN
Project Title 712, 713 COOLING TOWER (IW 01050, 01051, 01052) 572632	Logbook No. 94 DODGE	Ice Chest No. N/A Temp. N/A
To (Lab) Building 559 Laboratory	Method of Shipment SAMPLE TEAM	Bill of Lading/Air Bill No. N/A
Protocol CAS SOP-003 REV 3	Related COC (if any) 01D0696#002	PRE N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time IDC 1988

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01D0696-001.001	IW01050	AQUEOUS	4/18/01	1350	712 COOLING TOWER	40-ML / G /1	See Item 1	None None
01D0696-001.002	IW01050	AQUEOUS			712 COOLING TOWER	40-ML / G /1	PA03A026 (Metal Screen) [Rush]	None None
01D0696-002.001	IW01051	AQUEOUS		1340	713 COOLING TOWER	40-ML / G /1	See Item 1	None None
01D0696-002.002	IW01051	AQUEOUS			713 COOLING TOWER	40-ML / G /1	PA03A026 (Metal Screen) [Rush]	None None
01D0696-003.001	IW01052	AQUEOUS		1330	713A VALVE PIT	40-ML / G /1	See Item 1	None None
01D0696-003.002	IW01052	AQUEOUS			713A VALVE PIT	40-ML / G /1	PA03A026 (Metal Screen) [Rush]	None None
							4/18/01	

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
CAS	1430 4/18/01	Johnson	4/18/01 1430				

LABORATORY USE ONLY

	Initials/Date	Y/N
Cooler Custody Seal Intact:		☐
Outer TID Intact:		☐
TID # (if applicable):		☐
TID Removed by/Date:		☐
Sample Custody Seals Intact:		☐
Labels & COC Agree:	4/18/01	☐

FINAL SAMPLE DISPOSITION — Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process) — Disposed By

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Commodo dvanced Sciences	CHAIN OF CUSTODY/ MPLE ANALYSIS REQUEST	C.O.C. # 0)696#001
		Page 2 of 2

RIN	Contact/Requestor	Telephone No.
01D0696	JOHNSEN, SHELLY/DABOLL, DAVID	6401/4985

Item 1 PA03A005 (Fingerprint) [Rush]; PA04A003 (Pu g/l Radiochemistry) [Rush]; PA04A004 (U g/l Radiochemistry) [Rush]; PA04A005 (Am g/l Radiochemistry) [Rush]

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time

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

85

EBERLINE SERVICES

April 24, 2001

Chuck Hoelzel
Kaiser-Hill, L.L.C.
Rocky Flats Environmental Technology Site
Analytical Services
10808 Highway 93, Unit B
Golden, CO 80403

COPY

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APR 26 2001

ENTERED

RIN Number: **01D0696**
Lab Code: TNU
Subcontract No. KH700093EP6

COVER PAGE

Chuck,

Enclosed please find results for 3 samples which were received at Eberline Services - Rocky Flats on April 18, 2001, for analysis of gross alpha/gross beta activity for assessment under the No-Rad-Added program (MDA) with a Rush (5 day) TAT. Preliminary results including the Case Narrative, Sample and QC Results Summary were faxed to Analytical Services and David DaBoll, RMRS, on April 24, 2001.

The sample(s) results reported in this package are:

ASD Sample ID	Lab Sample ID
01D0696-001.003	1004107-01
01D0696-002.003	1004107-02
01D0696-003.003	1004107-03
01D0696-003.003	1004107-04 D (Duplicate of 1004107-03)

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the laboratory manager or the manager's designee, as verified by the following signature."

Laboratory Manager

4/25/01
Date

0000

Analytical Service
Rocky Flats Environmental Technology Sit
10808 Highway 93, Unit
Building No. T886
Golden, Colorado 80403-820
(303) 966-7765 Fax (303) 966-430
Toll free (800) 269-015
www.eberlineservices.co

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Data Package Review Signature Page

[signature]	4/24/01
Technical Review	**Date**
Patricia B. Newton	4-25-01
Quality Assurance Review	**Date**

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Sample and QC Sample Result Summaries	Page 9
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Standard Summary	Page 14
Instrument Raw Data	Page 15
Instrument Calibration Summaries	Page 25

CHAIN - OF - CUSTODY

Commodore Advanced Sciences

RFETS

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # 01D0696#002

Page 1 of 1

Sampler(s) S Gowe 512570 (time/date)	Contact/Requester JOHNSEN, SHELLY/DABOLL, DAVID	Telephone No. 6401/4985
RIN 01D0696 John Goosby 512633	Sampling Origin 712 & 713 COOLING TOWER	Purchase Order/Charge Code EBB422AN
Project Title 712, 713 COOLING TOWER (IW 01050, 01051, 01052)	Logbook No. 94 Dodge	Ice Chest No. Temp. N/A
To (Lab) Thermo NuTech	Method of Shipment Sample Team	Bill of Lading/Air Bill No. N/A
Protocol CAS Sop. 003 Rev. 3	Related COC (if any) 01D0696#001	PRE N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
IDC 1988

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01D0696-001.003	IW01050	AQUEOUS	4/18/01	1350	712 COOLING TOWER	1-L / P/G /1	OS01A017 (Gross A/B - MDA) [Rush]	HNO3 4 degrees C
01D0696-002.003	IW01051	AQUEOUS		1340	713 COOLING TOWER	1-L / P/G /1	OS01A017 (Gross A/B - MDA) [Rush]	HNO3 4 degrees C
01D0696-003.003	IW01052	AQUEOUS		1330	713A VALVE PIT	1-L / P/G /1	OS01A017 (Gross A/B - MDA) [Rush]	HNO3 4 degrees C

4/18/01

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
S.K. Gowe	1547 4/18/01	[signature]	4/18/01 1547				
[signature]	4/18/01 1600	C4	4/18/01 1600				

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

90

Send Confirmation

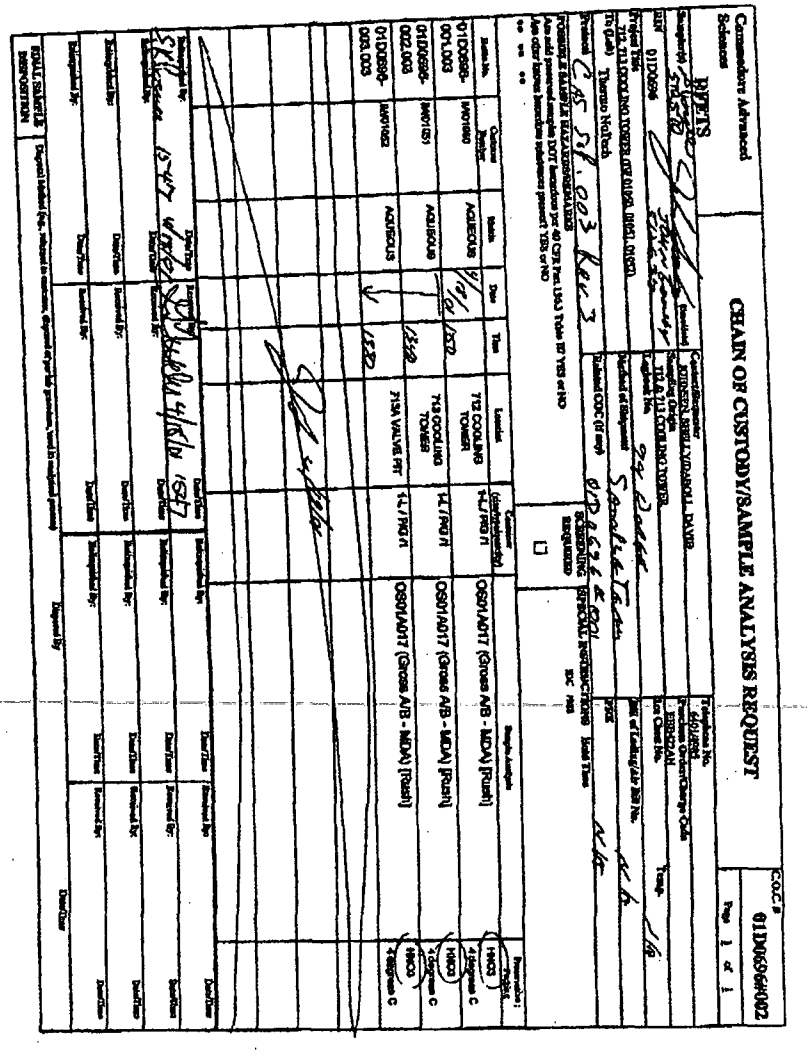
WorkCentre 450c report for
RECFAX
3039666595
Apr-18-01 04:02 PM

Successful

Pages scanned 1
Pages confirmed 1

Job	Sent	To Remote Station	Duration	Mode	Pages	Results
038	Apr-18 04:01pm	303 966 4555	00:45	ECM	1/ 1	OK,144

$$$	Phone charge code	F	Forward	P	Poll	48	4800 bps chosen
A	Auto-distribute	G	Group dial	PC	to/from PC	96	9600 bps chosen
C	Cover page	M	Mailbox	PW	Password	144	14400 bps chosen
ECM	Error Correction			RM	Receive to memory		



Eberline Services - Rocky Flats
RFETS, Building T386D
Golden, Colorado 80403
(303) 966-7765

RIN: 01D0696
Report Date: 4/24/2001

Method Summary

Gross alpha and gross beta activities are measured by evaporating an aliquot of the prepared sample onto a counting planchet and counting the alpha and beta activities in a low background, thin-windowed, gas flow proportional counter. Organics or combustible solids are ashed, the residue dissolved in acid, and the solution or an aliquot of the solution is evaporated onto a counting planchet. Aqueous samples are concentrated and then evaporated onto a counting planchet. The initial preparation of soils, sludges, and sediments is described in detail in procedure ATP-002, *"Initial Preparation of Soils/Sludges/Sediments for Dissolution."* Analysis of soils, sludges and non-combustible solids is described in detail in procedure ATP-026, *"Sample Preparation for Analysis of Gross Alpha and Gross Beta Activity in Solid Samples."* Analysis of aqueous samples and prepared non-aqueous samples is described in detail in procedure ATP-015, *"Sample Preparation for Analysis of Gross Alpha and Gross Beta Activity in Aqueous Samples."* Preparation of oils, solvents and other combustible organics is described in procedure ATP-005, *"Preparation of Oils and Solvents for Analysis of Gross Alpha and Gross Beta Activity."* The counting procedure is described in procedure ATP-008, *"Operation of the Tennelec LB4100 Gas Proportional Counters."*

The detector counting efficiency and self-absorption effects of the salt residue on the planchet are determined from calibration curves which are generated by counting several planchets prepared with a known amount of alpha or beta activity and increasing amounts of salt (0 to 100 mg). Americium-241 is used as the spike for the alpha curves and a solution of Sr-90, Y-90 is used for the beta curves. These standards are prepared from certified reference material which is traceable to the National Institute of Standards Technology (NIST).

The theoretical minimum detectable activity (MDA) for the analysis is based on the detector background, detector efficiency and self-absorption effects, count time and quantity of sample analyzed. The MDA for each analysis is calculated and is also reported. If the reported result is based on the average of two or more counts, the average MDA is reported.

Quality Control Summary

A sample batch consists of eleven or fewer samples, a duplicate of one of the samples, an alpha and a beta laboratory control sample, and a preparation blank. Each set of samples forms a "QC Batch" and is assigned a QC batch number. A sample can be traced back to its corresponding quality control samples through the QC Batch number. The preparation blank (PB), an aliquot of deionized, distilled water, is prepared and analyzed with the samples to confirm that the samples were not contaminated during the analysis. The activities reported for samples and standards were not corrected for preparation blank activity. The alpha and beta laboratory control samples are aqueous standards of ^{241}Am and ^{90}Sr, respectively. The SRM standards used to prepared these standards are traceable to NIST. The duplicate, designated as the sample ID followed by a "D", is a second aliquot of one of the samples in the QC Batch which is carried through the procedure as a separate sample.

The instrument QC includes determining instrument backgrounds weekly and counting an instrument check source daily on the Tennelec LB4100 multidetector gas proportional counters. The instrument backgrounds are based on the average of at least five, and normally ten or more, 4 hour counts. The instrument check sources are counted daily to verify that the efficiencies of the detectors have not changed. A summary of the instrument backgrounds is included in the instrument raw data section of this report. The daily check source information is available in the supporting documentation package.

Narrative

These samples, described as aqueous matrices from the 712 and 713 Cooling Towers and the 713A Valve Pit, were submitted for analysis of gross alpha/gross beta activity for assessment under the No-Rad-Added program (MDA). The samples were prepared for analysis of gross alpha/gross beta activity using procedure ATP-015, *"Sample Preparation for Analysis of Gross Alpha-Gross Beta Activity in Aqueous Samples,"* and incorporating the quality control requirements of procedure ATP-005, *"Preparation of Oils, Solvents and Combustibles for Analysis of Gross Alpha and Gross Beta Activity"* in order to comply with the No-Rad-Added program requirements. These additional quality control requirements are as follows: Two planchets are prepared for each sample in the batch. The counts of the two planchets prepared for each sample are evaluated for statistical equivalence. If the two counts are not equivalent, the planchets for that sample are recounted. The average of the statistically equivalent data for the two planchets are reported, unless otherwise noted.

The samples were analyzed in QC batch 01AB062. Sample 1004107-01 contained a moderate concentration of dissolved and/or undissolved solids. In order to achieve a residue weight on the counting planchet less than the allowable maximum of 100 mg, the analysis aliquot size was limited to 60 ml. In order to help compensate for the reduced analysis aliquot and the increased self-absorption caused by

Eberline Services - Rocky Flats
RFETS, Building T886D
Golden, Colorado 80403
(303) 966-7765

RIN: 01D0696
Report Date: 4/24/2001

Narrative (continued)

the residue on the counting planchets, the planchets prepared for this sample were counted for 12 hours. When these planchets were counted, the alpha and beta counts were statistically different. It was determined that a 12 hour recount was not necessary due to the elevated beta activity in the sample, and that a 4 hour recount would be adequate. The remaining planchets in the batch were counted for the routine count time of 4 hours. The beta activity for the PB was greater than the uncertainty, and the entire batch was therefore recounted for 4 hours. When the sample batch was recounted, the beta counts were statistically different for sample 1004107-04 D. The planchets prepared for this sample were recounted for 4 hours with acceptable results. The average of the initial count and the recount are reported for the batch. Sample 1004107-04 D is a duplicate of sample 1004107-03. There were no other problems noted with these analyses and all QC data are acceptable.

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Sample and QC Sample Result Summaries

Eberline Services - Rocky Flats
RFETS, Building T886D
Golden, Colorado 80403
(303) 966-7765

RIN: 01D0696
Report Date: 4/24/2001

Sample and Duplicate Analysis Results

		Gross Alpha			Gross Beta				
Customer Sample ID	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units	QC Batch
01D0696-001.003	1004107-01	10	10	24	109	7	6	pCi/l	01AB062
01D0696-002.003	1004107-02	1.7	0.6	1.8	5.1	0.8	2.2	pCi/l	01AB062
01D0696-003.003	1004107-03	2.0	0.6	1.8	8.0	0.8	2.2	pCi/l	01AB062
01D0696-003.003	1004107-04 D	2.4	0.5	1.8	8.6	0.8	2.1	pCi/l	01AB062

Preparation Blank Results

		Gross Alpha			Gross Beta				
QC Batch	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units	
01AB062	1004107-05	0.1	0.3	1.1	0.3	0.6	2.0	pCi/l	

LCS Results

		Gross Alpha			Gross Beta				
QC Batch	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units	SRM
01AB062	1004107-06	22.4	2.2	4.7	24.1	2.5	6.5	pCi/l	STD_94

PREPARATION LOGS

GROSS ALPHA/GROSS BETA
SAMPLE PREPARATION BENCHSHEET - DIRECT LIQUIDS - WATER MATRIX

QC Batch: 01AB062
Prep Start Date: 4/19/01
Prep Complete: 4/19/01

Procedure: ATP-015
Analyst: [illegible]

RIN	SAMPLE ID	P	VOLUME (ML)	TARE WT (G)	GROSS WT (G) 4/19/01	NET WT (MG) 4/19/01	COMMENTS
01D0696	1004107-01	1A	100	7.2463	~~7.3445~~ 7.3447	~~98.2~~ 98.4	001.003 Clear water
↓	↓ d	2B	d	7.2436	~~7.3445~~ 7.3373	~~100.9~~ 93.7	d
	-02	3A	150	7.2363	7.2923	56.0 ✓	002.003
	d	4B	↓	7.2467	7.3028	56.1 ✓	d
	-03	5A		7.1942	7.2387	44.5 ✓	003.003
	d	6B		7.2316	7.2781	46.5 ✓	d
	-04Dup	7A		7.2174	7.2618	44.4 ✓	003.003 Lab dup
↓	d	8B		7.2287	7.2713	42.6 ✓	d
N/A	-05 PB	9A		7.2573	7.2569	-0.4 ✓	Prep blank
	d	10B	↓	7.2084	7.2083	-0.1 ✓	d
	-06 LCS	11A	50	7.2050	7.2222	17.2 ✓	Std-94+0.5ml salt
↓	↓ d	12B	d	7.2347	7.2501	15.4 ✓	d
				4/19/01			

LABORATORY COC				Balance ID/ Date	Pipette #/ Date	COUNTING INFORMATION		
Transfer Information	Date/Time	By	Comment			Date	System	Filename
110/C4 to 106	4/19/01 0645	[illegible]		Mvey 4/19/01	P-11 4/19/01	4/19/01	2	50110406 (12hr)(1/2)
106 to 105	4/19/01 0710	[illegible]		"	P-13 4/19/01	4/20/01	2	50111006 (4Hr 2-12)
105 to 110/C4	4/19/01 0748	[illegible]		"	"	4/23/01	2	50111304 (Recount)
to	"			"	"	4/23/01	2	50111306 (Recount 7B)

PROCEDURE COMMENTS: 1L hotplate used for evaporation and planchets. 4/19/01 *muffled for 20min @ 600C
1A gross wt: 7.3447 net wt: 98.4mg ✓ 2B gross wt: 7.3373 Net wt: 93.7mg ✓

REVIEWED BY: [signature] DATE: 4/20/01

REVIEW COMMENTS:

0112

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GROSS ALPHA/GROSS BETA
TOTAL SOLIDS BENCHSHEET

QC BATCH 01AB062

Sample ID	Aliquot (ml)	Planchet Tare Wt. (g)	Planchet Gross Wt. (g)	Residue Net Wt. (g)	Total Solids (mg/ml)
100 4107-01	1	7.2616	7.2631	0.0015	1.5 use 60ml
" -02	"	7.2382	7.2382	0.0000	0 use 150
" -03	"	7.2205	7.2205	0.0000	0 "

COMMENTS:

Eberline Services Rocky Flats
RFETS, Building T886D
Golden, Colorado 80403

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STANDARD SUMMARY

Lab Control Sample Description

LCS ID

STD_94

Fabrication Details

LCS STD_94 was fabricated by using 10 ml of STD_79 and bringing the solution to 4 liters standard volume. Fabrication and verification of this LCS was done by Thermo NUtech Rocky Flats.

STD_79 (^{241}Am)
SV: 10.15 ± 0.24 pCi/ml
Certification Date: 4/20/2000
Expiration Date: 4/2002

STD_79 (^{90}Sr/^{90}Y)
SV: 10.66 ± 0.29 pCi/ml
Certification Date: 4/20/2000
Expiration Date: 4/2002

Standard Values (Decayed to Analysis Date)

Alpha Standard Value:	25.4 ± 0.6 pCi/l
Beta Standard Value:	26.0 ± 0.7 pCi/l

INSTRUMENT RAW DATA

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LCS STD-94

αSV = 25.4 ± 0.6 pCi/l
DV = 22.4 ± 2.2 Passes @3σ
(3σ) ± 3.4 ✓
βSV = 26.0 ± 0.7 pCi/l
DV = 24.1 ± 2.5 ✓

⊛ Lab Duplicate.

αF = 0.381 ✓
E = 1.201
βF = 0.597
E = 1.766 ✓
(F < E @ 3σ)

QC Batch	01AB062
Counting Unit ID	Blue
Date	4/23/01
Filename(s)	S0110906, S0111006, S0111304, S0111306

Sample ID	Gross Alpha (pCi/l)			Gross Beta (pCi/l)			Comment
	Activity	Unc 2s	MDA	Activity	Unc 2s	MDA	
01D0696 1004107-01 A	10.950	15.174	25.560	120.036	8.785	3.782	*A/B counts stat. diff.
01D0696 1004107-01 B	8.519 *	12.294	20.654	108.290 *	7.402	3.538	12 Hr Count-Data Not Used
01D0696 1004107-01 A	9.899	14.792	24.843	110.587	9.843	6.046	
01D0696 1004107-01 B	10.232	13.576	22.771	106.441	9.488	5.999	
Average	**10.066**	**10.039**	**23.807**	**108.514**	**6.836**	**6.022**	
01D0696 1004107-02 A	1.735	1.261	1.896	5.776	1.582	2.221	
01D0696 1004107-02 B	2.557	1.297	1.798	5.520	1.512	2.124	
01D0696 1004107-02 A	1.545	1.151	1.715	3.798	1.431	2.130	
01D0696 1004107-02 B	1.153	1.155	1.814	5.162	1.495	2.126	
Average	**1.747**	**0.609**	**1.806**	**5.064**	**0.753**	**2.150**	
01D0696 1004107-03 A	2.723	1.333	1.918	9.520	1.718	2.165	
01D0696 1004107-03 B	1.826	1.191	1.786	8.490	1.660	2.134	
01D0696 1004107-03 A	2.105	1.203	1.751	7.026	1.630	2.225	
01D0696 1004107-03 B	1.503	1.161	1.779	7.093	1.634	2.226	
Average ⊛	**2.039**	**0.612**	**1.809**	**8.032**	**0.831**	**2.188**	
01D0696 1004107-04 DUP A	1.993	1.281	1.929	8.819	1.701	2.205	
01D0696 1004107-04 DUP B	2.827	1.304	1.836	8.755	1.642	2.098	
01D0696 1004107-04 DUP A	2.168	1.121	1.568	5.734 *	1.532	2.148	*Beta counts stat. diff.;
01D0696 1004107-04 DUP B	2.298	1.184	1.688	7.794	1.628	2.143	Not used in average.
01D0696 1004107-04 DUP A	2.630	1.360	1.960	8.747	1.706	2.191	
01D0696 1004107-04 DUP B	2.604	1.312	1.870	8.193	1.621	2.096	*Dup of 1004107-03*
Average ⊛	**2.420**	**0.516**	**1.808**	**8.629**	**0.834**	**2.147**	
01AB062 1004107-05 PB A	0.134	0.655	1.128	1.399 *	1.309	2.119	*Beta result > than uncert.
01AB062 1004107-05 PB B	0.171	0.636	1.088	1.363	1.247	2.016	Recount entire set.
01AB062 1004107-05 PB A	-0.126	0.567	1.039	-1.028	1.140	2.015	
01AB062 1004107-05 PB B	0.072	0.604	1.055	-0.479	1.166	2.018	
Average	**0.063** ✓	**0.308**	**1.078**	**0.314** ✓	**0.609**	**2.042**	
01AB062 1004107-06 LCS A	21.352	4.482	4.861	25.661	5.136	6.826	
01AB062 1004107-06 LCS B	23.078	4.562	4.860	28.129	5.107	6.542	
01AB062 1004107-06 LCS A	22.874	4.450	4.334	18.884	4.602	6.390	
01AB062 1004107-06 LCS B	22.135	4.429	4.554	23.717	4.808	6.367	STD_94
Average	**22.360**	**2.240**	**4.652**	**24.098**	**2.459**	**6.531**	

KL Clark 4/24/01

102 0016

Water Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0110906
Batch Ended: 4-20-01 3:55

Alpha activity action level (pCi/l): 2.00E+00
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Beta activity action level (pCi/l): 4.00E+00
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB062 12 HR COUNT

Detector ID	Sample ID	Alpha Activity				Beta Activity				Residual Mass	Sample Volume
		pCi/l	2σ	flags	MDA	pCi/l	2σ	flags	MDA	mg	l
A1	01D0696 1004107-01 A	10.950	15.174	<MDA	25.560	120.036	8.785	>AL	3.782	98.40 ✓	0.060 ✓
A2	01D0696 1004107-01 B	8.519	12.294	<MDA	20.654	108.290	7.402	>AL	3.538	93.70 ✓	0.060 ✓

KL Clark 4/30/01

Data Not Used

0017

103 7100

Raw Data Summary
Tennelec LB4100

Filename: ***S0110906***
Unit ID: ***Blue***

Detector ID	*Sample ID*	*Alpha Counts*	*Beta Counts*	*Guard Counts*	*Count Time (minutes)*	*Event*	*Date*
A1	01D0696 1004107-01 A	169	6368	537679	720	0	4/20/01
A2	01D0696 1004107-01 B	133	6000	537681	720	0	4/20/01

✓ = Counts Statistically Equivalent (2 Sigma)
* = Counts Statistically Different (2 Sigma)

recount A+B Planchets
(4 hr count adequate due to activity in sample)

Data Not Used

Water Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0111006
Batch Ended: 4-20-01 12:21

Alpha activity action level (pCi/l): 2.00E+00
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Beta activity action level (pCi/l): 4.00E+00
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB062 RUSH IWs

Detector ID	Sample ID	Alpha Activity				Beta Activity				Residual Mass	Sample Volume
		pCi/l	2σ	flags	MDA	pCi/l	2σ	flags	MDA	mg	l
A1	01D0696 1004107-02 A	1.735	1.261	At AL	1.896	5.776	1.582	>AL	2.221	56.00 ✓	0.150 ✓
A2	01D0696 1004107-02 B	2.557	1.297	At AL	1.798	5.520	1.512	>AL	2.124	56.10 ✓	0.150 ✓
B1	01D0696 1004107-03 A	2.723	1.333	At AL	1.918	9.520	1.718	>AL	2.165	44.50 ✓	0.150 ✓
B2	01D0696 1004107-03 B	1.826	1.191	At AL	1.786	8.490	1.660	>AL	2.134	46.50 ✓	0.150 ✓
B3	01D0696 1004107-04 DUP A	1.993	1.281	At AL	1.929	8.819	1.701	>AL	2.205	44.40 ✓	0.150 ✓
B4	01D0696 1004107-04 DUP B	2.827	1.304	At AL	1.836	8.755	1.642	>AL	2.098	42.60 ✓	0.150 ✓
C1	01AB062 1004107-05 PB A	0.134 ✓	0.655	<MDA	1.128	1.399 *	1.309	<AL	2.119	0.00 ✓	0.150 ✓
C2	01AB062 1004107-05 PB B	0.171 ✓	0.636	<MDA	1.088	1.363 *	1.247	<AL	2.016	0.00 ✓	0.150 ✓
C3	01AB062 1004107-06 LCS A	21.352	4.482	>AL	4.861	25.661	5.136	>AL	6.826	17.20 ✓	0.050 ✓
C4	01AB062 1004107-06 LCS B	23.078	4.562	>AL	4.860	28.129	5.107	>AL	6.542	15.40 ✓	0.050 ✓

*β PB activity greater than uncertainty. Recount entire set.

4/30/01

0019

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Raw Data Summary
Tennelec LB4100

Filename: ***S0111006***
Unit ID: ***Blue***

Detector ID	*Sample ID*	*Alpha Counts*	*Beta Counts*	*Guard Counts*	*Count Time (minutes)*	*Event*	*Date*
A1	01D0696 1004107-02 A	34	714	180773	240	0	4/20/01
A2	01D0696 1004107-02 B	45	692	180777	240	0	4/20/01
B1	01D0696 1004107-03 A	54	906	185302	240	0	4/20/01
B2	01D0696 1004107-03 B	39	854	185299	240	0	4/20/01
B3	01D0696 1004107-04 DUP A	42	909	185299	240	0	4/20/01
B4	01D0696 1004107-04 DUP B	57	879	185296	240	0	4/20/01
C1	01AB062 1004107-05 PB A	7	628	183448	240	0	4/20/01
C2	01AB062 1004107-05 PB B	11	583	183447	240	0	4/20/01
C3	01AB062 1004107-06 LCS A	160	942	183450	240	0	4/20/01
C4	01AB062 1004107-06 LCS B	178	959	183455	240	0	4/20/01

✓ = Counts Statistically Equivalent (2 Sigma)
* = Counts Statistically Different (2 Sigma)

Water Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0111304
Batch Ended: 4-23-01 12:29

Alpha activity action level (pCi/l): 2.00E+00
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Beta activity action level (pCi/l): 4.00E+00
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB062 RECOUNT

Detector ID	Sample ID	Alpha Activity				Beta Activity				Residual Mass	Sample Volume
		pCi/l	2σ	flags	MDA	pCi/l	2σ	flags	MDA	mg	l
A1	01D0696 1004107-01 A	9.899	14.792	<MDA	24.843	110.587	9.843	>AL	6.046	98.40 ✓	0.060 ✓
A1	01D0696 1004107-01 B	10.232	13.576	<MDA	22.771	106.441	9.488	>AL	5.999	93.70 ✓	0.060
A2	01D0696 1004107-02 A	1.545	1.151	At AL	1.715	3.798	1.431	At AL	2.130	56.00 ✓	0.150 ✓
A2	01D0696 1004107-02 B	1.153	1.155	At AL	1.814	5.162	1.495	At AL	2.126	56.10 ✓	0.150 ✓
B1	01D0696 1004107-03 A	2.105	1.203	At AL	1.751	7.026	1.630	>AL	2.225	44.50 ✓	0.150 ✓
B1	01D0696 1004107-03 B	1.503	1.161	At AL	1.779	7.093	1.634	>AL	2.226	46.50 ✓	0.150 ✓
B2	01D0696 1004107-04 DUP A	2.168	1.121	At AL	1.568	5.734	1.532	>AL	2.148	44.40 ✓	0.150 ✓
B2	01D0696 1004107-04 DUP B	2.298	1.184	At AL	1.688	7.794	1.628	>AL	2.143	42.60 ✓	0.150 ✓
B3	01AB062 1004107-05 PB A	-0.126	0.567	<MDA	1.039	-1.028 ✓	1.140	<MDA	2.015	0.00 ✓	0.150 ✓
B3	01AB062 1004107-05 PB B	0.072	0.604	<MDA	1.055	-0.479 ✓	1.166	<MDA	2.018	0.00 ✓	0.150 ✓
B4	01AB062 1004107-06 LCS A	22.874	4.450	>AL	4.334	18.884	4.602	>AL	6.390	17.20 ✓	0.050 ✓
B4	01AB062 1004107-06 LCS B	22.135	4.429	>AL	4.554	23.717	4.808	>AL	6.367	15.40 ✓	0.050 ✓

LCS STD-94
(see Average Sheet)

4/24/01

1200

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Raw Data Summary
Tennelec LB4100

Filename: ***S0111304***
Unit ID: ***Blue***

Detector ID	*Sample ID*	*Alpha Counts*		*Beta Counts*		*Guard Counts*	*Count Time (minutes)*	*Event*	*Date*
A1	01D0696 1004107-01 A	51	✓	1997	✓	175304	240	0	4/23/01
A1	01D0696 1004107-01 B	54		1955		178462	240	0	4/23/01
A2	01D0696 1004107-02 A	32	✓	630	✓	175301	240	0	4/23/01
A2	01D0696 1004107-02 B	26		679		178460	240	0	4/23/01
B1	01D0696 1004107-03 A	43	✓	839	✓	179205	240	0	4/23/01
B1	01D0696 1004107-03 B	32		837		182149	240	0	4/23/01
B2	01D0696 1004107-04 DUP A	45	✓	759	*	179200	240	0	4/23/01
B2	01D0696 1004107-04 DUP B	48		841		182148	240	0	4/23/01
B3	01AB062 1004107-05 PB A	5	✓	507	✓	179201	240	0	4/23/01
B3	01AB062 1004107-05 PB B	10		532		182149	240	0	4/23/01
B4	01AB062 1004107-06 LCS A	174	✓	859	✓	179202	240	0	4/23/01
B4	01AB062 1004107-06 LCS B	171		926		182151	240	0	4/23/01

✓ = Counts Statistically Equivalent (2 Sigma)
* = Counts Statistically Different (2 Sigma)

recount A&B Planchets

0022

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Water Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0111306
Batch Ended: 4-23-01 20:47

Alpha activity action level (pCi/l): 2.00E+00
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Beta activity action level (pCi/l): 4.00E+00
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB062 RECOUNT 7/8

Detector ID	Sample ID	Alpha Activity				Beta Activity				Residual Mass	Sample Volume
		pCi/l	2σ	flags	MDA	pCi/l	2σ	flags	MDA	mg	l
A1	01D0696 1004107-04 DUP A	2.630	1.360	At AL	1.960	8.747	1.706	>AL	2.191	44.40 ✓	0.150 ✓
A2	01D0696 1004107-04 DUP B	2.604	1.312	At AL	1.870	8.193	1.621	>AL	2.096	42.60 ✓	0.150 ✓

KLClark 4/24/01

0023

Raw Data Summary
Tennelec LB4100

Filename: ***S0111306***
Unit ID: ***Blue***

Detector ID	*Sample ID*	*Alpha Counts*	*Beta Counts*	*Guard Counts*	*Count Time (minutes)*	*Event*	*Date*
A1	01D0696 1004107-04 DUP A	51 ✓	838 ✓	178448	240	0	4/23/01
A2	01D0696 1004107-04 DUP B	53	809	178452	240	0	4/23/01

✓ = Counts Statistically Equivalent (2 Sigma)
* = Counts Statistically Different (2 Sigma)

INSTRUMENT CALIBRATION SUMMARIES

Application definitions

Application Name	Water Sample
Macro File	WATERAB
Data Filename	S0110906
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB062 12 HR COUNT
CreateDate	4/19/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	4/20/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Data Not Used

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0110906***
Unit ID: ***Blue***

Detector	Date	Alpha		Beta	
		Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	4/12/01	0.0318	0.0031	2.0640	0.0248
A2	4/12/01	0.0241	0.0027	1.9714	0.0242
A3	4/12/01	0.0283	0.0029	2.0057	0.0244
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	4/12/01	0.0244	0.0027	2.1792	0.0255
B2	4/12/01	0.0280	0.0029	2.1476	0.0253
B3	4/12/01	0.0289	0.0029	2.3110	0.0262
B4	4/12/01	0.0259	0.0028	2.1470	0.0253
C1	4/16/01	0.0153	0.0033	2.3653	0.0405
C2	4/16/01	0.0278	0.0044	2.1806	0.0389
C3	4/16/01	0.0264	0.0043	2.2736	0.0397
C4	4/16/01	0.0278	0.0044	2.1444	0.0386
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

Data Not Used

Alpha Calibration
Tennelec LB4100

Filename: S0110906
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}_{major}$ $\qquad$ $K_{minor} = b_{minor} * a^{u}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Data Not Used

Filename: S0110906
Unit ID: Blue

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$; $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

General Counting Parameters/Detector Information

Application definitions

Application Name	Water Sample
Macro File	WATERAB
Data Filename	S0111006
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB062 RUSH IWs
CreateDate	4/20/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	4/20/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0111006***
Unit ID: ***Blue***

		Alpha		Beta	
Detector	Date	Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	4/12/01	0.0318	0.0031	2.0640	0.0248
A2	4/12/01	0.0241	0.0027	1.9714	0.0242
A3	4/12/01	0.0283	0.0029	2.0057	0.0244
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	4/12/01	0.0244	0.0027	2.1792	0.0255
B2	4/12/01	0.0280	0.0029	2.1476	0.0253
B3	4/12/01	0.0289	0.0029	2.3110	0.0262
B4	4/12/01	0.0259	0.0028	2.1470	0.0253
C1	4/16/01	0.0153	0.0033	2.3653	0.0405
C2	4/16/01	0.0278	0.0044	2.1806	0.0389
C3	4/16/01	0.0264	0.0043	2.2736	0.0397
C4	4/16/01	0.0278	0.0044	2.1444	0.0386
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

Alpha Calibration
Tennelec LB4100

Filename: S0111006
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$ $\qquad$ $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Filename: S0111006
Unit ID: Blue

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}_{major}$; $K_{minor} = b_{minor} * a^{u}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).

Errors are 1 sigma.

General Counting Parameters/Detector Information

Application definitions

Application Name	Water Sample
Macro File	WATERAB
Data Filename	S0111304
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB062 RECOUNT
CreateDate	4/23/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	4/23/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0111304***
Unit ID: ***Blue***

Detector	Date	Alpha		Beta	
		Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	4/20/01	0.0289	0.0029	2.0750	0.0249
A2	4/20/01	0.0345	0.0032	2.0018	0.0244
A3	4/20/01	0.0256	0.0028	1.9943	0.0244
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	4/20/01	0.0241	0.0027	2.3158	0.0263
B2	4/20/01	0.0253	0.0027	2.1839	0.0255
B3	4/20/01	0.0342	0.0032	2.2976	0.0261
B4	4/20/01	0.0259	0.0028	2.2351	0.0258
C1	4/20/01	0.0229	0.0026	2.3551	0.0265
C2	4/20/01	0.0277	0.0029	2.2089	0.0256
C3	4/20/01	0.0348	0.0032	2.2333	0.0258
C4	4/20/01	0.0214	0.0025	2.1753	0.0254
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

Alpha Calibration
Tennelec LB4100

Filename: S0111304
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$ $\qquad$ $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Filename: S0111304
Unit ID: Blue

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$; $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).

Errors are 1 sigma.

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General Counting Parameters/Detector Information

Application definitions

Application Name	Water Sample
Macro File	WATERAB
Data Filename	S0111306
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB062 RECOUNT 7/8
CreateDate	4/23/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	4/23/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0111306***
Unit ID: ***Blue***

Detector	Date	Alpha		Beta	
		Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	4/20/01	0.0289	0.0029	2.0750	0.0249
A2	4/20/01	0.0345	0.0032	2.0018	0.0244
A3	4/20/01	0.0256	0.0028	1.9943	0.0244
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	4/20/01	0.0241	0.0027	2.3158	0.0263
B2	4/20/01	0.0253	0.0027	2.1839	0.0255
B3	4/20/01	0.0342	0.0032	2.2976	0.0261
B4	4/20/01	0.0259	0.0028	2.2351	0.0258
C1	4/20/01	0.0229	0.0026	2.3551	0.0265
C2	4/20/01	0.0277	0.0029	2.2089	0.0256
C3	4/20/01	0.0348	0.0032	2.2333	0.0258
C4	4/20/01	0.0214	0.0025	2.1753	0.0254
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

Alpha Calibration
Tennelec LB4100

Filename: S0111306
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$ $\quad K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Filename: **S0111306**
Unit ID: **Blue**

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$; $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Johns Manville

000001

Johns Manville Corporation
10100 W. Ute Avenue (80127)
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303 978 2000

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April 20, 2001

Rocky Flats Environmental Technology Site
Mr. Conrad Trice
P.O. Box 464, Building 881
Golden, CO 80402-0464

COPY

Laboratory Report ID:	01041901
Laboratory Name:	JMTC IH Analytical Laboratory
Laboratory Code:	JMANS
Subcontract Number:	800188SX6
RIN:	01C0134
Requestor:	Bob Cathel
P.O./Charge Code:	DAA00009

Dear Mr. Trice:

The Johns Manville Technical Center (JMTC) has performed the following analytical services as requested. The results are calculated based upon the information supplied on the submission form. All laboratory data has been filed and are available upon request.
The JMTC IH Analytical Laboratory is accredited by the American Industrial Hygiene Association (AIHA) in the industrial hygiene program (Certificate No. 056) and participates in the AIHA ELPAT program.
If you have any questions, please call (303) 978-2584.

Scope of Work:

Requested Analysis	Bottle Number(s)	Customer Number(s)	Laboratory ID Number	Line Item Code	Sample Matrix
Beryllium	01C0134-001.001	776-04182001-31-601	01041901-001	NR01A001	WIPE
Beryllium	01C0134-002.001	776-04182001-31-602	01041901-002	NR01A001	WIPE
Beryllium	01C0134-003.001	776-04182001-31-603	01041901-003	NR01A001	WIPE
Beryllium	01C0134-004.001	776-04182001-31-604	01041901-004	NR01A001	WIPE
Beryllium	01C0134-005.001	776-04182001-31-605	01041901-005	NR01A001	WIPE
Beryllium	01C0134-006.001	776-04182001-31-606	01041901-006	NR01A001	WIPE
Beryllium	01C0134-007.001	776-04182001-31-607	01041901-007	NR01A001	WIPE
Beryllium	01C0134-008.001	776-04182001-31-608	01041901-008	NR01A001	WIPE
Beryllium	01C0134-009.001	776-04182001-31-609	01041901-009	NR01A001	WIPE
Beryllium	01C0134-010.001	776-04182001-31-610	01041901-010	NR01A001	WIPE
Beryllium	01C0134-011.001	776-04182001-31-611	01041901-011	NR01A001	WIPE
Beryllium	01C0134-012.001	776-04182001-31-612	01041901-012	NR01A001	WIPE
Beryllium	01C0134-013.001	776-04182001-31-613	01041901-013	NR01A001	WIPE
Beryllium	01C0134-014.001	776-04182001-31-614	01041901-014	NR01A001	WIPE
Beryllium	01C0134-015.001	776-04182001-31-615	01041901-015	NR01A001	WIPE
Beryllium	01C0134-016.001	776-04182001-31-616	01041901-016	NR01A001	WIPE
Beryllium	01C0134-017.001	776-04182001-31-617	01041901-017	NR01A001	WIPE
Beryllium	01C0134-018.001	776-04182001-31-618	01041901-018	NR01A001	WIPE
Beryllium	01C0134-019.001	776-04182001-31-619	01041901-019	NR01A001	WIPE
Beryllium	01C0134-020.001	776-04182001-31-620	01041901-020	NR01A001	WIPE
Beryllium	01C0134-021.001	776-04182001-31-621	01041901-021	NR01A001	WIPE
Beryllium	01C0134-022.001	776-04182001-31-622	01041901-022	NR01A001	WIPE

Comments: No problem were encountered with sample receiving and sample analysis

April 20, 2001

Laboratory Report ID:	01041901
Laboratory Name:	JMTC IH Analytical Laboratory
Laboratory Code:	JMANS
Subcontract Number:	800188SX6
RIN:	01C0134
Requestor:	Bob Cathel
P.O./Charge Code:	DAA00009

I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy sample package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Scott P. Steiner

Scott A. Steiner
Industrial Hygiene Project Manager

4/25/01
Date

D9

April 20, 2001

Laboratory Report ID:	01041901
Laboratory Name:	JMTC IH Analytical Laboratory
Laboratory Code:	JMANS
Subcontract Number:	800188SX6
RIN:	01C0134
Requestor:	Bob Cathel
P.O./Charge Code:	DAA00009

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April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

DATA REVIEW CHECKLIST

1. SAMPLE DATA PACKAGE COVER PAGE	Reply	√	C#
a) The laboratory name, code, subcontract number, RIN, Site sample numbers, Line Item codes (LIC-analyses), sample matrix, custody seal number, name of industrial hygienist, and report date are accurately recorded.	Yes	✓	
b) All Site sample identifications are cross-referenced with all lab identifications.	Yes	✓	
c) The verbatim compliance and authorization statement is present with the dated signature of the Laboratory Manager or designee.	Yes	✓	
d) Any problems with the receipt are explained (e.g., broken containers, incorrect COC documentation, etc.)	Yes	✓	

2. TABLE OF CONTENTS	Reply	√	C#
a) The Table of Contents is included and contains all Sample Data Package Deliverable Section Titles with their beginning page numbers.	Yes	✓	

3. DATA REVIEW CHECKLIST - NR01 SAMPLE DATA PACKAGE	Reply	√	C#
a) The IH01 DRC is present and in strict conformance with the formatting and content of the form contained in the current version of the IH01 Appendix A. All discrepancies were identified and documented, accordingly.	Yes	✓	
b) All DRC ***Reply*** **blocks are completed with either a "Y", "N", or "N/A".**	Yes	✓	
c) All DRC ***Reply*** **blocks completed with an "N"** are explained in the Narrative.	Yes	✓	
d) The DRC footer is completed for each page; the laboratory manager or designee signed and dated the DRC.	Yes	✓	
e) All SDP deliverable sections appear in the SDP in order by deliverable section number.	Yes	✓	
f) Only one SDP is submitted for each SS05 and RIN request.	Yes	✓	N/A
g) All components of the SDP deliverables contain original documents where possible.	Yes	✓	Φ
h) There is no inclusion of required items in the SDP by reference to another SDP.	Yes	✓	Φ
i) Site samples are exclusively used for sample matrix QC.	Yes	✓	Φ
j) Site and non-Site samples are not reported together in any way.	Yes	✓	Φ
k) The complete sample data package is single-sided and consecutively paginated.	Yes	✓	

4. CHAIN-OF-CUSTODY, HOLDING TIMES, AND SAMPLE PRESERVATION	Reply	√	C#
a) The continuity of each sample's custody is evidenced by the chain of the date, time and signatures of each transaction from sample collection to receipt by the laboratory.	Yes	✓	
b) If the continuity was corrupted, documentation of correspondence with the CTR is included.	Yes	✓	
c) All samples are identified on the COC with the corresponding Line Item Codes (analyses).	Yes	✓	
d) The pH of each sample and the shipping container temperature are recorded, where applicable; Preservation was consistent with PSA Module.	N/A	✓	
e) Any conflicting, incorrect, or missing information are identified and documented, and there is documentation of the resolution.	Yes	✓	
f) Analytical and preparation holding times were met for all sample analyses.	Yes	✓	
g) Following sample receipt by the lab, samples were properly preserved and were stored at the appropriate temperature, if required. Internal COCs record movement within Lab and are included.	Yes	✓	

Initials: LS **Lab Name:** JMTC IH Analytical Laboratory **RIN:** 01C0134

Analytical Batch Identification No(s).: QU010419-E

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April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

DATA REVIEW CHECKLIST

5. NARRATIVE	Reply	√	C#
a) Contains a synopsis of the analytical and preparation methods; identifies base methods and any deviations of the base methods; references applicable laboratory certifications.	Yes	✓	
b) Contains a description of the samples; describes samples which are of a similar matrix.	Yes	✓	
c) Contains synopsis of Analytical Batch QC assessment. All anomalies, deficiencies, interferences, reanalyses, and deviations from approved SOPs related to the analysis are explained. Contains a QC assessment for the RIN which includes a discussion of all items with an "N" reply on the IH01 DRC.	Yes	✓	
d) Samples requiring reanalysis are identified with the reason for reanalysis, and the original and reanalysis Analytical Batch Identification Numbers. A synopsis of the reanalysis Analytical Batch QC assessment is included.	Yes	✓	
1. Statement saying whether the IDLs/MDLs meet the RDL for each constituent.	Yes	✓	
2. Statement saying whether all calibration verifications were or were not met	Yes	✓	
3. Statement saying whether laboratory control sample analysis was performed per IH01 and the results were or were not within acceptable limits of base methods	Yes	✓	
e) For any deviations that required CTR approval, the correspondence and approval are documented.	Yes	✓	
f) All holding-time compliances and violations are described in Narrative.	Yes	✓	

6. SAMPLE AND QC RESULTS SUMMARY	Reply	√	C#
The Sample and QC Results Summary Package is present and all pages are labeled with the Lab Code and the RIN. The Sample and QC Results Summary Packages include:	Yes	✓	
a) *Sample Results* are present in the order listed on the COC and include:	Yes	✓	
1. Result Sheets contain all information identified in IH01 Exhibit B Sec. 3.8.3	Yes	✓	
2. One and only one result for each requested constituent.	Yes	✓	
3. Correct results reported with blank correction in the correct units as defined by Exhibit C Reporting Limit units for each requested constituent.	Yes	✓	
4. Results for detected constituents are factored by all dilutions.	Yes	✓	
5. Results for non-detected constituents are reported as MDLs factored by all dilutions.	Yes	✓	
6. Results reported to the correct number of significant figures.	Yes	✓	
b) *QC Summary* is present and includes:	Yes	✓	
1. All method specific QC	Yes	✓	
2. All calibration verification results for each appropriate method	Yes	✓	
* QC is within limits	Yes	✓	
3. Spike results for each analytical batch	Yes	✓	
* QC is within limits	Yes	✓	
4. Method Blank results for each analytical batch	Yes	✓	
* QC is within limits	Yes	✓	
5. Duplicate results for each analytical batch	Yes	✓	
* QC is within limits	Yes	✓	
6. External Reference Standard results	Yes	✓	
* QC is within limits.	Yes	✓	
7. Sample Holding Time Summaries	Yes	✓	
c) *Calibration Data Package* is present, if not presented in instrument raw date, chronologically by instrument.	Yes	✓	

Initials: _____ **Lab Name:** JMTC IH Analytical Laboratory **RIN:** 01C0134

Analytical Batch Identification No(s).: QU010419-E

April 20, 2001

Laboratory Report ID:	01041901
Laboratory Name:	JMTC IH Analytical Laboratory
Laboratory Code:	JMANS
Subcontract Number:	800188SX6
RIN:	01C0134
Requestor:	Bob Cathel
P.O./Charge Code:	DAA00009

DATA REVIEW CHECKLIST

6. SAMPLE AND QC RESULTS SUMMARY (Continued)	Reply	√	C#
d) *Raw Instrument Data Package* (as required by method) is present, arranged chronologically by instrument and includes:	Yes	✓	
1. Instrument Run Logs and Readouts	Yes	✓	
2. All Sample and QC raw data are present, including data not used, at the required frequency, arranged chronologically by instrument and includes:	Yes	✓	
* Ion Chromatograms and Gas Chromatograms (if applicable)	Yes	✓	
* Quantitation Reports (if applicable)	Yes	✓	
3. Raw Data contains all information identified in IH01 Exhibit B Sec. 3.8.6.3 and 3.8.6.4.	Yes	✓	
4. The data were reviewed, signed and dated by an area specialist, and found to be acceptable.	Yes	✓	
5. Sufficient raw data are included to allow manual calculation of the final sample results and QC sample recoveries.	Yes	✓	
6. All QC samples were prepared and analyzed in the same manner as the samples in the Analytical Batch, in the same time frame, and using the same instrument and instrument parameters, etc.	Yes	✓	
e) *Sample Preparation Raw Data Package* is present, arranged chronologically, and includes:	Yes	✓	
1. Sample Preparation/Extraction Logbook Pages/Benchsheets	Yes	✓	
2. Preparation Logs contain all information identified in IH01 Exhibit B Sec. 3.8.7.3 and 3.8.6.4	Yes	✓	
3. Sufficient raw data are included to allow manual calculation of the final sample results and QC sample recoveries.	Yes	✓	
4. Samples were prepared using an approved procedure in IH01 Exhibit C	Yes	✓	
f) *Standard Summary Package* is present, and includes:	Yes	✓	
1. Documentation of identification numbers and expiration dates for all standards used for data reported in the RIN.	Yes	✓	
2. Documentation for secondary standards prepared from Primary Standards.	Yes	✓	
3. All standard identifiers are traceable to primary certificates.	Yes	✓	
4. All standards and sources were valid (not expired) at the time of use.	Yes	✓	

7. ELECTRONIC DATA DELIVERABLE (EDD)	Reply	√	C#
a) The EDD accurately reflects the data contained in the Sample Data Package	Yes	✓	
b) The hard copy of the EDD as specified in GR01 Exhibit B, Section 4 is included with the Sample Data Package. The hard copy includes data file name and means of transmittal.	Yes	✓	
c) An automated EDD verification check has been performed.	Yes	✓	

Shaded areas are for Site use only.

Respond to each checklist item in the "Reply" column with a Y (yes), N (no), or NA (not applicable).

Complete footer information, including the initials of the laboratory manager or designee on each page.

Refer to Module GR01, Exhibit B, Section 4 for instructions to complete this form.

I certify that all responses to this checklist accurately reflect the completeness and quality aspects of this sample data package as outlined in GR01 and IH01. Furthermore, I understand that inaccuracies in the completion of this checklist will be considered a nonconformance to Subcontract Requirements as evidenced by the following signature of the laboratory manager or designee.

Print/Typed Name: Scott A. Steiner Title: Industrial Hygiene Project Manager

Signature: Scott A. Steiner Date: 4/25/01

Initials: SS **Lab Name:** JMTC IH Analytical Laboratory **RIN:** 01C0134

Analytical Batch Identification No(s).: QU010419-E

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April 20, 2001

Laboratory Report ID:	01041901
Laboratory Name:	JMTC IH Analytical Laboratory
Laboratory Code:	JMANS
Subcontract Number:	800188SX6
RIN:	01C0134
Requestor:	Bob Cathel
P.O./Charge Code:	DAA00009

DATA REVIEW CHECKLIST

DATA REVIEW CHECKLIST EXAMINATION

Assessment of this Sample Data Package is based on the following documents:

DA-GR01 Version _____ DA-IH01 Version _____

This Sample Data Package requires the following assessment level:

☐ No Further Assessment ☐ Partial Verification ☐ Complete Verification ☐ Validation

Assessment Level is based on: ☒ Examination ☐ Customer ☐ Laboratory Assessment Program

Notes: Data package was reviewed and is acceptable.

Examiner	Signature	Date
Conrad Trice	Conrad Trice	5/2/2001

PARTIAL VERIFICATION

☐ This Sample Data Package requires no further assessment (See attached Data Quality Assessment Report)

☐ This Sample Data Package requires further assessment at the following level:

☐ Complete Verification ☒ Validation

Notes:

Data Verifier	Signature	Date

Initials: _____ **Lab Name:** JMTC IH Analytical Laboratory **RIN:** 01C0134

Analytical Batch Identification No(s).: QU010419-E

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April 20, 2001

Laboratory Report ID:	01041901
Laboratory Name:	JMTC IH Analytical Laboratory
Laboratory Code:	JMANS
Subcontract Number:	800188SX6
RIN:	01C0134
Requestor:	Bob Cathel
P.O./Charge Code:	DAA00009

DATA REVIEW CHECKLIST

COMPLETE VERIFICATION

☐ This Sample Data Package requires no further assessment (See attached Data Quality Assessment Report)

☐ This Sample Data Package requires validation

Notes:

Data Verifier	Signature	Date

Initials: _____ **Lab Name:** JMTC IH Analytical Laboratory **RIN:** 01C0134

Analytical Batch Identification No(s).: QU010419-E

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Kaiser-Hill

RFETS

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

01041901 Due: 4/26/01

C.O.C. # 01C0134#001

Sampler(s) Bob Cathel 4/18/01 1309 (time/date)	Contact/Requester TRICE, CONRAD/BOB CATHEL	Telephone No. 2490/6880
RIN 01C0134	Sampling Origin Outside B776	Purchase Order/Charge Code DAA00009
Project Title IH Be Swipes	Logbook No. N/A	Ice Chest No. N/A Temp.
To (Lab) Johns Manville	Method of Shipment Commodore Advanced Sciences	Bill of Lading/Air Bill No. 4533-2127-2830
Protocol Be Swipes	Related COC (if any)	PRE N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
CAS TRANSPORT ONLY
[signature] 4/18/01

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0134-001.001	776-04182001-31-601	FILTER	4/18/01	1309	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-002.001	776-04182001-31-602	FILTER		1310	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-003.001	776-04182001-31-603	FILTER		1311	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-004.001	776-04182001-31-604	FILTER		1312	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-005.001	776-04182001-31-605	FILTER		1312	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-006.001	776-04182001-31-606	FILTER		1318	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-007.001	776-04182001-31-607	FILTER	4/18/01	1318	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Bob Cathel 1457	4/18/01	[signature] CAS	4/18/01 1457	T Yancey	4/18/01 1550	Fed-Ex	
S.K. Powell 1530	4/18/01	T Yancey	4/18/01 1530	Fed-ex		J. Slate	4/19/01 10:30
T Yancey	4/18/01 1535	Fridge 4	4/18/01 1535				
Fridge 4	4/18/01 1545	T Yancey	4/18/01 1545				

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

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Kaiser-Hill

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

01041901

C.O.C. # 01C0134#001

RIN 01C0134

Contact/Requestor: TRICE, CONRAD/BOB CATHEL

Telephone No.: 2490/6880

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0134-008.001	776-04182001-31-608	FILTER	4/18/01	1319	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-009.001	776-04182001-31-609	FILTER		1320	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-010.001	776-04182001-31-610	FILTER		1320	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-011.001	776-04182001-31-611	FILTER		1419	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-012.001	776-04182001-31-612	FILTER		1419	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-013.001	776-04182001-31-613	FILTER		1420	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-014.001	776-04182001-31-614	FILTER		1421	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-015.001	776-04182001-31-615	FILTER		1421	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-016.001	776-04182001-31-616	FILTER		1427	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-017.001	776-04182001-31-617	FILTER		1428	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-018.001	776-04182001-31-618	FILTER	4/18/01	1428	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Bob Cathel	4/18/01 1457		4/18/01 1457	J Yancey	4/18/01 1550	Fed Ex	
S. K Laird 1530	4/18/01	J Yancey	4/18/01 1530	Sod-ex		D. Slate	4/19/01 10:30
J Yancey	4/18/01 1535	Fridge 4	4/18/01 1535				
Fridge 4	4/18/01 1545	J Yancey	4/18/01 1545				

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

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Kaiser-Hill	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 01041901	C.O.C. # 01C0134#001
		Page 3 of 3

RIN	Contact/Requestor	Telephone No.
01C0134	TRICE, CONRAD/BOB CATHEL	2490/6880

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0134-019.001	776-04182001-31-619	FILTER	4/18/01	1429	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-020.001	776-04182001-31-620	FILTER		1429	Outside B776	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-021.001	776-04182001-31-621	FILTER		~~N/A~~ 1309	Outside B776 4/18/01	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None
01C0134-022.001	776-04182001-31-622	FILTER	4/18/01	1309 ~~N/A~~	Outside B776 4/18/01	1-FILTER / N/A /1	NR01A001 (Beryllium Filter Analysis) [Routine]	N/A None

4/18/01

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Bob Cathel	4/18/01 1457	[signature] CAS	4/18/01 1457	T Yancey	4/18/01 1550	Fed-Ex	
S.K. Powe	1530 4/18/01	T Yancey	4/18/01 1530	Fed-ex		J. Slate	4/19/01 10:30
T Yancey	4/18/01 1535	Fridge 4	4/18/01 1535				
Fridge 4	4/18/01 1545	T Yancey	4/18/01 1545				

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

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Johns Manville

JMTC IH Analytical Laboratory
10100 West Ute Avenue (80127)
P.O. Box 625005
Littleton, CO 80162-5005
(303) 978-3724

Sample Receipt Form

Project Number: 01041901 **Date Received:** 04/19/01

Client Name: Kaiser-Hill Company LLC **Received By:** PS

No. of Samples: 22

Sample Condition	Yes	No
Was the condition of the shipment package acceptable?	☑	☐
Are all containers intact with complete labels?	☑	☐
Are Custody Seals present on containers and are all of them intact?	☑	☐
Was proper media used for all analyses?	☑	☐
Is the C.O.C present and filled out correctly?	☑	☐
Do all sample Identification names, (or numbers) correspond to the C.O.C?	☑	☐
Are sample collection flow rates, time and volumes listed on the C.O.C?	☐	☑

Additional comments or Discrepancies:

Custody seal was present and intact on the top of the zip top baggie. Wipe samples.

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April 20, 2001

Laboratory Report ID:	01041901
Laboratory Name:	JMTC IH Analytical Laboratory
Laboratory Code:	JMANS
Subcontract Number:	800188SX6
RIN:	01C0134
Requestor:	Bob Cathel
P.O./Charge Code:	DAA00009

NARRATIVE

The laboratory did not encounter any problems or questions associated with the receipt of samples into the laboratory. All samples identified on the Chain-of-Custody (COC) form were received and accepted in good condition with tamper-resistant seals intact. *(1.d, 4.b, 4.e)*

Whatman 4 or Whatman 41 swipe samples were submitted in this project and analyzed for the identification and quantitation of beryllium in accordance with Line Item Code (LIC), NR01A001. The methodology does not define any required specific holding times for the compound on the sampling media. Results of the sample analyses were generated and reported by the specified turn-around time (TAT). *(4.f, 5.6, 5.f, 6.b.7)*

The laboratory preparation of samples in this project was performed following laboratory Standard Operating Procedure (SOP), IH M-1.02, Revision N. Additional references to the preparation technique of this sample type are addressed in EPA Method, 3015A and CEM Application Procedure, MS-9. The samples were prepared using the CEM Microwave Sample Preparation System, Model MDS 2000. The instrumental sample analysis for these samples follows SOP, IH M-1.04, Revision N, which covers the analytical procedure outlined in OSHA method, ID-125G. Start-up and calibration of the Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) instrument are performed following manufacturer's instructions and are addressed in SOP, IH M-1.03, Revision N. *(5.a)*

Results of all calibration verifications (initial and continuing), method blanks (calibration and matrix), Laboratory Control Samples (LCSs), Laboratory Control Sample Duplicates (LCDs) and internal QA/QC program monitoring standards for this analytical batch are within acceptable limits as specified in Statement of Work (SOW) modules, GR01-B.3 and NR01-A. *(5.c, 5.d.2, 5.d.3, 6.b.2-6)*

The internal quality control procedures for statistical monitoring of analytical data to ensure the production of quality results with continuing high validity are addressed in the JMTC IH Laboratory Quality Assurance Manual, Section 10.0. **Results of all method-specific QC assessments for this analytical batch are within acceptable limits in accordance with SOW modules, GR01-B.3 and NR01-A.** *(5.c, 6.b.1)*

The Instrument Detection Limit (IDL) has been determined to be 0.00028 µg/ml using the ICP-AES instrument, Perkin Elmer - Optima model 3000DV. Method Detection Limit (MDL) determinations are performed in accordance with the EPA Method contained in 40 CFR Part 136, Appendix B. The MDL for beryllium on the Whatman swipe matrix by ICP-AES has been determined to be 0.012 µg/swipe. These values meet the required detection limits for SOW module, NR01-A. *(5.d.1)* The sample batch did not require any sample re-analyses due to dilutions or any anomalies. *(5.d)*

The JMTC IH Analytical Laboratory is accredited by the American Industrial Hygiene Association (AIHA) in the industrial hygiene program (Certificate N. 056) and continues to rate proficient within the Proficiency Analytical Testing (PAT) program. This program is designed for laboratories involved in analyzing samples taken in the workplace environment. The JMTC IH Analytical Laboratory is also accredited in the Environmental Lead Laboratory Accreditation Program (ELLAP), which is recognized by the EPA National Lead Laboratory Accreditation Program (NLLAP). This program accredits and monitors performance of laboratories testing for lead in environmental samples such as paint, soil, dust wipes and air. *(5.a)*

1 of 2

April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code:	NR01A001	Reporting Limit:	0.1 µg
Sample Matrix:	WIPE	Date Received:	04/19/01
Analytical Method:	OSHA ID-125G	Date Analyzed:	04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-601	01041901-001	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

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April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code:	NR01A001	Reporting Limit:	0.1 µg
Sample Matrix:	WIPE	Date Received:	04/19/01
Analytical Method:	OSHA ID-125G	Date Analyzed:	04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-602	01041901-002	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

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April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code: NR01A001
Sample Matrix: WIPE
Analytical Method: OSHA ID-125G

Reporting Limit: 0.1 µg
Date Received: 04/19/01
Date Analyzed: 04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION Backup	Main	Total	T	Q	Constituent ID
776-04182001-31-603	01041901-003	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

143

April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code: NR01A001
Sample Matrix: WIPE
Analytical Method: OSHA ID-125G

Reporting Limit: 0.1 µg
Date Received: 04/19/01
Date Analyzed: 04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION Backup	Main	Total	T	Q	Constituent ID
776-04182001-31-604	01041901-004	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

144

April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code: NR01A001
Sample Matrix: WIPE
Analytical Method: OSHA ID-125G

Reporting Limit: 0.1 µg
Date Received: 04/19/01
Date Analyzed: 04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-605	01041901-005	Beryllium			< 0.1 µg	TR1	J	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

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April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code:	NR01A001	Reporting Limit:	0.1 µg
Sample Matrix:	WIPE	Date Received:	04/19/01
Analytical Method:	OSHA ID-125G	Date Analyzed:	04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-606	01041901-006	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

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April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code: NR01A001
Sample Matrix: WIPE
Analytical Method: OSHA ID-125G

Reporting Limit: 0.1 µg
Date Received: 04/19/01
Date Analyzed: 04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION Backup	Main	Total	T	Q	Constituent ID
776-04182001-31-607	01041901-007	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

147

April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code:	NR01A001	Reporting Limit:	0.1 µg
Sample Matrix:	WIPE	Date Received:	04/19/01
Analytical Method:	OSHA ID-125G	Date Analyzed:	04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-608	01041901-008	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

148

April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code:	NR01A001	Reporting Limit:	0.1 µg
Sample Matrix:	WIPE	Date Received:	04/19/01
Analytical Method:	OSHA ID-125G	Date Analyzed:	04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-609	01041901-009	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code:	NR01A001	Reporting Limit:	0.1 µg
Sample Matrix:	WIPE	Date Received:	04/19/01
Analytical Method:	OSHA ID-125G	Date Analyzed:	04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-610	01041901-010	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

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April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code:	NR01A001	Reporting Limit:	0.1 µg
Sample Matrix:	WIPE	Date Received:	04/19/01
Analytical Method:	OSHA ID-125G	Date Analyzed:	04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-611	01041901-011	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

(5)

April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code: NR01A001
Sample Matrix: WIPE
Analytical Method: OSHA ID-125G

Reporting Limit: 0.1 µg
Date Received: 04/19/01
Date Analyzed: 04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-612	01041901-012	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code: NR01A001
Sample Matrix: WIPE
Analytical Method: OSHA ID-125G

Reporting Limit: 0.1 µg
Date Received: 04/19/01
Date Analyzed: 04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION Backup	Main	Total	T	Q	Constituent ID
776-04182001-31-613	01041901-013	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

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April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code: NR01A001
Sample Matrix: WIPE
Analytical Method: OSHA ID-125G

Reporting Limit: 0.1 µg
Date Received: 04/19/01
Date Analyzed: 04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-614	01041901-014	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

154

April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code: NR01A001
Sample Matrix: WIPE
Analytical Method: OSHA ID-125G

Reporting Limit: 0.1 µg
Date Received: 04/19/01
Date Analyzed: 04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-615	01041901-015	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

155

..pril 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code:	NR01A001	Reporting Limit:	0.1 µg
Sample Matrix:	WIPE	Date Received:	04/19/01
Analytical Method:	OSHA ID-125G	Date Analyzed:	04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-616	01041901-016	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

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April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code:	NR01A001	Reporting Limit:	0.1 µg
Sample Matrix:	WIPE	Date Received:	04/19/01
Analytical Method:	OSHA ID-125G	Date Analyzed:	04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-617	01041901-017	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

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April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code:	NR01A001	Reporting Limit:	0.1 µg
Sample Matrix:	WIPE	Date Received:	04/19/01
Analytical Method:	OSHA ID-125G	Date Analyzed:	04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-618	01041901-018	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code: NR01A001
Sample Matrix: WIPE
Analytical Method: OSHA ID-125G

Reporting Limit: 0.1 µg
Date Received: 04/19/01
Date Analyzed: 04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-619	01041901-019	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code:	NR01A001	Reporting Limit:	0.1 µg
Sample Matrix:	WIPE	Date Received:	04/19/01
Analytical Method:	OSHA ID-125G	Date Analyzed:	04/20/01

Customer Number	Laboratory *ID Number*	Requested *Analysis*	CONCENTRATION *Backup*	*Main*	Total	T	Q	Constituent ID
776-04182001-31-620	01041901-020	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

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April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code:	NR01A001	Reporting Limit:	0.1 µg
Sample Matrix:	WIPE	Date Received:	04/19/01
Analytical Method:	OSHA ID-125G	Date Analyzed:	04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-621	01041901-021	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

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April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

SAMPLE RESULTS SUMMARY

Line Item Code:	NR01A001	Reporting Limit:	0.1 µg
Sample Matrix:	WIPE	Date Received:	04/19/01
Analytical Method:	OSHA ID-125G	Date Analyzed:	04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION			T	Q	Constituent ID
			Backup	Main	Total			
776-04182001-31-622	01041901-022	Beryllium			< 0.1 µg	TR1	U	7440-41-7

Comments: No problems were encountered with sample preparation and analysis.

162

Date 4-19-01

Commodity _____ SPR _____ Project _____

Other Reference QU010419-E PB 010420-B

Subject 01041903 01041805 ~~0104805~~ 01041901
NR01 Be NR01 Be 4-19-01 NR01 Be

MICROWAVE DIGEST IN 10 ml OF 50% HNO_3 AT 55% POWER FOR 1 HOUR

VESSEL	CONTENTS	VESSEL	CONTENTS
93-01	PB	93-26	PB
02	MB	27	QC 01040430 LCS
03	MBS	28	QC 01040430 LCD
04	QC 01040429 LCS	29	01041901-005
05	QC 01040429 LCD	30	006
06	01041903-001	31	007
07	002	32	008
08	003	33	009
09	004	34	010
10	005	35	011
11	006	36	012
12	007	37	013
13	008	38	014
14	009	39	015
15	010	40	016
16	011 4-19-01	41	017
17	01041805-~~012~~ 001	42	018
18	002	43	019
19	003	44	020
20	004	45	021
21	005	46	022
22	01041901-001		
23	002		
24	003		
25	004		

Signatures [signature] Date 4-19-01
Notebook Assignee

163 _____ Date _____
Witness (es) Per Instruction ☐ 8 and/or ☐ 9

Sequence No.: 1 Autosampler Location: 60
Sample ID: CAL 1 Date Collected: 4/20/01 10:04:13 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: Data Type: Original

Sequence No.: 1 Autosampler Location: 60
Sample ID: CAL 1 Date Collected: 4/20/01 10:10:40 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: Data Type: Original

Mean Data: CAL 1

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Calib Conc.	Units
Be 313.042	33121.9	646.38	1.95%		

Sequence No.: 2 Autosampler Location: 61
Sample ID: CAL 2 Date Collected: 4/20/01 10:12:00 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: Data Type: Original

Mean Data: CAL 2

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Calib Conc.	Units
Be 313.042	4059238.0	56774.70	1.40%	[1.00]	µg/ml

Sequence No.: 3 Autosampler Location: 62
Sample ID: CAL 3 Date Collected: 4/20/01 10:13:45 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: Data Type: Original

Mean Data: CAL 3

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Calib Conc.	Units
Be 313.042	40073011.1	504991.52	1.26%	[10.0]	µg/ml

Sequence No.: 4 Autosampler Location: 56
Sample ID: ICV Date Collected: 4/20/01 10:15:53 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: Data Type: Original

Mean Data: ICV

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	4042183.0	1.01	µg/ml	0.014	1.01	µg/SMPL	0.014	1.38%

QC value within limits for Be 313.042 Recovery = 100.86%
All analytes passed QC.

Sequence No.: 5 Autosampler Location: 63
Sample ID: CV Date Collected: 4/20/01 10:17:33 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: Data Type: Original

Mean Data: CV

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	20216964.7	5.04	µg/ml	0.061	5.04	µg/SMPL	0.061	1.21%

QC value within limits for Be 313.042 Recovery = 100.89%
All analytes passed QC.

Sequence No.: 6 **Autosampler Location: 60**
Sample ID: CB **Date Collected: 4/20/01 10:19:41 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: **Data Type: Original**

Mean Data: CB

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	1563.5	0.000	µg/ml	0.0005	0.000	µg/SMPL	0.0005	121.32%

QC value within limits for Be 313.042 Recovery = Not calculated
All analytes passed QC.

Sequence No.: 7 **Autosampler Location: 1**
Sample ID: PB **Date Collected: 4/20/01 10:21:01 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: PB

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	-2781.1	-0.001	µg/ml	0.0002	-0.007	µg/SMPL	0.0016	22.41%

Sequence No.: 8 **Autosampler Location: 2**
Sample ID: MB **Date Collected: 4/20/01 10:22:21 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: MB

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	-3370.1	-0.001	µg/ml	0.0001	-0.008	µg/SMPL	0.0014	16.88%

Sequence No.: 9 **Autosampler Location: 3**
Sample ID: MBS **Date Collected: 4/20/01 10:23:43 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: MBS

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	2067364.1	0.516	µg/ml	0.0086	5.16	µg/SMPL	0.086	1.67%

103.2%

Sequence No.: 10 **Autosampler Location: 4**
Sample ID: QC01040429 LCS **Date Collected: 4/20/01 10:25:28 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: QC01040429 LCS

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD

Be 313.042	2747084.0	0.685 µg/ml		0.0111	6.85 µg/SMPL	0.111	1.62%

97.8%

Sequence No.: 11 Autosampler Location: 5
Sample ID: QC01040429 LCD Date Collected: 4/20/01 10:27:15 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: QC01040429 LCD

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	2719366.6	0.679	µg/ml	0.0122	6.79	µg/SMPL	0.122	1.80%

97%

Sequence No.: 12 Autosampler Location: 6
Sample ID: 01041903-001 Date Collected: 4/20/01 10:29:02 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041903-001

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-3985.9	-0.001	µg/ml	0.0002	-0.010	µg/SMPL	0.0018	17.82%

Sequence No.: 13 Autosampler Location: 7
Sample ID: 01041903-002 Date Collected: 4/20/01 10:30:27 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041903-002

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-3955.3	-0.001	µg/ml	0.0002	-0.010	µg/SMPL	0.0019	19.38%

Sequence No.: 14 Autosampler Location: 8
Sample ID: 01041903-003 Date Collected: 4/20/01 10:31:52 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041903-003

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-3592.3	-0.001	µg/ml	0.0002	-0.009	µg/SMPL	0.0021	23.30%

Sequence No.: 15 Autosampler Location: 9
Sample ID: 01041903-004 Date Collected: 4/20/01 10:33:20 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041903-004

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-4254.3	-0.001	µg/ml	0.0002	-0.011	µg/SMPL	0.0020	18.67%

Sequence No.: 16 Autosampler Location: 10
Sample ID: 01041903-005 Date Collected: 4/20/01 10:34:39 AM
Analyst:

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Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041903-005

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-4041.4	-0.001	µg/ml	0.0002	-0.010	µg/SMPL	0.0015	14.94%

Sequence No.: 17 Autosampler Location: 63
Sample ID: CV Date Collected: 4/20/01 10:35:59 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: Data Type: Original

Mean Data: CV

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	20100762.5	5.02	µg/ml	0.050	5.02	µg/SMPL	0.050	0.99%

QC value within limits for Be 313.042 Recovery = 100.31%
All analytes passed QC.

Sequence No.: 18 Autosampler Location: 60
Sample ID: CB Date Collected: 4/20/01 10:38:08 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: Data Type: Original

Mean Data: CB

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-419.2	0.000	µg/ml	0.0004	0.000	µg/SMPL	0.0004	348.85%

QC value within limits for Be 313.042 Recovery = Not calculated
All analytes passed QC.

Sequence No.: 19 Autosampler Location: 11
Sample ID: 01041903-006 Date Collected: 4/20/01 10:39:28 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041903-006

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-3995.9	-0.001	µg/ml	0.0001	-0.010	µg/SMPL	0.0014	14.04%

Sequence No.: 20 Autosampler Location: 12
Sample ID: 01041903-007 Date Collected: 4/20/01 10:40:49 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041903-007

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-4134.8	-0.001	µg/ml	0.0002	-0.010	µg/SMPL	0.0017	16.23%

Sequence No.: 21 Autosampler Location: 13
Sample ID: 01041903-008 Date Collected: 4/20/01 10:42:10 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

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Mean Data: 01041903-008

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-3723.5	-0.001	µg/ml	0.0002	-0.009	µg/SMPL	0.0020	21.45%

Sequence No.: 22 Autosampler Location: 14
Sample ID: 01041903-009 Date Collected: 4/20/01 10:43:33 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041903-009

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-3887.7	-0.001	µg/ml	0.0002	-0.010	µg/SMPL	0.0019	19.51%

Sequence No.: 23 Autosampler Location: 15
Sample ID: 01041903-010 Date Collected: 4/20/01 10:44:56 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041903-010

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-3960.9	-0.001	µg/ml	0.0002	-0.010	µg/SMPL	0.0020	19.96%

Sequence No.: 24 Autosampler Location: 16
Sample ID: 01041903-011 Date Collected: 4/20/01 10:46:20 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041903-011

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-2806.2	-0.001	µg/ml	0.0002	-0.007	µg/SMPL	0.0021	29.36%

Sequence No.: 25 Autosampler Location: 17
Sample ID: 01041805-001 Date Collected: 4/20/01 10:47:46 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041805-001

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	2353.2	0.001	µg/ml	0.0002	0.006	µg/SMPL	0.0020	33.36%

Sequence No.: 26 Autosampler Location: 18
Sample ID: 01041805-002 Date Collected: 4/20/01 10:49:11 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041805-002

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	11785.9	0.003	µg/ml	0.0001	0.029	µg/SMPL	0.0013	4.50%

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Sequence No.: 27 Autosampler Location: 19
Sample ID: 01041805-003 Date Collected: 4/20/01 10:50:38 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041805-003

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Calib Std.Dev.	Sample Conc.	Sample Units	Sample Std.Dev.	RSD
Be 313.042	5162.8	0.001	µg/ml	0.0002	0.013	µg/SMPL	0.0020	15.87%

Sequence No.: 28 Autosampler Location: 20
Sample ID: 01041805-004 Date Collected: 4/20/01 10:51:57 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041805-004

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Calib Std.Dev.	Sample Conc.	Sample Units	Sample Std.Dev.	RSD
Be 313.042	659.4	0.000	µg/ml	0.0002	0.002	µg/SMPL	0.0021	129.39%

Sequence No.: 29 Autosampler Location: 63
Sample ID: CV Date Collected: 4/20/01 10:53:16 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: Data Type: Original

Mean Data: CV

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Calib Std.Dev.	Sample Conc.	Sample Units	Sample Std.Dev.	RSD
Be 313.042	20127687.1	5.02	µg/ml	0.069	5.02	µg/SMPL	0.069	1.36%

QC value within limits for Be 313.042 Recovery = 100.44%
All analytes passed QC.

Sequence No.: 30 Autosampler Location: 60
Sample ID: CB Date Collected: 4/20/01 10:55:25 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: Data Type: Original

Mean Data: CB

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Calib Std.Dev.	Sample Conc.	Sample Units	Sample Std.Dev.	RSD
Be 313.042	-10.3	0.000	µg/ml	0.0004	0.000	µg/SMPL	0.0004	>999.9%

QC value within limits for Be 313.042 Recovery = Not calculated
All analytes passed QC.

Sequence No.: 31 Autosampler Location: 21
Sample ID: 01041805-005 Date Collected: 4/20/01 10:56:45 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041805-005

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Calib Std.Dev.	Sample Conc.	Sample Units	Sample Std.Dev.	RSD
Be 313.042	-2839.9	-0.001	µg/ml	0.0002	-0.007	µg/SMPL	0.0019	27.11%

169

Sequence No.: 32 Autosampler Location: 22
Sample ID: 01041901-001 Date Collected: 4/20/01 10:58:06 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041901-001

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-1710.0	0.000	µg/ml	0.0002	-0.004	µg/SMPL	0.0019	43.41%

Sequence No.: 33 Autosampler Location: 23
Sample ID: 01041901-002 Date Collected: 4/20/01 10:59:27 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041901-002

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-1978.1	0.000	µg/ml	0.0002	-0.005	µg/SMPL	0.0020	41.52%

Sequence No.: 34 Autosampler Location: 24
Sample ID: 01041901-003 Date Collected: 4/20/01 11:00:49 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041901-003

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	429.6	0.000	µg/ml	0.0002	0.001	µg/SMPL	0.0019	177.45%

Sequence No.: 35 Autosampler Location: 25
Sample ID: 01041901-004 Date Collected: 4/20/01 11:02:13 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041901-004

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	662.4	0.000	µg/ml	0.0002	0.002	µg/SMPL	0.0022	134.17%

Sequence No.: 36 Autosampler Location: 26
Sample ID: PB Date Collected: 4/20/01 11:03:36 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: PB

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-2549.9	-0.001	µg/ml	0.0002	-0.006	µg/SMPL	0.0025	39.12%

Sequence No.: 37 Autosampler Location: 27
Sample ID: QC01040430 LCS Date Collected: 4/20/01 11:05:01 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

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Mean Data: QC01040430 LCS

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	5208637.7	1.30	µg/ml	0.019	13.0	µg/SMPL	0.19	1.49%

100%

Sequence No.: 38 Autosampler Location: 28
Sample ID: QC01040430 LCD Date Collected: 4/20/01 11:07:12 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: QC01040430 LCD

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	5231699.7	1.31	µg/ml	0.016	13.1	µg/SMPL	0.16	1.21%

100.8%

Sequence No.: 39 Autosampler Location: 29
Sample ID: 01041901-005 Date Collected: 4/20/01 11:09:16 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041901-005

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	5619.9	0.001	µg/ml	0.0002	0.014	µg/SMPL	0.0019	13.87%

Sequence No.: 40 Autosampler Location: 30
Sample ID: 01041901-006 Date Collected: 4/20/01 11:10:35 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041901-006

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	-968.8	0.000	µg/ml	0.0002	-0.002	µg/SMPL	0.0021	86.33%

Sequence No.: 41 Autosampler Location: 63
Sample ID: CV Date Collected: 4/20/01 11:11:54 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: Data Type: Original

Mean Data: CV

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	20071611.0	5.01	µg/ml	0.069	5.01	µg/SMPL	0.069	1.37%

QC value within limits for Be 313.042 Recovery = 100.16%
All analytes passed QC.

Sequence No.: 42 Autosampler Location: 60
Sample ID: CB Date Collected: 4/20/01 11:14:02 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: Data Type: Original

Mean Data: CB

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD

Be 313.042	2701.7	0.001 µg/ml	0.0006	0.001 µg/SMPL	0.0006	88.45%

QC value within limits for Be 313.042 Recovery = Not calculated
All analytes passed QC.

Sequence No.: 43 **Autosampler Location: 31**
Sample ID: 01041901-007 **Date Collected: 4/20/01 11:15:22 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: 01041901-007

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-2560.5	-0.001	µg/ml	0.0002	-0.006	µg/SMPL	0.0021	32.24%

Sequence No.: 44 **Autosampler Location: 32**
Sample ID: 01041901-008 **Date Collected: 4/20/01 11:16:42 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: 01041901-008

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-2420.3	-0.001	µg/ml	0.0002	-0.006	µg/SMPL	0.0022	37.19%

Sequence No.: 45 **Autosampler Location: 33**
Sample ID: 01041901-009 **Date Collected: 4/20/01 11:18:04 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: 01041901-009

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-748.2	0.000	µg/ml	0.0002	-0.002	µg/SMPL	0.0023	122.66%

Sequence No.: 46 **Autosampler Location: 34**
Sample ID: 01041901-010 **Date Collected: 4/20/01 11:19:25 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: 01041901-010

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-1385.9	0.000	µg/ml	0.0002	-0.003	µg/SMPL	0.0023	65.59%

Sequence No.: 47 **Autosampler Location: 35**
Sample ID: 01041901-011 **Date Collected: 4/20/01 11:20:48 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: 01041901-011

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	994.7	0.000	µg/ml	0.0002	0.002	µg/SMPL	0.0024	98.26%

Sequence No.: 48 **Autosampler Location: 36**

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Sample ID: 01041901-012 Date Collected: 4/20/01 11:22:11 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041901-012

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	2418.8	0.001	µg/ml	0.0002	0.006	µg/SMPL	0.0023	38.20%

Sequence No.: 49 Autosampler Location: 37
Sample ID: 01041901-013 Date Collected: 4/20/01 11:23:35 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041901-013

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-1212.7	0.000	µg/ml	0.0002	-0.003	µg/SMPL	0.0024	78.15%

Sequence No.: 50 Autosampler Location: 38
Sample ID: 01041901-014 Date Collected: 4/20/01 11:25:00 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041901-014

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-613.9	0.000	µg/ml	0.0002	-0.002	µg/SMPL	0.0020	128.29%

Sequence No.: 51 Autosampler Location: 39
Sample ID: 01041901-015 Date Collected: 4/20/01 11:26:17 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041901-015

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-1296.8	0.000	µg/ml	0.0002	-0.003	µg/SMPL	0.0022	67.78%

Sequence No.: 52 Autosampler Location: 40
Sample ID: 01041901-016 Date Collected: 4/20/01 11:27:35 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: 10X Data Type: Original

Mean Data: 01041901-016

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-1804.5	0.000	µg/ml	0.0002	-0.005	µg/SMPL	0.0023	50.55%

Sequence No.: 53 Autosampler Location: 63
Sample ID: CV Date Collected: 4/20/01 11:28:55 AM
Analyst:
Sample Wt: Sample Prep Volume:
Dilution: Data Type: Original

Mean Data: CV

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	20111425.6	5.02	µg/ml	0.071	5.02	µg/SMPL	0.071	1.42%

QC value within limits for Be 313.042 Recovery = 100.36%
All analytes passed QC.

Sequence No.: 54 **Autosampler Location: 60**
Sample ID: CB **Date Collected: 4/20/01 11:31:03 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: **Data Type: Original**

Mean Data: CB

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	1783.9	0.000	µg/ml	0.0005	0.000	µg/SMPL	0.0005	107.41%

QC value within limits for Be 313.042 Recovery = Not calculated
All analytes passed QC.

Sequence No.: 55 **Autosampler Location: 41**
Sample ID: 01041901-017 **Date Collected: 4/20/01 11:32:23 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: 01041901-017

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-1449.1	0.000	µg/ml	0.0002	-0.004	µg/SMPL	0.0022	60.76%

Sequence No.: 56 **Autosampler Location: 42**
Sample ID: 01041901-018 **Date Collected: 4/20/01 11:33:43 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: 01041901-018

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-469.4	0.000	µg/ml	0.0002	-0.001	µg/SMPL	0.0022	191.25%

Sequence No.: 57 **Autosampler Location: 43**
Sample ID: 01041901-019 **Date Collected: 4/20/01 11:35:04 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: 01041901-019

Analyte	Mean Corrected Intensity	Calib Conc.	Calib Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Be 313.042	-557.9	0.000	µg/ml	0.0003	-0.001	µg/SMPL	0.0026	189.51%

Sequence No.: 58 **Autosampler Location: 44**
Sample ID: 01041901-020 **Date Collected: 4/20/01 11:36:25 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: 01041901-020

Analyte	Mean Corrected	Calib	Sample

Analyte	Intensity	Conc.	Units	Std.Dev.	Conc.	Units	Std.Dev.	RSD
Be 313.042	-709.8	0.000	µg/ml	0.0002	-0.002	µg/SMPL	0.0023	130.15%

Sequence No.: 59 **Autosampler Location: 45**
Sample ID: 01041901-021 **Date Collected: 4/20/01 11:37:47 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: 01041901-021

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	-2648.9	-0.001	µg/ml	0.0003	-0.007	µg/SMPL	0.0025	38.13%

Sequence No.: 60 **Autosampler Location: 46**
Sample ID: 01041901-022 **Date Collected: 4/20/01 11:39:11 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: 10X **Data Type: Original**

Mean Data: 01041901-022

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	-2727.6	-0.001	µg/ml	0.0002	-0.007	µg/SMPL	0.0024	34.86%

Sequence No.: 61 **Autosampler Location: 63**
Sample ID: CV **Date Collected: 4/20/01 11:40:34 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: **Data Type: Original**

Mean Data: CV

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	20042651.8	5.00	µg/ml	0.075	5.00	µg/SMPL	0.075	1.49%

QC value within limits for Be 313.042 Recovery = 100.02%
All analytes passed QC.

Sequence No.: 62 **Autosampler Location: 60**
Sample ID: CB **Date Collected: 4/20/01 11:42:43 AM**
Analyst:
Sample Wt: **Sample Prep Volume:**
Dilution: **Data Type: Original**

Mean Data: CB

Analyte	Mean Corrected Intensity	Calib Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Be 313.042	2808.9	0.001	µg/ml	0.0006	0.001	µg/SMPL	0.0006	89.91%

QC value within limits for Be 313.042 Recovery = Not calculated
All analytes passed QC.

Analytical Sequence
Method: BE

Seq.	Loc.	ID	Status
1	60	CAL 1	Applied
2	61	CAL 2	Applied
3	62	CAL 3	Applied
4	56	ICV	Passed
5	63	CV	Passed
6	60	CB	Passed
7	1	PB	Analyzed
8	2	MB	Analyzed
9	3	MBS	Analyzed

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10	4	QC01040429 LCS	Analyzed
11	5	QC01040429 LCD	Analyzed
12	6	01041903-001	Analyzed
13	7	01041903-002	Analyzed
14	8	01041903-003	Analyzed
15	9	01041903-004	Analyzed
16	10	01041903-005	Analyzed
17	63	CV	Passed
18	60	CB	Passed
19	11	01041903-006	Analyzed
20	12	01041903-007	Analyzed
21	13	01041903-008	Analyzed
22	14	01041903-009	Analyzed
23	15	01041903-010	Analyzed
24	16	01041903-011	Analyzed
25	17	01041805-001	Analyzed
26	18	01041805-002	Analyzed
27	19	01041805-003	Analyzed
28	20	01041805-004	Analyzed
29	63	CV	Passed
30	60	CB	Passed
31	21	01041805-005	Analyzed
32	22	01041901-001	Analyzed
33	23	01041901-002	Analyzed
34	24	01041901-003	Analyzed
35	25	01041901-004	Analyzed
36	26	PB	Analyzed
37	27	QC01040430 LCS	Analyzed
38	28	QC01040430 LCD	Analyzed
39	29	01041901-005	Analyzed
40	30	01041901-006	Analyzed
41	63	CV	Passed
42	60	CB	Passed
43	31	01041901-007	Analyzed
44	32	01041901-008	Analyzed
45	33	01041901-009	Analyzed
46	34	01041901-010	Analyzed
47	35	01041901-011	Analyzed
48	36	01041901-012	Analyzed
49	37	01041901-013	Analyzed
50	38	01041901-014	Analyzed
51	39	01041901-015	Analyzed
52	40	01041901-016	Analyzed
53	63	CV	Passed
54	60	CB	Passed
55	41	01041901-017	Analyzed
56	42	01041901-018	Analyzed
57	43	01041901-019	Analyzed
58	44	01041901-020	Analyzed
59	45	01041901-021	Analyzed
60	46	01041901-022	Analyzed
61	63	CV	Passed
62	60	CB	Passed

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April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

QC RESULTS SUMMARY

Line Item Code: NR01A001
Date Received: 04/19/01
Analytical Method: OSHA ID-125G
Reporting Limit: 0.1 µg

QC Parameter	QC Item Type	Compound	Expected Recovery	Actual Recovery	Percent Recovery
Preparation Blank (PB)	PB1	Beryllium	< 0.1 µg	< 0.1 µg	N/A
Matrix Blank (MB)	MB1	Beryllium	< 0.1 µg	< 0.1 µg	N/A
Matrix Blank Spike (MBS)	MS1	Beryllium	5.0 µg	5.16 µg	103.2%
Laboratory Control Sample (LCS)	LC1	Beryllium	7.0 µg	6.85 µg	97.9%
Laboratory Control Duplicate (LCD)	LC1a	Beryllium	7.0 µg	6.79 µg	97.0%
Preparation Blank (PB)	PB2	Beryllium	< 0.1 µg	< 0.1 µg	N/A
Laboratory Control Sample (LCS)	LC2	Beryllium	13.0 µg	13.0 µg	100.0%
Laboratory Control Duplicate (LCD)	LC2a	Beryllium	13.0 µg	13.1 µg	100.8%

Limits: 80.0 to 120.0%

Comments: Laboratory control spike no. QC01040429 and QC01040430

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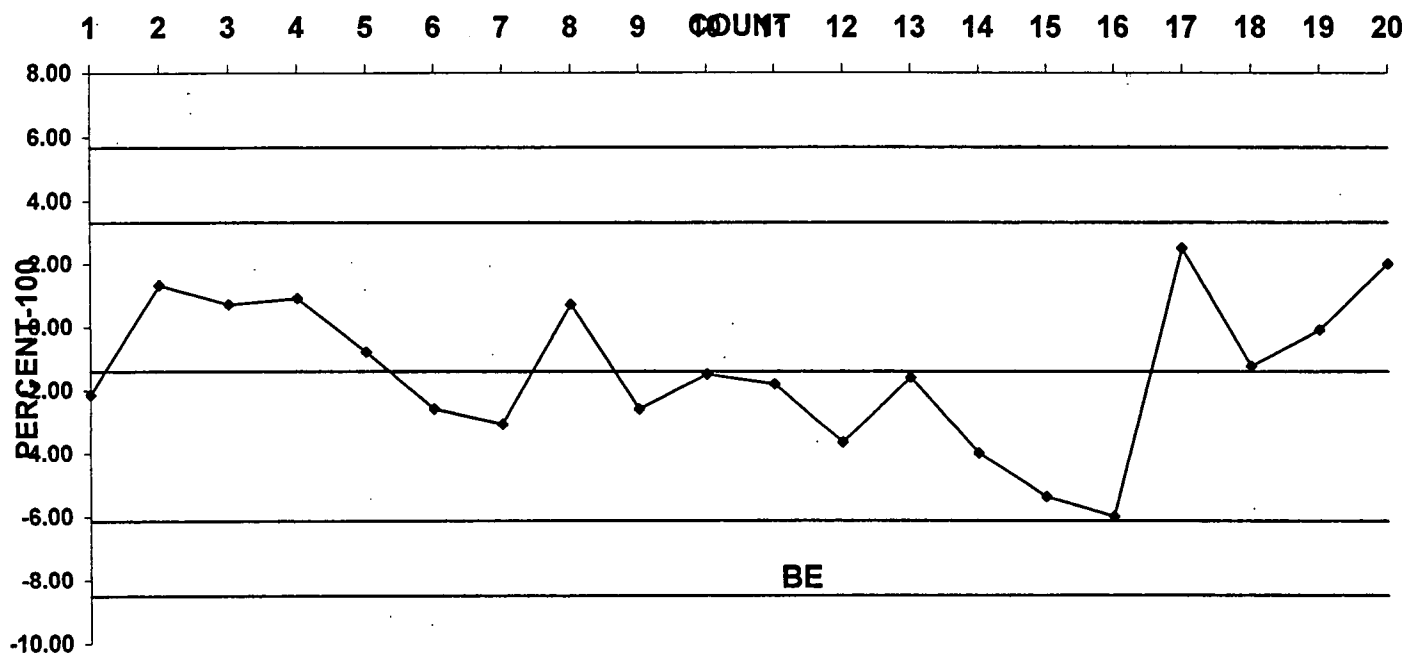
use outliers	Avg	Stdev all	Stdev used	CV	MIN	MED	MAX	n	
in stats?	98.6	2.361788585	2.36	0.0240	94.00	98.45	103.85	18	3
y									UCL, LCL

Matrix: WIPE
Media: WHATMAN
Method: N7300
Analyst: DA
Date: 4/20/01
Stdev used: 2.4
Chrt type: p
Req Stdev: na
Req Avg: na
% Certainty: na



Rule criteria used
98.6
RULE 1
OK
RULE2
OK
RULE 3
OK
RULE 4
OK
RULE 5
OK
RULE 6
OK

Data

Count	%	QC #	Count	%	QC #	Count	%	QC #	Count	%	QC #	Count	%	QC #
1	100.00	QC01040430	5	100.91	QC01040425	9	100.71	01040421	13	96.33	01040417	17	94.00	01040413
2	97.86	QC01040429	6	99.20	QC01040424	10	97.40	01040420	14	98.40	01040416	18	102.50	01040412
3	101.33	QC01040428	7	97.40	QC01040423	11	98.50	01040419	15	96.00	01040415	19	98.75	01040411
4	100.71	QC01040427	8	96.92	QC01040422	12	98.18	01040418	16	94.62	01040414	20	99.90	01040410

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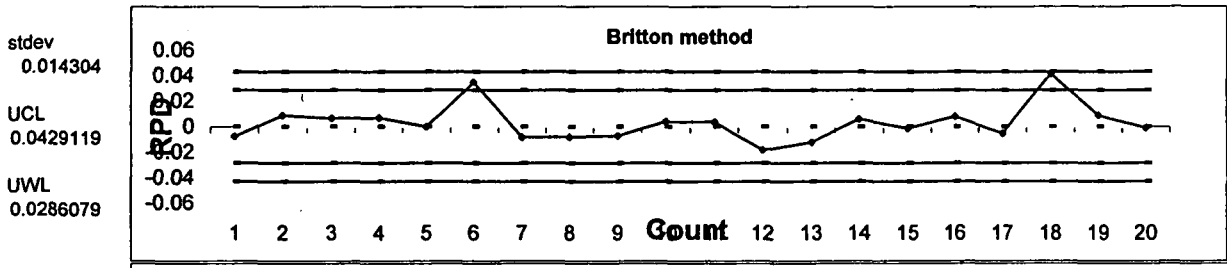
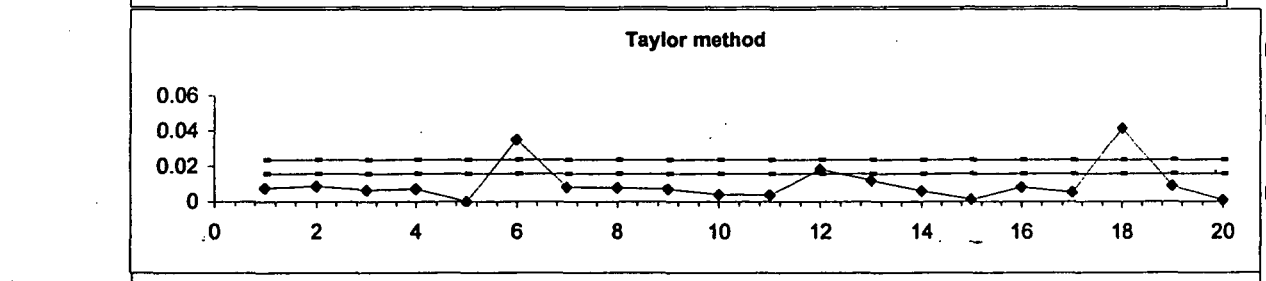
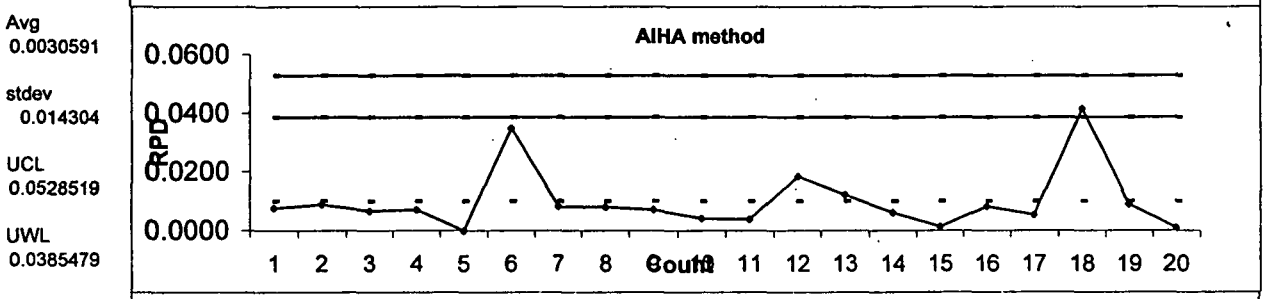
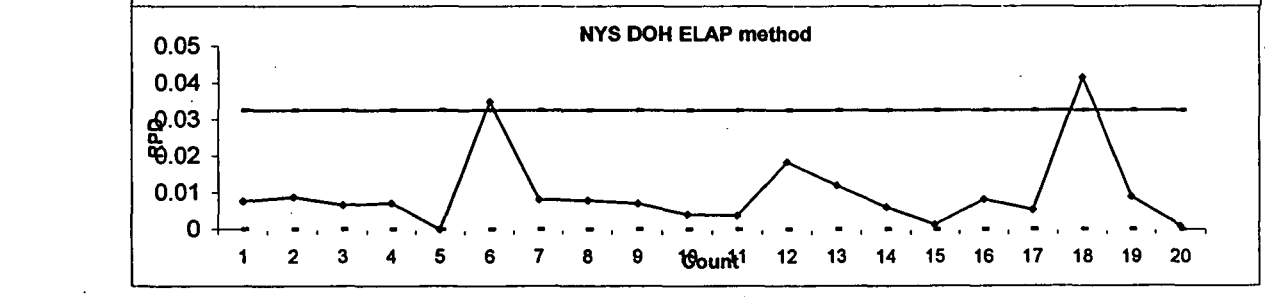
1 of

Date	Analyst	Media	Analyte	MATRIX	Instrument	n
04/20/01	DA	WHATMAN	BE	WIPE		20









Raw RPD Data

Count	ug	QC #	Count	ug	QC #	Count	ug	QC #	Count	QC #	ug
1	7.66E-03	QC01040430	6	3.49E-02	QC01040424	11	0.0038	QC01040419	16	QC01040414	0.0082
2	8.80E-03	QC01040429	7	8.18E-03	QC01040423	12	0.0183	QC01040418	17	QC01040413	0.0053
3	6.60E-03	QC01040428	8	7.91E-03	QC01040422	13	0.0120	QC01040417	18	QC01040412	0.0415
4	7.12E-03	QC01040427	9	7.07E-03	QC01040421	14	0.0061	QC01040416	19	QC01040411	0.0089
5	0.00E+00	QC01040425	10	4.12E-03	QC01040420	15	0.0013	QC01040415	20	QC01040410	0.0010

Examples from The Synergist, pp.12-13, Oct. 97

AIHA
The Essential Source

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February 20, 2001

COPY

MARILYN ANDREWS
JOHNS MANVILLE
JMTC IH ANALYTICAL LAB
P.O. BOX 625005
LITTLETON CO 80162-5005

Lab ID# 101537

Dear MARILYN ANDREWS

Enclosed are your Proficiency Analytical Testing (PAT) Round 144 results.

PAT round 145 sample kits will be mailed to laboratories around April 1, 2001; and results will be due to AIHA on May 1, 2001. The analytes for round 145 are:

Metals - cadmium, lead, zinc
Organics - benzene (BNZ), o-xylene (OXY), toluene (TOL)
Asbestos - chrysotile (one manmade fiber)

If you have any questions, please contact Fred Grunder at AIHA, (703) 849-8888.

Your Password to enter data via the Internet is now included on the submission form included with the samples. Your password is in the upper left hand corner (next to your lab ID#) of the mailing address label. Please do not call AIHA for your password. Because of security concerns, passwords will not be given over the phone.

Please note: After submitting your data on the PAT data web site, it is very important to print the confirmation page. Save this page as verification that results have been submitted.

The address to enter PAT results is: **http://www.aiha.org/proftest.htm**

The AIHA Laboratory Quality Assurance Programs, Policies and Application for AIHA accreditation are available on-line.
http://www.aiha.org

Note: The Policies for 2001 comply with ISO 17025.

The application covers the following programs:

1. Industrial Hygiene Laboratory Accreditation Program (IHLAP) including Bulk Asbestos as an analyte
2. Environmental Lead Laboratory Accreditation Program (ELLAP)
3. Asbestos Analysts Registry (AAR)
4. Environmental Microbiology Accreditation Program (EMLAP)

Sincerely,

Fred Grunder, CIH

American Industrial Hygiene Association
2700 Prosperity Ave., Suite 250, Fairfax, VA 22031
(703) 849-8888 (703) 207-8558 fax
InfoFax Service Line (703) 641-INFO or Internet: infonet@aiha.org

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PROFICIENCY ANALYTICAL TESTING (PAT) PROGRAM
INDIVIDUAL LABORATORY REPORT FOR ROUND 144
LAB ID=101537 FEBRUARY 9, 2001
JOHNS MANVILLE, LITTLETON, CO 80162-5005

000054

CONTAMINANT (ABV.)	UNIT	SAMPLE NO.	REPORTED RESULTS	MEAN VALUES •	ACCEPTABLE RANGE# LOWER	UPPER	Z & SCORE	LAB @ PERFORMANCE
CADMIUM (CAD)	(MG)	1	0.0039	0.0039	0.0033	0.0045	0.04	A
	(MG)	2	0.0098	0.0098	0.0085	0.0111	0.01	A
	(MG)	3	0.0128	0.0127	0.0111	0.0143	0.20	A
	(MG)	4	0.0201	0.0195	0.0171	0.0218	0.82	A
CHROMIUM (CHR)	(MG)	1	0.2240	0.2234	0.1832	0.2636	0.04	A
	(MG)	2	0.0812	0.0824	0.0684	0.0963	-0.25	A
	(MG)	3	0.1010	0.1015	0.0841	0.1188	-0.08	A
	(MG)	4	0.1540	0.1525	0.1259	0.1792	0.16	A
LEAD (LEA)	(MG)	1	0.0440	0.0450	0.0391	0.0509	-0.49	A
	(MG)	2	0.0629	0.0646	0.0566	0.0725	-0.63	A
	(MG)	3	0.0824	0.0842	0.0741	0.0943	-0.53	A
	(MG)	4	0.0987	0.0987	0.0869	0.1106	-0.01	A
SILICA (SIL)	(MG)	1	0.1144	0.0837	0.0402	0.1271	2.12	A
	(MG)	2	0.0858	0.0763	0.0357	0.1169	0.70	A
	(MG)	3	0.1010	0.1213	0.0637	0.1789	-1.06	A
	(MG)	4	0.1327	0.0804	0.0382	0.1226	3.72	H
ASBESTOS/FIBERS (ASB/MMF)	(F/MM2)	1	113.9000	107.7742	52.8094	182.1384	0.28	A
	(F/MM2)	2	435.4000	507.5547	297.2145	773.8433	-0.94	A
	(F/MM2)	3	249.7000	276.1539	150.5577	439.5549	-0.56	A
	(F/MM2)	4	79.3000	90.9387	44.5600	153.6864	-0.66	A
METHANOL (MOH)	(MG)	1	0.0979	0.1004	0.0728	0.1280	-0.27	A
	(MG)	2	0.4731	0.4891	0.3941	0.5841	-0.50	A
	(MG)	3	0.2410	0.2439	0.1907	0.2970	-0.16	A
	(MG)	4	0.8618	0.8692	0.7102	1.0282	-0.14	A

• Mean values are the mean of all laboratories based on original scales except for asbestos. Asbestos results are calculated based on transformed data. Therefore, asbestos performance limits are not symmetrical to the mean values.
\# Upper limit: mean value + 3 standard deviations
Lower limit: mean value - 3 standard deviations
& Z Score = (reported result-mean value)/standard deviation
@ A: Analysis acceptable -: Results not reported
H: Results > upper limit (Z > 3), not acceptable L: Results < lower limit (Z < -3), not acceptable
Note: the acceptability of reported results is based on z-scores. This is why a reported result may appear acceptable according to performance limits, but be identified as an outlier.

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PROFICIENCY ANALYTICAL TESTING (PAT) PROGRAM
LABORATORY YEAR-TO-DATE PERFORMANCE REPORT FOR ROUND 144
LAB ID=101537 FEBRUARY 9, 2001
JOHNS MANVILLE, LITTLETON, CO 80162-5005

SAMPLE TYPE	ROUND	ROUND * PERFORMANCE	ACCUMULATED PERFORMANCE 4 ROUNDS	(%)	2 ROUNDS	(%)	PROFICIENCY RATING #
METALS	141	12/12					
	142	12/12					
	143	12/12					
	144	12/12	48/48	100	24/24	100	P
SILICA	141	4/4					
	142	4/4					
	143	4/4					
	144	3/4	15/16	94	7/8	88	P
ASBESTOS/FIBERS	141	4/4					
	142	4/4					
	143	4/4					
	144	4/4	16/16	100	8/8	100	P
ORGANICS	141	8/8					
	142	9/12					
	143	12/12					
	144	4/4	33/36	92	16/16	100	P

* The denominators represent the total number of samples to be analyzed.
The numerators represent the number of acceptable results.
A '-' represents non-submittal and is calculated as a zero in the numerator.

P : Proficient N: Nonproficient
Performance ratings are based on expected results over four rounds (one year). A lab's performance on each sample type is rated proficient (P), if: 1) three-fourths (75%) or more of the accumulated results over four rounds are acceptable or 2) for the last two rounds, all samples are analyzed and the results are 100% acceptable. If a laboratory receives samples for a contaminant and does not report the data, the results will be considered unacceptable for that contaminant.

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PROFICIENCY ANALYTICAL TESTING (PAT) PROGRAM
SUMMARY RESULTS OF ALL LABS FOR ROUND 144

CONTAMINANT (UNIT)	SAMPLE NO.	SUMMARY STATISTICS OF ALL LABS N	MEAN*	STD@	RSD(%)&	# LABS RATED	# OF LABS ACCEPTABLE	# LOW OUTLIER	#HIGH OUTLIER
CADMIUM (MG)	1	264	0.0039	0.000208	5.3	264	243	14	7
	2	264	0.0098	0.000429	4.4	264	246	11	7
	3	264	0.0127	0.000535	4.2	264	247	10	7
	4	264	0.0195	0.00078	4.0	264	243	14	7
CHROMIUM (MG)	1	263	0.2234	0.013398	6.0	263	248	12	3
	2	263	0.0824	0.00466	5.7	263	248	6	9
	3	263	0.1015	0.005788	5.7	263	242	11	10
	4	263	0.1525	0.008888	5.8	263	247	11	5
LEAD (MG)	1	265	0.0450	0.00197	4.4	265	252	5	8
	2	265	0.0646	0.00265	4.1	265	255	6	4
	3	265	0.0842	0.003367	4.0	265	249	7	9
	4	265	0.0987	0.003949	4.0	265	249	8	8
SILICA (MG)	1	74	0.0837	0.014477	17.3	74	69	2	3
	2	74	0.0763	0.013534	17.7	74	70	0	4
	3	74	0.1213	0.019201	15.8	74	67	2	5
	4	74	0.0804	0.01406	17.5	74	69	3	2
ASBESTOS/FIBERS (F/MM2) +	1	190	107.7742	21.55484	20.0	852	788	7	57
	2	190	507.5547	79.43813	15.7	852	782	26	44
	3	190	276.1539	48.1662	17.4	852	795	24	33
	4	190	90.9387	18.18775	20.0	852	765	29	58
METHANOL (MG)	1	232	0.1004	0.009199	9.2	232	208	8	16
	2	232	0.4891	0.031669	6.5	232	209	9	14
	3	232	0.2439	0.017729	7.3	232	208	11	13
	4	232	0.8692	0.053002	6.1	232	213	11	8

* MEAN - The mean of all laboratories. These values were listed on the individual laboratory report.
@ STD - standard deviation
& RSD - relative standard deviation=((STD/MEAN)*100%)
+ - Results for fibers are calculated on transformed data.

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AIHA
The Essential Source

March 9, 2001

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COPY

MARILYN ANDREWS
JOHNS MANVILLE
PO BOX 625005
LITTLETON CO 80162-5005

LabID# 101537

Dear MARILYN ANDREWS:

Enclosed are your ELPAT Round 34 results.

ELPAT Round 35 sample kits will be mailed to laboratories around May 1, 2001.
Results will be due at AIHA on June 1, 2001.

Please note: After submitting your data on the ELPAT data web site, it is very important to print the confirmation page. Save this page as verification that results have been submitted.

The address to enter ELPAT results is: **http://www.aiha.org/proftest.htm**

The AIHA Laboratory Quality Assurance Programs, Policies and Application for AIHA accreditation are available on-line.
http://www.aiha.org

Note: The Policies for 2001 comply with ISO 17025.

The application covers the following programs:

1. Industrial Hygiene Laboratory Accreditation Program (IHLAP) including Bulk Asbestos as an analyte
2. Environmental Lead Laboratory Accreditation Program (ELLAP)
3. Asbestos Analysts Registry (AAR)
4. Environmental Microbiology Accreditation Program (EMLAP)

Sincerely,

Fred I. Grunder, CIH

American Industrial Hygiene Association
2700 Prosperity Ave., Suite 250, Fairfax, VA 22031
(703) 849-8888 (703) 207-8558 fax
InfoFax Service Line (703) 641-INFO or Internet: infonet@aiha.o

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ENVIRONMENTAL LEAD PROFICIENCY ANALYTICAL TESTING (ELPAT) PROGRAM
INDIVIDUAL LABORATORY REPORT FOR ROUND 034
LAB ID=101537 MARCH 9, 2001
JOHNS MANVILLE, LITTLETON, CO 80162-5005

SAMPLE TYPE	SAMPLE NO.	REPORTED RESULTS	REFERENCE VALUES *	ACCEPTABLE RANGE # LOWER	UPPER	LAB @ PERFORMANCE	Z & SCORE
Paint Chips (%)	1	1.31	1.3296	1.106	1.5531	A	-0.26
	2	2.91	2.936	2.3798	3.4921	A	-0.14
	3	5.77	5.494	4.5412	6.4468	A	0.87
	4	0.073	0.0761	0.0583	0.0939	A	-0.52
Soil (mg/kg)	1	139	139.2	105.2	173.2	A	-0.02
	2	26.1	29	8.6	49.3	A	-0.43
	3	690	659.8	556.1	763.5	A	0.87
	4	112	114.1	81.5	146.8	A	-0.20
Dust Wipes (ug)	1	118	117.0008	86.6	147.4	A	0.10
	2	372	408.6593	288.2	529.1	A	-0.91
	3	37.9	41.2686	25.6	56.9	A	-0.65
	4	201	201.5695	150.5	252.6	A	-0.03

* Reference value is the mean of the reference laboratories
\# Upper limit: reference value + 3 standard deviations
Lower limit: reference value - 3 standard deviations
@ A: Analysis acceptable; -: Results not reported
H: Results > upper limit, L: Results < lower limit, not acceptable
& Z Score = (reported result-reference value)/standard deviation
Note: the acceptablity of reported results is based on z-scores.
This is why a reported result may appear acceptable according to performance limits, but be identified as an outlier.

LABORATORY YEAR-TO-DATE PERFORMANCE REPORT
LAB ID=101537

SAMPLE TYPE	ROUND NO.	ROUND * PERFORMANCE	ACCUMULATED 4 ROUNDS	(%)	PERFORMANCE 2 ROUNDS	(%)	PROFICIENCY RATING #
Paint Chips (%)	031	4/4					
	032	4/4					
	033	4/4					
	034	4/4	16/16	100	8/8	100	P
Soil (mg/kg)	031	4/4					
	032	4/4					
	033	4/4					
	034	4/4	16/16	100	8/8	100	P
Dust Wipes (ug)	031	4/4					
	032	4/4					
	033	4/4					
	034	4/4	16/16	100	8/8	100	P

* The denominators represent the total number of samples analyzed.
The numerators represent the number of acceptable results.
\# P : Proficient NP: Nonproficient
Performance ratings are based on accumulated results over four rounds (one year). A lab's performance in ground paint chips, soil, or dust wipes is rated proficient (P), if: 1) three-fourths (75%) or more of the accumulated results over four rounds are acceptable or 2) for the last two rounds, all samples are analyzed and the results are 100 % acceptable. If a lab receives samples and does not report the data, the results will be treated as outliers.

ENVIRONMENTAL LEAD PROFICIENCY ANALYTICAL TESTING (ELPAT) PROGRAM
SUMMARY STATISTICS OF REFERENCE LABORATORIES FOR ROUND 034

SAMPLE TYPE	SAMPLE	N	MEAN	MINIMUM	MAXIMUM	STD	RSD(%)	ACCEPTABLE RANGE
Paint Chips (%)	1	118	1.3296	1.2024	1.46	.074	5.6	1.106 - 1.5531
	2	118	2.936	2.5967	3.283	.185	6.3	2.3798 - 3.4921
	3	118	5.494	4.852	6	.318	5.8	4.5412 - 6.4468
	4	118	0.0761	0.0654	0.0864	.006	7.8	0.0583 - 0.0939
Soil (mg/kg)	1	118	139.2	119.2	163	11.3	8.1	105.2 - 173.2
	2	118	29	14	42.3	6.76	23.3	8.6 - 49.3
	3	118	659.8	592.3	719.1	34.6	5.2	556.1 - 763.5
	4	118	114.1	96	135.2	10.9	9.5	81.5 - 146.8
Dust Wipes (ug)	1	118	117	96.1	133.1	10.1	8.6	86.6 - 147.4
	2	118	408.7	337.5	484	40.1	9.8	288.2 - 529.1
	3	118	41.3	31	49.8	5.19	12.6	25.6 - 56.9
	4	118	201.6	171	230.5	17.0	8.4	150.5 - 252.6

summary statistics of all laboratories participated

SAMPLE TYPE	SAMPLE	N	MEAN	MINIMUM	Q1	MEDIAN	Q3	MAXIMUM
Paint Chips (%)	1	262	1.321	0	1.2492	1.32945	1.3870	5.3265
	2	262	2.913	0	2.7421	2.9419	3.0800	5.6513
	3	262	5.3755	0	5.2067	5.4872	5.7500	8.4532
	4	262	0.1321	0.0002	0.0703	0.0751	0.0811	6.0225
Soil (mg/kg)	1	226	143.1	10.8	131.000	139.55	148.100	650
	2	226	35.6	0	25.4000	28.8	33.3000	1125
	3	226	659.1	85.6	626.000	659.6	685.600	3060
	4	226	114.2	0	105.900	113.85	122.900	322.5
Dust Wipes (ug)	1	244	131.7	38.9	108.550	117.4	124.950	3375
	2	244	405.9	195.1	372.150	405.15	429.500	1780
	3	244	45	7	37.0500	41.15	45.1500	816
	4	244	202.8	17.3	187.000	201	214.800	1255

SUMMARY OF PERFORMANCE - ALL LABORATORIES PARTICIPATED

SAMPLE TYPE	SAMPLE NO.	N OF LABS RATED	ACCEPTABLE LABS	LOW OUTLIER	HIGH OUTLIER
Paint Chips (%)	1	262	241	13	8
	2	262	245	10	7
	3	262	238	17	7
	4	262	244	8	10
Soil (mg/kg)	1	226	209	6	11
	2	226	208	8	10
	3	226	212	11	3
	4	226	211	8	7
Dust Wipes (ug)	1	244	229	9	6
	2	244	233	8	3
	3	244	231	9	4
	4	244	231	9	4

AIHA
The Essential Source

000060

March 9, 2001

MARILYN ANDREWS
JOHNS MANVILLE
PO BOX 625005
LITTLETON CO 80162-5005

LabID# 101537

Dear MARILYN ANDREWS:

Enclosed are your ELPAT Round 34 results.

ELPAT Round 35 sample kits will be mailed to laboratories around May 1, 2001.
Results will be due at AIHA on June 1, 2001.

Please note: After submitting your data on the ELPAT data web site, it is very important to print the confirmation page. Save this page as verification that results have been submitted.

The address to enter ELPAT results is: **http://www.aiha.org/proftest.htm**

The AIHA Laboratory Quality Assurance Programs, Policies and Application for AIHA accreditation are available on-line.
http://www.aiha.org

Note: The Policies for 2001 comply with ISO 17025.

The application covers the following programs:

1. Industrial Hygiene Laboratory Accreditation Program (IHLAP) including Bulk Asbestos as an analyte
2. Environmental Lead Laboratory Accreditation Program (ELLAP)
3. Asbestos Analysts Registry (AAR)
4. Environmental Microbiology Accreditation Program (EMLAP)

Sincerely,

Fred I. Grunder, CIH

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American Industrial Hygiene Association
2700 Prosperity Ave., Suite 250, Fairfax, VA 22031
(703) 849-8888 (703) 207-8558 fax
InfoFax Service Line (703) 641-INFO or Internet: infonet@aiha.org

ENVIRONMENTAL LEAD PROFICIENCY ANALYTICAL TESTING (ELPAT) PROGRAM
INDIVIDUAL LABORATORY REPORT FOR ROUND 034
LAB ID=101537 MARCH 9, 2001
JOHNS MANVILLE, LITTLETON, CO 80162-5005

SAMPLE TYPE	SAMPLE NO.	REPORTED RESULTS	REFERENCE VALUES *	ACCEPTABLE RANGE # LOWER	UPPER	LAB @ PERFORMANCE	Z & SCORE
Paint Chips (%)	1	1.31	1.3296	1.106	1.5531	A	-0.26
	2	2.91	2.936	2.3798	3.4921	A	-0.14
	3	5.77	5.494	4.5412	6.4468	A	0.87
	4	0.073	0.0761	0.0583	0.0939	A	-0.52
Soil (mg/kg)	1	139	139.2	105.2	173.2	A	-0.02
	2	26.1	29	8.6	49.3	A	-0.43
	3	690	659.8	556.1	763.5	A	0.87
	4	112	114.1	81.5	146.8	A	-0.20
Dust Wipes (ug)	1	118	117.0008	86.6	147.4	A	0.10
	2	372	408.6593	288.2	529.1	A	-0.91
	3	37.9	41.2686	25.6	56.9	A	-0.65
	4	201	201.5695	150.5	252.6	A	-0.03

* Reference value is the mean of the reference laboratories
\# Upper limit: reference value + 3 standard deviations
Lower limit: reference value - 3 standard deviations
@ A: Analysis acceptable; -: Results not reported
H: Results > upper limit, L: Results < lower limit, not acceptable
& Z Score = (reported result-reference value)/standard deviation
Note: the acceptablity of reported results is based on z-scores. This is why a reported result may appear acceptable according to performance limits, but be identified as an outlier.

LABORATORY YEAR-TO-DATE PERFORMANCE REPORT
LAB ID=101537

SAMPLE TYPE	ROUND NO.	ROUND * PERFORMANCE	ACCUMULATED 4 ROUNDS(%)		PERFORMANCE 2 ROUNDS(%)		PROFICIENCY RATING #
Paint Chips (%)	031	4/4					
	032	4/4					
	033	4/4					
	034	4/4	16/16	100	8/8	100	P
Soil (mg/kg)	031	4/4					
	032	4/4					
	033	4/4					
	034	4/4	16/16	100	8/8	100	P
Dust Wipes (ug)	031	4/4					
	032	4/4					
	033	4/4					
	034	4/4	16/16	100	8/8	100	P

* The denominators represent the total number of samples analyzed. The numerators represent the number of acceptable results.
\# P : Proficient NP: Nonproficient
Performance ratings are based on accumulated results over four rounds (one year). A lab's performance in ground paint chips, soil, or dust wipes is rated proficient (P), if: 1) three-fourths (75%) or more of the accumulated results over four rounds are acceptable or 2) for the last two rounds, all samples are analyzed and the results are 100 % acceptable. If a lab receives samples and does not report the data, the results will be treated as outliers.

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ENVIRONMENTAL LEAD PROFICIENCY ANALYTICAL TESTING (ELPAT) PROGRAM
SUMMARY STATISTICS OF REFERENCE LABORATORIES FOR ROUND 034

SAMPLE TYPE	SAMPLE	N	MEAN	MINIMUM	MAXIMUM	STD	RSD(%)	ACCEPTABLE RANGE
Paint Chips (%)	1	118	1.3296	1.2024	1.46	.074	5.6	1.106 - 1.5531
	2	118	2.936	2.5967	3.283	.185	6.3	2.3798 - 3.4921
	3	118	5.494	4.852	6	.318	5.8	4.5412 - 6.4468
	4	118	0.0761	0.0654	0.0864	.006	7.8	0.0583 - 0.0939
Soil (mg/kg)	1	118	139.2	119.2	163	11.3	8.1	105.2 - 173.2
	2	118	29	14	42.3	6.76	23.3	8.6 - 49.3
	3	118	659.8	592.3	719.1	34.6	5.2	556.1 - 763.5
	4	118	114.1	96	135.2	10.9	9.5	81.5 - 146.8
Dust Wipes (ug)	1	118	117	96.1	133.1	10.1	8.6	86.6 - 147.4
	2	118	408.7	337.5	484	40.1	9.8	288.2 - 529.1
	3	118	41.3	31	49.8	5.19	12.6	25.6 - 56.9
	4	118	201.6	171	230.5	17.0	8.4	150.5 - 252.6

summary statistics of all laboratories participated

SAMPLE TYPE	SAMPLE	N	MEAN	MINIMUM	Q1	MEDIAN	Q3	MAXIMUM
Paint Chips (%)	1	262	1.321	0	1.2492	1.32945	1.3870	5.3265
	2	262	2.913	0	2.7421	2.9419	3.0800	5.6513
	3	262	5.3755	0	5.2067	5.4872	5.7500	8.4532
	4	262	0.1321	0.0002	0.0703	0.0751	0.0811	6.0225
Soil (mg/kg)	1	226	143.1	10.8	131.000	139.55	148.100	650
	2	226	35.6	0	25.4000	28.8	33.3000	1125
	3	226	659.1	85.6	626.000	659.6	685.600	3060
	4	226	114.2	0	105.900	113.85	122.900	322.5
Dust Wipes (ug)	1	244	131.7	38.9	108.550	117.4	124.950	3375
	2	244	405.9	195.1	372.150	405.15	429.500	1780
	3	244	45	7	37.0500	41.15	45.1500	816
	4	244	202.8	17.3	187.000	201	214.800	1255

SUMMARY OF PERFORMANCE - ALL LABORATORIES PARTICIPATED

SAMPLE TYPE	SAMPLE NO.	N OF LABS RATED	ACCEPTABLE LABS	LOW OUTLIER	HIGH OUTLIER
Paint Chips (%)	1	262	241	13	8
	2	262	245	10	7
	3	262	238	17	7
	4	262	244	8	10
Soil (mg/kg)	1	226	209	6	11
	2	226	208	8	10
	3	226	212	11	3
	4	226	211	8	7
Dust Wipes (ug)	1	244	229	9	6
	2	244	233	8	3
	3	244	231	9	4
	4	244	231	9	4

AIHA
The Essential Source

February 16, 2001

MARILYN ANDREWS
JOHNS MANVILLE
PO BOX 625005
LITTLETON CO 80162-5005

Lab ID# 101537

Dear MARILYN ANDREWS:

Enclosed are your Lead in Air results for Round 34 of the Environmental Lead Proficiency Analytical Testing (ELPAT) program.

ELPAT Lead-in-air Round 35 sample kits will be mailed to laboratories around April 1, 2001 and results will be due to AIHA on May 1, 2001.

Your Password to enter data via the Internet is now included on the submission form that is included with the PAT samples. Your password is in the upper left-hand corner (next to your lab ID#) of the mailing address label. Please do not call AIHA for your password. Because of security concerns, passwords will not be given over the phone.

Please note: After submitting your data on the data web site, it is very important to print the confirmation page. Save this page as verification that results have been submitted.

The address to enter PAT results is: http://www.aiha.org/proftest.htm

If you have any questions, please contact Tony Hodge at AIHA, (703) 849-8888.

The AIHA Laboratory Quality Assurance Programs, Policies and Application for AIHA accreditation are available on-line.
http://www.aiha.org

Note: The Policies for 2001 comply with ISO 17025.

The application covers the following programs:

1. Industrial Hygiene Laboratory Accreditation Program (IHLAP) including Bulk Asbestos as an analyte
2. Environmental Lead Laboratory Accreditation Program (ELLAP)
3. Asbestos Analysts Registry (AAR)
4. Environmental Microbiology Accreditation Program (EMLAP)

Sincerely,

Fred I. Grunder, CIH

American Industrial Hygiene Association
2700 Prosperity Ave., Suite 250, Fairfax, VA 22031
(703) 849-8888 (703) 207-8558 fax
InfoFax Service Line (703) 641-INFO or Internet: infonet@aiha.org

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101537

ENVIRONMENTAL LEAD PROFICIENCY ANALYTICAL TESTING (ELPAT) PROGRAM
INDIVIDUAL LABORATORY REPORT FOR ROUND 034
LAB ID=101537 FEBRUARY 16, 2001

SAMPLE TYPE	SAMPLE NO.	REPORTED RESULTS	REFERENCE VALUES *	ACCEPTABLE RANGE # LOWER	UPPER	LAB @ PERFORMANCE	Z & SCORE
Lead in Air (mg/m3)	1	0.0244	0.025	0.0217	0.0283	A	-0.53
	2	0.0723	0.0742	0.0651	0.0834	A	-0.63
	3	0.0485	0.0495	0.0436	0.0555	A	-0.52
	4	0.0987	0.0987	0.0869	0.1106	A	-0.01

* Reference value is the mean of the reference laboratories
\# Upper limit: reference value + 3 standard deviations
Lower limit: reference value - 3 standard deviations
@ A: Analysis acceptable; -: Results not reported
H: Results > upper limit; L: Results < lower limit, not acceptable
& Z Score = (reported result-reference value)/standard deviation
Note: the acceptability of reported results is based on z-scores.
This is why a reported result may appear acceptable according to acceptable range, but be identified as an outlier.

LABORATORY YEAR-TO-DATE PERFORMANCE REPORT
LAB ID=101537

SAMPLE TYPE	ROUND NO.	ROUND * PERFORMANCE	ACCUMULATED 4 ROUNDS(%)		PERFORMANCE 2 ROUNDS(%)		PROFICIENCY RATING #
Lead in Air (mg/m3)	031	4/4					
	032	0/4					
	033	4/4					
	034	4/4	12/16	75	8/8	100	P

* The denominators represent the total number of samples analyzed.
The numerators represent the number of acceptable results.
\# P : Proficient NP: Nonproficient
Performance ratings are based on accumulated results over four rounds (one year). A lab's performance in lead in air is rated proficient (P), if: 1) three-fourths (75%) or more of the accumulated results over four rounds are acceptable or 2) for the last two rounds, all samples are analyzed and the results are 100 % acceptable. If a laboratory receives samples and does not report the data, the results will be treated as outliers.

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ENVIRONMENTAL LEAD PROFICIENCY ANALYTICAL TESTING (ELPAT) PROGRAM
SUMMARY STATISTICS OF REFERENCE LABORATORIES FOR ROUND 034

SAMPLE TYPE	SAMPLE	REFERENCE VALUE	STD	RSD(%)	ACCEPTABLE RANGE
Lead in Air (mg/m3)	1	0.025	0.00109	4.38114	0.0217 - 0.0283
	2	0.0742	0.00305	4.10399	0.0651 - 0.0834
	3	0.0495	0.00198	4	0.0436 - 0.0555
	4	0.0987	0.00395	4	0.0869 - 0.1106

SUMMARY STATISTICS OF ALL LABORATORIES PARTICIPATED

SAMPLE TYPE	SAMPLE	N	MEAN	MINIMUM	Q1	MEDIAN	Q3	MAXIMUM
Lead in Air (mg/m3)	1	118	0.0267	0.0029	0.0235	0.02485	0.0261	0.2389
	2	118	0.0778	0.0092	0.0707	0.07375	0.0770	0.7175
	3	118	0.0527	0.0058	0.0472	0.04955	0.0512	0.47
	4	118	0.1182	0.0063	0.0929	0.09835	0.1021	0.991

SUMMARY OF PERFORMANCE - ALL LABORATORIES PARTICIPATED

SAMPLE TYPE	SAMPLE NO.	N OF LABS RATED	ACCEPTABLE LABS	LOW OUTLIER	HIGH OUTLIER
Lead in Air (mg/m3)	1	118	100	13	5
	2	118	103	13	2
	3	118	100	12	6
	4	118	98	13	7

April 20, 2001

Laboratory Report ID: 01041901
Laboratory Name: JMTC IH Analytical Laboratory
Laboratory Code: JMANS
Subcontract Number: 800188SX6
RIN: 01C0134
Requestor: Bob Cathel
P.O./Charge Code: DAA00009

QUICK RESULTS SUMMARY

Line Item Code: NR01A001
Sample Matrix: WIPE
Analytical Method: OSHA ID-125G

Reporting Limit: 0.1 µg
Date Received: 04/19/01
Date Analyzed: 04/20/01

Customer Number	Laboratory ID Number	Requested Analysis	CONCENTRATION Backup	Main	Total	T	Q	Constituent ID
776-04182001-31-601	01041901-001	Beryllium			< 0.1 µg	TR1	U	7440-41-7
5-04182001-31-602	01041901-002	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-603	01041901-003	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-604	01041901-004	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-605	01041901-005	Beryllium			< 0.1 µg	TR1	J	7440-41-7
776-04182001-31-606	01041901-006	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-607	01041901-007	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-608	01041901-008	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-609	01041901-009	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-610	01041901-010	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-611	01041901-011	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-612	01041901-012	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-613	01041901-013	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-614	01041901-014	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-615	01041901-015	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-616	01041901-016	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-617	01041901-017	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-618	01041901-018	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-619	01041901-019	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-620	01041901-020	Beryllium			< 0.1 µg	TR1	U	7440-41-7
776-04182001-31-621	01041901-021	Beryllium			< 0.1 µg	TR1	U	7440-41-7
76-04182001-31-622	01041901-022	Beryllium			< 0.1 µg	TR1	U	7440-41-7

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EDDCHECK.chk

EDDCHECK: Release 1.1.1

04/23/2001 1:29:20 PM

EDD CHECKER RESULTS FOR S:\IHREPO~1\ROCKYF~1\(9977~1.T)K\APRIL'~1\01C0134.TXT

RIN: 01C0134 LIC: NR01A001 Lab: JMANS Date: 04/20/2001

END OF EDD -- 0 ERRORS ENCOUNTERED.

END OF EDD FILE -- TOTAL OF 0 ERRORS ENCOUNTERED.

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0.1 04/20/2001
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/2001WIPE TR1 7440-41-7 BERYLLIUM
0.1 UG/WIPE U
0.1 04/20/2001
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/2001WIPE TR1 7440-41-7 BERYLLIUM
0.1 UG/WIPE U
0.1 04/20/2001
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/2001WIPE TR1 7440-41-7 BERYLLIUM
0.1 UG/WIPE U
0.1 04/20/2001
01041901 01C0134-012.001 01041901-012 04/19/200104/20
/2001WIPE TR1 7440-41-7 BERYLLIUM
0.1 UG/WIPE U

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/2001WIPE                TR1  7440-41-7       BERYLLIUM
                                  0.1         UG/WIPE   U

 0.1          04/20/2001
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/2001WIPE                TR1  7440-41-7       BERYLLIUM
                                  0.1         UG/WIPE   U

 0.1          04/20/2001
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/2001WIPE                TR1  7440-41-7       BERYLLIUM
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                                  0.1         UG/WIPE   U

 0.1          04/20/2001
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/2001WIPE                TR1  7440-41-7       BERYLLIUM
                                  0.1         UG/WIPE   U

 0.1          04/20/2001
01041901       01C0134-020.001     01041901-020        04/19/200104/20
/2001WIPE                TR1  7440-41-7       BERYLLIUM
                                  0.1         UG/WIPE   U

 0.1          04/20/2001
01041901       01C0134-021.001     01041901-021        04/19/200104/20
/2001WIPE                TR1  7440-41-7       BERYLLIUM
                                  0.1         UG/WIPE   U

 0.1          04/20/2001
01041901       01C0134-022.001     01041901-022        04/19/200104/20
/2001WIPE                TR1  7440-41-7       BERYLLIUM
                                  0.1         UG/WIPE   U

 0.1          04/20/2001
$$$
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Safe Sites OF COLORADO, L.L.C.
Rocky Flats Environmental Technology Site

ENTERED 5/15/01

RECEIVED
MAY 10 2001

INTEROFFICE CORRESPONDENCE

DATE: May 8, 2001

TO: V. Ideker, ASD, Bldg. 881, X3437

FROM: M. S. Brugh, Radiological Inorganic Lab Manager, Bldg. 559, X7709

SUBJECT: SAMPLE PACKAGE SUBMITTAL

Attached are reports which have been analyzed by the 559 Radiochemistry Laboratory. Analyses performed:

fingerprint · pH · g/l Pu · g/l U · g/l Am · g/l Cl- · OH-/H+ · g/g Pu · g/g U · g/g Am
other _____

01C0131-001 Top
001 Bottom
002 Top
002 Bottom

Please see the Summary Narrative for all information pertaining to any anomalies for these samples.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions details in the narrative summary. Release of the data contained in this hard copy data and package and in the computer-readable data submitted has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

Mark S. Brugh
Manager, Radiological Inorganic Laboratory

559 Laboratories Analyical Report

This report provides g/g U-235, Am-241, and Pu values determined using procedures L-4184 and L-4182. All methods are Safeguards approved. The Q column lists data qualifiers. A 'U' indicates that the measured value is below the method MDA. The method MDA is then reported as the analytical result. SAN codes are provided when the results are within the Safeguards approved range for the method. The LL/TRU field is filled when sufficient information is available to do so.

Sample Owner	Cathel, Bob	*Phone #*	6880
Company		*Pager*	fax 5415
APO Sample ID	01C0131-001.001Top	*Customer Sample ID*	
Date Received	4/23/01	*Location*	776 Outside
Date Analyzed	5/2/01		
Date Reported	5/4/01		
Narrative	This sample was received by the 559 Radiochemistry Laboratory for g/g Pu, Am-241, U-235, and fingerprint analysis. The sample consisted of two layers, labelled Top and Bottom, respectively. No anomalies occurred during analysis. All QA/QC was within limits.		

				Q	MDA				
Pu g/g	2.37E-10	+/-	1.16E-10	U	2.88E-10	*Pu SAN Code*	RCPU		
Am g/g		+/-		U	4.05E-13	*Am SAN Code*	RCAM	*LL/TRU*	LL
U g/g		+/-		U	6.61E-07	*U SAN Code*	RCEU		

Approval John S. Tracer

Peer Review Roger C. Henderson

559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	***Company***	
APO Sample ID	01C0131-001.001Top		
Date Received	4/23/01		
Date Analyzed	5/2/01		
Date Reported	5/4/01		
Case Narrative	This sample was received by the 559 Radiochemistry Laboratory for g/g Pu, Am-241, U-235, and fingerprint analysis. The sample consisted of two layers, labelled Top and Bottom, respectively. No anomalies occurred during analysis. All QA/QC was within limits.		
Physical Description	Top layer of two phase sample. Non-viscous, translucent light brownish green liquid.		
Water Test	Positive		
pH	7.50	***Standard pH units***	
Specific Gravity	0.9974	***Relative to water @ 20 C***	
Miscibility	Water		
Water Reactivity	No		
Ignitability	NA, Aqueous Sample	***degrees C***	
Chlorinated Solvents	NA, Aqueous Sample	***ppm***	

Approval John S Jones

Peer Review Roger A Henderson

559 Laboratories Analyical Report

This report provides g/g U-235, Am-241, and Pu values determined using procedures L-4184 and L-4182. All methods are Safeguards approved. The Q column lists data qualifiers. A 'U' indicates that the measured value is below the method MDA. The method MDA is then reported as the analytical result. SAN codes are provided when the results are within the Safeguards approved range for the method. The LL/TRU field is filled when sufficient information is available to do so.

Sample Owner	Cathel, Bob	*Phone #*	6880
Company		*Pager*	fax 5415
APO Sample ID	01C0131-001.001Bottom	*Customer Sample ID*	
Date Received	4/23/01	*Location*	776 Outside
Date Analyzed	5/2/01		
Date Reported	5/4/01		
Narrative	This sample was received by the 559 Radiochemistry Laboratory for g/g Pu, Am-241, U-235, and fingerprint analysis. The sample consisted of two layers, labelled Top and Bottom, respectively. No anomalies occurred during analysis. All QA/QC was within limits.		

				Q	MDA				
Pu g/g	6.60E-09	+/-	3.09E-09	U	7.42E-09	*Pu SAN Code*	RCPU		
Am g/g	4.20E-12	+/-	4.11E-12	U	6.62E-12	*Am SAN Code*	RCAM	*LL/TRU*	LL
U g/g		+/-		U	1.79E-05	*U SAN Code*	RCEU		

Approval John [illegible]

Peer Review Roger A Henderson

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559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	***Company***	
APO Sample ID	01C0131-001.001Bottom		
Date Received	4/23/01		
Date Analyzed	5/2/01		
Date Reported	5/4/01		

Case Narrative	This sample was received by the 559 Radiochemistry Laboratory for g/g Pu, Am-241, U-235, and fingerprint analysis. The sample consisted of two layers, labelled Top and Bottom, respectively. No anomalies occurred during analysis. All QA/QC was within limits.
Physical Description	Bottom layer of two phase sample comprising about 90% of total sample volume. Opaque, thick, brown sludgy. For pH analysis, sample was mixed in DI water.

Water Test	Positive	
pH	7.00	***Standard pH units***
Specific Gravity	1.2368	***Relative to water @ 20 C***
Miscibility	Water	
Water Reactivity	No	
Ignitability	NA, Aqueous Sample	***degrees C***
Chlorinated Solvents	NA, Aqueous Sample	***ppm***

Approval John S Irwin

Peer Review Roger A Henderson

201

559 Laboratories Analyical Report

This report provides g/g U-235, Am-241, and Pu values determined using procedures L-4184 and L-4182. All methods are Safeguards approved. The Q column lists data qualifiers. A 'U' indicates that the measured value is below the method MDA. The method MDA is then reported as the analytical result. SAN codes are provided when the results are within the Safeguards approved range for the method. The LL/TRU field is filled when sufficient information is available to do so.

Sample Owner	Cathel, Bob	*Phone #*	6880
Company		*Pager*	fax 5415
APO Sample ID	01C0131-002.001Top	*Customer Sample ID*	
Date Received	4/23/01	*Location*	776 Outside
Date Analyzed	5/2/01		
Date Reported	5/4/01		
Narrative	This sample was received by the 559 Radiochemistry Laboratory for g/g Pu, Am-241, U-235, and fingerprint analysis. The sample consisted of two layers, labelled Top and Bottom, respectively. No anomalies occurred during analysis. All QA/QC was within limits.		

					Q	*MDA*				
Pu g/g	3.05E-10	+/-	1.32E-10			2.87E-10	*Pu SAN Code*	RCPU		
Am g/g	1.36E-10	+/-	1.63E-10		U	2.65E-13	*Am SAN Code*	RCAM	*LL/TRU*	LL
U g/g		+/-			U	5.98E-07	*U SAN Code*	RCEU		

Approval John K Fraser

Peer Review Roger A Henderson

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559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	***Company***	
APO Sample ID	01C0131-002.001Top		
Date Received	4/23/01		
Date Analyzed	5/2/01		
Date Reported	5/4/01		
Case Narrative	This sample was received by the 559 Radiochemistry Laboratory for g/g Pu, Am-241, U-235, and fingerprint analysis. The sample consisted of two layers, labelled Top and Bottom, respectively. No anomalies occurred during analysis. All QA/QC was within limits.		
Physical Description	Top layer of two phase sample comprising about 10% of total sample volume. Non-viscous, translucent cloudy grey liquid.		
Water Test	Positive		
pH	7.50	***Standard pH units***	
Specific Gravity	1.0021	***Relative to water @ 20 C***	
Miscibility	Water		
Water Reactivity	No		
Ignitability	NA, Aqueous Sample	***degrees C***	
Chlorinated Solvents	NA, Aqueous Sample	***ppm***	

Approval John R Traer

Peer Review Roger A Henderson

559 Laboratories Analyical Report

This report provides g/g U-235, Am-241, and Pu values determined using procedures L-4184 and L-4182. All methods are Safeguards approved. The Q column lists data qualifiers. A 'U' indicates that the measured value is below the method MDA. The method MDA is then reported as the analytical result. SAN codes are provided when the results are within the Safeguards approved range for the method. The LL/TRU field is filled when sufficient information is available to do so.

Sample Owner	Cathel, Bob	*Phone #*	6880
Company		*Pager*	fax 5415
APO Sample ID	01C0131-002.001Bottom	*Customer Sample ID*	
Date Received	4/23/01	*Location*	776 Outside
Date Analyzed	5/2/01		
Date Reported	5/4/01		
Narrative	This sample was received by the 559 Radiochemistry Laboratory for g/g Pu, Am-241, U-235, and fingerprint analysis. The sample consisted of two layers, labelled Top and Bottom, respectively. No anomalies occurred during analysis. All QA/QC was within limits.		

				Q	MDA				
Pu g/g	1.69E-10	+/-	9.16E-11	U	2.64E-10	*Pu SAN Code*	RCPU		
Am g/g		+/-		U	3.83E-13	*Am SAN Code*	RCAM	*LL/TRU*	LL
U g/g		+/-		U	6.27E-07	*U SAN Code*	RCEU		

Approval John K Fraser

Peer Review Roger A Henderson

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559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	***Company***	
APO Sample ID	01C0131-002.001Bottom		
Date Received	4/23/01		
Date Analyzed	5/2/01		
Date Reported	5/4/01		
Case Narrative	This sample was received by the 559 Radiochemistry Laboratory for g/g Pu, Am-241, U-235, and fingerprint analysis. The sample consisted of two layers, labelled Top and Bottom, respectively. No anomalies occurred during analysis. All QA/QC was within limits.		
Physical Description	Bottom layer of two phase sample comprising about 90% of total sample volume. Opaque, thick, black substance (partially solid), sludge-like. For pH analysis, sample was mixed in DI water.		
Water Test	Positive		
pH	7.00	***Standard pH units***	
Specific Gravity	1.0882	***Relative to water @ 20 C***	
Miscibility	Water		
Water Reactivity	No		
Ignitability	NA, Aqueous Sample	***degrees C***	
Chlorinated Solvents	NA, Aqueous Sample	***ppm***	

Approval John Z Duran

Peer Review Roger A Henderson

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Commodore Advanced Sciences

RFETS

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # 0 0131#001

Page 1 of 2

Sampler(s) Steve 512570 (time/date)	Contact/Requester TRICE, CONRAD/BOB CATHEL	Telephone No. 2490/6880
RIN 01C0131 JOHN GOOCSEY	Sampling Origin OUTSIDE B776	Purchase Order/Charge Code DAD01ANA
Project Title B776, OUTSIDE, CT 712, CT 713, SLUDGE 512674	Logbook No. N/A 94 DODGE	Ice Chest No. N/A Temp. N/A
To (Lab) Building 559 Laboratory	Method of Shipment Commodore Advanved Sciences Sample Team	Bill of Lading/Air Bill No. N/A
Protocol CAS SOP-003 REV 3	Related COC (if any) 01C 0131	PRE N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** IDC-1927 **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
NOTE: COMMODORE ADVANVED SCIENCES SHALL COLLECT FIVE SAMPLES AND COMPOSITE INTO ONE SAMPLE PER SAMPLING EVENT.

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0131-001.001	CT-712	SOLID	4/20/01	1255	Outside B776	40-G / P/G /1	See Item 1	None None
01C0131-001.002	CT-712	SOLID			Outside B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0131-002.001	CT-713	SOLID		1310	Outside B776	40-G / P/G /1	See Item 1	None None
01C0131-002.002	CT-713	SOLID			Outside B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None

LABORATORY USE ONLY

	Initials/Date	Y/N
Cooler Custody Seal Intact:		☐
Outer TID Intact:		☐
TID # (if applicable):		☐
TID Removed by/Date:		☐
Sample Custody Seals Intact:		☐
Labels & COC Agree:		☐

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
CAS	1820 4/20/01	TIBOA FRIDGE #2	1820 4/20/01				
TIBOA FRIDGE #2	1100 4/23/01	CAS	1100 4/23/01				
CAS	1430 4/23/01	Johnson	4/23/01 1430				

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

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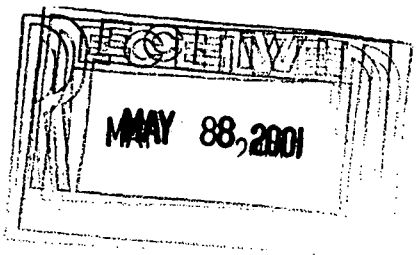
EBERLINE SERVICES



May 7, 2001

Chuck Hoelzel
Kaiser-Hill, L.L.C.
Rocky Flats Environmental Technology Site
Analytical Services
10808 Highway 93, Unit B
Golden, CO 80403

RIN Number: **01C0131**
Lab Code: TNU
Subcontract No. KH700093EP6

COVER PAGE

Chuck,

Enclosed please find results for 2 samples which were received at Eberline Services - Rocky Flats on April 23, 2001. The samples were submitted for gross alpha/gross beta activity for assessment under the No-Rad-Added program with a Routine TAT (30 day). The preservation on the chain-of-custody (COC) was indicated as "None." Normal preservation for samples of this type is 4°C; however, based on the preservation indicated on the COC, the samples were not placed under refrigeration.

Results for the following sample(s) are included in this report:

APO Sample ID	Lab Sample ID
01C0131-001.003	1004146-01
01C0131-002.003	1004146-02
01C0131-002.003	1004146-03 D (Duplicate of 1004146-02)

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the laboratory manager or the manager's designee, as verified by the following signature."

Laboratory Manager

5/7/01
Date

0000

Analytical Service
Rocky Flats Environmental Technology Sit
10808 Highway 93, Unit
Building No. T886
Golden, Colorado 80403-820
(303) 966-7765 Fax (303) 966-430
Toll free (800) 269-015
www.eberlineservices.co

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Data Package Review Signature Page

K L Clark
Technical Review

5/7/01
Date

Patricia B. Newton
Quality Assurance Review

5-7-01
Date

0001

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CHAIN - OF - CUSTODY

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1004146

Commodore Advanced Sciences	**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**	C.O.C.: 01C0131#002
		Page 1 of 1

Sampler(s) (signature/date) 512570	Contact/Requester TRICE, CONRAD/BOB CATHEL	Telephone No. 2490/6880
RIN 01C0131	Sampling Origin OUTSIDE B776	Purchase Order/Charge Code DAD01ANA
Project Title B776, OUTSIDE, CT 712, CT 713, SLUDGE	Logbook No. N/A	Ice Chest No. N/A Temp. N/A
To (Lab) Thermo NuTech	Method of Shipment Commodore Advanced Sciences	Bill of Lading/Air Bill No. N/A
Protocol CAS SOP-003 REV. 3	Related COC (if any) 01C0131 #001	PRE N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** IDC-1927 **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
NOTE: COMMODORE ADVANCED SCIENCES SHALL COLLECT FIVE SAMPLES AND COMPOSITE INTO ONE SAMPLE PER SAMPLING EVENT.

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0131-001.003	CT-712	SOLID	4/20/01	1255	Outside B776	125-G / P/G /1	OS01A007 (Gross Alpha/Beta - MDA) [Routine]	None None
01C0131-002.003	CT-713	SOLID	↓	1310	Outside B776	125-G / P/G /1	OS01A007 (Gross Alpha/Beta - MDA) [Routine]	None None

4/20/01

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
CAS	4/20/01 1420	TSDA FREIGHT #2	4/20/01 1420				
TSDA FREIGHT #2	4/23/01 1100	CAS	4/23/01 1100				
CAS	4/23/01 1510		4/23/01 1510				
	4/23/01 1515	B5	4/23/01 1515				

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

Send Confirmation

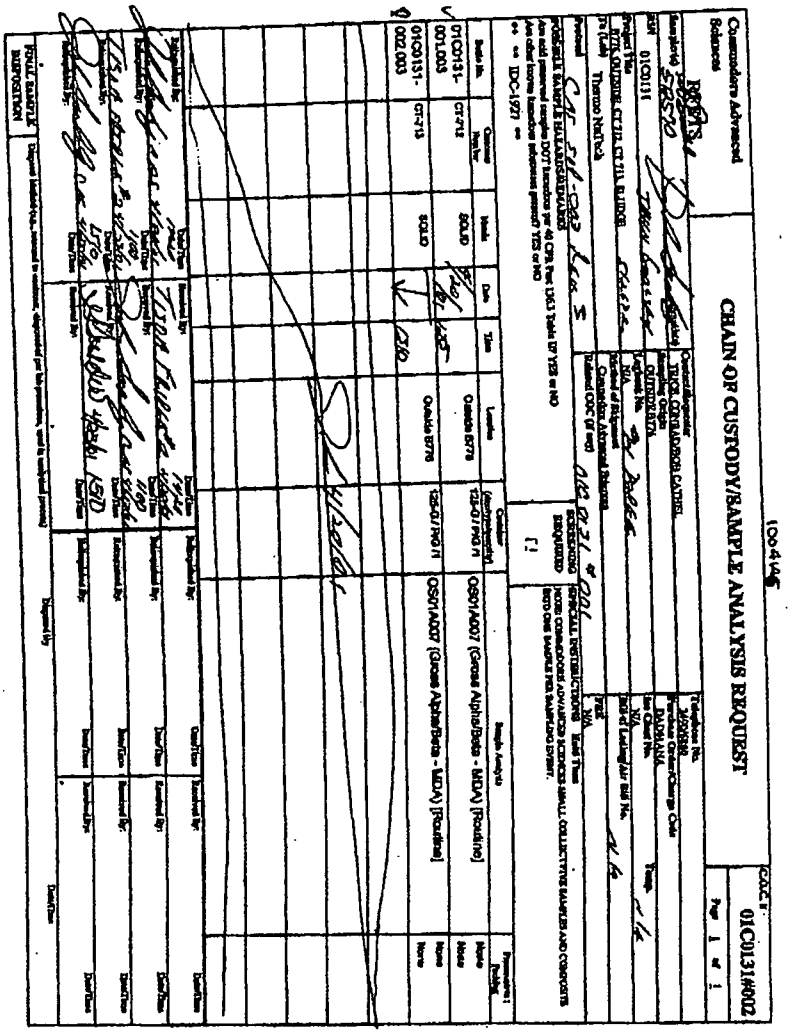
WorkCentre 450c report for
RECFAX
3039666595
Apr-23-01 03:17 PM

Successful

Pages scanned 1
Pages confirmed 1

Job	Sent	To Remote Station	Duration	Mode	Pages	Results
050	Apr-23 03:16pm	303 966 4555	00:47	ECM	1/ 1	OK,144

$$$	Phone charge code	F	Forward	P	Poll	48	4800 bps chosen
A	Auto-distribute	G	Group dial	PC	to/from PC	96	9600 bps chosen
C	Cover page	M	Mailbox	PW	Password	144	14400 bps chosen
ECM	Error Correction			RM	Receive to memory		



0005

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CASE NARRATIVE

2/3

Eberline Services - Rocky Flats
RFETS, Building T886D
Golden, Colorado 80403
(303) 966-7765

RIN: 01C0131
Report Date: 05/07/2001

Method Summary

Gross alpha and gross beta activities are measured by evaporating an aliquot of the prepared sample onto a counting planchet and counting the alpha and beta activities in a low background, thin-windowed, gas flow proportional counter. Organics or combustible solids are ashed, the residue dissolved in acid, and the solution or an aliquot of the solution is evaporated onto a counting planchet. Aqueous samples are concentrated and then evaporated onto a counting planchet. The initial preparation of soils, sludges, and sediments is described in detail in procedure ATP-002, *"Initial Preparation of Soils/Sludges/Sediments for Dissolution."* Analysis of prepared non-aqueous samples is described in detail in procedure ATP-026, *"Sample Preparation for Analysis of Gross Alpha and Gross Beta Activity in Solid Samples."* Analysis of prepared aqueous samples is described in detail in procedure ATP-015, *"Sample Preparation for Analysis of Gross Alpha and Gross Beta Activity in Aqueous Samples."* Preparation of oils, solvents and other combustible organics is described in procedure ATP-005, *"Preparation of Oils and Solvents for Analysis of Gross Alpha and Gross Beta Activity."* The counting procedure is described in procedure ATP-008, *"Operation of the Tennelec LB4100 Gas Proportional Counters."*

The detector counting efficiency and self-absorption effects of the salt residue on the planchet are determined from calibration curves which are generated by counting several planchets prepared with a known amount of alpha or beta activity and increasing amounts of salt (0 to 100 mg). Americium-241 is used as the spike for the alpha curves and a solution of Sr-90, Y-90 is used for the beta curves. These standards are prepared from certified reference material which is traceable to the National Institute of Standards Technology (NIST).

The theoretical minimum detectable activity (MDA) for the analysis is based on the detector background, detector efficiency and self-absorption effects, count time and quantity of sample analyzed. The MDA for each analysis is calculated and is also reported. If the reported result is based on the average of two or more counts, the average MDA is reported.

Quality Control Summary

A sample batch consists of eleven or fewer samples, a duplicate of one of the samples, an alpha and a beta laboratory control sample, and a preparation blank. Each set of samples forms a "QC Batch" and is assigned a QC batch number. A sample can be traced back to its corresponding quality control samples through the QC Batch number. The preparation blank (PB), an aliquot of deionized, distilled water, is prepared and analyzed with the samples to confirm that the samples were not contaminated during the analysis. The activities reported for samples and standards were not corrected for preparation blank activity. The alpha and beta laboratory control samples are aqueous standards of ^{241}Am and ^{90}Sr, respectively. The SRM standards used to prepare these standards are traceable to NIST. The duplicate, designated as the sample ID followed by a "D", is a second aliquot of one of the samples in the QC Batch which is carried through the procedure as a separate sample.

The instrument QC includes determining instrument backgrounds weekly and counting an instrument check source daily on the Tennelec LB4100 multidetector gas proportional counters. The instrument backgrounds are based on the average of at least five, and normally ten or more, 4 hour counts. The instrument check sources are counted daily to verify that the efficiencies of the detectors have not changed. A summary of the instrument backgrounds is included in the instrument raw data section of this report. The daily check source information is available in the supporting documentation package.

Narrative

The samples, described as sludge from outside Building 776, were submitted for analysis of gross alpha/gross beta activity for No-Rad-Added assessment. The samples were analyzed in QC batch 01AB068 using procedure ATP-005, *"Preparation of Oils, Solvents and Combustibles for Analysis of Gross Alpha and Gross Beta Activity."* The first time the batch was counted, the MDAs exceeded the RDLs of 0.2 pCi/g alpha and 0.6 pCi/g beta for sample 1004146-01. However, the activity in the sample was significantly higher than the MDAs, and increasing the count time to 12 hours to lower the MDAs was not necessary. The MDAs for samples 1004146-02 and -03 D exceeded the RDL of 0.2 pCi/g alpha. The planchets prepared for these samples were recounted for 12 hours and the data from the 12 hour count are reported. Sample 1004146-03 D is a duplicate of sample 1004146-02. There were no other problems noted with these analyses and all QC data are acceptable.

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Sample and QC Sample Result Summaries

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Eberline Services - Rocky Flats
RFETS, Building T886D
Golden, Colorado 80403
(303) 966-7765

RIN: 01C0131
Report Date: 05/07/2001

Sample and Duplicate Analysis Results

		Gross Alpha			Gross Beta				
Customer Sample ID	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units	QC Batch
01C0131-001.003	1004146-01	6.8	0.9	1.6	8.6	0.7	1.0	pCi/g	01AB068
01C0131-002.003	1004146-02	3.6	0.3	0.7	4.1	0.2	0.3	pCi/g	01AB068
01C0131-002.003	1004146-03 D	3.9	0.3	0.7	4.1	0.2	0.3	pCi/g	01AB068

Preparation Blank Results

		Gross Alpha			Gross Beta				
QC Batch	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units	
01AB068	1004146-04	0.02	0.07	0.18	-0.43	0.14	0.36	pCi/g	

LCS Results

		Gross Alpha			Gross Beta				
QC Batch	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units	SRM
01AB068	1004146-05	9.9	1.1	1.4	9.4	1.0	1.7	pCi/ml	STD_79

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PREPARATION LOGS

GROSS AL. /GROSS BETA
SAMPLE PREPARATION BENCHSHEET
DISSOLVED SOLIDS - VOLUMETRIC SUB-ALIQUOTTING

QC Batch: 01AB068
Prep Start Date: 4/24/01
Prep Complete: 5/2/01

Procedure: ATP-005
Analyst: JS

RIN	SAMPLE ID	P	INITIAL ALIQUOT WT. (G)	DISSOLVED VOLUME (ML)	VOLUME OF SOL'N ON PLANCHET (ML)	SAMPLE ALIQUOT PLANCHET (G)	PLANCHET PREPARATION			COMMENTS
							TARE WT. (G)	GROSS WT. (G)	NET WT. (G)	
01C0131	1004146-01	1A	1.9743	25	4.5	0.3563 ✓	7.2335	7.3025	0.0690 ✓	001.003 Judge
01C0131	-01	2B	"		"	"	7.2746	7.3417	0.0671 ✓	"
	-02	3A	1.9856		11	0.8737 ✓	7.2509	7.3296	0.0787 ✓	002.003
	"	4B	"		"	"	7.2483	7.3018	0.0835 ✓	
	-03DUP	5A	1.9823		10	0.7929 ✓	7.2141	7.2905	0.0764 ✓	lab dup
	"	6B	"		"	"	7.1965	7.2716	0.0751 ✓	"
N/A	-04PB	7A	2.0		11	0.88 ✓	7.2457	7.2455	-0.0003 ✓	Prep blank
	"	8B	"		"	"	7.1896	7.1894	-0.0002 ✓	"
	-05LCS	9A	0.5		10	0.2 ✓	7.1976	7.2203	0.0227 ✓	Std - 79+0.5ml salt
	"	10B	"		"	"	7.1586	7.1812	0.0226 ✓	"
				JS 4/30/01						

LABORATORY COC				BALANCE INFORMATION		PIPETTE INFORMATION		COUNTING INFORMATION		
Transfer Information	Date/Time	By	Comment	Balance ID	Date	Pipette #	Date	Date	System	Filename
110/BS to 108	4/24/01 1120	JS		Louie	4/24/01	P-13	4/24/01	5/3/01	2	S0112304
108 to 110/BS	4/24/01 1135	JS		Huey	4/24/01	P-13	5/1/01	5/3/01	2	S0112306 (12Hr)
to	/			Huey	5/1/01	P-12	5/1/01			
to	/			Huey	5/2/01	P-11	5/1/01			

PROCEDURE COMMENTS: Sample Aliquot = (Initial Aliquot/Dissolved Volume) * Vol on Planchet

REVIEWED BY: [signature] DATE: 5/4/01

REVIEW COMMENTS:

2/8 00

Eberline Services Rocky Flats
RFETS, Building T888D
Golden, Colorado 80403
(303) 966-7785

GROSS ALPHA/GROSS BETA
TOTAL SOLIDS BENCHSHEET

QC BATCH 01AB068

p#	Sample ID	Aliquot (ml)	Planchet Tare Wt. (g)	Planchet Gross Wt. (g)	Residue Net Wt. (g)	Total Solids (mg/ml)
1A	1004146-01	1	7.2335	7.2538	0.0203	20.3 use 4.5
3A	" -02	"	7.2509	7.2589	0.0080	8.0 use 11
5A	" -03	"	7.2141	7.2228	0.0087	8.7 use 10

COMMENTS:

2/9

0012

Eberline Services Rocky Flats
RFETS, Building T886D
Golden, Colorado 80403

STANDARD SUMMARY

Lab Control Sample Description

LCS - STD_79

STD_79

Isotope: ^{241}Am
SV: 10.15 ± 0.24 pCi/ml
Certification Date: 4/20/2000
Expiration Date: 4/2002

Isotope: $^{90}Sr/^{90}Y$
SV: 10.66 ± 0.29 pCi/ml
Certification Date: 4/20/2000
Expiration Date: 4/2002

Standard Values (Decayed to Analysis Date)

Alpha Standard Value:	10.2 ± 0.2 pCi/ml
Beta Standard Value:	10.4 ± 0.3 pCi/ml

220

INSTRUMENT RAW DATA

221

QC Batch 01AB068
Counting Unit ID BLUE
Date 5/4/01
Filename(s) S0112304, S0112306 (12 Hour Count)

Sample ID	Gross Alpha (pCi/g)			Gross Beta (pCi/g)			Comment
	Activity	Unc 2s	MDA	Activity	Unc 2s	MDA	
01C0131 1004146-01 A	6.807	1.266	1.569	8.630	1.008	1.032	
01C0131 1004146-01 B	6.847	1.251	1.534	8.579	1.004	1.030	
Average	**6.827**	**0.890**	**1.551**	**8.605**	**0.711**	**1.031**	
01C0131 1004146-02 A	3.918	0.624	0.753	4.126	0.445	0.419	4 Hour Count
01C0131 1004146-02 B	3.872	0.654	0.831	4.415	0.463	0.421	Data Not Used
01C0131 1004146-02 A	3.432	0.458	0.672	3.909	0.323	0.272	12 Hour Count
01C0131 1004146-02 B	3.699	0.481	0.714	4.197	0.340	0.265	
Average *	**3.566**	**0.332**	**0.693**	**4.053**	**0.234**	**0.268**	
01C0131 1004146-03 DUP A	4.219	0.668	0.870	4.503	0.496	0.469	4 Hour Count
01C0131 1004146-03 DUP B	4.388	0.661	0.823	4.272	0.483	0.470	Data Not Used
01C0131 1004146-03 DUP A	3.843	0.477	0.720	4.054	0.347	0.306	12 Hour Count
01C0131 1004146-03 DUP B	3.994	0.491	0.733	4.203	0.360	0.296	Dup of 1004146-02
Average *	**3.919**	**0.342**	**0.726**	**4.129**	**0.250**	**0.301**	
01AB068 1004146-04 PB A	-0.001	0.097	0.174	-0.453	0.190	0.355	
01AB068 1004146-04 PB B	0.033	0.103	0.175	-0.403	0.192	0.356	
Average	**0.016** ✓	**0.071**	**0.175**	**-0.428** ✓	**0.135**	**0.355**	
01AB068 1004146-05 LCS A	9.042	1.438	1.428	9.330	1.409	1.678	
01AB068 1004146-05 LCS B	10.672	1.546	1.442	9.537	1.428	1.699	STD_79
Average	**9.857**	**1.056**	**1.435**	**9.434**	**1.003**	**1.688**	

LCS STD-79
α SV = 10.2 ± 0.2 pCi/mL ✓
OV = 9.9 ± 1.1
β SV = 10.4 ± 0.3 pCi/mL
OV = 9.4 ± 1.0 ✓

* Lab Dup Eval.
αF = 0.353 ✓
E = 0.715
βF = 0.076 ✓
E = 0.514
(F < E @ 3σ)

K Clark
5/4/01

0015
222

Soil Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0112304
Batch Ended: 5-3-01 11:46

Alpha activity action level (pCi/g): 2.00E+01
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Beta activity action level (pCi/g): 4.00E+01
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB068 SLUDGE OUTSIDE B776

Detector ID	Sample ID	Alpha Activity				Beta Activity				Masses	
		pCi/g	2σ	flags	MDA	pCi/g	2σ	flags	MDA	Residual	Sample
										g	g
B3	01C0131 1004146-01 A	6.807	1.266	<AL	1.569 ⊛	8.630	1.008	<AL	1.032 ⊛	0.0690 ✓	0.3563 ✓
B3	01C0131 1004146-01 B	6.847	1.251	<AL	1.534 ⊛	8.579	1.004	<AL	1.030 ⊛	0.0671 ✓	0.3563 ✓
B4	01C0131 1004146-02 A	3.918	0.624	<AL	0.753 *	4.126	0.445	<AL	0.419	0.0787 ✓	0.8737 ✓
B4	01C0131 1004146-02 B	3.872	0.654	<AL	0.831 *	4.415	0.463	<AL	0.421	0.0835 ✓	0.8737 ✓
C2	01C0131 1004146-03 DUP A	4.219	0.668	<AL	0.870 *	4.503	0.496	<AL	0.469	0.0764 ✓	0.7929 ✓
C2	01C0131 1004146-03 DUP B	4.388	0.661	<AL	0.823 *	4.272	0.483	<AL	0.470	0.0751 ✓	0.7929 ✓
C3	01AB068 1004146-04 PB A	-0.001 ✓	0.097	<MDA	0.174	-0.453 ✓	0.190	<MDA	0.355	0.0000 ✓	0.8800 ✓
C3	01AB068 1004146-04 PB B	0.033 ✓	0.103	<MDA	0.175	-0.403 ✓	0.192	<MDA	0.356	0.0000 ✓	0.8800 ✓
C4	01AB068 1004146-05 LCS A	9.042	1.438	<AL	1.428	9.330	1.409	<AL	1.678	0.0227 ✓	0.2000 ✓
C4	01AB068 1004146-05 LCS B	10.672	1.546	<AL	1.442	9.537	1.428	<AL	1.699	0.0226 ✓	0.2000 ✓

⊛ MDAs exceed RDLs of 0.2 pCi/g α and 0.6 pCi/g β. However, activity in sample significantly higher than MDA. No 12 hour recount necessary.

* MDAs exceed RDL of 0.2 pCi/g α. Recount sample planchets for 12 hours.

KLClark 5/3/01

0016

Raw Data Summary
Tennelec LB4100

Filename: ***S0112304***
Unit ID: ***Blue***

Detector ID	*Sample ID*	*Alpha Counts*	*Beta Counts*	*Guard Counts*	*Count Time (minutes)*	*Event*	*Date*
B3	01C0131 1004146-01 A	237 ✓	1406 ✓	177433	240	0	5/3/01
B3	01C0131 1004146-01 B	242	1406	178091	240	0	5/3/01
B4	01C0131 1004146-02 A	311 ✓	1534 ✓	177432	240	0	5/3/01
B4	01C0131 1004146-02 B	296	1583	178087	240	0	5/3/01
C2	01C0131 1004146-03 DUP A	326 ✓	1517 ✓	175628	240	0	5/3/01
C2	01C0131 1004146-03 DUP B	342	1479	175839	240	0	5/3/01
C3	01AB068 1004146-04 PB A	8 ✓	463 ✓	175627	240	0	5/3/01
C3	01AB068 1004146-04 PB B	13	477	175838	240	0	5/3/01
C4	01AB068 1004146-05 LCS A	261 ✓	1133 ✓	175631	240	0	5/3/01
C4	01AB068 1004146-05 LCS B	307	1160	175836	240	0	5/3/01

✓ = Counts Statistically Equivalent (2 Sigma)
• = Counts Statistically Different (2 Sigma)

Soil Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0112306
Batch Ended: 5-4-01 4:42

Alpha activity action level (pCi/g): 2.00E+01
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Beta activity action level (pCi/g): 4.00E+01
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB068 12 HOUR COUNT

Detector ID	Sample ID	Alpha Activity				Beta Activity				Masses	
		pCi/g	2σ	flags	MDA	pCi/g	2σ	flags	MDA	Residual	Sample
										g	g
B3	01C0131 1004146-02 A	3.432	0.458	<AL	0.672	3.909	0.323	<AL	0.272	0.0787 ✓	0.8737 ✓
B4	01C0131 1004146-02 B	3.699	0.481	<AL	0.714	4.197	0.340	<AL	0.265	0.0835 ✓	0.8737 ✓
C3	01C0131 1004146-03 DUP A	3.843	0.477	<AL	0.720	4.054	0.347	<AL	0.306	0.0764 ✓	0.7929 ✓
C4	01C0131 1004146-03 DUP B	3.994	0.491	<AL	0.733	4.203	0.360	<AL	0.296	0.0751 ✓	0.7929 ✓

K Clark 5/4/01

0018

Raw Data Summary
Tennelec LB4100

Filename: ***S0112306***
Unit ID: ***Blue***

Detector ID	*Sample ID*	*Alpha Counts*	*Beta Counts*	*Guard Counts*	*Count Time (minutes)*	*Event*	*Date*
B3	01C0131 1004146-02 A	808 ✓	4449 ✓	531707	720	0	5/4/01
B4	01C0131 1004146-02 B	849	4597	531706	720	0	5/4/01
C3	01C0131 1004146-03 DUP A	875 ✓	4266 ✓	525804	720	0	5/4/01
C4	01C0131 1004146-03 DUP B	925	4327	525806	720	0	5/4/01

✓ = Counts Statistically Equivalent (2 Sigma)
• = Counts Statistically Different (2 Sigma)

0019

INSTRUMENT CALIBRATION SUMMARIES

General Counting Parameters/Detector Information

Application definitions

Application Name	Soil Sample
Macro File	SOILAB
Data Filename	S0112304
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB068 SLUDGE OUTSIDE B776
CreateDate	5/3/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	5/3/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0112304***
Unit ID: ***Blue***

Detector	Date	Alpha		Beta	
		Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	4/26/01	0.0393	0.0034	2.2324	0.0258
A2	4/26/01	0.0321	0.0031	2.0884	0.0249
A3	4/26/01	0.0259	0.0028	2.0720	0.0248
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	4/26/01	0.0259	0.0028	2.3446	0.0264
B2	4/26/01	0.0280	0.0029	2.2315	0.0258
B3	4/26/01	0.0289	0.0029	2.3932	0.0267
B4	4/26/01	0.0235	0.0026	2.2991	0.0262
C1	4/26/01	0.0202	0.0025	2.4827	0.0272
C2	4/26/01	0.0229	0.0026	2.2952	0.0261
C3	4/26/01	0.0345	0.0032	2.3890	0.0267
C4	4/26/01	0.0280	0.0029	2.2634	0.0260
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

Alpha Calibration
Tennelec LB4100

Filename: S0112304
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: *Self absorption curves have the following format:*

$K_{major} = b_{major} * a^{u}_{major}$ $\qquad$ $K_{minor} = b_{minor} * a^{u}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Filename: S0112304
Unit ID: Blue

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: *Self absorption curves have the following format:*

$K_{major} = b_{major} * a^{u}{}_{major}$; $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

General Counting Parameters/Detector Information

Application definitions

Application Name	Soil Sample
Macro File	SOILAB
Data Filename	S0112306
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB068 12 HOUR COUNT
CreateDate	5/3/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	5/4/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0112306***
Unit ID: ***Blue***

Detector	Date	Alpha		Beta	
		Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	4/26/01	0.0393	0.0034	2.2324	0.0258
A2	4/26/01	0.0321	0.0031	2.0884	0.0249
A3	4/26/01	0.0259	0.0028	2.0720	0.0248
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	4/26/01	0.0259	0.0028	2.3446	0.0264
B2	4/26/01	0.0280	0.0029	2.2315	0.0258
B3	4/26/01	0.0289	0.0029	2.3932	0.0267
B4	4/26/01	0.0235	0.0026	2.2991	0.0262
C1	4/26/01	0.0202	0.0025	2.4827	0.0272
C2	4/26/01	0.0229	0.0026	2.2952	0.0261
C3	4/26/01	0.0345	0.0032	2.3890	0.0267
C4	4/26/01	0.0280	0.0029	2.2634	0.0260
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

Alpha Calibration
Tennelec LB4100

Filename: S0112306
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$ $\qquad$ $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Filename: S0112306
Unit ID: Blue

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$; $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

SS08
Data Quality Assessment Report
Rocky Flats Environmental Technology Site

RIN Number	Analytical Method/PSA Line Item	Review Level
01C0131 (SDG: MAY 08)	TCLP Metals including Mercury/RS08/A006	Complete Verification

Analytical Laboratory	Assessment Performed by	Number of Samples/ Matrix
559 Radiological Laboratory	TechLaw, Inc.	2/leachate/A006

Sample Numbers: 01C0131-001.002, 01C0131-002.002

Quality Control Item	Reviewed (Y or N)	Non-Compliance Identified
General (Cover Page, Table of Contents, DRC Checklist, General SDP Requirements Narrative)	Y	N
Chain of Custody, Preservation, and Holdings	Y	N
Sample Results	Y	N
Calibration Verification, CRDL Standard	Y	Action Item 1
Verification and Preparation Blanks	Y	Action Item 2
Interference Check Sample	Y	N
Matrix Spike	Y	N
Duplicates	Y	Action Item 3
Laboratory Control Sample	Y	N
Standard Additions	NA	N
ICP Serial Dilution	Y	N
Instrument Detection Limits	Y	N
Other: Interelement Correction Factors, Linear Range Studies, Preparation Logs, Instrument Run Log	Y	N
Preparation and Instrument RAW Data	N	N
Standards	N	N
EDD	NA	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item

JUN 15 2001

ENTERED

2360

SS08
Data Quality Assessment Report
Rocky Flats Environmental Technology Site

Data Assessment results are classified as either Action Items or Comments. Action Items are technical non-compliances that result in qualification of analytical results. Data may be qualified as valid (V), estimated (J), presumptively estimated (NJ), estimated at an elevated level of detection (UJ), or rejected (R). Multiple qualifiers may be associated with any given data point based on the number of problems identified, however, the assigned qualifier is based upon the following hierarchy: R, UJ, NJ, J, V. All data points that are not qualified based upon action items in this report are considered valid (V). Comments are technical non-compliances or contractual non-compliances that do not result in qualification of data.

Action Items:

1. The following sample results are qualified as estimated (J) because the CRDL standard recoveries were outside the QC criteria of 80-120% and the sample results were less than 3X the RDL:
   - Arsenic, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, phosphorus, strontium, titanium, and vanadium in both samples
   - Zinc in sample 01C0131-002.002. **[105]**

2. The following sample result is qualified as estimated (J) because of negative bias as indicated in the blanks:
   - Thallium, and selenium in both samples. **[107]**

3. The following sample results are qualified as estimated (J) because the matrix duplicate criteria were not met:
   - Manganese, and zinc in both samples. **[111]**

Comments:

None

Verification/Validation Signature _____ Date: 6/13/01

Reviewer Signature _____ Date: _____
(Validation Only)

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Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0131-001 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 04/20/2001 **QC Report No:** SD050801

Receipt Date: 04/23/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M	
Aluminum	0.60	U		05/18/2001 13:42	05/18/2001	P	
Antimony	0.30	U		05/18/2001 13:42	05/18/2001	P	
Arsenic	0.30	U		05/18/2001 13:42	05/18/2001	P	J105
Barium	0.38	B		05/18/2001 13:42	05/18/2001	P	
Beryllium	0.015	U		05/18/2001 13:42	05/18/2001	P	J105
Cadmium	0.035	B		05/18/2001 13:42	05/18/2001	P	J105
Calcium	350.			05/18/2001 13:42	05/18/2001	P	
Chromium	0.15	U		05/18/2001 13:42	05/18/2001	P	J105
Cobalt	0.15	U		05/18/2001 13:42	05/18/2001	P	J105
Copper	0.60			05/18/2001 13:42	05/18/2001	P	J105
Iron	1.1			05/18/2001 13:42	05/18/2001	P	
Lead	0.15	U		05/18/2001 13:42	05/18/2001	P	J105
Magnesium	22.	B		05/18/2001 13:42	05/18/2001	P	
Manganese	5.1		* RK	05/18/2001 13:42	05/18/2001	P	J111
Mercury	0.0020	U	~~H~~ 5/21/01	05/21/2001 13:43	05/21/2001	CV	
Molybdenum	0.15	U		05/18/2001 13:42	05/18/2001	P	J105
Nickel	0.12	U		05/18/2001 13:42	05/18/2001	P	J105
Phosphorus	2.3	B		05/18/2001 13:42	05/18/2001	P	J105
Selenium	0.30	U		05/18/2001 13:42	05/18/2001	P	J107
Silver	0.090	U		05/18/2001 13:42	05/18/2001	P	
Strontium	1.9			05/18/2001 13:42	05/18/2001	P	J105
Thallium	0.30	U		05/18/2001 13:42	05/18/2001	P	J107
Titanium	0.060	U		05/18/2001 13:42	05/18/2001	P	J105
Vanadium	0.15	U		05/18/2001 13:42	05/18/2001	P	J105
Zinc	5.6		•	05/18/2001 13:42	05/18/2001	P	J111

Color Before: colorless **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0131-002 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 04/20/2001 **QC Report No:** SD050801

Receipt Date: 04/23/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M	
Aluminum	0.60	U		05/18/2001 13:43	05/18/2001	P	
Antimony	0.30	U		05/18/2001 13:43	05/18/2001	P	
Arsenic	0.30	U		05/18/2001 13:43	05/18/2001	P	J105
Barium	0.50	B		05/18/2001 13:43	05/18/2001	P	
Beryllium	0.015	U		05/18/2001 13:43	05/18/2001	P	J105
Cadmium	0.030	U		05/18/2001 13:43	05/18/2001	P	J105
Calcium	430.			05/18/2001 13:43	05/18/2001	P	
Chromium	0.15	U		05/18/2001 13:43	05/18/2001	P	J105
Cobalt	0.15	U		05/18/2001 13:43	05/18/2001	P	J105
Copper	0.15	U		05/18/2001 13:43	05/18/2001	P	J105
Iron	9.0			05/18/2001 13:43	05/18/2001	P	
Lead	0.15	U		05/18/2001 13:43	05/18/2001	P	J105
Magnesium	22.	B		05/18/2001 13:43	05/18/2001	P	
Manganese	3.6		*	05/18/2001 13:43	05/18/2001	P	J111
Mercury	0.0020	U	~~H~~ RK	05/21/2001 13:45	05/21/2001	CV	
Molybdenum	0.15	U	5/2/01	05/18/2001 13:43	05/18/2001	P	J105
Nickel	0.12	U		05/18/2001 13:43	05/18/2001	P	J105
Phosphorus	1.5	U		05/18/2001 13:43	05/18/2001	P	J105
Selenium	0.30	U		05/18/2001 13:43	05/18/2001	P	J107
Silver	0.090	U		05/18/2001 13:43	05/18/2001	P	
Strontium	1.9			05/18/2001 13:43	05/18/2001	P	J105
Thallium	0.30	U		05/18/2001 13:43	05/18/2001	P	J107
Titanium	0.060	U		05/18/2001 13:43	05/18/2001	P	J105
Vanadium	0.23	B		05/18/2001 13:43	05/18/2001	P	J105
Zinc	0.57		*	05/18/2001 13:43	05/18/2001	P	J105, 111

Color Before: colorless **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

KAISER ◆ HILL COMPANY

ENTERED 5-29-01

RECEIVED MAY 2001

INTEROFFICE MEMORANDUM

DATE: May 23, 2001

TO: V. Ideker, Analytical Projects Office, Bldg. T130C, X3437/d-212-3191

FROM: M. S. Brugh, Radiological Inorganic Lab, Bldg. 559, x7709/d-212-4547

SUBJECT: SAMPLE DATA PACKAGE COVER PAGE

The enclosed solid samples were received in Building 559 Radiological Laboratory for TCLP/Total Metals and TCLP/Mercury Analysis.

Sample ID#	APO#	Sample ID#	APO#
X01C0131	001		
X01C0131	002		

Please see the Summary Narrative for all information pertaining to any anomalies for the sample.

Comments:

"I certify that this data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature."

5/24/01

Mark S. Brugh — Date
Manager, Radiological Inorganic Laboratory

VERIFICATION
JUN 2001
SOM ANALYTICAL SERVICES

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DATA REVIEW CHECKLIST

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METALS DATA COMPLETENESS CHECKLIST

RIN # X01C0131

- Case Narrative Report Information

  ✓ TCLP Extraction for Inorganic Metals Report and Sample Description Information
  ✓ ICP Inorganic Metals Report
  NA Flame AA Inorganic Metals Report
  ✓ Cold Vapor AA Mercury Report

- Metals Analysis Forms

  ✓ Inorganic Analysis Data Package (Cover Page)
  ✓ Inorganic Analysis Data Results (Form 1A)
  ✓ Initial and Continuing Calibration Verification Results (Form 2A)
  ✓ CRDL Standard for AA and/or ICP Results (Form 2B)
  ✓ Blank Analysis Results (Form 3A)
  ✓ ICP Interference Check Sample Results (Form 4A)
  ✓ Pre-Digestion Spike Sample Recovery Results (Form 5A)
  ✓ Post-Digestion Spike Sample Recovery Results (Form 5B)
  ✓ Duplicate Sample Results (Form 6A)
  NA Aqueous Laboratory Control Sample Results (Form 7A)
  ✓ Solid Laboratory Control Sample Results (Form 7B)
  NA Instrument Method of Addition Results (Form 8A)
  ✓ ICP Serial Dilution Results (Form 9A)
  ✓ Instrument Detection Limits (Form 10A)
  ✓ ICP Instrument Inter-Element Correction Factors (Form 11A-11E)
  ✓ Linear Ranges (Form 12A)
  ✓ TCLP Sample Preparation Log (Form 13A)
  ✓ Total Metals Sample Preparation Log (Form 13B)
  ✓ Instrument Analysis Run Log (Form 14A)
  NA Sample Holding Times Log (Form 15A)

- Metals Analysis Raw Data

  ✓ ICP Raw Data
  NA Flame AA Raw Data
  ✓ Mercury Cold Vapor AA Raw Data

- Metals Analysis Sample Preparation and Sample Digestion Logs

  ✓ TCLP Inorganic Extraction Log Sheet Information
  ✓ Total Metals Digestion Log Sheet Information
  ✓ Instrument Analysis Run Sheet
  ✓ Calibration Standard and QA/QC Standard Summary Sheets
  ✓ Chain-of Custody Records

- Other Information

  ✓ Data Review Checklist
  ✓ Metals Data Package Completeness Checklist
  ✓ Table of Content
  ✓ Sample Data Package Cover Page

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Sign-off: Midge Duran
Date : 5-23-01

Data Review Checklist

SS05 Sample Data Package

1. SAMPLE DATA PACKAGE COVER PAGE	Reply	√	C#
a) The laboratory name, code, subcontract number, RIN, Site sample numbers, Line Item codes (LIC-analyses), sample matrix, and report dates are accurately recorded.	Y	✓	
b) All Site sample identifications are cross-referenced with all lab identifications.	Y	✓	
c) The verbatim compliance and authorization statement is present with the dated signature of the Laboratory Manager or designee.	Y	✓	
d) Any problems with the receipt are explained (e.g., broken containers, incorrect COC documentation, etc.)	Y	✓	

2. TABLE OF CONTENTS	Reply	√	C#
a) The Table of Contents is included and contains all Sample Data Package Deliverable Section Titles with their beginning page numbers.	Y	✓	

3. DATA REVIEW CHECKLIST (DRC) and SS05 SAMPLE DATA PACKAGE (SDP)	Reply	√	C#
a) The SS05 DRC is present and in strict conformance with the formatting and content of the form contained in the current version of the SS05, Appendix A. All discrepancies were identified and documented, accordingly.	Y	✓	
b) All DRC ***Reply*** **blocks are completed with either a "Y", "N" or "N/A".**	Y	✓	
c) All DRC ***Reply*** **blocks completed with an "N"** are explained in the Narrative.	Y	✓	
d) The DRC footer is completed for each page; the laboratory manager or designee signed and dated the DRC.	Y	✓	
e) All SDP deliverable sections appear in the SDP in order by deliverable section number	Y	✓	
f) Only one SDP is submitted for each SS05 and RIN request.	Y	✓	N/A
g) All components of the SDP deliverables contain original documents where possible.	Y	✓	Φ
h) There is no inclusion of required items in the SDP by reference to another SDP.	Y	✓	Φ
i) Site samples are exclusively used for sample matrix QC	Y	✓	Φ
j) Site and non Site samples are not reported together in any way	Y	✓	Φ
k) The complete sample data package is single sided and consecutively paginated.	Y	✓	

4. CHAIN-OF-CUSTODY, HOLDING TIMES, AND SAMPLE PRESERVATION	Reply	√	C#
a) The continuity of each sample's custody is evidenced by the chain of the date, time and signatures of each transaction from sample collection to receipt by the laboratory.	Y	✓	See narrative
b) If the continuity was corrupted, documentation of correspondence with the CTR is included.	Y	✓	
c) All samples are identified on the COC with the corresponding Line Item Codes (analyses).	Y	✓	Concerning
d) The pH of each sample and the shipping container temperature are recorded, where applicable; Preservation was consistent with PSA Module.	Y	✓	internal
e) Any conflicting, incorrect, or missing information are identified and documented; and there is documentation of the resolution.	Y	✓	COC.
f) Analytical and preparation holding times were met for all sample analyses.	Y	✓	RK
g) Following sample receipt by the lab, samples were properly adjusted to the correct pH and were stored at the appropriate temperature, if required. Internal COCs are included.	N	✓	5/22/01

RIN: X01C0131 Lab Name: B.559 Inorg. Lab Initials: RK

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Data Review Checklist

SS05 Sample Data Package

5. NARRATIVE	Reply	√	C#
a) Contains a synopsis of the analytical and preparation methods; identifies base methods and any deviations of the base methods.	Y	✓	
b) Contains a description of the samples; describes samples which are of a similar matrix.	Y	✓	
c) Contains synopsis of Analytical Batch QC assessment. All anomalies, deficiencies, interferences, reanalyses, and deviations from approved SOPs related to the analysis are explained. Contains a QC assessment for the RIN which includes a discussion of all items with an "N" reply on the SSO5 DRC.	Y	✓	
1) statement about N, *, and E flags	Y	✓	
2) statement if dilutions were required, and all dilutions explained	Y	✓	
3) statement that RDLs were or were not met for all analytes	Y	✓	
4) discussion of any RDLs which were not met	Y	✓	
5) discussion of all analyses performed by Method of Additions	n/a	✓	
d) Samples requiring reanalysis are identified with the reason for reanalysis, the original and reanalysis Analytical Batch Identification Numbers, and a synopsis of the reanalysis Analytical Batch QC assessment is included.	n/a	✓	
e) For any deviations that required CTR approval, the correspondence and approval are documented.	Y	✓	
f) All holding-time compliances and violations are described in Narrative.	Y	✓	

6. SAMPLE AND QC SAMPLE RESULTS SUMMARY	Reply	√	C#
The Sample and QC Sample Results Summary Package is present and all pages are labeled with the Lab Code and the RIN. The Sample and QC Sample Results Summary Package includes:	Y	✓	
a) Form 1s (Sample Results) are present for each sample in the RIN for this PSA Module and each includes:	Y	✓	
1) one and only one result for each requested analyte.	Y	✓	
2) correct results reported in the correct units for each requested analyte.	Y	✓	
3) results for detected analytes factored by all dilutions.	Y	✓	
4) results for non-detected analytes reported as IDLs factored by all dilutions.	Y	✓	
5) results reported to the correct number of significant figures.	Y	✓	
6) C and M qualifiers entered correctly for each analyte.	Y	✓	
7) Q qualifiers entered for all samples associated with QC samples receiving qualifiers.	Y	✓	
8) the (IDL * dilution factor) for non-detected analyte is ≤ the specified RDLs.	Y	✓	
b) Form 2As (Calibration Verification) are present and each includes:	Y	✓	
1) all ICV and CCV results for all requested analytes	Y	✓	
2) results for an ICV from the beginning of the run, and a CCV at the end of the run.	Y	✓	Φ
3) CCV results reported such that no more than 10 solutions (except CCB or ICB) were analyzed between analysis of ICVs or CCVs.	Y	✓	Φ
4) all ICV and CCV results within limits.	Y	✓	
5) if the preceding item was marked "N", no sample data were reported when results were not within limits.	n/a	✓	
6) at least the minimum number of standards prescribed for each method were used to establish the initial calibration	Y	✓	Φ
7) The correlation coefficients of the calibration curves were > 0.995 for all GFAA and CVAA analyses.	n/a	✓	Φ
8) The calibration and ICV standards were from independent sources.	Y	✓	Φ

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Data Review Checklist

SS05 Sample Data Package

(continued)		Reply	√	C#
c)	Form 2Bs (CRDL Standard)are present and each includes:	Y	✓	
	1) RDL standard results at specified concentrations for every requested analyte.	Y	✓	Φ
	2) RDL standard results for the beginning, end, and each 8 hours within each ICPES run and at the beginning of each GFAAS and CVAA run.	Y	✓	Φ
	3) RDL standard results were within 80-120% limits for ICP analyses.	n/a	✓	
d)	Form 3s (Verification and Preparation Blanks) are present and each includes:	Y	✓	
	1) all ICB and CCB results for all requested analytes; results reported to IDLs.	Y	✓	
	2) results for an ICB from the beginning of the run, and a CCB at the end of the run.	Y	✓	Φ
	3) CCB results reported such that no more than 10 solutions (except CCV) were analyzed between analysis of ICBs or CCBs.	Y	✓	Φ
	4) the absolute values of all ICB and CCB results are less than specified IDLs.	N	✓	all analytes
	5) if the preceding item was marked "N" and the blank results are > RDL, then only results >10* the blank concentration are reported from the non-conforming analytical batch	n/a	✓	concerning
	6) PB results for all analytes for each analytical batch in the RIN; results reported to IDLs.	Y	✓	blanks
	7) the absolute values of analyte concentrations in all PBs are less than specified IDLs.	N	✓	RK
	8) if the preceding item was marked "N" and the PB results are > RDL, then the samples containing >10* the PB concentration only are reported for that analyte from the non-conforming analytical batch.	n/a	✓	5/22/01
e)	Form 4s (Interference Check Sample) are present and each includes:	Y	✓	
	1) ICSA & ICSAB results as specified for every requested analyte determined by ICPES.	Y	✓	
	2) ICSA & ICSAB results for the beginning, end, and each 8 hours within each ICPES run	Y	✓	
	3) all ICSA, ICSAB, and other interference check sample results within limits	Y	✓	Φ
f)	Form 5As (Matrix Spike) are present and each includes:	Y	✓	
	1) one Form 5A for each matrix, waste type, and analytical batch (max. of 20 samples).	Y	✓	
	2) control limits for %R assigned according to CLP-SOW	Y	✓	
	3) Spikes reported and completed for all applicable elements according to CLP-SOW and SS05.	Y	✓	
	4) "N" flags present in the Q column if %R is outside limits according to CLP-SOW	Y	✓	
g)	Form 5Bs (Post Digestion Spike) are present for each matrix and for analytes receiving N flag for ICPES or FLAAS analyses.	Y	✓	
h)	Form 6s (Duplicate) are present and each includes:	Y	✓	
	1) one Form 6 for each matrix, waste type, and analytical batch (max. of 20 samples).	Y	✓	
	2) control limits for RPD assigned according to CLP-SOW	Y	✓	
	3) RPDs reported and calculated according to CLP-SOW	Y	✓	
	4) "*" flag present in the Q column if RPD is outside limits according to CLP-SOW.	Y	✓	
i)	Form 7s (Laboratory Control Sample) are present and each includes:	Y	✓	
	1) A Form 7 or LCS result for each analytical batch is present; results for all requested elements.	Y	✓	
	2) LCS results for all requested analytes and percent recoveries within the control limits.	Y	✓	
j)	Form 8s (Standard Additions) are present for each sample and analyte with Form 1 results indicating analysis by MSA.	n/a	✓	
k)	Form 9s (Serial Dilution) are present and each includes:	Y	✓	
	1) one Form 9 serial dilution for at least one sample from each matrix type and for each analytical batch analyzed by ICPES or ICP/MS.	Y	✓	
	2) control limits for %D assigned according to CLP-SOW	Y	✓	
	3) %D reported and calculated according to CLP-SOW	Y	✓	

RIN: X01C0131 Lab Name: B-559 Inorg. Lab Initials: RK

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Data Review Checklist

SS05 Sample Data Package

(continued)	Reply	√	C#
4) E" flags present in the Q column if the %D is outside limits according to CLP-SOW.	Y	✓	
l) Forms 10 (Instrument Detection Limits) are present and include IDL values for each method reported; for all reported analytes, that are less than or equal to the required RDLs.	Y	✓	
1) A valid IDL study was prepared within 3 months of date of analysis for all methods	Y	✓	
m) Form 11s (Interelement Correction Factors) are present for each ICPES instrument used to report data	Y	✓	
n) Form 12 (Linear Range Studies) is present for each ICPES instrument used to report data	Y	✓	
1) All reported results are from analyses within the linear range of each instrument	Y	✓	Φ
o) Form 13 (Preparation Logs) is present for each analytical batch reported and includes:	Y	✓	
1) preparation data for all reported samples.	Y	✓	Φ
2) properly identified samples, duplicates, spikes, PBs, and LCSs.	Y	✓	Φ
3) QC Sample Identifiers clearly link each preparation batch QC sample (duplicate, spike, LCS, and preparation blank) with associated Site samples.	Y	✓	Φ
4) at least one set of duplicates, spikes, PBs, LCSs samples for each analytical batch.	Y	✓	Φ
5) at least one sample from each matrix type in the batch run in duplicate and spiked.	Y	✓	Φ
6) batch sizes of < 20 analytical samples.	Y	✓	Φ
p) Form 14s (Instrument Run Log) are present for each run performed and include:	Y	✓	Φ
1) all information (e.g., instrument Ids, analysis run dates, DF) are correctly entered.	Y	✓	Φ
2) analytical spike recoveries correctly entered for each GFAAS run.	n/a	✓	Φ
3) reported data indicated as specified in CLP-SOW.	Y	✓	Φ

7. PREPARATION RAW DATA	Reply	√	C#
a) The preparation raw data (benchsheets and/or preparation logs) are included and document the required items as specified in the Preparation Summary Section of SS05, Exhibit B.	Y	✓	Φ
b) Sufficient raw data are included to allow manual calculation of the final sample results and QC sample recoveries.	Y	✓	Φ
c) Samples were prepared using an approved procedure in SS05 Exhibit C.	Y	✓	

8. STANDARDS SUMMARY	Reply	√	C#
a) For primary standards that were diluted and used for LCS and any in-house prepared instrument calibration sources, the required items as specified in the Standards Summary Section of SS05, Exhibit B are included.	Y	✓	Φ
b) All standard identifiers are traceable to primary certificates, which are traceable to NIST.	Y	✓	Φ
c) All standards and sources traceable to NIST were valid (not expired) at the time of use.	Y	✓	Φ

9. INSTRUMENT RAW DATA	Reply	√	C#
a) The instrument raw data for the RIN are included and document the required items as specified in SS05 Exhibit B Section 2. All data entries were verified as accurate by the reviewer.	Y	✓	Φ
b) The data were reviewed, signed, and dated by the area spectroscopist as acceptable.	Y	✓	Φ
c) Sufficient raw data are included to allow manual calculation of the final sample results and QC sample chemical recoveries.	Y	✓	Φ
d) All batch QC samples were prepared and analyzed in the same manner as the samples in the Analytical Batch, in the same time frame, and using the same instrument parameters, etc.	Y	✓	Φ

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RIN: X01C0131 Lab Name: B 559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): SD050801.RPT

Data Review Checklist

SS05 Sample Data Package

10. ELECTRONIC DATA DELIVERABLE (EDD)	Reply	√	C#
a) The EDD accurately reflects the data contained in the Sample Data Package	Y	✓	
b) The hard copy of the EDD as specified in GR01 Exhibit B, Section 4 is included with the Sample Data Package. The hard copy includes data file name and means of transmittal.	Y	✓	
c) An automated EDD verification check has been performed.	Y	✓	N/A

Shaded areas are for Site use only.

Respond to each checklist item in the "Reply" column with a Y (yes), N (no), or NA (not applicable).

Complete footer information, including the initials of the laboratory manager or designee on each page.

Refer to Module GR01, Exhibit B, Section 4 for instructions to complete this form.

I certify that all responses to this checklist accurately reflect the completeness and quality aspects of this sample data package as outlined in GR01 and SS05. Furthermore, I understand that inaccuracies in the completion of this checklist will be considered a nonconformance to Subcontract Requirements as evidenced by the following signature of the laboratory manager or designee.

Print/Typed Name: R.C. Keller Title: Chemist

Signature RC. Keller Date 5/22/01

For Data Assessment Use Only

DATA REVIEW CHECKLIST EXAMINATION

Assessment of this Sample Data Package is based on the following documents:

DA-GR01 Version ____ DA-SS05 Version ____

This Sample Data Package requires the following assessment level:

☐ No Further Assessment ☐ Partial Verification ☐ Complete Verification ☐ Validation

Assessment Level is based on: ☒ Examination ☐ Customer ☐ Laboratory Assessment Program

Notes: Data Package was reviewed and is acceptable.

Conrad Trice	Conrad Trice	5/31/2001
Examiner	Signature	Date

RIN: X01C0131 Lab Name: B. 559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): 5005080I.RPT

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PARTIAL VERIFICATION

- ❑ **This Sample Data Package requires no further assessment (See attached Data Quality Assessment Report)**
- ❑ This Sample Data Package requires further assessment at the following level:
  - ❑ Complete Verification ❑ Validation

Notes:

Data Verifier	Signature	Date

COMPLETE VERIFICATION

- ❑ **This Sample Data Package requires no further assessment (See attached Data Quality Assessment Report)**
- ❑ This Sample Data Package requires validation

Notes:

Data Verifier	Signature	Date

RIN: XA1C0131 Lab Name: B. 559 Inorg Lab Initials: RK

Analytical Batch Identification No.(s): SD050801.RPT

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Data Review Checklist

SS05 Sample Data Package

1. SAMPLE DATA PACKAGE COVER PAGE	*Reply*	√	*C#*
a) The laboratory name, code, subcontract number, RIN, Site sample numbers, Line Item codes (LIC-analyses), sample matrix, and report dates are accurately recorded.	Y	✓	
b) All Site sample identifications are cross-referenced with all lab identifications.	Y	✓	
c) The verbatim compliance and authorization statement is present with the dated signature of the Laboratory Manager or designee.	Y	✓	
d) Any problems with the receipt are explained (e.g., broken containers, incorrect COC documentation, etc.)	Y	✓	

2. TABLE OF CONTENTS	*Reply*	√	*C#*
a) The Table of Contents is included and contains all Sample Data Package Deliverable Section Titles with their beginning page numbers.	Y	✓	

3. DATA REVIEW CHECKLIST (DRC) and SS05 SAMPLE DATA PACKAGE (SDP)	Reply	√	C#
a) The SS05 DRC is present and in strict conformance with the formatting and content of the form contained in the current version of the SS05, Appendix A. All discrepancies were identified and documented, accordingly.	Y	✓	
b) All DRC ***Reply*** **blocks are completed with either a "Y", "N" or "N/A".**	Y	✓	
c) All DRC ***Reply*** **blocks completed with an** "N" are explained in the Narrative.	Y	✓	
d) The DRC footer is completed for each page; the laboratory manager or designee signed and dated the DRC.	Y	✓	
e) All SDP deliverable sections appear in the SDP in order by deliverable section number	Y	✓	
f) Only one SDP is submitted for each SS05 and RIN request.	Y	✓	N/A
g) All components of the SDP deliverables contain original documents where possible.	Y	✓	Φ
h) There is no inclusion of required items in the SDP by reference to another SDP.	Y	✓	Φ
i) Site samples are exclusively used for sample matrix QC	Y	✓	Φ
j) Site and non Site samples are not reported together in any way	Y	✓	Φ
k) The complete sample data package is single sided and consecutively paginated.	Y	✓	

4. CHAIN-OF-CUSTODY, HOLDING TIMES, AND SAMPLE PRESERVATION	Reply	√	C#
a) The continuity of each sample's custody is evidenced by the chain of the date, time and signatures of each transaction from sample collection to receipt by the laboratory.	Y	✓	See narrative concerning internal COC
b) If the continuity was corrupted, documentation of correspondence with the CTR is included.	Y	✓	
c) All samples are identified on the COC with the corresponding Line Item Codes (analyses).	Y	✓	
d) The pH of each sample and the shipping container temperature are recorded, where applicable; Preservation was consistent with PSA Module.	Y	✓	
e) Any conflicting, incorrect, or missing information are identified and documented; and there is documentation of the resolution.	Y	✓	RK
f) Analytical and preparation holding times were met for all sample analyses.	Y	✓	RK 5/22/01
g) Following sample receipt by the lab, samples were properly adjusted to the correct pH and were stored at the appropriate temperature, if required. Internal COCs are included.	N	–	

RIN: X01C0131 Lab Name: B. 559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): SD050801.HGT

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Data Review Checklist

SS05 Sample Data Package

5. NARRATIVE	Reply	√	C#
a) Contains a synopsis of the analytical and preparation methods; identifies base methods and any deviations of the base methods.	Y	✓	
b) Contains a description of the samples; describes samples which are of a similar matrix.	Y	✓	
c) Contains synopsis of Analytical Batch QC assessment. All anomalies, deficiencies, interferences, reanalyses, and deviations from approved SOPs related to the analysis are explained. Contains a QC assessment for the RIN which includes a discussion of all items with an "N" reply on the SSO5 DRC.	Y	✓	
1) statement about N, *, and E flags	Y	✓	
2) statement if dilutions were required, and all dilutions explained	Y	✓	
3) statement that RDLs were or were not met for all analytes	Y	✓	
4) discussion of any RDLs which were not met	Y	✓	
5) discussion of all analyses performed by Method of Additions	n/a	✓	
d) Samples requiring reanalysis are identified with the reason for reanalysis, the original and reanalysis Analytical Batch Identification Numbers, and a synopsis of the reanalysis Analytical Batch QC assessment is included.	n/a	✓	
e) For any deviations that required CTR approval, the correspondence and approval are documented.	Y	✓	
f) All holding-time compliances and violations are described in Narrative.	Y	✓	

6. SAMPLE AND QC SAMPLE RESULTS SUMMARY	Reply	√	C#
The Sample and QC Sample Results Summary Package is present and all pages are labeled with the Lab Code and the RIN. The Sample and QC Sample Results Summary Package includes:	Y	✓	
a) Form 1s (Sample Results) are present for each sample in the RIN for this PSA Module and each includes:	Y	✓	
1) one and only one result for each requested analyte.	Y	✓	
2) correct results reported in the correct units for each requested analyte.	Y	✓	
3) results for detected analytes factored by all dilutions.	Y	✓	
4) results for non-detected analytes reported as IDLs factored by all dilutions.	Y	✓	
5) results reported to the correct number of significant figures.	Y	✓	
6) C and M qualifiers entered correctly for each analyte.	Y	✓	
7) Q qualifiers entered for all samples associated with QC samples receiving qualifiers.	Y	✓	
8) the (IDL * dilution factor) for non-detected analyte is ≤ the specified RDLs.	Y	✓	
b) Form 2As (Calibration Verification) are present and each includes:	Y	✓	
1) all ICV and CCV results for all requested analytes	Y	✓	
2) results for an ICV from the beginning of the run, and a CCV at the end of the run.	Y	✓	Φ
3) CCV results reported such that no more than 10 solutions (except CCB or ICB) were analyzed between analysis of ICVs or CCVs.	Y	✓	Φ
4) all ICV and CCV results within limits.	Y	✓	
5) if the preceding item was marked "N", no sample data were reported when results were not within limits.	n/a	✓	
6) at least the minimum number of standards prescribed for each method were used to establish the initial calibration	Y	✓	Φ
7) The correlation coefficients of the calibration curves were > 0.995 for all GFAA and CVAA analyses.	Y	✓	Φ
8) The calibration and ICV standards were from independent sources.	Y	✓	Φ

RIN: X01C0131 Lab Name: B. 559 Inorg. Lab Initials: RK

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Data Review Checklist

SS05 Sample Data Package

(continued)		Reply	√	C#
c)	Form 2Bs (CRDL Standard)are present and each includes:	Y	✓	
	1) RDL standard results at specified concentrations for every requested analyte.	Y	✓	Φ
	2) RDL standard results for the beginning, end, and each 8 hours within each ICPES run and at the beginning of each GFAAS and CVAA run.	Y	✓	Φ
	3) RDL standard results were within 80-120% limits for ICP analyses.	n/a	✓	
d)	Form 3s (Verification and Preparation Blanks) are present and each includes:	Y	✓	
	1) all ICB and CCB results for all requested analytes; results reported to IDLs.	Y	✓	
	2) results for an ICB from the beginning of the run, and a CCB at the end of the run.	Y	✓	Φ
	3) CCB results reported such that no more than 10 solutions (except CCV) were analyzed between analysis of ICBs or CCBs.	Y	✓	Φ
	4) the absolute values of all ICB and CCB results are less than specified IDLs.	Y	✓	
	5) if the preceding item was marked "N" and the blank results are > RDL, then only results >10* the blank concentration are reported from the non-conforming analytical batch	n/a	✓	
	6) PB results for all analytes for each analytical batch in the RIN; results reported to IDLs.	Y	✓	
	7) the absolute values of analyte concentrations in all PBs are less than specified IDLs.	Y	✓	
	8) if the preceding item was marked "N" and the PB results are > RDL, then the samples containing >10* the PB concentration only are reported for that analyte from the non-conforming analytical batch.	n/a	✓	
e)	Form 4s (Interference Check Sample) are present and each includes:	n/a	✓	
	1) ICSA & ICSAB results as specified for every requested analyte determined by ICPES.	n/a	✓	
	2) ICSA & ICSAB results for the beginning, end, and each 8 hours within each ICPES run	n/a	✓	
	3) all ICSA, ICSAB, and other interference check sample results within limits	n/a	✓	Φ
f)	Form 5As (Matrix Spike) are present and each includes:	Y	✓	
	1) one Form 5A for each matrix, waste type, and analytical batch (max. of 20 samples).	Y	✓	
	2) control limits for %R assigned according to CLP-SOW	Y	✓	
	3) Spikes reported and completed for all applicable elements according to CLP-SOW and SS05.	Y	✓	
	4) "N" flags present in the Q column if %R is outside limits according to CLP-SOW	Y	✓	
g)	Form 5Bs (Post Digestion Spike) are present for each matrix and for analytes receiving N flag for ICPES or FLAAS analyses.	Y	✓	
h)	Form 6s (Duplicate) are present and each includes:	Y	✓	
	1) one Form 6 for each matrix, waste type, and analytical batch (max. of 20 samples).	Y	✓	
	2) control limits for RPD assigned according to CLP-SOW	Y	✓	
	3) RPDs reported and calculated according to CLP-SOW	Y	✓	
	4) "*" flag present in the Q column if RPD is outside limits according to CLP-SOW.	Y	✓	
i)	Form 7s (Laboratory Control Sample) are present and each includes:	Y	✓	
	1) A Form 7 or LCS result for each analytical batch is present; results for all requested elements.	Y	✓	
	2) LCS results for all requested analytes and percent recoveries within the control limits.	Y	✓	
j)	Form 8s (Standard Additions) are present for each sample and analyte with Form 1 results indicating analysis by MSA.	n/a	✓	
k)	Form 9s (Serial Dilution) are present and each includes:	n/a	✓	
	1) one Form 9 serial dilution for at least one sample from each matrix type and for each analytical batch analyzed by ICPES or ICP/MS.	n/a	✓	
	2) control limits for %D assigned according to CLP-SOW	n/a	✓	
	3) %D reported and calculated according to CLP-SOW	n/a	✓	

RIN: X01C0131 Lab Name: B. 559 Inorg. Lab Initials: RIC

Analytical Batch Identification No.(s): SD050801.H6T

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Data Review Checklist

SS05 Sample Data Package

(continued)	Reply	√	C#
4) E" flags present in the Q column if the %D is outside limits according to CLP-SOW.	n/a	✓	
l) Forms 10 (Instrument Detection Limits) are present and include IDL values for each method reported; for all reported analytes, that are less than or equal to the required RDLs.	Y	✓	
1) A valid IDL study was prepared within 3 months of date of analysis for all methods	Y	✓	
m) Form 11s (Interelement Correction Factors) are present for each ICPES instrument used to report data	n/a	✓	
n) Form 12 (Linear Range Studies) is present for each ICPES instrument used to report data	n/a	✓	
1) All reported results are from analyses within the linear range of each instrument	Y	✓	Φ
o) Form 13 (Preparation Logs) is present for each analytical batch reported and includes:	Y	✓	
1) preparation data for all reported samples.	Y	✓	Φ
2) properly identified samples, duplicates, spikes, PBs, and LCSs.	Y	✓	Φ
3) QC Sample Identifiers clearly link each preparation batch QC sample (duplicate, spike, LCS, and preparation blank) with associated Site samples.	Y	✓	Φ
4) at least one set of duplicates, spikes, PBs, LCSs samples for each analytical batch.	Y	✓	Φ
5) at least one sample from each matrix type in the batch run in duplicate and spiked.	Y	✓	Φ
6) batch sizes of < 20 analytical samples.	Y	✓	Φ
p) Form 14s (Instrument Run Log) are present for each run performed and include:	Y	✓	Φ
1) all information (e.g., instrument Ids, analysis run dates, DF) are correctly entered.	Y	✓	Φ
2) analytical spike recoveries correctly entered for each GFAAS run.	n/a	✓	Φ
3) reported data indicated as specified in CLP-SOW.	Y	✓	Φ

7. PREPARATION RAW DATA	*Reply*	√	*C#*
a) The preparation raw data (benchsheets and/or preparation logs) are included and document the *required items as specified in the Preparation Summary Section of SS05, Exhibit B.*	Y	✓	Φ
b) Sufficient raw data are included to allow manual calculation of the final sample results and QC sample recoveries.	Y	✓	Φ
c) Samples were prepared using an approved procedure in SS05 Exhibit C.	Y	✓	

8. STANDARDS SUMMARY	*Reply*	√	*C#*
a) For primary standards that were diluted and used for LCS and any in-house prepared instrument calibration sources, the required items as specified in the Standards Summary Section of SS05, Exhibit B are included.	Y	✓	Φ
b) All standard identifiers are traceable to primary certificates, which are traceable to NIST.	Y	✓	Φ
c) All standards and sources traceable to NIST were valid (not expired) at the time of use.	Y	✓	Φ

9. INSTRUMENT RAW DATA	*Reply*	√	*C#*
a) The instrument raw data for the RIN are included and document the required items as specified in SS05 Exhibit B Section 2. All data entries were verified as accurate by the reviewer.	Y	✓	Φ
b) The data were reviewed, signed, and dated by the area spectroscopist as acceptable.	Y	✓	Φ
c) Sufficient raw data are included to allow manual calculation of the final sample results and QC sample chemical recoveries.	Y	✓	Φ
d) All batch QC samples were prepared and analyzed in the same manner as the samples in the Analytical Batch, in the same time frame, and using the same instrument parameters, etc.	Y	✓	Φ

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RIN: X01C0131 Lab Name: B-559 Inorg Lab Initials: RK

Analytical Batch Identification No.(s): SD050801.H6T

Data Review Checklist

SS05 Sample Data Package

10. ELECTRONIC DATA DELIVERABLE (EDD)	Reply	√	C#
a) The EDD accurately reflects the data contained in the Sample Data Package	Y	✓	
b) The hard copy of the EDD as specified in GR01 Exhibit B, Section 4 is included with the Sample Data Package. The hard copy includes data file name and means of transmittal.	Y	✓	
c) An automated EDD verification check has been performed.	Y		N/A

Shaded areas are for Site use only.
Respond to each checklist item in the "Reply" column with a Y (yes), N (no), or NA (not applicable).
Complete footer information, including the initials of the laboratory manager or designee on each page.
Refer to Module GR01, Exhibit B, Section 4 for instructions to complete this form.

I certify that all responses to this checklist accurately reflect the completeness and quality aspects of this sample data package as outlined in GR01 and SS05. Furthermore, I understand that inaccuracies in the completion of this checklist will be considered a nonconformance to Subcontract Requirements as evidenced by the following signature of the laboratory manager or designee.

Print/Typed Name: R.C. Keller Title: Chemist

Signature RC Keller Date 5/22/01

For Data Assessment Use Only

DATA REVIEW CHECKLIST EXAMINATION

Assessment of this Sample Data Package is based on the following documents:

DA-GR01 Version ____ DA-SS05 Version ____

This Sample Data Package requires the following assessment level:

☐ No Further Assessment ☐ Partial Verification ☐ Complete Verification ☐ Validation
Assessment Level is based on: ☒ Examination ☐ Customer ☐ Laboratory Assessment Program

Notes: Data package was reviewed and is acceptable.

Conrad Trice	Conrad Trice	5/31/2000
Examiner	Signature	Date

RIN: X01C0131 Lab Name: B. 559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): SD050801.HGT

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PARTIAL VERIFICATION

- ☐ **This Sample Data Package requires no further assessment (See attached Data Quality Assessment Report)**
- ☐ This Sample Data Package requires further assessment at the following level:
  - ☐ Complete Verification ☐ Validation

Notes:

Data Verifier	Signature	Date

COMPLETE VERIFICATION

- ☐ **This Sample Data Package requires no further assessment (See attached Data Quality Assessment Report)**
- ☐ This Sample Data Package requires validation

Notes:

Data Verifier	Signature	Date

RIN: X01C0131 Lab Name: B. 559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): SD050801.H6T

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0016

CHAIN OF CUSTODY

Commodo Advanced Sciences

RFETS

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # 01C0131#001

Page 1 of 2

Sampler(s) [signature] 512570 (time/date)	Contact/Requester TRICE, CONRAD/BOB CATHEL	Telephone No. 2490/6880
RIN 01C0131 JOHN GOOSSEY	Sampling Origin OUTSIDE B776	Purchase Order/Charge Code DAD01ANA
Project Title B776, OUTSIDE, CT 712, CT 713, SLUDGE 512674	Logbook No. N/A 94 DODGE	Ice Chest No. N/A Temp. ~6
To (Lab) Building 559 Laboratory	Method of Shipment Commodore Advanved Sciences Sample Team	Bill of Lading/Air Bill No. N/A
Protocol CAS SOP-003 REV 3	Related COC (if any) 01C 0131	PRE N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** IDC-1927 **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
NOTE: COMMODORE ADVANVED SCIENCES SHALL COLLECT FIVE SAMPLES AND COMPOSITE INTO ONE SAMPLE PER SAMPLING EVENT.

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0131-001.001	CT-712	SOLID	4/20/01	1255	Outside B776	40-G / P/G /1	See Item 1	None None
01C0131-001.002	CT-712	SOLID			Outside B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0131-002.001	CT-713	SOLID		1310	Outside B776	40-G / P/G /1	See Item 1	None None
01C0131-002.002	CT-713	SOLID			Outside B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None

LABORATORY USE ONLY

	Initials/Date	Y/N
Cooler Custody Seal Intact:		☐
Outer TID Intact:		☐
TID # (if applicable):		☐
TID Removed by/Date:		☐
Sample Custody Seals Intact:		☐
Labels & COC Agree:	[signature] 4/23/01	☐

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature] CAS	1820 4/20/01	T130A FRIDGE #2	1820 4/20/01				
T130A FRIDGE #2	1100 4/23/01	[signature] CAS	1100 4/23/01				
[signature] CAS	1430 4/23/01	[signature] Johnson	4/23/01 1430				

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

0018

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

ICP ATOMIC EMISSION SPECTROSCOPY REPORT TOTAL METALS BY ICP
Date : (5/22/01)
Lab #'s : X01C0131-001.002 and X01C0131-002.002

Narrative for Samples X01C0131-001.002 and X01C0131-002.002 Collected from Building 776

TCLP Extracts from Building 776 solid (multi-phase) samples and an extraction fluid reagent blank (TCLP Ext. #1), were prepared for total metals only, outside of glovebox containment, in accordance with EPA Reference SW-846 "Test Methods for Evaluating Solid Waste", Method 3010. Each total metals sample digest was analyzed by ICP atomic emission spectroscopy in accordance with EPA Reference SW-846 Method 6010 "Inductively Coupled Plasma Atomic-Emission Spectroscopy".

Sample Storage Considerations:

The solid samples were stored within a designated refrigerator at 4°C prior to preparation and analysis of total metals.

Total Metals Method Selection and Preparation Considerations:

The "total metals" digestion method was performed on a representative 10.0 ml aliquot from each TCLP extract of the samples in accordance with EPA Reference SW-846, Method 3010. The total metals digestion method was also performed on a 20.0 ml aliquot of X-TCLP Ext. #1, and made up to 20.0 ml final volume in accordance with EPA SW-846, Method 3010. The total metals digest for each sample was made up to 30.0 ml final volumes in respective 50 ml capacity calibrated polypropylene disposable screw-cap vessels.

EPA Method Exceptions:

The analytical methods utilized to chemically prepare representative aliquots of each sample follow the guidelines of the EPA Reference *SW-846* (Test Methods for Evaluating Solid Waste) Method 3010, "Acid Digestion of Aqueous Samples and Extracts for Analysis by Flame AA and ICP Spectroscopy" and Method 6010, "Inductively Coupled Plasma-Atomic Emission Spectroscopy" with the following deviations noted below:

Method 3010 Deviations:

1) Smaller aqueous starting sample aliquots of 10.0 ml, and final sample digest volumes of 30.0 ml are utilized to comply with waste minimization and criticality safety concerns. *2)* Reduced volume 50-ml centrifuge tubes are utilized in place of graduate cylinders for the final sample digest. A final dilution accuracy of ±0.5% has been demonstrated with these centrifuge tubes. *3)* The concentration of HCl in the final digest is approximately 25%. This has been done to allow for increased solubility of the silver (Ag) present in samples as $AgCl_2^-$, thus resulting in more quantitative recovery for this element. The larger excess of chloride ion in the final total metals digest also helps to maintain silver as the soluble species $AgCl_2^-$, thus preventing accidental conversion into the unwanted insoluble silver salt, AgCl. The alternative to utilization of only 5% HCl in the final digest is the use of EPA Method 7761, which requires an aliquot

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of the total metals digest to be complexed with cyanogen iodide, to solubilize silver, prior to separate analysis. Accidental formation of hydrogen cyanide is a possibility both inside and outside of glovebox containment with utilization of Method 7761 and is an extreme safety hazard since acids are routinely utilized in all of these areas. The accuracy of analyses for several different aqueous and solid reference standards has been demonstrated, not only for silver but also for all other elements covered in this procedure. Utilization of ratios of HCL:HNO_3 of greater than 10:1 is also documented in other references as a means of increasing the solubility of silver, as described above.

Method 6010 Deviations:

1) Reduced volume 50-ml centrifuge tubes are utilized in place of class A volumetric flasks for the final sample digest. A final dilution accuracy of $\pm$0.5% has been demonstrated with these centrifuge tubes. *2)* Calibrated macro-pipettes and micro-pipettes, in combination with trace metals grade polypropylene pipette tips, are utilized instead of Class A glass volumetric pipettes, to prepare ICP standards. *3)* See the above Method 3010 deviation step #3 - same for Method 6010.

The method deviations *1)* through *3)* have been done to comply with the current operational safety, industrial safety, criticality safety, waste minimization, and hazardous waste requirements at the Rocky Flats Plant.

Additional Information:

The samples were received in Building 559 on April 23, 2001 as a Priority 3 (31-day turn around), TCLP extracted May 17, digested and analyzed on May 18. The "internal chain of custody" is maintained by the "sample-receiving group" (located in Building 559). No abnormalities were observed with this sample set.

QA/QC Sample Information:

Sample X01C0130-001 represents the QA/QC sample that received the pre-digestion and post-digestion spikes, the 5X serial dilution, and the lab duplicate (X01C0130-001D) for this sample set. Manganese and zinc were out of the control limits for duplicates (noted by an "*" on form 6) indicating the sample is heterogeneous. Antimony was above the absolute value for instrument detection limit on CCB2, selenium on CCB1 and CCB2, and thallium on prep blank. However, the values were less than 3X the IDL, which is acceptable per SW-846. No other quality control problems were observed with this sample set.

Data Reporting Information:

The ICP instrument raw analytical results are listed in Forms 5A, 5B, 6, and 7 for the purposes of equivalency of QA/QC data comparison. The final Form 1 analytical results are calculated by multiplying the respective raw analytical results in these Forms (5A, 5B, 6, and 7) by the Form 14 dilution factors. The supporting QA/QC data package (Forms 1-14) and the raw data, corresponding to the sample analyte results, are located in Analytical Service Division File X01C0131-001 (SD050801.RPT).

Kaiser Hill Company
Rocky Flats Environmental Technology Site

ICP ATOMIC EMISSION SPECTROSCOPY REPORT TOTAL METALS BY ICP
Date : (5/22/01)
Lab #'s : X01C0131-001.002 and X01C0131-002.002

The September 1994 RCRA Standard Hazardous Waste Regulatory Limits for each of the TCLP Extract Elements are listed below, for reference.

Element	1994 RCRA TCLP Hazardous Waste Regulatory Limit (mg/L)
Aluminum	-------
Antimony	-------
Arsenic	5.000
Barium	100.000
Beryllium	-------
Cadmium	1.000
Calcium	-------
Chromium	5.000
Cobalt	-------
Copper	-------
Iron	-------
Lead	5.000
Magnesium	-------
Manganese	-------
Mercury	0.200
Molybdenum	-------
Nickel	-------
Phosphorus	-------
Selenium	1.000
Silver	5.000
Strontium	-------
Thallium	-------
Titanium	-------
Vanadium	-------
Zinc	-------

If there are any questions regarding these results, please feel free to contact Russ Keller at extension 2260 or pager 212-4434.

Chemist Approval : Russ Keller **Date:** 5/22/01

Reviewer Approval : _____ **Date:** 5/24/01

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

ICP ATOMIC EMISSION SPECTROSCOPY REPORT TOTAL METALS BY ICP

Date : (5/22/01)
Lab #'s : X01C0131-001.002 and X01C0131-002.002

The ICP reports can be expected to contain various combinations of these Forms, depending on the customer requirements for sample preparation and analysis. If the customer requires additional information, he or she should contact the responsible chemist for a review of the raw data.

Definitions of Data Qualifiers

Various data qualifiers may be utilized to provide an indication of the quality or deviation of standard or sample analyte results. Each of these data qualifiers and their definitions are listed below:

For a "C" (Concentration) Qualifier:

B - The absolute value of the reported analytical result is less than the Required Detection Limit (RDL), but greater than or equal to the Instrument Detection Limit (IDL).
U - The absolute value of the reported analytical result is less than the Instrument Detection Limit (IDL).

For a "Q" (Quality) Qualifier:

N - The pre-digestion (MRSP) spiked or standard addition analytical sample recoveries were not between the 75 and 125 % control limits for the analyte of interest.

NA - Not Applicable. Analyte not determined by ICP.

NC - The Relative Percent Difference (RPD) between duplicate analyte results are not calculated since the analytical results are below 10 times the instrument detection limit (IDL) for the analyte of interest.

NR - The standard addition is not performed or required for the analyte of interest.

E - The percent difference between the original sample result and its corresponding (1/5) dilution result did not agree within +/- 10 %, for elements present at levels greater than 10 times the IDL.

S - The reported result was determined by the Method of Standard Additions, and the correlation coefficient was 0.995 or greater.

+ - The reported result was determined by the Method of Standard Additions, and the correlation coefficient was less than 0.995 .

* - The percent relative difference between the sample and duplicate results did not agree within +/- 20 %, for elements present at levels greater than 10 times the IDL.

V - The post-digestion (ISA) spike recovery of the initial total metals first analytical standard addition or spike was outside 75 - 125%, for the analyte of interest.

Definitions of Analytical Method Qualifiers
For the "M" (Quality) Qualifier:

P - The analytical method utilized for the determination of the reported result was ICP.

A - The analytical method utilized for the determination of the reported result was Flame Absorption Spectroscopy.

F - The analytical method utilized for the determination of the reported result was Graphite Furnace Absorption Spectroscopy.

C - The analytical method utilized for the determination of the reported result was Cold Vapor Absorption Spectroscopy.

H - The analytical method utilized for the determination of the reported result was Hydride Generation Absorption Spectroscopy.
NR - The analyte was not required to be analyzed.

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

COLD VAPOR ATOMIC ABSORPTION SPECTROSCOPY REPORT TOTAL MERCURY BY CVAA
Date : 5/22/01
Lab No.s: X01C0131-001.002 and X01C0131-002.002

Narrative for Solid Samples X01C0131-001.002 and X01C0131-002.002 Collected from Building 776

TCLP extracts from Building 776 solid (multi-phase) samples and an extraction fluid reagent blank (TCLP Ext. #1), were prepared for total mercury, outside of glovebox containment, in accordance with EPA Reference SW-846 "Test Methods for Evaluating Solid Waste", Method 7470. The final analysis of each of the total mercury sample digest solutions for trace mercury was performed by Cold Vapor Atomic Absorption Spectroscopy.

Sample Storage Considerations:

The solid samples were stored within a designated refrigerator at 4°C prior to preparation and analysis for total mercury.

Total Mercury Digestion Method Considerations:

Total Mercury Method Selection and Preparation Considerations and Exceptions:

The total mercury digestion method was performed on a representative 20.0 ml aliquot from each TCLP extract of the samples in accordance with EPA Reference SW-846, Method 7470. The total mercury digestion method was also performed on a 40.0 ml aliquot of TCLP Ext. #1, and made up to 40.0 ml final volume in accordance with EPA SW-846, Method 7470. The total mercury digests were made up to 40.0 ml final volumes in respective original 50 ml capacity calibrated nalgene disposable screw-cap digestion vessels utilized for digestion.

EPA Method Exceptions:

The analytical methods utilized to chemically prepare representative aliquots of each sample follows the guidelines of the EPA Reference *SW-846* (Test Methods for Evaluating Solid Waste) Method 7470, "Mercury in Liquid Waste" (Manual Cold-Vapor Technique) with the following deviations noted below:

Method 7470 Deviations:

1) For aqueous samples and extracts, smaller starting sample aliquots of 20.0 ml and final sample digest volumes of 40.0 ml are utilized to comply with waste minimization and criticality safety requirements. The addition of mercury digestion reagents is ratioed and scaled down to the smaller initial 20 ml starting volume of sample used. *2)* Reduced volume screw-cap 50-ml nalgene bottles are utilized in place of 300-ml glass BOD bottles for preparation of all mercury sample digests. This has been done to comply with Industrial Safety requirements to reduce the amount of breakable glassware that is handled both inside and outside of glovebox lines. It is also done to comply with "criticality" safety and waste minimization requirements. A final dilution accuracy of ±0.5% has been demonstrated with these screw-cap polyethylene bottles.

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

COLD VAPOR ATOMIC ABSORPTION SPECTROSCOPY REPORT TOTAL MERCURY BY CVAA
Date : 5/22/01
Lab No.s: X01C0131-001.002 and X01C0131-002.002

Additional Information:

The samples were received on April 23, 2001 as a Priority 3 (31 day turnaround). The samples were TCLP extracted on May 17, digested and analyzed on May 21 (meeting the mercury hold time from collection date April 20). The "internal chain of custody" is maintained by the "sample-receiving group", located in Building 559. No other abnormalities were observed with this sample set.

QA/QC Sample Information:

Sample X01C0130-001 represents the QA/QC sample that received a pre-digestion spike, post-digestion spike, and the laboratory duplicate (X01C0130-001D) for this sample set. No quality control problems were noted for this sample set.

Data Reporting Considerations:

The Cold Vapor AA instrument raw analytical results are listed in Forms 5A, 5B, 6, and 7 for the purposes of equivalency of QA/QC data comparison. The final Form 1 analytical results for total mercury are calculated by multiplying the respective raw analytical results in these Forms (5A, 5B, 6, and 7) by the Form 14 dilution factors. The supporting QA/QC data package (Forms 1-14) and the raw data, corresponding to these sample analyte results, are located in Analytical Services Division File X01C0131-001 (SD050801.HGT).

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

COLD VAPOR ATOMIC ABSORPTION SPECTROSCOPY REPORT TOTAL MERCURY BY CVAA
Date : 5/22/01
Lab No.s: X01C0131-001.002 and X01C0131-002.002

The September 1994 RCRA Standard Hazardous Waste Regulatory Limits for each of the TCLP Extract Elements are listed below, for reference.

Element	1994 RCRA TCLP Hazardous Waste Regulatory Limit (mg/L)
Aluminum	-------
Antimony	-------
Arsenic	5.000
Barium	100.000
Beryllium	-------
Cadmium	1.000
Calcium	-------
Chromium	5.000
Cobalt	-------
Copper	-------
Iron	-------
Lead	5.000
Magnesium	-------
Manganese	-------
Mercury	0.200
Molybdenum	-------
Nickel	-------
Phosphorus	-------
Selenium	1.000
Silver	5.000
Strontium	-------
Thallium	-------
Titanium	-------
Vanadium	-------
Zinc	-------

If there are any questions regarding these results, please feel free to contact Russ Keller at extension 2260 or pager 212-4434.

Chemist Approval : Russ Keller Date: 5/22/01
Russ Keller

Reviewer Approval : [signature] Date: 5/27/01

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

COLD VAPOR ATOMIC ABSORPTION SPECTROSCOPY REPORT TOTAL MERCURY BY CVAA
Date : 5/22/01
Lab No.s: X01C0131-001.002 and X01C0131-002.002

Definitions of Data Qualifiers

Various data qualifiers may be utilized to provide an indication of the quality or deviation of standard or sample analyte results. Each of these data qualifiers and their definitions are listed below:

For a "C" (Concentration) Qualifier:

B - The absolute value of the analyzed result obtained is less than the Required Detection Limit (RDL), but greater than or equal to the Instrument Detection Limit (IDL).

U - The absolute value of the reported analytical result is less than the Instrument Detection Limit (IDL).

For a "Q" (Quality) Qualifier:

N - The pre-digestion (MRSP) spiked or standard addition analytical sample recoveries were not within the 75 - 125 % control limits for the analyte of interest.
NA - Not Applicable. Analyte not determined by ICP.
NC - The Relative Percent Difference (RPD) between duplicate analyte results are not calculated since the analytical results are below 10 times the instrument detection limit (IDL) for the analyte of interest.
NR - The standard addition is not performed or required for the analyte of interest.
E - The percent difference between the original sample result and its corresponding (1/5) dilution result did not agree within +/- 10 %, for elements present at levels greater than 10 times the IDL.
S - The reported result was determined by the Method of Standard Additions, and the correlation coefficient was 0.995 or greater.
+ - The reported result was determined by the Method of Standard Additions, and the correlation coefficient was less than 0.995 .
* - The percent relative difference between the sample and duplicate results did not agree within +/- 20 %, for elements present at levels greater than 10 times the IDL.
V - The post-digestion (ISA) spike recovery of the initial total mercury first analytical standard addition or post-digestion spike was not within the 75 - 125 % control limits.

Definitions of Analytical Method Qualifiers

For the "M" (Quality) Qualifier:

P - The analytical method utilized for the determination of the reported result was ICP.
A - The analytical method utilized for the determination of the reported result was Flame Absorption Spectroscopy.
F - The analytical method utilized for the determination of the reported result was Graphite Furnace Absorption Spectroscopy.
C - The analytical method utilized for the determination of the reported result was Cold Vapor Absorption Spectroscopy.
H - The analytical method utilized for the determination of the reported result was Hydride Generation Absorption Spectroscopy.
NR - The analyte was not required to be analyzed.

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SAMPLE AND QC RESULT SUMMARIES

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INORGANIC ANALYSIS DATA PACKAGE

Cover Page

Lab Name: Rocky Flats

SDG No : MAY08

QC Report Number : SD050801

Lab Sample ID's beginning with "X" are TCLP Extracts.

No.	Lab Sample ID.	APO Sample ID.	Description	COC Customer No.
1	X01C0130-001	01C0130-001.002	Bldg. 776 Solid Sample	none
2	X01C0130-002	01C0130-002.002	Bldg. 776 Solid Sample	none
3	X01C0130-003	01C0130-003.002	Bldg. 776 Solid Sample	none
4	X01C0130-004	01C0130-004.002	Bldg. 776 Solid Sample	none
5	X01C0130-005	01C0130-005.002	Bldg. 776 Solid Sample	none
6	X01C0130-006	01C0130-006.002	Bldg. 776 Solid Sample	none
7	X01C0130-007	01C0130-007.002	Bldg. 776 Solid Sample	none
8	X01C0130-008	01C0130-008.002	Bldg. 776 Solid Sample	none
9	X01C0130-009	01C0130-009.002	Bldg. 776 Solid Sample	none
10	X01C0130-010	01C0130-010.002	Bldg. 776 Solid Sample	none
11	X01C0131-001	01C0131-001.002	Bldg. 776 Solid Sample	none
12	X01C0131-002	01C0131-002.002	Bldg. 776 Solid Sample	none

Were ICP interelement corrections applied? (y/n): YES

Were ICP background corrections applied? (Y/N): YES

Comments:

I have reviewed the following data for the Samples listed above.

Signature: RC. Kelly 5/22/01
Analytical Chemist Date

Signature: [signature] 5/22/01
Independent Technical Reviewer Date

SQA ID: INOR-01-A1 Report Template: c:\datarev\crreports\NonWippcov_r4.rpt Cover Page, Page 1 of 1

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0029

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0131-001 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT SDG No: MAY08

Date Sampled: 04/20/2001 QC Report No: SD050801

Receipt Date: 04/23/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	0.60	U		05/18/2001 13:42	05/18/2001	P
Antimony	0.30	U		05/18/2001 13:42	05/18/2001	P
Arsenic	0.30	U		05/18/2001 13:42	05/18/2001	P
Barium	0.38	B		05/18/2001 13:42	05/18/2001	P
Beryllium	0.015	U		05/18/2001 13:42	05/18/2001	P
Cadmium	0.035	B		05/18/2001 13:42	05/18/2001	P
Calcium	350.			05/18/2001 13:42	05/18/2001	P
Chromium	0.15	U		05/18/2001 13:42	05/18/2001	P
Cobalt	0.15	U		05/18/2001 13:42	05/18/2001	P
Copper	0.60			05/18/2001 13:42	05/18/2001	P
Iron	1.1			05/18/2001 13:42	05/18/2001	P
Lead	0.15	U		05/18/2001 13:42	05/18/2001	P
Magnesium	22.	B		05/18/2001 13:42	05/18/2001	P
Manganese	5.1		* RK	05/18/2001 13:42	05/18/2001	P
Mercury	0.0020	U	~~H~~ 5/21/01	05/21/2001 13:43	05/21/2001	CV
Molybdenum	0.15	U		05/18/2001 13:42	05/18/2001	P
Nickel	0.12	U		05/18/2001 13:42	05/18/2001	P
Phosphorus	2.3	B		05/18/2001 13:42	05/18/2001	P
Selenium	0.30	U		05/18/2001 13:42	05/18/2001	P
Silver	0.090	U		05/18/2001 13:42	05/18/2001	P
Strontium	1.9			05/18/2001 13:42	05/18/2001	P
Thallium	0.30	U		05/18/2001 13:42	05/18/2001	P
Titanium	0.060	U		05/18/2001 13:42	05/18/2001	P
Vanadium	0.15	U		05/18/2001 13:42	05/18/2001	P
Zinc	5.6		*	05/18/2001 13:42	05/18/2001	P

Color Before: colorless Clarity Before: clear

Color After: colorless Clarity After: clear

Texture: Artifacts:

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0131-002 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 04/20/2001 **QC Report No:** SD050801

Receipt Date: 04/23/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	0.60	U		05/18/2001 13:43	05/18/2001	P
Antimony	0.30	U		05/18/2001 13:43	05/18/2001	P
Arsenic	0.30	U		05/18/2001 13:43	05/18/2001	P
Barium	0.50	B		05/18/2001 13:43	05/18/2001	P
Beryllium	0.015	U		05/18/2001 13:43	05/18/2001	P
Cadmium	0.030	U		05/18/2001 13:43	05/18/2001	P
Calcium	430.			05/18/2001 13:43	05/18/2001	P
Chromium	0.15	U		05/18/2001 13:43	05/18/2001	P
Cobalt	0.15	U		05/18/2001 13:43	05/18/2001	P
Copper	0.15	U		05/18/2001 13:43	05/18/2001	P
Iron	9.0			05/18/2001 13:43	05/18/2001	P
Lead	0.15	U		05/18/2001 13:43	05/18/2001	P
Magnesium	22.	B		05/18/2001 13:43	05/18/2001	P
Manganese	3.6		*	05/18/2001 13:43	05/18/2001	P
Mercury	0.0020	U	~~H~~ RK	05/21/2001 13:45	05/21/2001	CV
Molybdenum	0.15	U	5/2/01	05/18/2001 13:43	05/18/2001	P
Nickel	0.12	U		05/18/2001 13:43	05/18/2001	P
Phosphorus	1.5	U		05/18/2001 13:43	05/18/2001	P
Selenium	0.30	U		05/18/2001 13:43	05/18/2001	P
Silver	0.090	U		05/18/2001 13:43	05/18/2001	P
Strontium	1.9			05/18/2001 13:43	05/18/2001	P
Thallium	0.30	U		05/18/2001 13:43	05/18/2001	P
Titanium	0.060	U		05/18/2001 13:43	05/18/2001	P
Vanadium	0.23	B		05/18/2001 13:43	05/18/2001	P
Zinc	0.57		*	05/18/2001 13:43	05/18/2001	P

Color Before: colorless **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

ICV Source: SPEX/EPA **CCV Source:** SPEX/EPA

Concentration Units: mg/L

Analyte	Initial Calibration				Continuing Calibration						(1)
	True	Found	% R	QC Criteria	True	Found	% R	Found	% R	QC Criteria	M
Aluminum	10.00	10.48	104.8	90-110	10.00	10.45	104.5	10.49	104.9	90-110	P
Antimony	10.00	9.940	99.40	90-110	10.00	9.926	99.26	10.02	100.2	90-110	P
Arsenic	10.00	9.294	92.94	90-110	10.00	9.325	93.25	9.309	93.09	90-110	P
Barium	5.000	4.843	96.85	90-110	5.000	4.880	97.61	4.868	97.36	90-110	P
Beryllium	2.000	1.927	96.36	90-110	2.000	1.931	96.53	1.929	96.46	90-110	P
Cadmium	2.000	1.945	97.25	90-110	2.000	1.951	97.57	1.944	97.21	90-110	P
Calcium	10.00	9.479	94.79	90-110	10.00	9.522	95.22	9.493	94.93	90-110	P
Chromium	5.000	5.000	100.0	90-110	5.000	5.012	100.2	4.994	99.89	90-110	P
Cobalt	5.000	4.994	99.88	90-110	5.000	5.038	100.8	5.024	100.5	90-110	P
Copper	5.000	4.856	97.12	90-110	5.000	4.921	98.43	4.900	98.00	90-110	P
Iron	10.00	9.876	98.76	90-110	10.00	10.00	100.0	9.947	99.47	90-110	P
Lead	10.00	9.778	97.78	90-110	10.00	9.781	97.81	9.736	97.36	90-110	P
Magnesium	10.00	9.474	94.74	90-110	10.00	9.500	95.00	9.460	94.60	90-110	P
Manganese	5.000	4.981	99.61	90-110	5.000	5.006	100.1	4.995	99.89	90-110	P
Mercury	0.0100	0.009	98.89	80-120	0.010	0.010	101.0	0.009	99.75	80-120	CV
Molybdenum	5.000	4.809	96.17	90-110	5.000	4.855	97.10	4.814	96.28	90-110	P
Nickel	5.000	5.017	100.3	90-110	5.000	5.037	100.7	5.022	100.4	90-110	P
Phosphorus	50.00	52.79	105.6	90-110	50.00	52.76	105.5	52.65	105.3	90-110	P
Selenium	10.00	9.948	99.48	90-110	10.00	9.958	99.58	9.801	98.01	90-110	P
Silver	2.000	1.966	98.30	90-110	2.000	1.999	99.97	1.993	99.66	90-110	P
Strontium	2.000	1.936	96.79	90-110	2.000	1.948	97.39	1.944	97.21	90-110	P
Thallium	10.00	9.521	95.21	90-110	10.00	10.05	100.5	10.14	101.4	90-110	P
Titanium	2.000	1.994	99.72	90-110	2.000	2.011	100.5	2.007	100.4	90-110	P
Vanadium	5.000	4.861	97.23	90-110	5.000	4.883	97.66	4.865	97.30	90-110	P
Zinc	5.000	4.965	99.31	90-110	5.000	4.972	99.44	4.956	99.12	90-110	P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

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Form 2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

ICV Source: n/a **CCV Source:** SPEX/EPA

Concentration Units: mg/L

	Initial Calibration				Continuing Calibration						(1)
Analyte	True	Found	% R	QC Criteria	True	Found	% R	Found	% R	QC Criteria	M
Aluminum					10.00	10.53	105.3			90-110	P
Antimony					10.00	10.03	100.3			90-110	P
Arsenic					10.00	9.487	94.87			90-110	P
Barium					5.000	4.919	98.37			90-110	P
Beryllium					2.000	1.950	97.50			90-110	P
Cadmium					2.000	1.968	98.41			90-110	P
Calcium					10.00	9.576	95.76			90-110	P
Chromium					5.000	5.055	101.1			90-110	P
Cobalt					5.000	5.094	101.9			90-110	P
Copper					5.000	4.949	98.99			90-110	P
Iron					10.00	10.25	102.5			90-110	P
Lead					10.00	9.868	98.68			90-110	P
Magnesium					10.00	9.578	95.78			90-110	P
Manganese					5.000	5.061	101.2			90-110	P
Molybdenum					5.000	4.845	96.90			90-110	P
Nickel					5.000	5.076	101.5			90-110	P
Phosphorus					50.00	53.08	106.2			90-110	P
Selenium					10.00	10.04	100.4			90-110	P
Silver					2.000	2.001	100.1			90-110	P
Strontium					2.000	1.961	98.07			90-110	P
Thallium					10.00	10.02	100.2			90-110	P
Titanium					2.000	2.028	101.4			90-110	P
Vanadium					5.000	4.871	97.42			90-110	P
Zinc					5.000	5.013	100.3			90-110	P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

Form 2B

CRDL STANDARD FOR AA AND ICP

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

AA CRDL Source: SCP SCIENCE

ICP CRDL Source: SCP SCIENCE

	Concentration Units: mg/L					
		Initial		Final		
Analyte	True	Found	%R	Found	%R	M
Aluminum						P
Antimony	0.2000	0.1982	99.10	0.2488	124.4	P
Arsenic	0.2000	0.2005	100.2	0.1560	78.00	P
Barium						P
Beryllium	0.01000	0.006900	69.00	0.007000	70.00	P
Cadmium	0.02000	0.01390	69.50	0.01300	65.00	P
Calcium						P
Chromium	0.1000	0.06880	68.80	0.07050	70.50	P
Cobalt	0.1000	0.07380	73.80	0.08320	83.20	P
Copper	0.1000	0.08260	82.60	0.06280	62.80	P
Iron	0.2000	0.1543	77.15	0.1945	97.25	P
Lead	0.1000	0.08370	83.70	0.07860	78.60	P
Magnesium						P
Manganese	0.03000	0.02050	68.33	0.02100	70.00	P
Mercury	0.002000	0.001937	96.85	0.002091	104.6	CV
Molybdenum	0.4000	0.2805	70.12	0.2746	68.65	P
Nickel	0.08000	0.05920	74.00	0.05400	67.50	P
Phosphorus	1.000	0.8063	80.63	0.7688	76.88	P
Selenium	0.2000	0.2125	106.3	0.1967	98.35	P
Silver	0.06000	0.07950	132.5	0.06680	111.3	P
Strontium	0.4000	0.2836	70.90	0.2852	71.30	P
Thallium	0.2000	0.1827	91.35	0.1622	81.10	P
Titanium	0.04000	0.02780	69.50	0.02460	61.50	P
Vanadium	0.1000	0.07520	75.20	0.07440	74.40	P
Zinc	0.1000	0.06590	65.90	0.06620	66.20	P

Comments:

Form 3

BLANKS

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

Preparation Blank Matrix (soil/water): WATER

Analyte	Initial Calib. Blank (mg/L)	C	Continuing Calibration Blank Value(s) (mg/L) 1	C	2	C	3	C	Preparation Blank 1 (mg/L)	C	(1) M
Aluminum	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	P
Antimony	0.100	U	0.100	U	-0.113	B	0.100	U	0.100	U	P
Arsenic	0.100	U	0.100	U	0.100	U	0.100	U	0.100	U	P
Barium	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Beryllium	0.00500	U	0.00500	U	0.00500	U	0.00500	U	0.00500	U	P
Cadmium	0.0100	U	0.0100	U	0.0100	U	0.0100	U	0.0100	U	P
Calcium	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	P
Chromium	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Cobalt	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Copper	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Iron	0.100	U	0.100	U	0.100	U	0.100	U	0.100	U	P
Lead	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Magnesium	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	P
Manganese	0.0100	U	0.0100	U	0.0100	U	0.0100	U	0.0100	U	P
Mercury	0.00100	U	0.00100	U	0.00100	U			0.00100	U	CV
Molybdenum	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Nickel	0.0400	U	0.0400	U	0.0400	U	0.0400	U	0.0400	U	P
Phosphorus	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	P
Selenium	0.100	U	-0.112	B	0.100	U	-0.108	B	0.100	U	P
Silver	0.0300	U	0.0300	U	0.0300	U	0.0300	U	0.0300	U	P
Strontium	0.0100	U	0.0100	U	0.0100	U	0.0100	U	0.0100	U	P
Thallium	0.100	U	0.100	U	0.100	U	0.100	U	-0.121	B	P
Titanium	0.0200	U	0.0200	U	0.0200	U	0.0200	U	0.0200	U	P
Vanadium	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Zinc	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

Form 4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: Rocky Flats **SDG No:** MAY08

Check Sample Source: SPEX/EPA **QC Report No:** SD050801

Concentration Units

Analyte	True		Initial Found			Final Found		
	Sol. A	Sol. AB	Sol. A1	Sol. A1B1	%R [1]	Sol. A2	Sol. A2B2	%R [1]
Aluminum	500	500	486	501	100	479	488	97.7
Antimony		1.00	0.0357	1.03	103	-0.0172	0.984	98.4
Arsenic		1.00	-0.0858	0.959	95.9	-0.0731	0.998	99.8
Barium		0.500	0.00710	0.493	98.5	0.00610	0.483	96.6
Beryllium		0.500	0.000400	0.497	99.4	0.000300	0.490	98.1
Cadmium		1.00	-0.00960	0.920	92.0	-0.00900	0.907	90.7
Calcium	500	500	469	481	96.3	463	470	94.1
Chromium		0.500	-0.0259	0.464	92.7	-0.0178	0.463	92.5
Cobalt		0.500	0.0135	0.491	98.3	0.0134	0.488	97.6
Copper		0.500	-0.0136	0.472	94.4	-0.00110	0.470	93.9
Iron	200	200	184	188	93.9	182	186	92.9
Lead		1.00	-0.0495	0.875	87.5	-0.0128	0.887	88.7
Magnesium	500	500	490	495	99.1	488	492	98.4
Manganese		0.500	-0.00340	0.480	96.0	-0.00300	0.475	95.0
Molybdenum		1.00	-0.00880	0.956	95.6	0.0193	0.959	95.9
Nickel		1.00	-0.00980	0.920	92.0	-0.00580	0.908	90.8
Phosphorus			-0.123	0.0775		-0.149	0.161	
Selenium		1.00	-0.0740	0.895	89.5	-0.0470	0.968	96.8
Silver		1.00	0.0187	1.02	102	0.0109	0.990	99.0
Strontium		1.00	0.00250	1.01	101	0.00140	0.998	99.8
Thallium		1.00	0.0483	1.10	110	0.0507	1.10	110
Titanium			-0.00250	-0.00180		-0.00500	-0.00480	
Vanadium		0.500	0.0001000	0.495	99.0	0.0266	0.480	96.0
Zinc		1.00	0.00660	0.994	99.4	0.000900	0.974	97.4

(1) %R = Found/True x 100 , if True <> 0, the Control Limit = 80 - 120%

Comments:

Form 5a

Pre-Digest Matrix Spike Sample Recovery

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Lab Sample ID: X01C0130-001 **% Solids:** 0 **Matrix:** TCLP Extract

MS Sample ID: X01C0130-001M **% Solids:** 0 **Level (low/med):**

Concentration Units: mg/L

Analyte	Control Limit	Matrix Spike (SSR)	C	Sample (SR)	C	Spike Added (SA)	(2) %R	Q	(1) M
Aluminum	75 - 125	16.6272		0.777600	B	15.00	106.		P
Antimony	75 - 125	12.6492		0.3	U	12.00	105.		P
Arsenic	75 - 125	6.43680		0.3	U	6.000	107.		P
Barium	75 - 125	6.81420		0.290100	B	6.000	109.		P
Beryllium	75 - 125	6.32880		0.02	U	6.000	105.		P
Cadmium	75 - 125	6.40680		0.0420000	B	6.000	106.		P
Calcium		66.9987		70.4520		0.0			NR
Chromium	75 - 125	9.82320		3.47010		6.000	106.		P
Cobalt	75 - 125	3.33840		0.1	U	3.000	111.		P
Copper	75 - 125	37.7163		23.0439		15.00	97.8		P
Iron	75 - 125	16.6692		0.651600		15.00	107.		P
Lead	75 - 125	6.41730		0.1	U	6.000	107.		P
Magnesium		5.03670	B	5.30940	B	0.0			NR
Manganese	75 - 125	7.07640		0.569100		6.000	108.		P
Mercury	75 - 125	0.0511572		0.002	U	0.05000	102.		CV
Molybdenum	75 - 125	3.29790		0.1	U	3.000	110.		P
Nickel	75 - 125	6.60990		0.1	U	6.000	110.		P
Phosphorus		6.68880		2.20320	B	0.0			NR
Selenium	75 - 125	16.2369		0.3	U	15.00	108.		P
Silver	75 - 125	6.39120		0.09	U	6.000	107.		P
Strontium	75 - 125	3.57870		0.394500	B	3.000	106.		P
Thallium	75 - 125	12.7668		0.3	U	12.00	106.		P
Titanium	75 - 125	6.68340		0.06	U	6.000	111.		P
Vanadium	75 - 125	6.66720		0.1	U	6.000	111.		P
Zinc	75 - 125	18.1785		1.66740		15.00	110.		P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA (NR = spike not required)

(2) %R = 100 • (SSR - SR) / SA ; Note that %R is calculated before values for SSR, SR, and SA are rounded for reporting. Consequently, if %R is recalculated from the reported values, differences can occur due to the rounding .

Comments:

Form 5b

Post-Digest Matrix Spike Sample Recovery

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Lab Sample ID: X01C0130-001 **Matrix:** TCLP Extract

AS Sample ID: X01C0130-001I **Level (low/med):**

Concentration Units: mg/L

Analyte	Control Limit	Analytical Spike (SSR)	C	Sample (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75.0 - 125	5.48		0.259	B	5.00	104.		P
Antimony	75.0 - 125	4.09		0.1	U	4.00	102.		P
Arsenic	75.0 - 125	2.12		0.1	U	2.00	106.		P
Barium	75.0 - 125	2.25		0.0967	B	2.00	107.		P
Beryllium	75.0 - 125	2.08		0.005	U	2.00	104.		P
Cadmium	75.0 - 125	2.11		0.0140	B	2.00	105.		P
Calcium		23.0		23.5		0.0			P
Chromium	75.0 - 125	3.28		1.16		2.00	106.		P
Cobalt	75.0 - 125	1.10		0.05	U	1.00	110.		P
Copper	75.0 - 125	12.7		7.68		5.00	100.		P
Iron	75.0 - 125	5.58		0.217		5.00	107.		P
Lead	75.0 - 125	2.13		0.05	U	2.00	106.		P
Magnesium		1.72	B	1.77	B	0.0			P
Manganese	75.0 - 125	2.34		0.190		2.00	107.		P
Mercury	75.0 - 125	0.0250		0.001	U	0.0250	100.		CV
Molybdenum	75.0 - 125	1.07		0.05	U	1.00	107.		P
Nickel	75.0 - 125	2.17		0.04	U	2.00	109.		P
Phosphorus		2.29		0.734	B	0.0			P
Selenium	75.0 - 125	5.38		0.1	U	5.00	108.		P
Silver	75.0 - 125	2.10		0.03	U	2.00	105.		P
Strontium	75.0 - 125	1.18		0.132	B	1.00	105.		P
Thallium	75.0 - 125	4.73		0.1	U	4.00	118.		P
Titanium	75.0 - 125	2.21		0.02	U	2.00	110.		P
Vanadium	75.0 - 125	2.17		0.05	U	2.00	109.		P
Zinc	75.0 - 125	6.01		0.556		5.00	109.		P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA (NR = spike not required)

(2) %R = 100 * (SSR - SR) / SA

Comments:

Form 6

Sample and Sample Duplicate Result Comparison

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Dup Sample ID: X01C0130-001D **% Solids:** N/A **Level (low/med):**

Lab Sample ID: X01C0130-001 **% Solids:** N/A **Matrix:** TCLP Extract

Concentration Units: mg/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	(2) RPD	Q	(1) M
Aluminum	± 1.2 mg/L	0.778	B	0.6	U	200.		P
Antimony		0.3	U	0.3	U			P
Arsenic		0.3	U	0.3	U			P
Barium	± 0.60 mg/L	0.290	B	0.1	U	200.		P
Beryllium		0.02	U	0.02	U			P
Cadmium	± 0.060 mg/L	0.0420	B	0.0309	B	30.5		P
Calcium	± 30 mg/L	70.5		54.6		25.3		P
Chromium	± 20 %	3.47		3.13		10.3		P
Cobalt		0.1	U	0.1	U			P
Copper	± 20 %	23.0		19.7		15.8		P
Iron	± 0.60 mg/L	0.652		0.342	B	62.4		P
Lead		0.1	U	0.1	U			P
Magnesium	± 30 mg/L	5.31	B	5.10	B	4.10		P
Manganese	± 20 %	0.569		0.456		22.0	*	P
Mercury		0.002	U	0.002	U			CV
Molybdenum		0.1	U	0.1	U			P
Nickel		0.1	U	0.1	U			P
Phosphorus	± 3.0 mg/L	2.20	B	1.93	B	13.2		P
Selenium		0.3	U	0.3	U			P
Silver		0.09	U	0.09	U			P
Strontium	± 1.2 mg/L	0.395	B	0.327	B	18.8		P
Thallium		0.3	U	0.3	U			P
Titanium		0.06	U	0.06	U			P
Vanadium		0.1	U	0.1	U			P
Zinc	± 0.30 mg/L	1.67		1.33		22.8	*	P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

(2) RPD = 100 * | S - D | / ((S + D) / 2)

Comments:

Form 7

LABORATORY CONTROL SAMPLE

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Solid LCS Source: **Sample ID:** EPAQC21A1

Aqueous LCS Source: SPEX

Analyte	Aqueous (mg/L)				Control Limits (%)		(1)
	True	Found	C	%R	Lower Limit	Upper Limit	M
Aluminum	0.0	0.200	U				P
Antimony	4.000	4.27		107.	80.00	120.0	P
Arsenic	4.000	3.97		99.2	80.00	120.0	P
Barium	0.0	0.0500	U				P
Beryllium	4.000	4.04		101.	80.00	120.0	P
Cadmium	4.000	4.14		104.	80.00	120.0	P
Calcium	4.000	4.38	B	110.	80.00	120.0	P
Chromium	4.000	4.21		105.	80.00	120.0	P
Cobalt	4.000	4.24		106.	80.00	120.0	P
Copper	4.000	4.06		101.	80.00	120.0	P
Iron	4.000	4.23		106.	80.00	120.0	P
Lead	4.000	4.15		104.	80.00	120.0	P
Magnesium	4.000	4.06	B	102.	80.00	120.0	P
Manganese	4.000	4.20		105.	80.00	120.0	P
Molybdenum	4.000	4.19		105.	80.00	120.0	P
Nickel	4.000	4.21		105.	80.00	120.0	P
Phosphorus	0.0	1.30					P
Selenium	4.000	4.13		103.	80.00	120.0	P
Silver	0.0	0.0300	U				P
Strontium	4.000	4.10		102.	80.00	120.0	P
Thallium	4.000	4.32		108.	80.00	120.0	P
Titanium	4.000	4.26		106.	80.00	120.0	P
Vanadium	4.000	4.16		104.	80.00	120.0	P
Zinc	4.000	4.15		104.	80.00	120.0	P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

Form 7

LABORATORY CONTROL SAMPLE

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Solid LCS Source: **Sample ID:** EPAQC7A1

Aqueous LCS Source: SPEX

Analyte	Aqueous (mg/L)				Control Limits (%)		(1)
	True	Found	C	%R	Lower Limit	Upper Limit	M
Aluminum	4.000	4.16		104.	80.00	120.0	P
Antimony	0.0	0.100	U				P
Arsenic	0.0	0.100	U				P
Barium	4.000	4.13		103.	80.00	120.0	P
Beryllium	0.0	0.00500	U				P
Cadmium	0.0	0.0100	U				P
Calcium	0.0	0.367	B				P
Chromium	0.0	0.0500	U				P
Cobalt	0.0	0.0500	U				P
Copper	0.0	0.0500	U				P
Iron	0.0	0.115	B				P
Lead	0.0	0.0500	U				P
Magnesium	0.0	0.200	U				P
Manganese	0.0	0.0100	U				P
Molybdenum	0.0	0.0500	U				P
Nickel	0.0	0.0400	U				P
Phosphorus	0.0	0.500	U				P
Selenium	0.0	0.100	U				P
Silver	2.000	2.10		105.	80.00	120.0	P
Strontium	0.0	0.0100	U				P
Thallium	0.0	0.100	U				P
Titanium	0.0	0.0200	U				P
Vanadium	0.0	0.0500	U				P
Zinc	0.0	0.0500	U				P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

Form 7

LABORATORY CONTROL SAMPLE

Lab Name: Rocky Flats

SDG No: MAY08

QC Report No: SD050801

Solid LCS Source:

Sample ID: XEGCO-10

Aqueous LCS Source: SPEX

Analyte	Aqueous (mg/L)				Control Limits (%)		(1)
	True	Found	C	%R	Lower Limit	Upper Limit	M
Mercury	0.02500	0.0245		97.9	80.00	120.0	CV

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

Form 9

ICP SERIAL DILUTIONS

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Lab Sample ID: X01C0130-001SD

Matrix: TCLP EXTRACT

Concentration Units: mg/L

Analyte	Control Limit (1)	Sample (I)	C	Serial Dil. (S)	€	% D (2)	Q	M (3)
Aluminum	NC	0.259	B	1.	U	100.		P
Antimony	NC	0.1	U	0.5	U			P
Arsenic	NC	0.1	U	0.5	U			P
Barium	NC	0.0967	B	0.2	U	100.		P
Beryllium	NC	0.005	U	0.02	U			P
Cadmium	NC	0.0140	B	0.05	U	100.		P
Calcium	± 10 %	23.5		24.3	B	3.5		P
Chromium	NC	1.16		1.16		0.50		P
Cobalt	NC	0.05	U	0.2	U			P
Copper	± 10 %	7.68		7.78		1.2		P
Iron	NC	0.217		0.715	B	230.		P
Lead	NC	0.05	U	0.2	U			P
Magnesium	NC	1.77	B	1.80	B	1.6		P
Manganese	NC	0.190		0.184		2.7		P
Molybdenum	NC	0.05	U	0.2	U			P
Nickel	NC	0.04	U	0.2	U			P
Phosphorus	NC	0.734	B	2.	U	100.		P
Selenium	NC	0.1	U	0.5	U			P
Silver	NC	0.03	U	0.1	U			P
Strontium	NC	0.132	B	0.122	B	6.8		P
Thallium	NC	0.1	U	0.5	U			P
Titanium	NC	0.02	U	0.1	U			P
Vanadium	NC	0.05	U	0.2	U			P
Zinc	NC	0.556		0.527		5.3		P

(1) NC (no criteria) if I < 5 0* IDL (I is the analyzed concentration, S is the analyzed concentration * 5)

(2) %D = 100 * (I - S) / I

(3) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

Form 10

INSTRUMENT DETECTION LIMITS

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

Instrument Name: JY48P ICP

Analyte	Wave-length (nm)	Background Correction(s)		IDL (mg/L)	RDL (mg/L)	IDL Date	M
		low (nm)	high (nm)				
Aluminum	308.215		308.305	0.20	0.40	04/10/01	P
Antimony	206.833		206.923	0.10	0.20	04/10/01	P
Arsenic	193.759		193.879	0.10	0.20	04/10/01	P
Barium	233.527		233.647	0.050	0.20	04/10/01	P
Beryllium	313.042	312.972		0.0050	0.010	04/10/01	P
Cadmium	226.502		226.552	0.010	0.020	04/10/01	P
Calcium	315.887		315.977	0.20	10	04/10/01	P
Chromium	267.716	267.596		0.050	0.10	04/10/01	P
Cobalt	228.616	228.616		0.050	0.10	04/10/01	P
Copper	324.75		324.800	0.050	0.10	04/10/01	P
Iron	238.204		238.294	0.10	0.20	04/10/01	P
Lead	220.353	220.313		0.050	0.10	04/10/01	P
Magnesium	279.553		279.643	0.20	10	04/10/01	P
Manganese	257.61		257.730	0.010	0.030	04/10/01	P
Molybdenum	202.03	201.99		0.050	0.40	04/10/01	P
Nickel	231.604		231.654	0.040	0.080	04/10/01	P
Phosphorus	214.914	214.874		0.50	1.0	04/10/01	P
Selenium	196.09		196.180	0.10	0.20	04/10/01	P
Silver	328.068		328.158	0.030	0.060	04/10/01	P
Strontium	407.771		407.891	0.010	0.40	04/10/01	P
Thallium	190.864	190.744		0.10	0.20	04/10/01	P
Titanium	334.941		335.061	0.020	0.040	04/10/01	P
Vanadium	292.402		292.522	0.050	0.10	04/10/01	P
Zinc	213.856	213.786		0.050	0.10	04/10/01	P

Comments:

Form 10

INSTRUMENT DETECTION LIMITS

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

Instrument Name: CVAA #400-1

Analyte	Wave-length (nm)	Background Correction(s)		IDL (mg/L)	RDL (mg/L)	IDL Date	M
		low (nm)	high (nm)				
Mercury	253.6			0.0010	0.0020	04/10/01	CV

Comments:

Form 11

ICP Interelement Correction Factors (Annual)

Lab Name: Rocky Flats

QC Report No: SD050801 SDG No: MAY08

ICP ID No: JY48P ICP Date: 1/10/01

Analyte	(nm)	Interelement Correction Factors (x .001)																	
		Al	Ba	Ca	Co	Cr	Cu	Fe	Mg	Mn	Mo	Ni	P	Pu	Se	Ti	U	V	Zn
Aluminum	308.21			0.55				-0.42	0.12	1.0	38			2.0			-3.1	7.2	
Antimony	206.83	0.090		-0.010	0.00	35		0.00	0.20			-0.66		0.26			-1.2	0.54	-1.9
Arsenic	193.76	4.8		0.010	0.46	2.5		0.030	0.00		1.3	-0.27		-0.65			0.93	6.2	
Barium	233.53			0.010				0.00			0.20	-0.28		0.00			0.030	0.74	
Beryllium	313.04													-0.010			-0.030	2.3	
Cadmium	226.50	0.030		0.00	0.040			0.030		-0.010		-0.020		0.050			-0.21		
Calcium	315.89							0.30	0.73					-0.64			-0.040		
Chromium	267.72	0.00							0.38	1.1				-0.26		0.15	0.58	-0.17	
Cobalt	228.62		0.30			0.28		0.040				0.18		0.11			-0.060		
Copper	324.75							0.050			0.31			3.1			-0.18	-0.44	
Lead	220.35	1.1		0.010	-0.60	-0.080		0.080	0.00			0.72		-0.29			0.060	0.010	0.30
Magnesium	279.55													0.050					
Manganese	257.61							0.010	0.050					0.16			-0.15		
Molybdenum	202.03							-0.040		0.95				0.35			-0.71		
Nickel	231.60	0.00						0.37			-1.8			0.28			0.090		
Phosphorus	214.91	0.76		-0.050	-1.6		13	0.15		-3.7	7.5	12		-1.4	-0.30		0.19	-91	1,300
Plutonium	299.64																76		

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Form 11

ICP Interelement Correction Factors (Annual)

Lab Name: Rocky Flats

QC Report No: SD050801 SDG No: MAY08

Analyte	(nm)	Interelement Correction Factors (x .001)																	
		Al	Ba	Ca	Co	Cr	Cu	Fe	Mg	Mn	Mo	Ni	P	Pu	Se	Ti	U	V	Zn
Selenium	196.09	0.15		-0.10		0.18		-0.69	0.00	1.2	-17	-0.030		1.2			-1.4	-0.43	
Silver	328.07			0.080			0.080				-1.0			-0.30			0.70	-0.22	
Strontium	407.77			0.040										0.020					
Thallium	190.86	0.00		0.010	3.3	-0.050		0.060		1.0	3.4	-1.9	0.00	-0.10			0.24	-1.9	0.33
Titanium	334.94			0.010		0.43								-0.090			0.15		
Uranium	367.01							7.2											
Vanadium	292.40							0.070			0.11			0.53		1.4	-3.0		
Zinc	213.86					-0.15	0.37	0.020	0.030			8.7		-0.32			-0.030	-0.28	

* If Analyte not listed, it has not IEC correction factors applied.

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Form 12

ICP LINEAR RANGES

(SEMIANNUAL)

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

ICP ID No: JY48P ICP **Date:** 04/10/01

Analyte	Integration (Sec.)	Concentration (mg/L)	M
Aluminum	10	5,000	P
Antimony	10	1,000	P
Arsenic	10	1,000	P
Barium	10	500	P
Beryllium	10	125	P
Cadmium	10	500	P
Calcium	10	2,500	P
Chromium	10	1,000	P
Cobalt	10	1,000	P
Copper	10	1,000	P
Iron	10	2,000	P
Lead	10	1,000	P
Magnesium	10	500	P
Manganese	10	500	P
Molybdenum	10	1,000	P
Nickel	10	1,000	P
Phosphorus	10	1,000	P
Selenium	10	1,000	P
Silver	10	100	P
Strontium	10	300	P
Thallium	10	1,000	P
Titanium	10	900	P
Vanadium	10	1,000	P
Zinc	10	750	P

Comments:

Form 13

SAMPLE PREPARATION LOG

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Prep Batch: 051801 P

No.	Sample ID Number	Preparation Date	Initial Sample Size	Final Volume (mL)	Sample Preparation Factor
1	EPAQC21A1	05/18/2001	20.00 mL	20.00	1.000
2	EPAQC7A1	05/18/2001	20.00 mL	20.00	1.000
3	TCBLK1	05/18/2001	20.00 mL	20.00	1.000
4	X01C0130-001	05/18/2001	10.00 mL	30.00	3.000
5	X01C0130-001D	05/18/2001	10.00 mL	30.00	3.000
6	X01C0130-001M	05/18/2001	10.00 mL	30.00	3.000
7	X01C0130-002	05/18/2001	10.00 mL	30.00	3.000
8	X01C0130-003	05/18/2001	10.00 mL	30.00	3.000
9	X01C0130-004	05/18/2001	10.00 mL	30.00	3.000
10	X01C0130-005	05/18/2001	10.00 mL	30.00	3.000
11	X01C0130-006	05/18/2001	10.00 mL	30.00	3.000
12	X01C0130-007	05/18/2001	10.00 mL	30.00	3.000
13	X01C0130-008	05/18/2001	10.00 mL	30.00	3.000
14	X01C0130-009	05/18/2001	10.00 mL	30.00	3.000
15	X01C0130-010	05/18/2001	10.00 mL	30.00	3.000
16	X01C0131-001	05/18/2001	10.00 mL	30.00	3.000
17	X01C0131-002	05/18/2001	10.00 mL	30.00	3.000

Form 13

SAMPLE PREPARATION LOG

Lab Name: Rocky Flats SDG No: MAY08

QC Report No: SD050801

Prep Batch: 052101 CV

No.	Sample ID Number	Preparation Date	Initial Sample Size	Final Volume (mL)	Sample Preparation Factor
18	TCBLK1	05/21/2001	40.00 mL	40.00	1.000
19	X01C0130-001	05/21/2001	20.00 mL	40.00	2.000
20	X01C0130-001D	05/21/2001	20.00 mL	40.00	2.000
21	X01C0130-001M	05/21/2001	20.00 mL	40.00	2.000
22	X01C0130-002	05/21/2001	20.00 mL	40.00	2.000
23	X01C0130-003	05/21/2001	20.00 mL	40.00	2.000
24	X01C0130-004	05/21/2001	20.00 mL	40.00	2.000
25	X01C0130-005	05/21/2001	20.00 mL	40.00	2.000
26	X01C0130-006	05/21/2001	20.00 mL	40.00	2.000
27	X01C0130-007	05/21/2001	20.00 mL	40.00	2.000
28	X01C0130-008	05/21/2001	20.00 mL	40.00	2.000
29	X01C0130-009	05/21/2001	20.00 mL	40.00	2.000
30	X01C0130-010	05/21/2001	20.00 mL	40.00	2.000
31	X01C0131-001	05/21/2001	20.00 mL	40.00	2.000
32	X01C0131-002	05/21/2001	20.00 mL	40.00	2.000
33	XEGCO-10	05/21/2001	40.00 mL	40.00	1.000

Form 14

ANALYSIS RUN LOG

Lab Name: Rocky Flats

QC Report No: SD050801 SDG No: MAY08

Instrument ID No: JY48P ICP Run No: JY48P ICP:5/18/01 1:21:58 PM Method: P

Start Date: 05/18/2001 End Date: 05/18/2001

Time	Sample ID	Total DF*	Ag	Al	As	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	Mg	Mn	Mo	Ni	P	Pb	Sb	Se	Sr	Ti	Tl	V	Zn
12:40	ICV1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:46	ICB1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:55	CRDL1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:58	INTA1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:59	INTAB1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:03	EPAQC21A1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:05	EPAQC7A1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:07	X01C0130-001	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:09	X01C0130-001M	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:10	X01C0130-001I	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:13	X01C0130-001SD	5.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:15	X01C0130-001D	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:17	CCV1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:20	CCB1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:21	TCBLK1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:21	X01C0130-002	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:23	X01C0130-003	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

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Form 14

ANALYSIS RUN LOG

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

			Ag	Al	As	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	Mg	Mn	Mo	Ni	P	Pb	Sb	Se	Sr	Ti	Tl	V	Zn
13:25	X01C0130-004	3.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:26	X01C0130-005	3.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:28	X01C0130-006	3.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:30	X01C0130-007	3.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:32	X01C0130-008	3.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:33	X01C0130-009	3.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:35	X01C0130-010	3.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:37	CCV2	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:40	CCB2	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:42	X01C0131-001	3.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:43	X01C0131-002	3.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:45	CRDL2	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:49	INTA2	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:50	INTAB2	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:52	CCV3	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
13:56	CCB3	1.000	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

* Prep Factor x Analytical Dilution Factor

0052

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Form 14

ANALYSIS RUN LOG

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

Instrument ID No: CVAA #400-1 **Run No:** CVAA#400-1_052101_1300 **Method:** CV

Start Date: 05/21/2001 **End Date:** 05/21/2001

Time	Sample ID	Total DF*	Hg
13:00	0 ppbstd	1.000	X
13:01	2.5 ppbstd	1.000	X
13:03	5 ppb std	1.000	X
13:05	10 ppb std	1.000	X
13:06	25 ppb std	1.000	X
13:08	50 ppb std	1.000	X
13:10	ICV1	1.000	X
13:11	ICB1	1.000	X
13:13	CRDL1	1.000	X
13:15	XEGCO-10	1.000	X
13:16	TCBLK1	1.000	X
13:18	X01C0130-001	2.000	X
13:20	X01C0130-001M	2.000	X
13:21	X01C0130-001I	1.000	X
13:23	X01C0130-001D	2.000	X
13:25	X01C0130-002	2.000	X
13:26	X01C0130-003	2.000	X

0053

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Form 14

ANALYSIS RUN LOG

Lab Name: Rocky Flats

QC Report No: SD050801 SDG No: MAY08

			Hg
13:28	X01C0130-004	2.000	X
13:30	CCV1	1.000	X
13:31	CCB1	1.000	X
13:33	X01C0130-005	2.000	X
13:35	X01C0130-006	2.000	X
13:36	X01C0130-007	2.000	X
13:38	X01C0130-008	2.000	X
13:40	X01C0130-009	2.000	X
13:41	X01C0130-010	2.000	X
13:43	X01C0131-001	2.000	X
13:45	X01C0131-002	2.000	X
13:46	CRDL2	1.000	X
13:48	CCV2	1.000	X
13:50	CCB2	1.000	X

* Prep Factor x Analytical Dilution Factor

0054

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PREPARATION RAW DATA

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ICP INITIAL INSTRUMENT ANALYSIS FORM

Analysis Date: 5-18-01 Analyst: D. Sipp / Cliff Vola

QC Data File: SD050801.XLS L-Procedure: L-4153/6010

QC Report No: SD050801.RPT Chemist Approval RC. Vola

No.	Calibration Standard or Sample ID	Standard or Sample Result mg/l	Standard Addition #1 mg/l	% Recovery of Standard Addition #1	Sample Dilution Factor mg/l	Final Result as mg/l or mg/kg
1	ICV1					
2	ICB1					
3	CRDL1					
4	INTA1					
5	INTAB1					
6	EPAQC21A1					
7	EPAQC7A1					
8	X01C0130-001					
9	X01C0130-001M					
10	X01C0130-001I					
11	X01C0130-001SD					
12	X01C0130-001D					
13	CCV1					
14	CCB1					
15	TCBLK1					
16	X01C0130-002					
17	X01C0130-003					
18	X01C0130-004					
19	X01C0130-005					
20	X01C0130-006					
21	X01C0130-007					
22	X01C0130-008					
23	X01C0130-009					
24	X01C0130-010					
25	CCV2					
26	CCB2					
27	X01C0131-001					
28	X01C0131-002					
29	CRDL2					
30	INTA2					
31	INTAB2					
32	CCV3					
33	CCB3					
34						
35						
36						
37						
38						
39						
40						

Comments: XEGCO-8 STD (.100 ML/10.0 ML)

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (BUILDING 559 LAB)

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TOTAL METALS SAMPLE PREPARATON FORM

PREP DATE : 5-18-01
QC DATA FILE : SD050801.XLS
QC REPORT NO. : SD050801.RPT
IS HEATING SOURCE 95 +/- 5 DEGREES C? (Y) OR NO
SAMPLE TYPE : Bldg. 776 solids (TCLP)

ANALYST : D. Lipp / Cliff Nolan
L-PROCEDURE USED: L-4150 (3016)
CHEMIST APPROVAL : R. Kelly

NO.	SAMPLE I. D.	INITIAL (gm) or (ml) RS 5/18/01	FINAL VOLUME (ml)	SAMPLE DILUTION FACTOR	COLOR BEFORE	CLARITY BEFORE	COLOR AFTER	CLARITY AFTER
1	R BLANK (EXT#1)	~~10.0~~ 20.0	~~30.0~~ 20.0	~~3.000~~ 1.0	COLORLESS	CLEAR	COLORLESS	CLEAR
2	EPAQC 21 STD	20.0	20.0	1.000	COLORLESS	CLEAR	COLORLESS	CLEAR
3	EPAQC 7A STD	20.0	20.0	1.000	COLORLESS	CLEAR	COLORLESS	CLEAR
4	X01C0130-001	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
5	X01C0130-001M	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
6	X01C0130-001D	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
7	X01C0130-002	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
8	X01C0130-003	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
9	X01C0130-004	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
10	X01C0130-005	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
11	X01C0130-006	10.0	30.0	3.000	COLORLESS	CLEAR	COLORLESS	CLEAR
12	X01C0130-007	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
13	X01C0130-008	10.0	30.0	3.000	COLORLESS	CLEAR	COLORLESS	CLEAR
14	X01C0130-009	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
15	X01C0130-010	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
16	X01C0131-001	10.0	30.0	3.000	COLORLESS	CLEAR	COLORLESS	CLEAR
17	X01C0131-002	10.0	30.0	3.000	COLORLESS	CLEAR	COLORLESS	CLEAR
18								
19								
20								
21								
22								
23								
24								
25								

Comments: XEGCO-8 STD (.100 ML/10.0 ML)

0057

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MERCURY COLD-VAPOR INITIAL INSTRUMENT ANALYSIS FORM

Analysis Date: 5-21-01	Analyst: D. Stipp / Cliff Nolan
QC Data File: SD050801.XLS	Element: Hg
QC Report No: SD050801.RPT	L-Procedure: L-4152
Hg Instrument ID: Buck Scientific 400-1	Chemist Approval R. Vella
Sample Type: Bldg. 776 solids (TCLP)	
START TIME: 1300	

No.	Calibration Standard or Sample ID	Standard or Sample % Tran.	Std or Sample Absorb.	Std. or Sample Result (ng/ml)	Standard Addition #1 (ng/ml)	% Recover of Standard Addition #1	Sample Dilution Factor	Final Result as (ng/ml) or (ng/g)
1	0 ppb Hg	99.7						
2	2.5 ppb Hg	90.0						
3	5 ppb Hg	82.3						
4	10 ppb Hg	68.8						
5	25 ppb Hg	44.0						
6	50 ppb Hg	22.5						
7	ICV STD 10	70.0						
8	ICB STD 0	99.5						
9	CRDL STD 2	92.0						
10	XEGCO-10	44.2						
11	R BLANK (Ext. #1)	99.7						
12	X01C0130-001	99.6						
13	X01C0130-001M	42.8						
14	X01C0130-001I	43.5						
15	X01C0130-001D	99.5						
16	X01C0130-002	99.5						
17	X01C0130-003	99.5						
18	X01C0130-004	99.7						
19	CCV STD 10	69.5						
20	CCB STD 0	99.5						
21	X01C0130-005	99.6						
22	X01C0130-006	99.6						
23	X01C0130-007	99.5						
24	X01C0130-008	99.5						
25	X01C0130-009	99.7						
26	X01C0130-010	99.5						
27	X01C0131-001	99.4						
28	X01C0131-002	99.6						
29	CRDL STD 2	91.5						
30	CCV STD 10	69.8						
31	CCB STD 0	99.6						
32								
33	STOP: 1350							
34								
35								
36								
37								
38								
39								
40								

Comments: ISA = 0.25ml of 1.0ppm Hg in 10.0ml of sample

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (BUILDING 559 LAB)

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MERCURY DIGESTION PREPARATION FORM
(SOLIDS, LIQUIDS, AND TCLP EXTRACT SAMPLES)

Mercury Digestion Prep Date: 5-21-01	Analyst: D. Supp / Cliff Nolan
QC Data File: SD050801.XLS	Element: Mercury
QC Report No: SD050801.RPT	L-Procedure: L-4152
	Chemist Approval R Kelly
Sample Type: Bldg. 776 solids (TCLP)	

No.	Calibration Standard or Sample ID	Sample Aliquot Volume (ml)	Sample Weight (grams)	Hg Digest Final Volume (ml)	Sample Dilution Factor
1	0 ppb Hg	40.0		40.0	1.000
2	2.5 ppb Hg	40.0		40.0	1.000
3	5 ppb Hg	40.0		40.0	1.000
4	10 ppb Hg	40.0		40.0	1.000
5	25 ppb Hg	40.0		40.0	1.000
6	50 ppb Hg	40.0		40.0	1.000
7	10 ppb Hg ICV/CCV	40.0		40.0	1.000
8	0 ppb Hg ICB/CCB	40.0		40.0	1.000
9	2 ppb Hg CRDL	40.0		40.0	1.000
10	XEGCO-10	40.0		40.0	1.000
11	R BLANK (Ext. #1)	40.0		40.0	1.000
12	X01C0130-001	20.0		40.0	2.000
13	X01C0130-001M	20.0		40.0	2.000
14	X01C0130-001D	20.0		40.0	2.000
15	X01C0130-002	20.0		40.0	2.000
16	X01C0130-003	20.0		40.0	2.000
17	X01C0130-004	20.0		40.0	2.000
18	X01C0130-005	20.0		40.0	2.000
19	X01C0130-006	20.0		40.0	2.000
20	X01C0130-007	20.0		40.0	2.000
21	X01C0130-008	20.0		40.0	2.000
22	X01C0130-009	20.0		40.0	2.000
23	X01C0130-010	20.0		40.0	2.000
24	X01C0131-001	20.0		40.0	2.000
25	X01C0131-002	20.0		40.0	2.000
26					
27					
28					
29					
30					
31					
32					
33					

Comments: MRSP= 1.0ml of 1.0ppm Hg

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (BUILDING 559 LAB)

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Calibration Data Summary

Run Name: CVAA #400-1_052101_1300

Analysis Date: 05/21/2001

Element	Standard Concentration	Units	Reading	Units
Hg	0.00	ug/L	0.0013	Abs
	2.50	ug/L	0.0458	Abs
	5.00	ug/L	0.0846	Abs
	10.00	ug/L	0.1624	Abs
	25.00	ug/L	0.3565	Abs
	50.00	ug/L	0.6478	Abs

Linear Regression Results
Y = mX + b

Correlation Coefficient (r)	Slope (m)	Y-int (b)
0.998	1.281E-002	1.889E-002

Quadratic Regression Results
Y = aX^2 + bX +c

Correlation Coefficient (r)	Coef. a	Coef. b	Coef. c
1.000	-5.533E-00	1.558E-002	6.243E-003

Sample Data Summary

Run Name: CVAA #400-1_052101_1300

Analysis Date: 05/21/2001

Lab Sample ID	Client Sample ID	QC Type	Element	Concentration		Measurement		Cal Type
				Value	Units	Reading	Units	
ICV1	ICV	ICV	Hg	9.89	ug/L	0.155	Abs	Q
ICB1	ICB	ICB		-0.261	ug/L	0.00218	Abs	Q
CRDL1	CRDL1	CRDL		1.94	ug/L	0.0362	Abs	Q
XEGCO-10	N/A	LCS		24.5	ug/L	0.355	Abs	Q
TCBLK1	TCBLK1	MB		-0.317	ug/L	0.00130	Abs	Q
X01C0130-001	01C0130-001.002	SAM		-0.289	ug/L	0.00174	Abs	Q
X01C0130-001M	01C0130-001.002	MS		25.6	ug/L	0.369	Abs	Q
X01C0130-001I	01C0130-001.002	AS		25.0	ug/L	0.362	Abs	Q
X01C0130-001D	01C0130-001.002	DUP		-0.261	ug/L	0.00218	Abs	Q
X01C0130-002	01C0130-002.002	SAM		-0.261	ug/L	0.00218	Abs	Q
X01C0130-003	01C0130-003.002	SAM		-0.261	ug/L	0.00218	Abs	Q
X01C0130-004	01C0130-004.002	SAM		-0.317	ug/L	0.00130	Abs	Q
CCV1	CCV1	CCV		10.1	ug/L	0.158	Abs	Q
CCB1	CCB1	CCB		-0.261	ug/L	0.00218	Abs	Q
X01C0130-005	01C0130-005.002	SAM		-0.289	ug/L	0.00174	Abs	Q
X01C0130-006	01C0130-006.002	SAM		-0.289	ug/L	0.00174	Abs	Q
X01C0130-007	01C0130-007.002	SAM		-0.261	ug/L	0.00218	Abs	Q
X01C0130-008	01C0130-008.002	SAM		-0.261	ug/L	0.00218	Abs	Q
X01C0130-009	01C0130-009.002	SAM		-0.317	ug/L	0.00130	Abs	Q
X01C0130-010	01C0130-010.002	SAM		-0.261	ug/L	0.00218	Abs	Q
X01C0131-001	01C0131-001.002	SAM		-0.233	ug/L	0.00261	Abs	Q
X01C0131-002	01C0131-002.002	SAM		-0.289	ug/L	0.00174	Abs	Q
CRDL2	CRDL2	CRDL		2.09	ug/L	0.0386	Abs	Q
CCV2	CCV2	CCV		9.97	ug/L	0.156	Abs	Q
CCB2	CCB2	CCB		-0.289	ug/L	0.00174	Abs	Q

Linear Regression Results Y = mX + b			Quadratic Regression Results Y = aX^2 + bX +c			
Correlation Coefficient (r)	Slope (m)	Y-int (b)	Correlation Coefficient (r)	Coef. a	Coef. b	Coef. c
9.983E-001	1.281E-002	1.889E-00	9.999E-001	-5.533E-00	1.558E-002	6.243E-003

STANDARDS SUMMARY

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Building 559 Inorganic Section

(2000/2001 Certified Aqueous Standard Inventory and Traceability Information)

Certified Standard I. D. Information	Lot Numbers	Aqueous Matrix	Preparation Date	Receipt Date	Date Opened	Expiration Date	Vendor Identification	Traceability Information	
10000 mg/L Aluminum Std	SC0220161	4% HNO3	8/14/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Antimony Std	SC0188007	4% HNO3	7/12/00	10/25/00	10/30/00	10/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Arsenic Std	SC0164906	4% HNO3	6/19/00	10/25/00	10/30/00	9/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Barium Std	SC0161903	4% HNO3	6/19/00	10/25/00	10/30/00	9/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Beryllium Std	SC0158879	4% HNO3	6/16/00	10/25/00	10/30/00	9/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Cadmium Std	SC0188004	4% HNO3	7/12/00	10/25/00	10/30/00	10/31/01	SCP SCIENCE	NIST	RFP-10
10000 mg/L Calcium Std	SC0229214	4% HNO3	8/22/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Cerium Std	7-38CE	2% HNO3	4/1/01	5/1/01	5/1/01	4/30/02	SPEX Industries	NIST	RFP-10
1000 mg/L Chromium Std	SC0216137	4% HNO3	8/9/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Cobalt Std	SC0252292	4% HNO3	9/20/00	10/25/00	10/30/00	12/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Copper Std	SC0229211	4% HNO3	8/22/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
10000 mg/L Iron Std	SC0199064	6% HNO3	7/28/00	10/25/00	10/30/00	10/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Lead Std	SC0196060	4% HNO3	7/18/00	10/25/00	10/30/00	10/31/01	SCP SCIENCE	NIST	RFP-10
10000 mg/L Magnesium Std	SC0164908	7% HNO3	6/20/00	10/25/00	10/30/00	9/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Magnesium Std	7-62MG	HNO3	10/1/00	10/25/00	10/30/00	9/30/01	SPEX Industries	NIST	RFP-10
1000 mg/L Manganese Std	SC0214128	4% HNO3	8/3/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
10 mg/L Mercury Std	8/41HG-AX/AY	HNO3	4/1/01	4/26/01	4/26/01	4/30/02	SPEX Industries	NIST	RFP-10
1000 mg/L Mercury Std	SC0188005	10% HNO3	7/12/00	10/25/00	10/30/00	10/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Molybdenum Std	SC0188006	H2O	7/18/00	10/25/00	10/30/00	10/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Nickel Std	SC0228198	4% HNO3	8/21/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Phosphorus Std	SC0252297	H2O	9/18/00	10/25/00	10/30/00	12/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Selenium Std	SC0252298	4% HNO3	9/18/00	10/25/00	10/30/00	12/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Silver Std	SC0252290	4% HNO3	9/18/00	10/25/00	10/30/00	12/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Strontium Std	SC0241245	4% HNO3	9/5/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Thallium Std	SC0252294	4% HNO3	9/19/00	10/25/00	10/30/00	12/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Titanium Std	SC0235232	H2O	8/31/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
10000 mg/L Uranium Std	N6-71U	HNO3	10/1/00	10/25/00	10/30/00	9/30/01	SPEX Industries	NIST	RFP-10
1000 mg/L Vanadium Std	SC0252295	4% HNO3	9/20/00	10/25/00	10/30/00	12/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Zinc Std	SC0241244	4% HNO3	9/5/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10

Building 559 Inorganic Section

(2000/2001 Certified Aqueous Standard Inventory and Traceability Information)

Certified Standard I. D. Information	Lot Numbers	Aqueous Matrix	Preparation Date	Receipt Date	Date Opened	Expiration Date	Vendor Identification	Traceability Information	
INT-A1 Interferents Std 5000 mg/L Al,Ca,Mg 2000 mg/L Fe	20-142AS	HNO3/H2O	4/1/01	4/26/01	4/26/01	4/30/02	SPEX Industries	NIST/EPA	RFP-10
INT-A2 Interferents Std 1000 mg/L Cr,Cu,Mn,Ni,Ti,V	19-101AS	5% HNO3	10/1/00	10/25/00	10/30/00	10/15/01	SPEX Industries	NIST/EPA	RFP-10
INT-B1 Analytes Std 100 mg/L Ag,Cd,Ni,Pb,Zn 50 mg/L Ba,Be,Co,Cr,Cu,Mn,V	1-65GM	HNO3/H2O	4/1/01	4/26/01	4/26/01	4/30/02	SPEX Industries	NIST/EPA	RFP-10
INT-B2 Analytes Std 100 mg/L Al,As,B,Mo,Na,Sb,Se,Tl 10 mg/L Ca,Fe,Mg,Si	16-65AS	HNO3/H2O	9/1/00	10/25/00	10/30/00	9/30/01	SPEX Industries	NIST/EPA	RFP-10
QC-7A Laboratory Control Std 100 mg/L Al,Ba,B,Na 50 mg/L Ag	18-82AS	HNO3/H2O	9/1/00	10/25/00	10/30/00	9/30/01	SPEX Industries	NIST/EPA	RFP-10
QC-21 Laboratory Control Std 100 mg/L Sb,As,Be,Cd,Ca,Cr, 100 mg/L Co,Cu,Fe,Pb,Li,Mg, 100 mg/L Mn,Mo,Ni,Se,Sr,Tl, 100 mg/L Ti,V,Zn	18-137AS	5% HNO3	9/1/00	10/25/00	10/30/00	9/30/01	SPEX Industries	NIST/EPA	RFP-10

Building 559 Inorganic Section

(2000/2001 Certified Solid Reference Standard Inventory and Traceability Information)

Certified Standard I. D. Information	Lot Numbers	Solid Matrix	Preparation Date	Receipt Date	Date Opened	Expiration Date	Vendor Identification	Traceability Information	
CRM021-100 Metals on Soil # 3	E021	Soil	7/1/00	7/18/00	7/18/00	7/31/01	Resource Technology Corporation	NIST/EPA	RFP-9
2725.2 mg/Kg Aluminum									
4954.8 mg/Kg Antimony									
24.8 mg/Kg Arsenic									
586.45 mg/Kg Barium									
1.2 mg/Kg Cadmium									
5426.5 mg/Kg Calcium									
10.7 mg/Kg Chromium									
(2.7) mg/Kg Cobalt									
4792.4 mg/Kg Copper									
6481.4 mg/Kg Iron									
(144742) mg/Kg Lead									
(2367.4) mg/Kg Magnesium									
174.2 mg/Kg Manganese									
4.7 mg/Kg Mercury									
12.6 mg/Kg Nickel									
6.5 mg/Kg Silver									
(0.6) mg/Kg Thallium									
(8.7) mg/Kg Vanadium									
546.4 mg/Kg Zinc									
CLP Inorganic Soil ERA 540	241	Soil	6/1/99	6/14/99	6/14/99	No Expiration Date	Environmental Resource Assoiates	NIST/EPA	RFP-8
5250 mg/Kg Aluminum									
53.0 mg/Kg Antimony									
93.9 mg/Kg Arsenic									
330 mg/Kg Barium									
42.7 mg/Kg Beryllium									
71.8 mg/Kg Boron									
97.2 mg/Kg Cadmium									
1320 mg/Kg Calcium									
46.0 mg/Kg Chromium									
120 mg/Kg Cobalt									
147 mg/Kg Copper									
10200 mg/Kg Iron									
135 mg/Kg Lead									
2340 mg/Kg Magnesium									
166 mg/Kg Manganese									
2.17 mg/Kg Mercury									
40.4 mg/Kg Molybdenum									
138 mg/Kg Nickel									
1480 mg/Kg Potassium									
96.0 mg/Kg Selenium									
86.7 mg/Kg Silver									
845 mg/Kg Sodium									
102 mg/Kg Strontium									
45.7 mg/Kg Thallium									
140 mg/Kg Tin									
319 mg/Kg Titanium									
65.1 mg/Kg Vanadium									
75.0 mg/Kg Zinc									

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Building 559 Inorganic Section

(2000/2001 Certified Solid Reference Standard Inventory and Traceability Information)

Certified Standard I. D. Information	Lot Numbers	Solid Matrix	Preparation Date	Receipt Date	Date Opened	Expiration Date	Vendor Identification	Traceability Information	
XEGCO-8 MRSP/ISA Lab Spike Std 500 mg/L Al,Cu,Fe,Se,Zn 400 mg/L Sb,Tl 200 mg/L As,Ba,Be,Cd,Cr,Pb, 200 mg/L Mn,Ni,Ag,Ti,V 100 mg/L Co,Mo,Sr	1-51PD	5 % HNO3/ tr. HF/ tr.Tartaric Acid	6/1/00	6/21/00	6/21/00	6/30/01	SPEX Industries	NIST/EPA	RFP-9
XEGCO-9 CCV Verification Std 500 mg/L P 100 mg/L Al,Sb,As,Ca,Pb,Mg, 100 mg/L Tl,Se,Fe 50 mg/L Ba,Cr,Co,Cu,Mn,Mo, 50 mg/L Ni,V,Zn 20 mg/L Be,Cd,Ag,Sr,Ti	5-198PD	5 % HNO3/ tr. HF & Tartaric Acid	4/1/01	5/3/01	5/3/01	4/30/02	SPEX Industries	NIST/EPA	RFP-10
TCLP Metals in Soil ERA 544 0.245 mg/l Antimony 0.0592 mg/l Arsenic 3.07 mg/l Barium 0.134 mg/l Beryllium 0.477 mg/l Cadmium 0.894 mg/l Chromium 1.12 mg/l Lead 1.34 mg/l Mercury 0.424 mg/l Nickel 0.202 mg/l Selenium 0.438 mg/l Silver 1.53 mg/l Zinc	85007	Soil	4/1/00	4/5/00	4/5/00	4/30/01	Environmental Resource Associates	NIST/EPA	RFP-9
XEGCO-10 LCS Hg Verification Std 5 ug/mL Hg	1-34PD	5 % HNO3	6/1/00	6/15/00	6/16/00	6/30/01	SPEX Industries	NIST/EPA	RFP-9

9900

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INSTRUMENT RAW DATA

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K.C. Kelly 5-18-01 Cliff Cohan 5-18-01 D. Gupp

12:27:59 05-18-2001
STANDARD SOLUTION 1

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET
2	FE	136	136	139	0	-4
3	U	3118	3111	3556	3032	-49
5	PU	2116	2114	2113	0	1
6	MG	78	77	76	0	1
8	CA	511	510	492	0	18
10	MN	294	292	297	0	-4
11	MO	947	936	0	938	3
12	V	827	845	845	0	-9
13	AL	1135	1135	1128	0	7
14	NI	730	728	722	0	7
16	BA	546	543	552	0	-8
17	SR	359	363	366	0	-5
18	CR	650	649	0	637	12
21	SE	1548	1547	1562	0	-15
22	TI	411	412	415	0	-4
23	CU	1265	1262	1259	0	5
26	CO	495	493	0	495	-1
28	AG	1800	1799	1796	0	3
30	AS	946	935	953	0	-13
31	BE	575	574	0	551	23
32	ZN	231	227	0	226	3
34	CD	356	355	357	0	-2
36	PB	2575	2565	0	2559	11
37	SB	1413	1407	1407	0	2
38	TL	824	840	0	836	-4
39	P	532	528	0	529	1

12:29:27 05-18-2001
STANDARD SOLUTION 2

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET
6	MG	3695	3757	80	0	3646
11	MO	9505	9713	0	981	8628
12	V	14562	14988	989	0	13785
16	BA	10543	10738	568	0	10072
17	SR	18599	18877	394	0	18343
18	CR	13913	14205	0	662	13396
32	ZN	9408	9628	0	239	9278
34	CD	9776	9978	375	0	9502
36	PB	38303	39036	0	2692	35977

12:30:30 05-18-2001
STANDARD SOLUTION 3

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET
2	FE	7119	7361	190	0	7049
6	MG	13528	13956	83	0	13658
8	CA	9874	10235	519	0	9535
10	MN	27426	28300	312	0	27550
13	AL	7453	7706	1155	0	6424
14	NI	12681	13104	759	0	12133
22	TI	13695	14054	432	0	13442
37	SB	3139	3182	1489	0	1671

12:31:41 05-18-2001
STANDARD SOLUTION 4

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET
21	SE	11543	11619	1594	0	9986
23	CU	9239	9261	1275	0	7975
26	CO	10219	10262	0	525	9715
28	AG	7489	7513	1800	0	5701
30	AS	12307	12419	958	0	11404

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31	BE	66730	67170	0	661	66288
38	TL	12400	12458	0	846	11582

12:32:58 05-18-2001
STANDARD SOLUTION 5

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET
3	U	5740	5707	3603	3166	2448
6	MG	333233	332533	323	0	332559

12:35:21 05-18-2001
STANDARD SOLUTION 6

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET
5	PU	5311	5327	2476	0	2843
39	P	3032	3062	0	570	2476

Standard Solution Set: TCP2
05-18-2001 12:35

Chan	Elem	Coef0	Coef1	Coef2	SD 0	SD 1	SD 2
2	FE	-3.	141.	None	.5	.5	None
3	U	-48.	24.7	None	16.	.29	None
5	PU	2.	28.4	None	7.	.20	None
6	MG	1.	1418.	-1.5E+0	1.6	20.	.5E-1
8	CA	19.	190.	None	1.8	.7	None
10	MN	-4.	1378.	None	1.0	5.	None
11	MO	4.	862.	None	3.	3.	None
12	V	-9.	690.	None	3.0	2.6	None
13	AL	7.	63.9	None	4.	.27	None
14	NI	7.	606.	None	2.6	2.3	None
16	BA	-8.	1007.	None	1.9	4.	None
17	SR	-5.	1835.	None	1.3	7.	None
18	CR	12.	669.	None	2.3	2.5	None
21	SE	-14.	200.	None	5.	.8	None
22	TI	-3.	672.	None	1.5	2.5	None
23	CU	5.	399.	None	4.	1.7	None
26	CO	-1.	486.	None	1.7	1.8	None
28	AG	4.	570.	None	6.	2.7	None
30	AS	-12.	228.	None	3.	.9	None
31	BE	24.	13253.	None	2.0	47.	None
32	ZN	3.	464.	None	.8	1.7	None
34	CD	-1.	950.	None	1.3	3.	None
36	PB	12.	719.	None	9.	2.7	None
37	SB	3.	162.	None	5.	1.2	None
38	TL	-4.	231.	None	2.9	.9	None
39	P	2.	49.6	None	1.9	.22	None

ICV1/DS/CN 12:40:18 05-18-2001

SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnCon
2	FE	1553	1529	151	0	1389	9.8
3	U	3176	3186	3629	3094	-47	.0
5	PU	2175	2176	2187	0	-12	-.4
6	MG	13511	13264	84	0	13302	9.4
8	CA	2341	2320	507	0	1823	9.4
10	MN	7232	7105	310	0	6858	4.9
11	MO	5166	5094	0	976	4154	4.8
12	V	4262	4226	897	0	3346	4.8
13	AL	1848	1843	1155	0	690	10.7
14	NI	3829	3778	758	0	3045	5.01
16	BA	5481	5411	575	0	4871	4.84
17	SR	3966	3889	379	0	3547	1.93
18	CR	4046	3994	0	655	3364	5.00
21	SE	3619	3574	1638	0	1959	9.86
22	TI	1780	1747	425	0	1339	1.99
23	CU	3261	3220	1302	0	1938	4.85
26	CO	2969	2922	0	516	2429	5.00
28	AG	2970	2957	1842	0	1120	1.96
30	AS	3148	3107	995	0	2131	9.39
31	BE	26553	26083	0	606	25712	1.93
32	ZN	2579	2545	0	235	2327	5.00
34	CD	2232	2204	370	0	1847	1.94
36	PB	9775	9647	0	2654	7056	9.79
37	SB	3122	3099	1461	0	1649	10.15
38	TL	3103	3091	0	891	2205	9.56
39	P	3598	3565	0	561	3021	59.31

ICV1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	9.8764	MG/L		.0610	10
3	U	.0015	MG/L	D: Conc<DL	.6663	1
5	PU	-.4626	MG/L	D: Conc<DL	.2587	1
6	MG	9.4740	MG/L		.1444	10
8	CA	9.4785	MG/L		.0603	10
10	MN	4.9805	MG/L		.0306	10
11	MO	4.8086	MG/L		.0309	10
12	V	4.8612	MG/L		.0307	10
13	AL	10.4774	MG/L		.0944	10
14	NI	5.0167	MG/L		.0317	10
16	BA	4.8426	MG/L		.0302	10
17	SR	1.9357	MG/L		.0119	3
18	CR	5.0004	MG/L		.0314	100
21	SE	9.9477	MG/L		.0693	100
22	TI	1.9943	MG/L		.0125	30
23	CU	4.8557	MG/L		.0334	100
26	CO	4.9938	MG/L		.0314	100
28	AG	1.9659	MG/L		.0175	30
30	AS	9.2941	MG/L		.0607	100
31	BE	1.9272	MG/L		.0119	30
32	ZN	4.9654	MG/L		.0310	100
34	CD	1.9449	MG/L		.0121	30
36	PB	9.7781	MG/L		.0629	100
37	SB	9.9396	MG/L		.0952	100
38	TL	9.5214	MG/L		.0613	100
39	P	52.7944	MG/L		.3970	1000

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

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ICB1/DS/CN 12:46:06 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnCon
2	FE	135	135	137	0	-2	.0
3	U	3106	3103	3530	3024	-47	.0
5	PU	2102	2102	2121	0	-19	-.7
6	MG	78	78	76	0	1	.0
8	CA	509	509	487	0	22	.0
10	MN	291	293	296	0	-4	0.0
11	MO	936	932	0	943	-10	-.0
12	V	832	830	850	0	-19	-.0
13	AL	1131	1130	1118	0	11	.0
14	NI	726	725	728	0	-3	-.0
16	BA	543	543	549	0	-7	.0
17	SR	360	358	368	0	-9	-.0
18	CR	647	647	0	635	11	-.0
21	SE	1527	1529	1559	0	-32	-.0
22	TI	408	408	415	0	-7	-.0
23	CU	1259	1255	1257	0	0	-.0
26	CO	490	490	0	489	0	.0
28	AG	1787	1790	1780	0	8	.0
30	AS	945	939	953	0	-12	.0
31	BE	572	572	0	548	24	.0
32	ZN	224	225	0	228	-4	-.01
34	CD	353	353	356	0	-3	-.0
36	PB	2542	2555	0	2554	-6	-.02
37	SB	1397	1395	1405	0	-9	-.06
38	TL	826	829	0	837	-10	-.02
39	P	527	527	0	524	3	.02

ICB1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.0101	MG/L	D: Conc<DL	.0034	1
3	U	.0944	MG/L	D: Conc<DL	.6663	1
5	PU	-.7165	MG/L	D: Conc<DL	.2588	1
6	MG	.0004	MG/L		.0000	1
8	CA	.0189	MG/L	D: Conc<DL	.0095	1
10	MN	.0001	MG/L		.0000	1
11	MO	-.0144	MG/L	D: Conc<DL	.0038	1
12	V	-.0129	MG/L	D: Conc<DL	.0042	1
13	AL	.0787	MG/L	D: Conc<DL	.0628	1
14	NI	-.0152	MG/L	D: Conc<DL	.0042	1
16	BA	.0012	MG/L	D: Conc<DL	.0019	1
17	SR	-.0023	MG/L	D: Conc<DL	.0006	1
18	CR	-.0007	MG/L	D: Conc<DL	.0001	1
21	SE	-.0837	MG/L	D: Conc<DL	.0273	1
22	TI	-.0049	MG/L	D: Conc<DL	.0021	1
23	CU	-.0093	MG/L	D: Conc<DL	.0112	1
26	CO	.0028	MG/L	D: Conc<DL	.0036	1
28	AG	.0078	MG/L	D: Conc<DL	.0111	1
30	AS	.0022	MG/L		.0003	1
31	BE	.0000	MG/L		.0000	1
32	ZN	-.0145	MG/L	D: Conc<DL	.0017	1
34	CD	-.0005	MG/L	D: Conc<DL	.0000	1
36	PB	-.0241	MG/L	D: Conc<DL	.0126	1
37	SB	-.0689	MG/L	D: Conc<DL	.0307	1
38	TL	-.0261	MG/L	D: Conc<DL	.0127	1
39	P	.0418	MG/L	D: Conc<DL	.0368	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

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CRDL1/DS/CN 12:55:01 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	156	157	138	0	18	.15
3	U	3133	3139	3582	3053	-49	-.02
5	PU	2131	2129	2130	0	0	-.06
6	MG	77	76	75	0	1	.00
8	CA	511	510	494	0	16	-.01
10	MN	324	323	299	0	24	.02
11	MO	1191	1193	0	946	245	.28
12	V	902	888	852	0	43	.07
13	AL	1144	1143	1130	0	13	.09
14	NI	771	768	727	0	42	.05
16	BA	550	549	557	0	-7	.00
17	SR	888	886	371	0	515	.28
18	CR	702	701	0	643	58	.06
21	SE	1611	1597	1577	0	27	.20
22	TI	433	433	418	0	15	.02
23	CU	1303	1301	1264	0	37	.08
26	CO	532	531	0	496	35	.07
28	AG	1850	1853	1802	0	48	.07
30	AS	1001	998	966	0	33	.20
31	BE	671	671	0	554	117	.00
32	ZN	260	262	0	227	33	.06
34	CD	370	370	358	0	11	.01
36	PB	2641	2640	0	2568	72	.08
37	SB	1464	1453	1423	0	35	.20
38	TL	886	878	0	843	38	.18
39	P	579	578	0	531	47	.89

CRDL1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1543	MG/L		.0035	1
3	U	-.0240	MG/L	D: Conc<DL	.0138	1
5	PU	-.0615	MG/L	D: Conc<DL	.2587	1
6	MG	.0001	MG/L		.0000	1
8	CA	-.0102	MG/L	D: Conc<DL	.0094	1
10	MN	.0204	MG/L		.0007	1
11	MO	.2805	MG/L		.0042	1
12	V	.0751	MG/L		.0043	1
13	AL	.0873	MG/L	D: Conc<DL	.0628	1
14	NI	.0592	MG/L		.0042	1
16	BA	.0005	MG/L		.0000	1
17	SR	.2835	MG/L		.0018	1
18	CR	.0688	MG/L		.0034	1
21	SE	.2125	MG/L		.0273	1
22	TI	.0277	MG/L		.0021	1
23	CU	.0826	MG/L		.0112	1
26	CO	.0738	MG/L		.0036	1
28	AG	.0794	MG/L		.0111	1
30	AS	.2005	MG/L		.0146	1
31	BE	.0068	MG/L		.0001	1
32	ZN	.0658	MG/L		.0018	1
34	CD	.0139	MG/L		.0013	1
36	PB	.0836	MG/L		.0126	1
37	SB	.1982	MG/L		.0307	1
38	TL	.1827	MG/L		.0127	1
39	P	.8062	MG/L		.0373	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

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INTA1/DS/CN 12:57:56 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	26353	26110	328	0	25902	183.66
3	U	3040	3039	3407	2925	-7	1.71
5	PU	2097	2099	2064	0	33	1.10
6	MG	327333	325766	315	0	326234	399.59
8	CA	90186	89786	704	0	89282	469.21
10	MN	322	321	300	0	21	.01
11	MO	1082	1087	0	1095	-11	-.01
12	V	833	843	839	0	-1	.01
13	AL	32253	32190	1165	0	31055	486.08
14	NI	761	760	718	0	42	.05
16	BA	558	556	552	0	4	.01
17	SR	390	392	360	0	31	.01
18	CR	731	732	0	636	96	.12
21	SE	1789	1791	1839	0	-49	-.17
22	TI	406	409	409	0	-2	.00
23	CU	1226	1226	1221	0	4	-.00
26	CO	491	493	0	483	9	.02
28	AG	1759	1765	1727	0	35	.05
30	AS	1757	1741	1265	0	483	2.17
31	BE	559	560	0	531	29	.00
32	ZN	261	261	0	247	13	.02
34	CD	386	385	377	0	8	.01
36	PB	3475	3478	0	3058	418	.56
37	SB	1621	1630	1620	0	6	.02
38	TL	953	960	0	979	-23	-.08
39	P	650	649	0	635	14	.25

INTA1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	183.6656	MG/L		1.1348	100
3	U	.3995	MG/L	D: Conc<DL	.6665	3
5	PU	1.0744	MG/L		.2589	1
6	MG	490.4904 ~~399.5937~~	MG/L		6.0922	100
8	CA	468.8726	MG/L		2.9305	100
10	MN	-.0034	MG/L	D: Conc<DL	.0007	1
11	MO	-.0087	MG/L	D: Conc<DL	.0038	1
12	V	.0001	MG/L	D: Conc<DL	.0042	1
13	AL	485.8570	MG/L		3.1824	100
14	NI	-.0098	MG/L	D: Conc<DL	.0042	1
16	BA	.0070	MG/L		.0019	1
17	SR	.0025	MG/L		.0007	1
18	CR	-.0258	MG/L	D: Conc<DL	.0035	1
21	SE	-.0740	MG/L	D: Conc<DL	.0274	1
22	TI	-.0024	MG/L	D: Conc<DL	.0021	1
23	CU	-.0135	MG/L	D: Conc<DL	.0000	1
26	CO	.0134	MG/L		.0036	1
28	AG	.0186	MG/L	D: Conc<DL	.0111	1
30	AS	-.0857	MG/L	D: Conc<DL	.0198	3
31	BE	.0004	MG/L	D: Conc<DL	.0001	1
32	ZN	.0065	MG/L		.0017	1
34	CD	-.0095	MG/L	D: Conc<DL	.0013	1
36	PB	-.0494	MG/L	D: Conc<DL	.0131	1
37	SB	.0356	MG/L	D: Conc<DL	.0307	1
38	TL	.0482	MG/L		.0127	1
39	P	-.1228	MG/L	D: Conc<DL	.0369	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

5-18-01

312

INTAB1/DS/CN 12:59:42 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	27000	26633	328	0	26488	187.81
3	U	3037	3039	3396	2910	6	2.21
5	PU	2098	2097	2076	0	21	.67
6	MG	330966	328533	317	0	329432	416.50
8	CA	92760	91986	704	0	91668	481.75
10	MN	991	980	297	0	688	.50
11	MO	1943	1922	0	1111	822	.94
12	V	1179	1175	837	0	339	.50
13	AL	33320	33103	1171	0	32040	501.50
14	NI	1332	1321	721	0	605	.98
16	BA	1049	1041	551	0	493	.49
17	SR	2264	2231	361	0	1886	1.03
18	CR	1061	1057	0	630	428	.62
21	SE	2002	1996	1858	0	141	.77
22	TI	407	407	408	0	-1	.00
23	CU	1421	1414	1220	0	197	.48
26	CO	727	722	0	482	241	.49
28	AG	2337	2328	1726	0	606	1.05
30	AS	2010	1989	1260	0	739	3.29
31	BE	7217	7123	0	544	6626	.49
32	ZN	729	724	0	250	476	1.01
34	CD	1275	1264	377	0	893	.94
36	PB	4159	4160	0	3062	1097	1.50
37	SB	1785	1792	1617	0	171	1.03
38	TL	1193	1195	0	972	221	.97
39	P	731	725	0	637	90	1.74

INTAB1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	187.8150	MG/L		1.1604	100
3	U	.8729	MG/L	D: Conc<DL	.6667	3
5	PU	.6047	MG/L	D: Conc<DL	.2588	1
6	MG	~~416.5033~~ 495.2986	MG/L		6.3500	100
8	CA	481.4019	MG/L		3.0088	100
10	MN	.4801	MG/L		.0031	1
11	MO	.9563	MG/L		.0071	1
12	V	.4949	MG/L		.0053	1
13	AL	501.2294	MG/L		3.2833	100
14	NI	.9199	MG/L		.0075	1
16	BA	.4924	MG/L		.0036	1
17	SR	1.0131	MG/L		.0063	1
18	CR	.4636	MG/L		.0052	1
21	SE	.8951	MG/L		.0277	1
22	TI	-.0018	MG/L	D: Conc<DL	.0021	1
23	CU	.4719	MG/L		.0116	1
26	CO	.4915	MG/L		.0047	1
28	AG	1.0208	MG/L		.0133	1
30	AS	.9591	MG/L		.0252	3
31	BE	.4971	MG/L		.0030	1
32	ZN	.9943	MG/L		.0065	1
34	CD	.9205	MG/L		.0059	1
36	PB	.8750	MG/L		.0158	3
37	SB	1.0304	MG/L		.0320	1
38	TL	1.1034	MG/L		.0141	1
39	P	.0774	MG/L	D: Conc<DL	.0387	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

5-18-01

3/3

EPAQC21A1/DS/CN 13:03:06 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	733	742	144	0	593	4.23
3	U	3176	3171	3633	3095	-57	-.31
5	PU	2165	2164	2164	0	0	-.04
6	MG	5778	5855	80	0	5736	4.06
8	CA	1351	1365	505	0	853	4.38
10	MN	6050	6135	308	0	5784	4.20
11	MO	4565	4620	0	973	3619	4.19
12	V	3742	3780	898	0	2862	4.16
13	AL	1183	1180	1149	0	32	.39
14	NI	3291	3334	755	0	2557	4.20
16	BA	565	563	571	0	-7	.00
17	SR	7860	7937	384	0	7514	4.09
18	CR	3469	3514	0	656	2834	4.21
21	SE	2446	2429	1640	0	798	4.06
22	TI	3278	3298	428	0	2859	4.25
23	CU	2908	2921	1293	0	1621	4.05
26	CO	2566	2593	0	512	2067	4.25
28	AG	1842	1836	1830	0	9	.01
30	AS	1895	1893	991	0	903	4.01
31	BE	53903	54800	0	651	53700	4.05
32	ZN	2161	2197	0	235	1943	4.18
34	CD	4275	4339	370	0	3937	4.14
36	PB	5625	5655	0	2638	3002	4.15
37	SB	2155	2178	1440	0	726	4.46
38	TL	1854	1871	0	859	1003	4.35
39	P	890	900	0	551	344	6.72

EPAQC21A1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	4.2306	MG/L		.0262	3
3	U	-.3483	MG/L	D: Conc<DL	.6663	1
5	PU	-.0184	MG/L	D: Conc<DL	.2587	1
6	MG	4.0612	MG/L		.0619	3
8	CA	4.3830	MG/L		.0293	3
10	MN	4.2013	MG/L		.0258	3
11	MO	4.1890	MG/L		.0270	3
12	V	4.1560	MG/L		.0264	3
13	AL	.1931	MG/L		.0629	1
14	NI	4.2138	MG/L		.0267	3
16	BA	-.0014	MG/L	D: Conc<DL	.0019	1
17	SR	4.0976	MG/L		.0252	3
18	CR	4.2112	MG/L		.0265	3
21	SE	4.1313	MG/L		.0377	3
22	TI	4.2572	MG/L		.0264	3
23	CU	4.0596	MG/L		.0286	3
26	CO	4.2444	MG/L		.0267	3
28	AG	.0148	MG/L	D: Conc<DL	.0111	1
30	AS	3.9681	MG/L		.0290	3
31	BE	4.0410	MG/L		.0248	3
32	ZN	4.1462	MG/L		.0259	3
34	CD	4.1431	MG/L		.0257	3
36	PB	4.1548	MG/L		.0290	3
37	SB	4.2726	MG/L		.0501	3
38	TL	4.3172	MG/L		.0301	3
39	P	1.2993	MG/L		.0581	10

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

EPAQC7A1/DS/CN 13:05:08 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	152	152	139	0	13	.11
3	U	3135	3145	3585	3059	-51	-.07
5	PU	2136	2132	2140	0	-7	-.28
6	MG	129	128	78	0	51	.03
8	CA	586	585	497	0	88	.36
10	MN	298	300	300	0	-2	.00
11	MO	978	969	0	947	26	.02
12	V	860	839	868	0	-19	-.01
13	AL	1411	1407	1137	0	272	4.15
14	NI	740	738	733	0	5	-.00
16	BA	4743	4690	562	0	4154	4.13
17	SR	373	368	372	0	-2	.00
18	CR	660	656	0	644	14	.00
21	SE	1570	1560	1604	0	-39	-.12
22	TI	418	416	421	0	-4	-.00
23	CU	1280	1281	1271	0	9	.01
26	CO	502	502	0	498	4	.00
28	AG	3019	3001	1809	0	1201	2.10
30	AS	964	966	967	0	-3	.04
31	BE	586	588	0	556	31	.00
32	ZN	229	235	0	227	4	.00
34	CD	359	358	359	0	-1	.00
36	PB	2608	2608	0	2603	5	-.00
37	SB	1431	1424	1424	0	3	.00
38	TL	853	863	0	845	13	.07
39	P	535	539	0	534	2	.01

EPAQC7A1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1146	MG/L		.0034	1
3	U	-.0778	MG/L	D: Conc<DL	.6663	1
5	PU	-.2824	MG/L	D: Conc<DL	.2587	1
6	MG	.0351	MG/L		.0012	1
8	CA	.3668	MG/L		.0098	1
10	MN	.0017	MG/L	D: Conc<DL	.0007	1
11	MO	.0271	MG/L		.0038	1
12	V	-.0144	MG/L	D: Conc<DL	.0042	1
13	AL	4.1551	MG/L		.0686	3
14	NI	-.0022	MG/L	D: Conc<DL	.0042	1
16	BA	4.1340	MG/L		.0258	3
17	SR	.0019	MG/L	D: Conc<DL	.0006	1
18	CR	.0025	MG/L	D: Conc<DL	.0034	1
21	SE	-.1227	MG/L	D: Conc<DL	.0273	1
22	TI	-.0005	MG/L	D: Conc<DL	.0000	1
23	CU	.0113	MG/L	D: Conc<DL	.0112	1
26	CO	.0085	MG/L	D: Conc<DL	.0036	1
28	AG	2.1018	MG/L		.0183	3
30	AS	.0246	MG/L	D: Conc<DL	.0145	1
31	BE	.0006	MG/L		.0001	1
32	ZN	.0036	MG/L	D: Conc<DL	.0017	1
34	CD	.0005	MG/L		.0000	1
36	PB	-.0140	MG/L	D: Conc<DL	.0126	1
37	SB	.0062	MG/L		.0001	1
38	TL	.0732	MG/L		.0127	1
39	P	.0045	MG/L		.0002	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

315

X01C0130-001/DS/CN 13:07:01 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	168	169	141	0	27	.21
3	U	3182	3176	3636	3083	-42	.26
5	PU	2156	2159	2167	0	-10	-.39
6	MG	2607	2563	79	0	2506	1.76
8	CA	5025	4972	512	0	4486	23.48
10	MN	560	559	302	0	257	.18
11	MO	962	970	0	968	-3	-.00
12	V	848	877	872	0	-10	-.00
13	AL	1172	1171	1147	0	24	.27
14	NI	753	754	742	0	11	.00
16	BA	659	660	569	0	90	.09
17	SR	615	610	375	0	238	.13
18	CR	1443	1437	0	653	787	1.15
21	SE	1577	1586	1611	0	-30	-.07
22	TI	423	424	424	0	-1	.00
23	CU	4390	4326	1292	0	3065	7.68
26	CO	502	505	0	501	2	.00
28	AG	1835	1845	1827	0	13	.01
30	AS	976	975	982	0	-7	.02
31	BE	586	588	0	559	28	.00
32	ZN	491	491	0	229	262	.55
34	CD	375	375	363	0	11	.01
36	PB	2620	2630	0	2618	7	-.00
37	SB	1453	1456	1449	0	5	.01
38	TL	843	848	0	859	-14	-.04
39	P	673	668	0	545	125	2.42

X01C0130-001 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.2171	MG/L		.0036	1
3	U	.2631	MG/L	D: Conc<DL	.6663	1
5	PU	-.4191	MG/L	D: Conc<DL	.2587	1
6	MG	1.7697	MG/L		.0270	2
8	CA	23.4839	MG/L		.1473	30
10	MN	.1897	MG/L		.0013	1
11	MO	-.0065	MG/L	D: Conc<DL	.0038	1
12	V	.0001	MG/L	D: Conc<DL	.0000	1
13	AL	.2592	MG/L		.0628	1
14	NI	.0066	MG/L	D: Conc<DL	.0042	1
16	BA	.0967	MG/L		.0019	1
17	SR	.1314	MG/L		.0010	1
18	CR	1.1566	MG/L		.0080	1
21	SE	-.0719	MG/L	D: Conc<DL	.0273	1
22	TI	.0035	MG/L	D: Conc<DL	.0021	1
23	CU	7.6813	MG/L		.0511	10
26	CO	.0057	MG/L	D: Conc<DL	.0036	1
28	AG	.0143	MG/L	D: Conc<DL	.0111	1
30	AS	.0200	MG/L	D: Conc<DL	.0145	1
31	BE	.0003	MG/L	D: Conc<DL	.0001	1
32	ZN	.5557	MG/L		.0038	1
34	CD	.0139	MG/L		.0013	1
36	PB	-.0067	MG/L	D: Conc<DL	.0126	1
37	SB	-.0239	MG/L	D: Conc<DL	.0307	1
38	TL	-.0420	MG/L	D: Conc<DL	.0127	1
39	P	.7343	MG/L		.0403	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

316

X01C0130-001M/DS/CN 13:08:53 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	926	927	146	0	780	5.55
3	U	3151	3145	3600	3068	-53	-.18
5	PU	2143	2139	2150	0	-9	-.35
6	MG	2455	2456	78	0	2377	1.67
8	CA	4760	4792	508	0	4267	22.33
10	MN	3549	3550	304	0	3245	2.35
11	MO	1910	1910	0	957	953	1.10
12	V	2387	2373	853	0	1526	2.22
13	AL	1505	1504	1139	0	365	5.61
14	NI	2083	2084	741	0	1342	2.20
16	BA	2844	2850	566	0	2280	2.27
17	SR	2559	2557	372	0	2185	1.19
18	CR	2844	2856	0	644	2205	3.27
21	SE	2686	2688	1623	0	1063	5.39
22	TI	1923	1915	424	0	1495	2.22
23	CU	6315	6297	1291	0	5014	12.56
26	CO	1047	1046	0	503	543	1.12
28	AG	3033	3027	1812	0	1217	2.13
30	AS	1466	1464	976	0	488	2.19
31	BE	28646	28653	0	602	28047	2.11
32	ZN	3054	3062	0	233	2825	6.08
34	CD	2393	2395	365	0	2028	2.13
36	PB	4171	4167	0	2612	1557	2.14
37	SB	2150	2149	1443	0	706	4.33
38	TL	1847	1849	0	865	982	4.26
39	P	1129	1123	0	548	577	11.31

X01C0130-001M / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	5.5564	MG/L		.0344	10
3	U	-.2214	MG/L	D: Conc<DL	.6663	1
5	PU	-.3418	MG/L	D: Conc<DL	.2587	1
6	MG	1.6788	MG/L		.0256	3
8	CA	22.3328	MG/L		.1401	30
10	MN	2.3588	MG/L		.0145	3
11	MO	1.0992	MG/L		.0080	1
12	V	2.2223	MG/L		.0145	3
13	AL	5.5424	MG/L		.0730	10
14	NI	2.2032	MG/L		.0144	3
16	BA	2.2714	MG/L		.0142	3
17	SR	1.1928	MG/L		.0073	1
18	CR	3.2744	MG/L		.0207	3
21	SE	5.4123	MG/L		.0441	10
22	TI	2.2278	MG/L		.0139	3
23	CU	12.5720	MG/L		.0824	10
26	CO	1.1127	MG/L		.0078	1
28	AG	2.1304	MG/L		.0185	3
30	AS	2.1455	MG/L		.0199	3
31	BE	2.1095	MG/L		.0130	3
32	ZN	6.0595	MG/L		.0376	10
34	CD	2.1355	MG/L		.0133	3
36	PB	2.1391	MG/L		.0185	3
37	SB	4.2163	MG/L		.0492	3
38	TL	4.2556	MG/L		.0296	3
39	P	2.2296	MG/L		.0840	10

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

317

X01C0130-001I/DS/CN 13:10:45 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	930	930	146	0	784	5.58
3	U	3167	3166	3620	3094	-59	-.42
5	PU	2159	2153	2162	0	-6	-.25
6	MG	2519	2512	78	0	2438	1.72
8	CA	4903	4923	512	0	4401	23.03
10	MN	3526	3517	306	0	3215	2.33
11	MO	1905	1896	0	970	930	1.07
12	V	2373	2357	871	0	1493	2.17
13	AL	1507	1510	1147	0	361	5.55
14	NI	2071	2074	749	0	1323	2.17
16	BA	2826	2826	571	0	2255	2.24
17	SR	2551	2538	376	0	2168	1.18
18	CR	2859	2858	0	650	2208	3.28
21	SE	2688	2674	1623	0	1058	5.36
22	TI	1913	1900	425	0	1481	2.20
23	CU	6382	6341	1297	0	5064	12.69
26	CO	1043	1044	0	505	539	1.11
28	AG	3031	3029	1832	0	1198	2.09
30	AS	1467	1464	983	0	482	2.16
31	BE	28300	28230	0	606	27658	2.08
32	ZN	3031	3041	0	236	2800	6.02
34	CD	2371	2371	366	0	2004	2.11
36	PB	4156	4165	0	2612	1547	2.13
37	SB	2128	2137	1447	0	685	4.20
38	TL	1967	1932	0	856	1093	4.74
39	P	1134	1133	0	555	578	11.32

X01C0130-001I / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	5.5845	MG/L		.0345	10
3	U	-.4688	MG/L	D: Conc<DL	.6663	1
5	PU	-.2145	MG/L	D: Conc<DL	.2587	1
6	MG	1.7213	MG/L		.0262	3
8	CA	23.0344	MG/L		.1445	30
10	MN	2.3367	MG/L		.0143	3
11	MO	1.0730	MG/L		.0078	1
12	V	2.1739	MG/L		.0142	3
13	AL	5.4803	MG/L		.0727	10
14	NI	2.1712	MG/L		.0142	3
16	BA	2.2464	MG/L		.0141	3
17	SR	1.1835	MG/L		.0073	1
18	CR	3.2784	MG/L		.0208	3
21	SE	5.3824	MG/L		.0440	10
22	TI	2.2071	MG/L		.0138	3
23	CU	12.6985	MG/L		.0832	10
26	CO	1.1033	MG/L		.0078	1
28	AG	2.0954	MG/L		.0183	3
30	AS	2.1183	MG/L		.0198	3
31	BE	2.0803	MG/L		.0128	3
32	ZN	6.0054	MG/L		.0373	10
34	CD	2.1101	MG/L		.0131	3
36	PB	2.1263	MG/L		.0184	3
37	SB	4.0864	MG/L		.0483	3
38	TL	4.7345	MG/L		.0323	10
39	P	2.2908	MG/L		.0841	10

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

31C

X01C0130-001SD/DS/CN 13:13:12 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	156	157	139	0	17	.14
3	U	3162	3166	3620	3079	-50	-.04
5	PU	2150	2148	2159	0	-11	-.42
6	MG	588	587	76	0	511	.35
8	CA	1442	1448	502	0	943	4.86
10	MN	352	350	304	0	46	.03
11	MO	956	966	0	954	6	.00
12	V	863	852	891	0	-34	-.03
13	AL	1158	1159	1144	0	14	.11
14	NI	743	743	739	0	3	-.00
16	BA	578	577	567	0	10	.01
17	SR	413	415	373	0	40	.02
18	CR	815	816	0	648	168	.23
21	SE	1576	1577	1615	0	-39	-.12
22	TI	417	418	422	0	-5	-.00
23	CU	1908	1910	1285	0	624	1.55
26	CO	503	500	0	499	2	.00
28	AG	1830	1835	1825	0	7	.00
30	AS	968	970	984	0	-15	-.01
31	BE	585	585	0	557	28	.00
32	ZN	283	280	0	229	52	.10
34	CD	363	364	362	0	2	.00
36	PB	2616	2613	0	2617	-3	-.01
37	SB	1439	1434	1440	0	-4	-.03
38	TL	853	858	0	882	-27	-.10
39	P	568	565	0	538	28	.51

X01C0130-001SD / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1429	MG/L		.0035	1
3	U	-.0476	MG/L	D: Conc<DL	.6663	1
5	PU	-.4242	MG/L	D: Conc<DL	.2587	1
6	MG	.3597	MG/L		.0055	1
8	CA	4.8611	MG/L		.0321	10
10	MN	.0369	MG/L		.0007	1
11	MO	.0037	MG/L	D: Conc<DL	.0038	1
12	V	-.0358	MG/L	D: Conc<DL	.0042	1
13	AL	.1147	MG/L	D: Conc<DL	.0628	1
14	NI	-.0058	MG/L	D: Conc<DL	.0042	1
16	BA	.0172	MG/L		.0019	1
17	SR	.0244	MG/L		.0007	1
18	CR	.2324	MG/L		.0037	1
21	SE	-.1219	MG/L	D: Conc<DL	.0273	1
22	TI	-.0023	MG/L	D: Conc<DL	.0021	1
23	CU	1.5550	MG/L		.0151	3
26	CO	.0069	MG/L	D: Conc<DL	.0036	1
28	AG	.0056	MG/L	D: Conc<DL	.0111	1
30	AS	-.0131	MG/L	D: Conc<DL	.0145	1
31	BE	.0004	MG/L	D: Conc<DL	.0001	1
32	ZN	.1052	MG/L		.0018	1
34	CD	.0039	MG/L	D: Conc<DL	.0013	1
36	PB	-.0201	MG/L	D: Conc<DL	.0126	1
37	SB	-.0464	MG/L	D: Conc<DL	.0307	1
38	TL	-.1013	MG/L	D: Conc<DL	.0127	1
39	P	.1809	MG/L		.0370	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

319

X01C0130-001D/DS/CN 13:15:04 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	153	152	139	0	12	.11
3	U	3153	3147	3594	3063	-47	.08
5	PU	2134	2140	2139	0	-2	-.11
6	MG	2513	2455	78	0	2406	1.69
8	CA	4016	3959	506	0	3481	18.20
10	MN	510	501	300	0	205	.15
11	MO	961	949	0	953	1	-.00
12	V	854	874	873	0	-10	-.00
13	AL	1161	1159	1141	0	19	.19
14	NI	740	740	736	0	4	-.00
16	BA	606	597	565	0	36	.04
17	SR	567	567	370	0	196	.10
18	CR	1364	1351	0	646	710	1.04
21	SE	1565	1561	1603	0	-41	-.12
22	TI	417	418	419	0	-2	.00
23	CU	3935	3860	1279	0	2618	6.55
26	CO	502	501	0	497	4	.01
28	AG	1824	1822	1813	0	9	.01
30	AS	962	967	980	0	-15	-.01
31	BE	583	581	0	554	27	.00
32	ZN	444	432	0	229	209	.44
34	CD	370	369	361	0	8	.01
36	PB	2612	2595	0	2590	13	.00
37	SB	1424	1437	1428	0	2	-.00
38	TL	867	841	0	859	-6	-.00
39	P	650	641	0	539	106	2.04

X01C0130-001D / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1139	MG/L		.0034	1
3	U	.0869	MG/L	D: Conc<DL	.6663	1
5	PU	-.1231	MG/L	D: Conc<DL	.2587	1
6	MG	1.6986	MG/L		.0259	3
8	CA	18.2009	MG/L		.1144	30
10	MN	.1521	MG/L		.0011	1
11	MO	-.0022	MG/L	D: Conc<DL	.0038	1
12	V	.0001	MG/L	D: Conc<DL	.0000	1
13	AL	.1801	MG/L	D: Conc<DL	.0628	1
14	NI	-.0048	MG/L	D: Conc<DL	.0042	1
16	BA	.0432	MG/L		.0019	1
17	SR	.1089	MG/L		.0009	1
18	CR	1.0429	MG/L		.0074	1
21	SE	-.1261	MG/L	D: Conc<DL	.0273	1
22	TI	.0024	MG/L	D: Conc<DL	.0021	1
23	CU	6.5571	MG/L		.0440	10
26	CO	.0106	MG/L	D: Conc<DL	.0036	1
28	AG	.0085	MG/L	D: Conc<DL	.0111	1
30	AS	-.0159	MG/L	D: Conc<DL	.0145	1
31	BE	.0002	MG/L	D: Conc<DL	.0001	1
32	ZN	.4421	MG/L		.0032	1
34	CD	.0103	MG/L		.0013	1
36	PB	.0022	MG/L	D: Conc<DL	.0126	1
37	SB	-.0367	MG/L	D: Conc<DL	.0001	1
38	TL	-.0083	MG/L	D: Conc<DL	.0127	1
39	P	.6436	MG/L		.0393	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

320

CCV1/DS/CN 13:16:52 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	1562	1555	151	0	1407	10.00
3	U	3154	3152	3599	3057	-40	.36
5	PU	2157	2147	2149	0	3	.04
6	MG	13459	13388	85	0	13339	9.50
8	CA	2336	2337	504	0	1831	9.53
10	MN	7224	7181	309	0	6893	5.00
11	MO	5158	5137	0	953	4194	4.85
12	V	4285	4235	899	0	3360	4.88
13	AL	1837	1837	1148	0	689	10.67
14	NI	3817	3804	753	0	3057	5.03
16	BA	5492	5473	574	0	4908	4.88
17	SR	3960	3931	376	0	3569	1.94
18	CR	4026	4014	0	647	3372	5.02
21	SE	3580	3567	1613	0	1960	9.87
22	TI	1781	1763	422	0	1350	2.01
23	CU	3261	3236	1283	0	1965	4.91
26	CO	2970	2946	0	507	2451	5.04
28	AG	2972	2957	1824	0	1140	1.99
30	AS	3132	3109	982	0	2138	9.42
31	BE	26423	26290	0	601	25755	1.94
32	ZN	2569	2562	0	235	2330	5.01
34	CD	2224	2216	366	0	1853	1.95
36	PB	9724	9670	0	2639	7058	9.79
37	SB	3102	3098	1453	0	1647	10.13
38	TL	3177	3198	0	859	2328	10.09
39	P	3580	3572	0	556	3019	59.28

CCV1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	10.0002	MG/L		.0617	10
3	U	.2890	MG/L	D: Conc<DL	.6663	1
5	PU	.0218	MG/L	D: Conc<DL	.2587	1
6	MG	9.5004	MG/L		.1448	10
8	CA	9.5221	MG/L		.0606	10
10	MN	5.0062	MG/L		.0307	10
11	MO	4.8550	MG/L		.0312	10
12	V	4.8831	MG/L		.0309	10
13	AL	10.4486	MG/L		.0942	10
14	NI	5.0372	MG/L		.0318	10
16	BA	4.8802	MG/L		.0305	10
17	SR	1.9476	MG/L		.0120	3
18	CR	5.0121	MG/L		.0315	10
21	SE	9.9582	MG/L		.0693	10
22	TI	2.0107	MG/L		.0126	3
23	CU	4.9213	MG/L		.0338	10
26	CO	5.0380	MG/L		.0316	10
28	AG	1.9994	MG/L		.0177	3
30	AS	9.3253	MG/L		.0609	10
31	BE	1.9306	MG/L		.0119	3
32	ZN	4.9721	MG/L		.0310	10
34	CD	1.9513	MG/L		.0121	3
36	PB	9.7811	MG/L		.0629	10
37	SB	9.9255	MG/L		.0951	10
38	TL	10.0538	MG/L		.0646	10
39	P	52.7570	MG/L		.3969	100

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

321

CCB1/DS/CN 13:20:03 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	144	144	138	0	6	.06
3	U	3126	3123	3574	3043	-51	-.09
5	PU	2121	2126	2128	0	-5	-.23
6	MG	79	79	76	0	2	.00
8	CA	516	516	493	0	23	.02
10	MN	296	295	299	0	-4	.00
11	MO	952	952	0	941	10	.00
12	V	850	845	861	0	-14	-.00
13	AL	1141	1141	1133	0	7	.00
14	NI	733	731	728	0	4	-.00
16	BA	551	551	558	0	-7	.00
17	SR	364	364	369	0	-6	-.00
18	CR	655	652	0	642	11	-.00
21	SE	1564	1541	1589	0	-37	-.11
22	TI	413	412	417	0	-5	-.00
23	CU	1270	1269	1270	0	-1	-.01
26	CO	496	497	0	495	2	.00
28	AG	1809	1809	1806	0	2	-.00
30	AS	953	953	964	0	-11	.00
31	BE	578	579	0	551	27	.00
32	ZN	227	228	0	228	0	-.00
34	CD	356	357	357	0	-1	.00
36	PB	2587	2584	0	2583	2	-.01
37	SB	1420	1422	1425	0	-5	-.04
38	TL	848	860	0	837	16	.08
39	P	531	533	0	531	0	-.02

CCB1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.0661	MG/L		.0034	1
3	U	-.0923	MG/L	D: Conc<DL	.6663	1
5	PU	-.2271	MG/L	D: Conc<DL	.2587	1
6	MG	.0009	MG/L	D: Conc<DL	.0011	1
8	CA	.0266	MG/L	D: Conc<DL	.0095	1
10	MN	.0002	MG/L		.0000	1
11	MO	.0084	MG/L	D: Conc<DL	.0038	1
12	V	-.0063	MG/L	D: Conc<DL	.0042	1
13	AL	.0086	MG/L		.0007	1
14	NI	-.0052	MG/L	D: Conc<DL	.0042	1
16	BA	.0008	MG/L		.0000	1
17	SR	-.0003	MG/L	D: Conc<DL	.0000	1
18	CR	-.0016	MG/L	D: Conc<DL	.0034	1
21	SE	-.1118	MG/L	D: Conc<DL	.0273	1
22	TI	-.0010	MG/L	D: Conc<DL	.0000	1
23	CU	-.0123	MG/L	D: Conc<DL	.0112	1
26	CO	.0057	MG/L	D: Conc<DL	.0036	1
28	AG	-.0012	MG/L	D: Conc<DL	.0000	1
30	AS	.0069	MG/L	D: Conc<DL	.0145	1
31	BE	.0002	MG/L	D: Conc<DL	.0001	1
32	ZN	-.0062	MG/L	D: Conc<DL	.0017	1
34	CD	.0009	MG/L		.0000	1
36	PB	-.0132	MG/L	D: Conc<DL	.0126	1
37	SB	-.0414	MG/L	D: Conc<DL	.0307	1
38	TL	.0870	MG/L		.0127	1
39	P	-.0130	MG/L	D: Conc<DL	.0368	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

322

TCBLK1/DS/CN 13:20:59 05-18-2001

SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	134	134	131	0	2	.04
3	U	2868	2861	3259	2797	-48	.03
5	PU	1944	1939	1939	0	3	.04
6	MG	81	82	75	0	6	.00
8	CA	482	480	451	0	29	.05
10	MN	262	262	270	0	-8	-.00
11	MO	855	862	0	858	1	-.00
12	V	776	770	786	0	-14	-.00
13	AL	1047	1047	1033	0	13	.10
14	NI	663	662	663	0	-1	-.01
16	BA	492	492	500	0	-9	-.00
17	SR	338	334	345	0	-10	-.00
18	CR	580	580	0	568	11	-.00
21	SE	1405	1400	1411	0	-9	.03
22	TI	380	378	384	0	-5	-.00
23	CU	1163	1161	1154	0	8	.00
26	CO	449	450	0	448	1	.00
28	AG	1640	1640	1634	0	5	.00
30	AS	856	856	869	0	-13	-.00
31	BE	532	531	0	504	26	.00
32	ZN	219	218	0	210	8	.01
34	CD	325	325	327	0	-3	-.00
36	PB	2334	2335	0	2324	10	-.00
37	SB	1274	1279	1278	0	-2	-.02
38	TL	729	731	0	761	-32	-.12
39	P	490	488	0	484	5	.06

TCBLK1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.0411	MG/L		.0034	1
3	U	.0354	MG/L	D: Conc<DL	.0138	1
5	PU	.0411	MG/L	D: Conc<DL	.2587	1
6	MG	.0038	MG/L		.0011	1
8	CA	.0580	MG/L		.0095	1
10	MN	-.0029	MG/L	D: Conc<DL	.0007	1
11	MO	-.0025	MG/L	D: Conc<DL	.0038	1
12	V	-.0063	MG/L	D: Conc<DL	.0042	1
13	AL	.1087	MG/L	D: Conc<DL	.0628	1
14	NI	-.0133	MG/L	D: Conc<DL	.0042	1
16	BA	-.0006	MG/L	D: Conc<DL	.0000	1
17	SR	-.0024	MG/L	D: Conc<DL	.0006	1
18	CR	-.0014	MG/L	D: Conc<DL	.0001	1
21	SE	.0319	MG/L	D: Conc<DL	.0273	1
22	TI	-.0018	MG/L	D: Conc<DL	.0021	1
23	CU	.0084	MG/L	D: Conc<DL	.0112	1
26	CO	.0049	MG/L	D: Conc<DL	.0036	1
28	AG	.0030	MG/L	D: Conc<DL	.0111	1
30	AS	-.0038	MG/L	D: Conc<DL	.0003	1
31	BE	.0002	MG/L	D: Conc<DL	.0001	1
32	ZN	.0121	MG/L		.0017	1
34	CD	-.0013	MG/L	D: Conc<DL	.0013	1
36	PB	-.0020	MG/L	D: Conc<DL	.0126	1
37	SB	-.0247	MG/L	D: Conc<DL	.0307	1
38	TL	-.1213	MG/L	D: Conc<DL	.0127	1
39	P	.0466	MG/L	D: Conc<DL	.0368	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

323

X01C0130-002/DS/CN 13:21:38 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	303	303	137	0	165	1.19
3	U	3083	3088	3525	2993	-41	.33
5	PU	2097	2097	2104	0	-7	-.29
6	MG	22003	21973	85	0	21902	15.70
8	CA	13192	13271	521	0	12710	66.71
10	MN	1668	1666	298	0	1368	.99
11	MO	941	938	0	931	8	.00
12	V	877	871	841	0	33	.06
13	AL	1259	1258	1118	0	140	2.08
14	NI	732	736	721	0	13	.01
16	BA	694	693	553	0	140	.14
17	SR	1120	1122	365	0	756	.41
18	CR	676	678	0	633	43	.04
21	SE	1522	1534	1573	0	-46	-.15
22	TI	409	412	413	0	-4	.00
23	CU	1774	1770	1254	0	518	1.28
26	CO	491	494	0	487	6	.01
28	AG	1791	1795	1787	0	5	.00
30	AS	952	946	958	0	-9	.01
31	BE	600	599	0	544	55	.00
32	ZN	526	522	0	223	300	.64
34	CD	361	358	355	0	4	.00
36	PB	2556	2565	0	2533	27	.02
37	SB	1401	1402	1398	0	3	.00
38	TL	844	847	0	824	21	.10
39	P	719	719	0	527	191	3.73

X01C0130-002 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	1.1938	MG/L		.0080	1
3	U	.3237	MG/L	D: Conc<DL	.6663	1
5	PU	-.3164	MG/L	D: Conc<DL	.2587	1
6	MG	15.7049	MG/L		.2394	30
8	CA	66.7020	MG/L		.4171	100
10	MN	.9958	MG/L		.0061	1
11	MO	.0052	MG/L	D: Conc<DL	.0038	1
12	V	.0621	MG/L		.0043	1
13	AL	2.0443	MG/L		.0643	3
14	NI	.0098	MG/L	D: Conc<DL	.0042	1
16	BA	.1466	MG/L		.0021	1
17	SR	.4122	MG/L		.0026	1
18	CR	.0397	MG/L		.0034	1
21	SE	-.1490	MG/L	D: Conc<DL	.0273	1
22	TI	-.0003	MG/L	D: Conc<DL	.0000	1
23	CU	1.2891	MG/L		.0140	1
26	CO	.0136	MG/L		.0036	1
28	AG	-.0016	MG/L	D: Conc<DL	.0111	1
30	AS	.0048	MG/L	D: Conc<DL	.0145	1
31	BE	.0022	MG/L		.0001	1
32	ZN	.6401	MG/L		.0043	1
34	CD	.0060	MG/L		.0013	1
36	PB	.0180	MG/L	D: Conc<DL	.0126	1
37	SB	.0011	MG/L		.0001	1
38	TL	.1072	MG/L		.0127	1
39	P	2.7701	MG/L		.0445	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

32

X01C0130-003/DS/CN 13:23:27 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	242	241	140	0	101	.74
3	U	3116	3119	3565	3039	-53	-.18
5	PU	2119	2117	2122	0	-4	-.19
6	MG	7308	7246	81	0	7196	5.10
8	CA	7357	7353	511	0	6843	35.87
10	MN	940	938	299	0	639	.46
11	MO	947	951	0	954	-5	-.00
12	V	871	845	859	0	-1	.01
13	AL	1218	1213	1130	0	84	1.21
14	NI	740	734	730	0	6	-.00
16	BA	678	678	556	0	122	.12
17	SR	751	743	371	0	376	.20
18	CR	661	661	0	637	24	.01
21	SE	1547	1551	1579	0	-30	-.07
22	TI	414	413	417	0	-4	-.00
23	CU	1572	1571	1264	0	307	.76
26	CO	498	498	0	496	2	.00
28	AG	1808	1808	1799	0	9	.00
30	AS	953	962	966	0	-9	.01
31	BE	577	578	0	553	24	.00
32	ZN	393	391	0	229	162	.34
34	CD	359	359	357	0	2	.00
36	PB	2577	2591	0	2552	32	.02
37	SB	1417	1415	1428	0	-12	-.08
38	TL	837	833	0	844	-10	-.02
39	P	637	632	0	534	100	1.93

X01C0130-003 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.7422	MG/L		.0056	1
3	U	-.1890	MG/L	D: Conc<DL	.6663	1
5	PU	-.1851	MG/L	D: Conc<DL	.2587	1
6	MG	5.1009	MG/L		.0777	10
8	CA	35.8708	MG/L		.2246	30
10	MN	.4670	MG/L		.0029	1
11	MO	-.0101	MG/L	D: Conc<DL	.0038	1
12	V	.0114	MG/L	D: Conc<DL	.0042	1
13	AL	1.1984	MG/L		.0633	1
14	NI	-.0017	MG/L	D: Conc<DL	.0000	1
16	BA	.1285	MG/L		.0020	1
17	SR	.2061	MG/L		.0014	1
18	CR	.0154	MG/L		.0034	1
21	SE	-.0722	MG/L	D: Conc<DL	.0273	1
22	TI	-.0011	MG/L	D: Conc<DL	.0000	1
23	CU	.7604	MG/L		.0122	1
26	CO	.0064	MG/L	D: Conc<DL	.0036	1
28	AG	.0070	MG/L	D: Conc<DL	.0111	1
30	AS	.0106	MG/L	D: Conc<DL	.0145	1
31	BE	.0000	MG/L	D: Conc<DL	.0001	1
32	ZN	.3438	MG/L		.0027	1
34	CD	.0041	MG/L		.0013	1
36	PB	.0262	MG/L	D: Conc<DL	.0126	1
37	SB	-.0885	MG/L	D: Conc<DL	.0307	1
38	TL	-.0261	MG/L	D: Conc<DL	.0127	1
39	P	1.4045	MG/L		.0391	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

325

X01C0130-004/DS/CN 13:24:51 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	154	153	137	0	16	.13
3	U	3111	3100	3537	3027	-50	-.02
5	PU	2116	2101	2117	0	-9	-.35
6	MG	13980	14202	83	0	14007	9.98
8	CA	13221	13509	523	0	12842	67.40
10	MN	659	666	299	0	363	.26
11	MO	941	937	0	943	-4	-.00
12	V	865	849	855	0	2	.01
13	AL	1151	1145	1121	0	27	.31
14	NI	733	729	725	0	5	-.00
16	BA	610	602	554	0	51	.05
17	SR	1007	1013	368	0	642	.35
18	CR	2200	2234	0	638	1578	2.34
21	SE	1558	1553	1588	0	-33	-.09
22	TI	415	412	415	0	-2	.00
23	CU	5303	5353	1267	0	4061	10.17
26	CO	496	494	0	492	3	.00
28	AG	1808	1797	1788	0	14	.01
30	AS	951	953	963	0	-11	.00
31	BE	577	572	0	549	25	.00
32	ZN	310	307	0	228	80	.16
34	CD	356	355	357	0	-2	0.00
36	PB	2574	2569	0	2554	17	.00
37	SB	1435	1420	1416	0	11	.05
38	TL	833	836	0	823	12	.06
39	P	664	658	0	538	122	2.37

X01C0130-004 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1358	MG/L		.0034	1
3	U	-.0286	MG/L	D: Conc<DL	.0138	1
5	PU	-.3553	MG/L	D: Conc<DL	.2587	1
6	MG	9.9816	MG/L		.1521	10
8	CA	67.3992	MG/L		.4214	100
10	MN	.2658	MG/L		.0017	1
11	MO	-.0088	MG/L	D: Conc<DL	.0038	1
12	V	.0160	MG/L		.0042	1
13	AL	.2777	MG/L		.0628	1
14	NI	-.0027	MG/L	D: Conc<DL	.0042	1
16	BA	.0582	MG/L		.0019	1
17	SR	.3503	MG/L		.0022	1
18	CR	2.3364	MG/L		.0150	3
21	SE	-.0869	MG/L	D: Conc<DL	.0273	1
22	TI	.0010	MG/L	D: Conc<DL	.0021	1
23	CU	10.1787	MG/L		.0670	10
26	CO	.0073	MG/L	D: Conc<DL	.0036	1
28	AG	.0135	MG/L	D: Conc<DL	.0111	1
30	AS	-.0019	MG/L	D: Conc<DL	.0145	1
31	BE	.0000	MG/L	D: Conc<DL	.0001	1
32	ZN	.1631	MG/L		.0020	1
34	CD	-.0000	MG/L	D: Conc<DL	.0000	1
36	PB	.0068	MG/L	D: Conc<DL	.0126	1
37	SB	-.0262	MG/L	D: Conc<DL	.0307	1
38	TL	.0668	MG/L		.0127	1
39	P	.8549	MG/L		.0401	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

326

X01C0130-005/DS/CN 13:26:26 05-18-2001

SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	150	149	140	0	10	.09
3	U	3131	3131	3589	3061	-62	-.53
5	PU	2125	2126	2134	0	-9	-.34
6	MG	1959	1945	78	0	1874	1.32
8	CA	3044	3042	503	0	2539	13.25
10	MN	461	459	300	0	159	.11
11	MO	960	945	0	958	-6	-.01
12	V	821	854	875	0	-38	-.04
13	AL	1155	1155	1137	0	18	.17
14	NI	736	739	729	0	8	.00
16	BA	646	642	561	0	83	.09
17	SR	519	521	372	0	147	.08
18	CR	1100	1100	0	642	457	.66
21	SE	1557	1555	1591	0	-35	-.10
22	TI	415	416	419	0	-4	-.00
23	CU	2974	2950	1275	0	1687	4.22
26	CO	519	519	0	496	23	.04
28	AG	1813	1812	1810	0	1	-.00
30	AS	953	960	983	0	-28	-.06
31	BE	578	576	0	550	26	.00
32	ZN	361	357	0	227	132	.27
34	CD	359	359	361	0	-2	0.00
36	PB	2596	2594	0	2597	-3	-.01
37	SB	1427	1424	1433	0	-9	-.06
38	TL	834	843	0	846	-8	-.01
39	P	613	608	0	540	70	1.35

X01C0130-005 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.0954	MG/L		.0034	1
3	U	-.5376	MG/L	D: Conc<DL	.6664	1
5	PU	-.3050	MG/L	D: Conc<DL	.2587	1
6	MG	1.3227	MG/L		.0201	1
8	CA	13.2517	MG/L		.0836	10
10	MN	.1185	MG/L		.0010	1
11	MO	-.0105	MG/L	D: Conc<DL	.0038	1
12	V	-.0433	MG/L	D: Conc<DL	.0042	1
13	AL	.1673	MG/L	D: Conc<DL	.0628	1
14	NI	.0026	MG/L	D: Conc<DL	.0042	1
16	BA	.0899	MG/L		.0019	1
17	SR	.0825	MG/L		.0008	1
18	CR	.6650	MG/L		.0054	1
21	SE	-.1021	MG/L	D: Conc<DL	.0273	1
22	TI	-.0011	MG/L	D: Conc<DL	.0000	1
23	CU	4.2213	MG/L		.0296	3
26	CO	.0487	MG/L		.0036	1
28	AG	-.0045	MG/L	D: Conc<DL	.0111	1
30	AS	-.0672	MG/L	D: Conc<DL	.0145	1
31	BE	.0002	MG/L	D: Conc<DL	.0001	1
32	ZN	.2774	MG/L		.0024	1
34	CD	-.0001	MG/L	D: Conc<DL	.0000	1
36	PB	-.0199	MG/L	D: Conc<DL	.0126	1
37	SB	-.0895	MG/L	D: Conc<DL	.0307	1
38	TL	-.0158	MG/L	D: Conc<DL	.0127	1
39	P	.4557	MG/L		.0379	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

327

X01C0130-006/DS/CN 13:28:18 05-18-2001

SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	164	163	136	0	27	.21
3	U	3107	3109	3554	3026	-50	-.06
5	PU	2113	2111	2114	0	-3	-.14
6	MG	12337	12457	82	0	12315	8.76
8	CA	17430	17722	535	0	17040	89.47
10	MN	599	602	297	0	303	.22
11	MO	945	943	0	945	-1	-.00
12	V	848	844	867	0	-21	-.01
13	AL	1149	1150	1124	0	25	.28
14	NI	732	733	727	0	6	-.00
16	BA	782	784	557	0	225	.23
17	SR	1221	1228	371	0	852	.46
18	CR	659	658	0	639	19	.01
21	SE	1557	1551	1588	0	-35	-.10
22	TI	411	412	417	0	-5	-.00
23	CU	1322	1320	1260	0	61	.14
26	CO	493	494	0	487	6	.01
28	AG	1801	1804	1791	0	11	.01
30	AS	955	954	972	0	-18	-.02
31	BE	574	574	0	549	25	.00
32	ZN	350	350	0	224	125	.26
34	CD	356	355	355	0	0	.00
36	PB	2567	2569	0	2556	12	.00
37	SB	1413	1412	1414	0	-3	-.02
38	TL	830	828	0	841	-12	-.03
39	P	595	595	0	531	64	1.23

X01C0130-006 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.2178	MG/L		.0036	1
3	U	-.0630	MG/L	D: Conc<DL	.6663	1
5	PU	-.1439	MG/L	D: Conc<DL	.2587	1
6	MG	8.7643	MG/L		.1336	10
8	CA	89.4718	MG/L		.5592	100
10	MN	.2223	MG/L		.0015	1
11	MO	-.0051	MG/L	D: Conc<DL	.0038	1
12	V	-.0171	MG/L	D: Conc<DL	.0042	1
13	AL	.2372	MG/L		.0628	1
14	NI	-.0018	MG/L	D: Conc<DL	.0042	1
16	BA	.2307	MG/L		.0023	1
17	SR	.4640	MG/L		.0029	1
18	CR	.0076	MG/L	D: Conc<DL	.0034	1
21	SE	-.0934	MG/L	D: Conc<DL	.0273	1
22	TI	-.0029	MG/L	D: Conc<DL	.0021	1
23	CU	.1409	MG/L		.0112	1
26	CO	.0142	MG/L		.0036	1
28	AG	.0069	MG/L	D: Conc<DL	.0111	1
30	AS	-.0251	MG/L	D: Conc<DL	.0145	1
31	BE	.0001	MG/L	D: Conc<DL	.0001	1
32	ZN	.2636	MG/L		.0024	1
34	CD	.0020	MG/L	D: Conc<DL	.0013	1
36	PB	-.0012	MG/L	D: Conc<DL	.0001	1
37	SB	-.0290	MG/L	D: Conc<DL	.0307	1
38	TL	-.0356	MG/L	D: Conc<DL	.0127	1
39	P	.8838	MG/L		.0378	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

328

X01C0130-007/DS/CN 13:30:01 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	159	159	138	0	21	.17
3	U	3102	3098	3553	3018	-53	-.14
5	PU	2099	2105	2108	0	-6	-.27
6	MG	22203	22396	86	0	22213	15.93
8	CA	38740	39370	590	0	38464	202.09
10	MN	556	559	299	0	258	.19
11	MO	944	944	0	947	-4	-.00
12	V	879	872	863	0	12	.03
13	AL	1157	1159	1119	0	39	.50
14	NI	730	732	722	0	9	.00
16	BA	734	733	556	0	176	.18
17	SR	2048	2065	369	0	1687	.92
18	CR	663	668	0	633	32	.03
21	SE	1548	1551	1587	0	-38	-.11
22	TI	414	416	416	0	-1	.00
23	CU	1372	1373	1257	0	115	.27
26	CO	493	494	0	488	5	.01
28	AG	1801	1801	1781	0	19	.02
30	AS	967	966	959	0	7	.08
31	BE	575	574	0	545	28	.00
32	ZN	462	457	0	226	232	.49
34	CD	354	354	355	0	-1	.00
36	PB	2575	2567	0	2553	18	.00
37	SB	1417	1423	1418	0	1	-.00
38	TL	855	829	0	850	-9	-.02
39	P	688	686	0	528	158	3.07

X01C0130-007 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1765	MG/L		.0035	1
3	U	-.1505	MG/L	D: Conc<DL	.6663	1
5	PU	-.2595	MG/L	D: Conc<DL	.2587	1
6	MG	15.9320	MG/L		.2429	30
8	CA	202.0782	MG/L		1.2624	100
10	MN	.1897	MG/L		.0013	1
11	MO	-.0080	MG/L	D: Conc<DL	.0038	1
12	V	.0311	MG/L		.0042	1
13	AL	.3877	MG/L		.0629	1
14	NI	.0030	MG/L	D: Conc<DL	.0042	1
16	BA	.1810	MG/L		.0022	1
17	SR	.9147	MG/L		.0057	1
18	CR	.0246	MG/L		.0034	1
21	SE	-.0945	MG/L	D: Conc<DL	.0273	1
22	TI	.0013	MG/L	D: Conc<DL	.0021	1
23	CU	.2785	MG/L		.0113	1
26	CO	.0116	MG/L		.0036	1
28	AG	.0130	MG/L	D: Conc<DL	.0111	1
30	AS	.0836	MG/L		.0145	1
31	BE	.0003	MG/L	D: Conc<DL	.0001	1
32	ZN	.4946	MG/L		.0035	1
34	CD	.0009	MG/L		.0000	1
36	PB	.0054	MG/L	D: Conc<DL	.0126	1
37	SB	-.0076	MG/L	D: Conc<DL	.0307	1
38	TL	-.0251	MG/L	D: Conc<DL	.0127	1
39	P	2.4329	MG/L		.0422	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

329

X01C0130-008/DS/CN 13:31:53 05-18-2001

SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	154	154	137	0	16	.14
3	U	3090	3090	3532	3024	-61	-.48
5	PU	2102	2099	2105	0	-5	-.23
6	MG	8515	8294	80	0	8324	5.90
8	CA	20590	20200	542	0	19852	104.25
10	MN	416	411	295	0	118	.08
11	MO	943	937	0	938	2	-.00
12	V	853	862	845	0	12	.03
13	AL	1143	1142	1119	0	23	.26
14	NI	731	727	723	0	5	-.00
16	BA	728	726	553	0	173	.17
17	SR	1200	1174	366	0	821	.45
18	CR	654	653	0	629	24	.01
21	SE	1546	1549	1577	0	-30	-.07
22	TI	411	411	415	0	-5	-.00
23	CU	1304	1303	1258	0	45	.10
26	CO	492	491	0	491	0	.00
28	AG	1795	1795	1785	0	10	.01
30	AS	952	950	957	0	-6	.02
31	BE	573	574	0	548	25	.00
32	ZN	308	306	0	227	79	.16
34	CD	361	362	354	0	7	.00
36	PB	2554	2554	0	2539	15	.00
37	SB	1412	1403	1414	0	-8	-.06
38	TL	834	829	0	841	-10	-.02
39	P	580	581	0	532	48	.92

X01C0130-008 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1403	MG/L		.0035	1
3	U	-.4845	MG/L	D: Conc<DL	.6664	1
5	PU	-.1995	MG/L	D: Conc<DL	.2587	1
6	MG	5.9057	MG/L		.0900	10
8	CA	104.2544	MG/L		.6515	100
10	MN	.0882	MG/L		.0009	1
11	MO	-.0016	MG/L	D: Conc<DL	.0038	1
12	V	.0295	MG/L		.0042	1
13	AL	.2038	MG/L		.0628	1
14	NI	-.0029	MG/L	D: Conc<DL	.0042	1
16	BA	.1787	MG/L		.0022	1
17	SR	.4463	MG/L		.0028	1
18	CR	.0161	MG/L		.0034	1
21	SE	-.0672	MG/L	D: Conc<DL	.0273	1
22	TI	-.0021	MG/L	D: Conc<DL	.0000	1
23	CU	.1024	MG/L		.0112	1
26	CO	.0021	MG/L	D: Conc<DL	.0036	1
28	AG	.0041	MG/L	D: Conc<DL	.0111	1
30	AS	.0258	MG/L	D: Conc<DL	.0145	1
31	BE	.0000	MG/L	D: Conc<DL	.0001	1
32	ZN	.1653	MG/L		.0020	1
34	CD	.0091	MG/L		.0013	1
36	PB	.0030	MG/L	D: Conc<DL	.0126	1
37	SB	-.0622	MG/L	D: Conc<DL	.0307	1
38	TL	-.0260	MG/L	D: Conc<DL	.0127	1
39	P	.7068	MG/L		.0374	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

330

X01C0130-009/DS/CN 13:33:28 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	155	154	138	0	15	.13
3	U	3105	3108	3541	3033	-54	-.19
5	PU	2111	2109	2113	0	-4	-.17
6	MG	29026	28976	90	0	28911	20.84
8	CA	34536	34710	577	0	34045	178.86
10	MN	399	397	296	0	101	.07
11	MO	952	946	0	944	5	.00
12	V	908	916	874	0	37	.06
13	AL	1150	1152	1121	0	30	.36
14	NI	732	733	725	0	7	.00
16	BA	743	740	555	0	186	.19
17	SR	2050	2042	369	0	1676	.91
18	CR	667	666	0	638	28	.02
21	SE	1566	1549	1578	0	-21	-.02
22	TI	413	414	417	0	-4	.00
23	CU	1310	1307	1259	0	49	.11
26	CO	492	495	0	490	3	.00
28	AG	1805	1808	1787	0	20	.02
30	AS	982	972	965	0	11	.10
31	BE	578	579	0	549	29	.00
32	ZN	286	281	0	226	57	.11
34	CD	355	356	357	0	-2	.00
36	PB	2571	2565	0	2563	5	-.00
37	SB	1413	1414	1411	0	2	-.00
38	TL	847	837	0	871	-29	-.10
39	P	603	604	0	532	71	1.37

X01C0130-009 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1356	MG/L		.0034	1
3	U	-.1941	MG/L	D: Conc<DL	.6663	1
5	PU	-.1651	MG/L	D: Conc<DL	.2587	1
6	MG	20.8465	MG/L		.3178	30
8	CA	178.8490	MG/L		1.1174	100
10	MN	.0755	MG/L		.0008	1
11	MO	.0015	MG/L	D: Conc<DL	.0038	1
12	V	.0670	MG/L		.0043	1
13	AL	.2609	MG/L		.0628	1
14	NI	.0002	MG/L	D: Conc<DL	.0000	1
16	BA	.1907	MG/L		.0022	1
17	SR	.9097	MG/L		.0056	1
18	CR	.0166	MG/L		.0034	1
21	SE	-.0123	MG/L	D: Conc<DL	.0273	1
22	TI	-.0018	MG/L	D: Conc<DL	.0000	1
23	CU	.1127	MG/L		.0112	1
26	CO	.0075	MG/L	D: Conc<DL	.0036	1
28	AG	.0152	MG/L	D: Conc<DL	.0111	1
30	AS	.1027	MG/L		.0145	1
31	BE	.0002	MG/L	D: Conc<DL	.0001	1
32	ZN	.1171	MG/L		.0019	1
34	CD	.0003	MG/L		.0000	1
36	PB	-.0122	MG/L	D: Conc<DL	.0126	1
37	SB	-.0042	MG/L	D: Conc<DL	.0001	1
38	TL	-.1122	MG/L	D: Conc<DL	.0127	1
39	P	1.2277	MG/L		.0380	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

331

X01C0130-010/DS/CN 13:35:01 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	159	157	136	0	21	.17
3	U	3108	3096	3538	3005	-37	.47
5	PU	2109	2100	2107	0	-3	-.14
6	MG	16941	17069	85	0	16920	12.08
8	CA	32623	33126	575	0	32299	169.68
10	MN	418	415	297	0	119	.08
11	MO	949	938	0	954	-11	-.01
12	V	875	851	849	0	14	.03
13	AL	1153	1150	1122	0	29	.34
14	NI	730	728	723	0	6	-.00
16	BA	768	767	556	0	211	.21
17	SR	1658	1664	369	0	1291	.70
18	CR	664	662	0	633	29	.02
21	SE	1570	1549	1592	0	-32	-.08
22	TI	415	415	416	0	-2	.00
23	CU	1299	1294	1251	0	44	.09
26	CO	532	528	0	488	41	.08
28	AG	1809	1802	1791	0	14	.02
30	AS	964	960	963	0	-1	.04
31	BE	577	572	0	549	25	.00
32	ZN	289	282	0	229	56	.11
34	CD	355	354	357	0	-3	-.00
36	PB	2567	2564	0	2537	28	.02
37	SB	1409	1407	1420	0	-12	-.08
38	TL	830	841	0	842	-7	-.01
39	P	601	599	0	529	70	1.34

X01C0130-010 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1753	MG/L		.0035	1
3	U	.4762	MG/L	D: Conc<DL	.6663	1
5	PU	-.1804	MG/L	D: Conc<DL	.2587	1
6	MG	12.0849	MG/L		.1842	10
8	CA	169.6743	MG/L		1.0600	100
10	MN	.0892	MG/L		.0009	1
11	MO	-.0154	MG/L	D: Conc<DL	.0038	1
12	V	.0348	MG/L		.0042	1
13	AL	.2507	MG/L		.0628	1
14	NI	-.0019	MG/L	D: Conc<DL	.0042	1
16	BA	.2160	MG/L		.0023	1
17	SR	.7004	MG/L		.0044	1
18	CR	.0211	MG/L		.0034	1
21	SE	-.0697	MG/L	D: Conc<DL	.0273	1
22	TI	.0007	MG/L	D: Conc<DL	.0021	1
23	CU	.1000	MG/L		.0112	1
26	CO	.0871	MG/L		.0036	1
28	AG	.0065	MG/L	D: Conc<DL	.0111	1
30	AS	.0464	MG/L		.0145	1
31	BE	.0000	MG/L	D: Conc<DL	.0001	1
32	ZN	.1143	MG/L		.0018	1
34	CD	-.0007	MG/L	D: Conc<DL	.0000	1
36	PB	.0203	MG/L	D: Conc<DL	.0126	1
37	SB	-.0873	MG/L	D: Conc<DL	.0307	1
38	TL	-.0175	MG/L	D: Conc<DL	.0127	1
39	P	1.2034	MG/L		.0379	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

332

CCV2/DS/CN 13:37:01 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	1541	1557	149	0	1399	9.94
3	U	3110	3117	3552	3033	-50	-.05
5	PU	2127	2126	2117	0	10	.28
6	MG	13294	13435	82	0	13282	9.45
8	CA	2307	2342	498	0	1826	9.50
10	MN	7148	7219	306	0	6877	4.99
11	MO	5098	5138	0	958	4159	4.81
12	V	4202	4281	892	0	3349	4.86
13	AL	1815	1830	1131	0	691	10.71
14	NI	3765	3811	740	0	3048	5.01
16	BA	5431	5497	567	0	4896	4.87
17	SR	3921	3950	372	0	3563	1.94
18	CR	3980	4029	0	644	3360	5.00
21	SE	3519	3561	1611	0	1929	9.71
22	TI	1761	1768	417	0	1347	2.00
23	CU	3216	3236	1268	0	1957	4.89
26	CO	2932	2960	0	501	2444	5.03
28	AG	2932	2944	1802	0	1136	1.98
30	AS	3088	3118	968	0	2134	9.40
31	BE	26150	26513	0	596	25735	1.94
32	ZN	2537	2572	0	232	2322	4.99
34	CD	2198	2220	362	0	1847	1.94
36	PB	9588	9669	0	2602	7026	9.75
37	SB	3073	3104	1426	0	1662	10.23
38	TL	3206	3197	0	852	2349	10.18
39	P	3530	3593	0	548	3013	59.15

CCV2 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	9.9472	MG/L		.0614	10
3	U	-.1218	MG/L	D: Conc<DL	.6663	1
5	PU	.2987	MG/L	D: Conc<DL	.2587	1
6	MG	9.4597	MG/L		.1442	10
8	CA	9.4930	MG/L		.0604	10
10	MN	4.9946	MG/L		.0307	10
11	MO	4.8140	MG/L		.0309	10
12	V	4.8651	MG/L		.0308	10
13	AL	10.4857	MG/L		.0944	10
14	NI	5.0222	MG/L		.0317	10
16	BA	4.8682	MG/L		.0304	10
17	SR	1.9441	MG/L		.0120	3
18	CR	4.9943	MG/L		.0314	10
21	SE	9.8005	MG/L		.0684	10
22	TI	2.0074	MG/L		.0126	3
23	CU	4.9002	MG/L		.0337	10
26	CO	5.0237	MG/L		.0315	10
28	AG	1.9933	MG/L		.0177	3
30	AS	9.3085	MG/L		.0608	10
31	BE	1.9291	MG/L		.0119	3
32	ZN	4.9558	MG/L		.0309	10
34	CD	1.9441	MG/L		.0121	3
36	PB	9.7364	MG/L		.0626	10
37	SB	10.0193	MG/L		.0958	10
38	TL	10.1425	MG/L		.0651	10
39	P	52.6491	MG/L		.3960	100

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

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CCB2/DS/CN 13:40:13 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	140	139	137	0	3	.04
3	U	3113	3118	3571	3034	-53	-.18
5	PU	2112	2118	2122	0	-8	-.30
6	MG	79	79	76	0	2	.00
8	CA	515	516	493	0	23	.02
10	MN	295	296	301	0	-5	-.00
11	MO	943	941	0	948	-6	-.01
12	V	843	841	859	0	-18	-.01
13	AL	1139	1138	1130	0	8	.02
14	NI	731	732	729	0	3	-.00
16	BA	551	551	558	0	-8	-.00
17	SR	363	362	370	0	-8	-.00
18	CR	650	651	0	638	12	.00
21	SE	1552	1539	1572	0	-27	-.05
22	TI	412	411	416	0	-5	-.00
23	CU	1266	1267	1264	0	2	-.00
26	CO	495	497	0	493	3	.00
28	AG	1803	1808	1801	0	4	.00
30	AS	950	947	967	0	-19	-.02
31	BE	576	578	0	550	26	.00
32	ZN	228	230	0	227	1	-.00
34	CD	357	356	358	0	-2	-.00
36	PB	2570	2577	0	2567	6	-.00
37	SB	1414	1411	1428	0	-16	-.11
38	TL	836	854	0	855	-10	-.02
39	P	532	534	0	532	1	-.01

CCB2 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.0437	MG/L		.0034	1
3	U	-.1826	MG/L	D: Conc<DL	.6663	1
5	PU	-.2951	MG/L	D: Conc<DL	.2587	1
6	MG	.0009	MG/L	D: Conc<DL	.0011	1
8	CA	.0244	MG/L	D: Conc<DL	.0095	1
10	MN	-.0006	MG/L	D: Conc<DL	.0000	1
11	MO	-.0106	MG/L	D: Conc<DL	.0038	1
12	V	-.0124	MG/L	D: Conc<DL	.0042	1
13	AL	.0290	MG/L	D: Conc<DL	.0628	1
14	NI	-.0064	MG/L	D: Conc<DL	.0042	1
16	BA	-.0001	MG/L	D: Conc<DL	.0000	1
17	SR	-.0016	MG/L	D: Conc<DL	.0006	1
18	CR	.0003	MG/L		.0001	1
21	SE	-.0601	MG/L	D: Conc<DL	.0273	1
22	TI	-.0018	MG/L	D: Conc<DL	.0021	1
23	CU	-.0058	MG/L	D: Conc<DL	.0112	1
26	CO	.0077	MG/L	D: Conc<DL	.0036	1
28	AG	.0010	MG/L		.0000	1
30	AS	-.0287	MG/L	D: Conc<DL	.0145	1
31	BE	.0002	MG/L	D: Conc<DL	.0001	1
32	ZN	-.0024	MG/L	D: Conc<DL	.0017	1
34	CD	-.0003	MG/L	D: Conc<DL	.0000	1
36	PB	-.0072	MG/L	D: Conc<DL	.0126	1
37	SB	-.1127	MG/L	D: Conc<DL	.0307	1
38	TL	-.0269	MG/L	D: Conc<DL	.0127	1
39	P	-.0126	MG/L	D: Conc<DL	.0002	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

334

X01C0131-001/DS/CN 13:41:55 05-18-2001

SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	185	185	137	0	47	.36
3	U	3078	3066	3506	2986	-44	.18
5	PU	2090	2082	2083	0	2	.02
6	MG	10403	10524	82	0	10381	7.37
8	CA	22236	22656	543	0	21902	115.03
10	MN	2610	2638	296	0	2327	1.69
11	MO	938	934	0	919	17	.01
12	V	843	843	837	0	5	.02
13	AL	1137	1132	1111	0	23	.26
14	NI	738	731	716	0	18	.01
16	BA	669	673	550	0	121	.12
17	SR	1500	1512	367	0	1138	.62
18	CR	673	670	0	625	46	.05
21	SE	1547	1532	1549	0	-10	.02
22	TI	410	409	414	0	-5	-.00
23	CU	1330	1327	1243	0	84	.20
26	CO	494	494	0	485	8	.01
28	AG	1788	1783	1767	0	18	.02
30	AS	938	936	959	0	-22	-.04
31	BE	570	568	0	542	26	.00
32	ZN	1090	1100	0	223	872	1.87
34	CD	362	362	352	0	9	.01
36	PB	2539	2526	0	2538	-6	-.02
37	SB	1405	1394	1391	0	8	.03
38	TL	820	820	0	836	-17	-.05
39	P	684	685	0	522	162	3.15

X01C0131-001 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.3608	MG/L		.0040	1
3	U	.1838	MG/L	D: Conc<DL	.6663	1
5	PU	.0102	MG/L		.0004	1
6	MG	7.3772	MG/L		.1124	10
8	CA	115.0303	MG/L		.7188	100
10	MN	1.6919	MG/L		.0104	1
11	MO	.0142	MG/L		.0038	1
12	V	.0216	MG/L		.0042	1
13	AL	.1984	MG/L		.0628	1
14	NI	.0180	MG/L		.0042	1
16	BA	.1268	MG/L		.0020	1
17	SR	.6188	MG/L		.0038	1
18	CR	.0461	MG/L		.0034	1
21	SE	.0321	MG/L	D: Conc<DL	.0273	1
22	TI	-.0023	MG/L	D: Conc<DL	.0000	1
23	CU	.2004	MG/L		.0112	1
26	CO	.0190	MG/L		.0036	1
28	AG	.0164	MG/L	D: Conc<DL	.0111	1
30	AS	-.0418	MG/L	D: Conc<DL	.0145	1
31	BE	.0001	MG/L	D: Conc<DL	.0001	1
32	ZN	1.8727	MG/L		.0117	1
34	CD	.0116	MG/L		.0013	1
36	PB	-.0255	MG/L	D: Conc<DL	.0126	1
37	SB	.0385	MG/L	D: Conc<DL	.0307	1
38	TL	-.0586	MG/L	D: Conc<DL	.0127	1
39	P	.7816	MG/L		.0425	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

336

X01C0131-002/DS/CN 13:43:42 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	560	558	140	0	419	2.99
3	U	3081	3080	3519	2995	-46	.12
5	PU	2091	2088	2097	0	-8	-.32
6	MG	10535	10507	81	0	10439	7.41
8	CA	27693	27800	559	0	27187	142.81
10	MN	1938	1934	297	0	1638	1.19
11	MO	951	940	0	937	8	.00
12	V	904	879	848	0	43	.07
13	AL	1141	1136	1114	0	24	.27
14	NI	732	726	720	0	9	.00
16	BA	713	713	551	0	161	.16
17	SR	1565	1557	367	0	1193	.65
18	CR	650	648	0	628	21	.01
21	SE	1535	1539	1568	0	-31	-.07
22	TI	413	409	413	0	-2	.00
23	CU	1256	1255	1248	0	7	.00
26	CO	492	491	0	488	3	.00
28	AG	1798	1789	1774	0	19	.02
30	AS	958	948	959	0	-7	.02
31	BE	575	572	0	545	28	.00
32	ZN	315	319	0	225	91	.19
34	CD	353	352	353	0	-1	.00
36	PB	2554	2541	0	2539	8	-.00
37	SB	1396	1399	1405	0	-8	-.06
38	TL	833	833	0	853	-20	-.06
39	P	553	554	0	530	23	.43

X01C0131-002 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	2.9953	MG/L		.0187	3
3	U	.1028	MG/L	D: Conc<DL	.6663	1
5	PU	-.3307	MG/L	D: Conc<DL	.2587	1
6	MG	7.4189	MG/L		.1131	10
8	CA	142.8086	MG/L		.8922	100
10	MN	1.1920	MG/L		.0073	1
11	MO	.0045	MG/L	D: Conc<DL	.0038	1
12	V	.0766	MG/L		.0043	1
13	AL	.1974	MG/L		.0628	1
14	NI	.0024	MG/L	D: Conc<DL	.0042	1
16	BA	.1661	MG/L		.0021	1
17	SR	.6480	MG/L		.0040	1
18	CR	.0089	MG/L	D: Conc<DL	.0034	1
21	SE	-.0652	MG/L	D: Conc<DL	.0273	1
22	TI	.0010	MG/L	D: Conc<DL	.0021	1
23	CU	.0063	MG/L	D: Conc<DL	.0112	1
26	CO	.0084	MG/L	D: Conc<DL	.0036	1
28	AG	.0170	MG/L	D: Conc<DL	.0111	1
30	AS	.0236	MG/L	D: Conc<DL	.0145	1
31	BE	.0001	MG/L	D: Conc<DL	.0001	1
32	ZN	.1907	MG/L		.0021	1
34	CD	.0008	MG/L		.0000	1
36	PB	-.0070	MG/L	D: Conc<DL	.0126	1
37	SB	-.0619	MG/L	D: Conc<DL	.0307	1
38	TL	-.0727	MG/L	D: Conc<DL	.0127	1
39	P	.2063	MG/L		.0369	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

336

CRDL2/DS/CN 13:45:24 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	162	162	138	0	24	.19
3	U	3148	3148	3613	3064	-53	-.18
5	PU	2142	2138	2149	0	-10	-.39
6	MG	81	80	77	0	3	.00
8	CA	518	517	498	0	19	.00
10	MN	327	327	302	0	25	.02
11	MO	1202	1199	0	960	240	.27
12	V	912	910	869	0	42	.07
13	AL	1154	1150	1141	0	11	.06
14	NI	778	774	736	0	39	.05
16	BA	558	555	566	0	-10	-.00
17	SR	895	891	374	0	518	.28
18	CR	708	707	0	648	59	.07
21	SE	1612	1614	1589	0	23	.19
22	TI	436	434	422	0	13	.02
23	CU	1312	1310	1282	0	29	.06
26	CO	537	537	0	497	39	.08
28	AG	1860	1861	1819	0	41	.06
30	AS	1010	1007	985	0	23	.15
31	BE	675	675	0	556	119	.00
32	ZN	264	264	0	230	34	.06
34	CD	374	373	363	0	10	.01
36	PB	2662	2665	0	2595	68	.07
37	SB	1489	1470	1436	0	43	.25
38	TL	889	889	0	855	34	.16
39	P	582	582	0	537	45	.85

CRDL2 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1944	MG/L		.0035	1
3	U	-.1844	MG/L	D: Conc<DL	.6663	1
5	PU	-.3815	MG/L	D: Conc<DL	.2587	1
6	MG	.0013	MG/L	D: Conc<DL	.0010	1
8	CA	.0061	MG/L	D: Conc<DL	.0095	1
10	MN	.0209	MG/L		.0007	1
11	MO	.2745	MG/L		.0042	1
12	V	.0744	MG/L		.0043	1
13	AL	.0588	MG/L	D: Conc<DL	.0628	1
14	NI	.0540	MG/L		.0042	1
16	BA	-.0020	MG/L	D: Conc<DL	.0019	1
17	SR	.2852	MG/L		.0018	1
18	CR	.0704	MG/L		.0034	1
21	SE	.1967	MG/L		.0273	1
22	TI	.0245	MG/L		.0021	1
23	CU	.0627	MG/L		.0112	1
26	CO	.0831	MG/L		.0036	1
28	AG	.0667	MG/L		.0111	1
30	AS	.1560	MG/L		.0145	1
31	BE	.0070	MG/L		.0001	1
32	ZN	.0661	MG/L		.0018	1
34	CD	.0130	MG/L		.0013	1
36	PB	.0785	MG/L		.0126	1
37	SB	.2487	MG/L		.0308	1
38	TL	.1621	MG/L		.0127	1
39	P	.7688	MG/L		.0373	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

A331

INTA2/DS/CN 13:48:57 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	25963	26153	321	0	25737	182.49
3	U	3035	3032	3412	2916	-6	1.72
5	PU	2094	2087	2056	0	35	1.15
6	MG	324566	325100	310	0	324522	392.02
8	CA	88246	89480	699	0	88164	463.34
10	MN	323	321	301	0	21	.01
11	MO	1091	1088	0	1075	14	.01
12	V	839	854	829	0	17	.03
13	AL	31553	32030	1166	0	30624	479.33
14	NI	760	760	715	0	44	.06
16	BA	560	559	556	0	3	.01
17	SR	389	388	360	0	28	.01
18	CR	731	731	0	631	99	.13
21	SE	1783	1792	1831	0	-44	-.14
22	TI	407	405	409	0	-4	.00
23	CU	1225	1222	1214	0	9	.01
26	CO	491	490	0	481	9	.01
28	AG	1762	1760	1730	0	30	.04
30	AS	1738	1745	1262	0	479	2.15
31	BE	562	560	0	532	28	.00
32	ZN	263	260	0	251	11	.01
34	CD	384	384	375	0	9	.01
36	PB	3462	3458	0	3021	438	.59
37	SB	1613	1624	1621	0	-3	-.03
38	TL	949	936	0	964	-22	-.07
39	P	646	646	0	633	12	.21

INTA2 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	182.4920	MG/L		1.1276	100
3	U	.4147	MG/L	D: Conc<DL	.6665	3
5	PU	1.1229	MG/L		.2589	1
6	MG	392.0210	MG/L		5.9767	100
8	CA	463.0017	MG/L		2.8938	100
10	MN	-.0030	MG/L	D: Conc<DL	.0007	1
11	MO	.0192	MG/L		.0038	1
12	V	.0265	MG/L		.0042	1
13	AL	479.1107	MG/L		3.1383	100
14	NI	-.0058	MG/L	D: Conc<DL	.0042	1
16	BA	.0060	MG/L		.0019	1
17	SR	.0013	MG/L	D: Conc<DL	.0007	1
18	CR	-.0178	MG/L	D: Conc<DL	.0035	1
21	SE	-.0470	MG/L	D: Conc<DL	.0273	1
22	TI	-.0050	MG/L	D: Conc<DL	.0000	1
23	CU	-.0011	MG/L	D: Conc<DL	.0112	1
26	CO	.0133	MG/L		.0036	1
28	AG	.0109	MG/L	D: Conc<DL	.0111	1
30	AS	-.0730	MG/L	D: Conc<DL	.0197	3
31	BE	.0003	MG/L	D: Conc<DL	.0001	1
32	ZN	.0009	MG/L	D: Conc<DL	.0017	1
34	CD	-.0089	MG/L	D: Conc<DL	.0013	1
36	PB	-.0127	MG/L	D: Conc<DL	.0131	1
37	SB	-.0171	MG/L	D: Conc<DL	.0307	1
38	TL	.0507	MG/L		.0127	1
39	P	-.1487	MG/L	D: Conc<DL	.0369	1

DS 5-18-01

487.9164

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

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INTAB2/DS/CN 13:50:41 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	26413	26630	319	0	26202	185.78
3	U	3029	3026	3401	2910	-6	1.75
5	PU	2094	2091	2059	0	33	1.11
6	MG	327133	327966	309	0	327240	404.44
8	CA	89703	90806	698	0	89556	470.65
10	MN	977	982	299	0	681	.49
11	MO	1916	1910	0	1089	824	.95
12	V	1175	1170	842	0	330	.49
13	AL	32183	32610	1171	0	31225	488.73
14	NI	1316	1320	720	0	598	.97
16	BA	1039	1039	555	0	483	.48
17	SR	2217	2221	362	0	1857	1.01
18	CR	1053	1053	0	628	424	.61
21	SE	1983	1989	1830	0	156	.85
22	TI	406	406	409	0	-3	.00
23	CU	1412	1414	1215	0	197	.48
26	CO	722	721	0	482	239	.49
28	AG	2324	2323	1736	0	587	1.02
30	AS	1982	1992	1252	0	735	3.27
31	BE	7056	7098	0	541	6535	.49
32	ZN	713	719	0	250	466	.99
34	CD	1250	1261	375	0	880	.92
36	PB	4135	4144	0	3045	1094	1.50
37	SB	1781	1792	1622	0	163	.99
38	TL	1184	1183	0	963	221	.97
39	P	725	723	0	631	93	1.79

INTAB2 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	185.7868	MG/L		1.1479	100
3	U	.4208	MG/L	D: Conc<DL	.6665	3
5	PU	1.0786	MG/L		.2589	1
6	MG	~~404.4481~~ 472.0029	MG/L		6.1662	100
8	CA	470.3091	MG/L		2.9394	100
10	MN	.4752	MG/L		.0031	1
11	MO	.9588	MG/L		.0072	1
12	V	.4802	MG/L		.0052	1
13	AL	488.4674	MG/L		3.1998	100
14	NI	.9077	MG/L		.0074	1
16	BA	.4832	MG/L		.0035	1
17	SR	.9976	MG/L		.0062	1
18	CR	.4626	MG/L		.0052	1
21	SE	.9678	MG/L		.0278	1
22	TI	-.0048	MG/L	D: Conc<DL	.0000	1
23	CU	.4695	MG/L		.0116	1
26	CO	.4877	MG/L		.0047	1
28	AG	.9898	MG/L		.0132	1
30	AS	.9985	MG/L		.0250	3
31	BE	.4902	MG/L		.0030	1
32	ZN	.9735	MG/L		.0064	1
34	CD	.9074	MG/L		.0059	1
36	PB	.8865	MG/L		.0158	3
37	SB	.9842	MG/L		.0319	1
38	TL	1.0983	MG/L		.0141	1
39	P	.1613	MG/L		.0388	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

5-18-01

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00100

CCV3/DS/CN 13:52:50 05-18-2001

SAMPLE Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	1590	1598	152	0	1442	10.24
3	U	3151	3151	3600	3069	-51	-.10
5	PU	2155	2152	2151	0	2	.02
6	MG	13485	13578	85	0	13446	9.57
8	CA	2333	2361	505	0	1842	9.58
10	MN	7260	7301	311	0	6969	5.06
11	MO	5151	5185	0	982	4186	4.84
12	V	4256	4308	928	0	3353	4.87
13	AL	1840	1851	1151	0	694	10.76
14	NI	3819	3855	756	0	3081	5.07
16	BA	5501	5548	577	0	4947	4.92
17	SR	3964	3982	378	0	3594	1.96
18	CR	4037	4069	0	652	3401	5.06
21	SE	3576	3611	1616	0	1977	9.95
22	TI	1786	1787	425	0	1361	2.02
23	CU	3264	3273	1292	0	1976	4.94
26	CO	2979	2991	0	507	2478	5.10
28	AG	2973	2974	1832	0	1140	1.99
30	AS	3134	3173	978	0	2175	9.58
31	BE	26483	26743	0	601	26011	1.96
32	ZN	2571	2598	0	235	2349	5.05
34	CD	2229	2247	368	0	1870	1.96
36	PB	9730	9812	0	2650	7120	9.88
37	SB	3108	3142	1461	0	1664	10.24
38	TL	3157	3208	0	862	2320	10.05
39	P	3572	3617	0	556	3039	59.66

CCV3 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	10.2488	MG/L		.0633	10
3	U	-.1801	MG/L	D: Conc<DL	.6663	1
5	PU	.0367	MG/L		.0004	1
6	MG	9.5781	MG/L		.1460	10
8	CA	9.5759	MG/L		.0609	10
10	MN	5.0610	MG/L		.0311	10
11	MO	4.8451	MG/L		.0311	10
12	V	4.8707	MG/L		.0308	10
13	AL	10.5311	MG/L		.0946	10
14	NI	5.0756	MG/L		.0320	10
16	BA	4.9187	MG/L		.0307	10
17	SR	1.9613	MG/L		.0121	3
18	CR	5.0548	MG/L		.0318	10
21	SE	10.0396	MG/L		.0698	10
22	TI	2.0275	MG/L		.0127	3
23	CU	4.9493	MG/L		.0340	10
26	CO	5.0935	MG/L		.0320	10
28	AG	2.0012	MG/L		.0177	3
30	AS	9.4871	MG/L		.0619	10
31	BE	1.9500	MG/L		.0120	3
32	ZN	5.0127	MG/L		.0313	10
34	CD	1.9683	MG/L		.0122	3
36	PB	9.8677	MG/L		.0634	10
37	SB	10.0282	MG/L		.0959	10
38	TL	10.0165	MG/L		.0643	10
39	P	53.0794	MG/L		.3994	100

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

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CCB3/DS/CN 13:56:06 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	148	147	139	0	8	.08
3	U	3127	3129	3573	3043	-47	.05
5	PU	2123	2129	2124	0	2	.01
6	MG	82	82	76	0	5	.00
8	CA	518	519	493	0	24	.03
10	MN	297	297	301	0	-5	-.00
11	MO	946	950	0	953	-6	-.01
12	V	820	843	863	0	-32	-.03
13	AL	1144	1146	1134	0	10	.06
14	NI	734	738	725	0	11	.00
16	BA	554	553	561	0	-8	0.00
17	SR	362	365	369	0	-6	-.00
18	CR	653	657	0	641	13	.00
21	SE	1555	1560	1593	0	-37	-.10
22	TI	413	413	421	0	-8	-.00
23	CU	1268	1274	1270	0	1	-.01
26	CO	498	498	0	495	3	.00
28	AG	1809	1818	1807	0	7	.00
30	AS	953	953	968	0	-15	-.01
31	BE	578	580	0	551	27	.00
32	ZN	229	227	0	230	-3	-.01
34	CD	358	358	362	0	-4	-.00
36	PB	2586	2589	0	2589	-2	-.01
37	SB	1421	1424	1424	0	-2	-.02
38	TL	844	836	0	843	-4	.00
39	P	536	536	0	534	2	.01

CCB3 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.0808	MG/L		.0034	1
3	U	.0575	MG/L	D: Conc<DL	.6663	1
5	PU	.0083	MG/L		.0004	1
6	MG	.0030	MG/L	D: Conc<DL	.0010	1
8	CA	.0334	MG/L		.0095	1
10	MN	-.0002	MG/L	D: Conc<DL	.0000	1
11	MO	-.0100	MG/L	D: Conc<DL	.0038	1
12	V	-.0327	MG/L	D: Conc<DL	.0042	1
13	AL	.0608	MG/L	D: Conc<DL	.0628	1
14	NI	.0061	MG/L	D: Conc<DL	.0042	1
16	BA	-.0000	MG/L	D: Conc<DL	.0000	1
17	SR	-.0003	MG/L	D: Conc<DL	.0000	1
18	CR	.0020	MG/L	D: Conc<DL	.0034	1
21	SE	-.1082	MG/L	D: Conc<DL	.0273	1
22	TI	-.0059	MG/L	D: Conc<DL	.0021	1
23	CU	-.0100	MG/L	D: Conc<DL	.0112	1
26	CO	.0083	MG/L	D: Conc<DL	.0036	1
28	AG	.0059	MG/L	D: Conc<DL	.0111	1
30	AS	-.0103	MG/L	D: Conc<DL	.0145	1
31	BE	.0003	MG/L	D: Conc<DL	.0001	1
32	ZN	-.0121	MG/L	D: Conc<DL	.0017	1
34	CD	-.0019	MG/L	D: Conc<DL	.0013	1
36	PB	-.0182	MG/L	D: Conc<DL	.0126	1
37	SB	-.0255	MG/L	D: Conc<DL	.0307	1
38	TL	.0015	MG/L		.0001	1
39	P	.0253	MG/L		.0002	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

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Kaiser Hill Company
Rocky Flats Environmental Technology Site
Inorganic Metals Lab - Building 559

TOXICITY CHARACTERISTIC LEACHING PROCEDURE EXTRACTION FOR INORGANIC METALS
DATE: (5/21/01)
Lab #'s: X01C0131-001.002 and X01C0131-002.002

The Samples included in this TCLP report

X01C0131-001.002 and X01C0131-002.002

Method Summary

The TCLP is designed to determine the mobility of both organic and inorganic contaminants present in liquid, solid, and multiphasic wastes. However, if a total analysis of the waste demonstrates that individual contaminates are not present in the waste, or they are present at such low concentrations that the appropriate regulatory thresholds could not possibly be exceeded, the TCLP need not be run.

The TCLP consist of three basic steps: separation, agitation and filtration. Which of these steps are performed depends upon whether the waste is a liquid, multiphasic or a solid and whether inorganic metals, semi-volatile or volatile organics are of interest. When volatile organics are not a concern a bottle extractor is used and when volatile organics are a concern a special extraction vessel Zero Headspace Extractor (ZHE) that precludes headspace is used.

Prior to TCLP extractions preliminary TCLP evaluations are performed on a representative amount of sample of waste that will not actually undergo TCLP extraction. These evaluations include: (1) determination of the percent solids (wet weight) of the waste; (2) determination of percent solids (dry weight) for waste that may contain insignificant solids (< 0.5), and is then defined as the TCLP extract after filtration through a 0.6 to 0.8 micron glass fiber filter; (3) determination of whether the solid portion of the wastes requires particle size reduction; and (4) determination of which of the two extraction fluids, based on the sample alkalinity, are to be used for the non-volatile TCLP extraction of the waste.

For wastes comprised of solids or for wastes containing significant amounts of solid material, the particle size of the waste is reduced (if necessary), the liquid phase, if any, is separated from the solid phase and stored for later analysis. The solid phase is extracted with an amount of extraction fluid equal to 20 times the weight of the solid phase. Following the extraction, the liquid extract is separated from the solid phase using a 0.6 to 0.8 micron glass fiber filter. If the separate phases are compatible, the initial liquid phase (sample filtrate) of the waste is added to the TCLP extract, and these liquids are analyzed together. If the separate phases are incompatible, the liquids are analyzed separately and the results are mathematically combined.

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Kaiser Hill Company
Rocky Flats Environmental Technology Site
Inorganic Metals Lab - Building 559

TOXICITY CHARACTERISTIC LEACHING PROCEDURE EXTRACTION FOR INORGANIC METALS
DATE: (5/21/01)
Lab #'s: X01C0131-001.002 and X01C0131-002.002

This report discusses test results for generation of the TCLP Extract. Reports for the analysis of the TCLP Extract are reported by those areas performing the analyses. The referenced base method, EPA Reference SW-846 Method 1311, is followed with the following deviations:

X01C0131-001.002

Lab Received Date: 4/23/01 TCLP Start Date: 5/17/01

The "percent solids" was determined to be 43.4788 for the sample. 11.0 ml of sample was in the initial liquid phase. The solid portion (8.4616 g) required 169.2 ml of extraction fluid. The initial liquid and extraction fluid was compatible with each other, and was combined together. The final combined extract pH was 5.67.

X01C0131-002.002

Lab Received Date: 4/23/01 TCLP Start Date: 5/17/01

The "percent solids" was determined to be 42.0138 for the sample. 11.0 ml of sample was in the initial liquid phase. The solid portion (7.9657 g) required 159.3 ml of extraction fluid. The initial liquid and extraction fluid was compatible with each other, and was combined together. The final combined extract pH was 6.03.

Additional Information:

The customer requested that TCLP SW-846 Method 1311 be utilized for the samples.

Quality Control Results

Sample X01C0130-001 represents the QA/QC sample that received a pre-digestion spike and a lab duplicate (X01C0130-001D) for this sample set. TCLP Extraction Fluid #1 represents the QA/QC sample that was run as a reagent blank for this sample set.

Chemist Approval RC-[illegible] Date 5/21/01

Second Reviewer [illegible] Date 5/24/01

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TCLP BATCH SHEET

Analyst: Bruce K Jordan Date: 5-17-01

Sample ID Number	Bottle Number	Extraction End Date	Filtrate Vol. (ml)	TCLP Solids Extract Vol. (ml)	HNO_3 Added (ml)	MR Spike Added (X)
X01C0130-001	0130-001	5-18-01	n/a	100	1.0	X
001D	0130-001D	↓	↓	↓	↓	
002	0130-002					
003	0130-003					
004	0130-004					
005	0130-005					
006	0130-006				↓	
007	0130-007				1.5	
008	0130-008				↓	
009	0130-009					
↓ 010	0130-010		↓	↓	↓	
X01C0131-001	0131-001		11.0	169.2	1.5	
↓ 002	0131-002		11.0	159.3	↓	
X TCLP Ext.#1	Ext.#1	↓	74.0	n/a	1.0	

Comments:

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MD 5-23-

Analyst: Bruce A Jordan Date: 5-17-01

Preliminary Percent Solids by Wet Weight Determination

Sample I.D. Number	Free Liq?	Solids/ Liquids Sample Preliminary Data					pH + H2O	pH + HCL	Final % Solids
		NWST(gm)	GFW (gm)	FCW (gm)	NFW (gm)	FSW (gm)			
X01C0130-001	N	5.0002					4.15	—	100
001D		5.0004					4.86	—	
002		5.0001					4.86	—	
003		5.0010					4.85	—	
004		5.0001		RK			5.22	1.77	
005		5.0002					6.19	1.77	
006		5.0005		5/18/01			6.11	1.67	
007		5.0000					6.70	1.86	
008		5.0013					6.89	1.83	
009		5.0002					7.14	1.75	

NWST = Net Weight of Original Sample Transferred
GFW = Gross Filtrate + Container Weight
FCW = Filtrate Container Tare Weight
NFW = Net Filtrate Weight
FSW = Filtered Solids Weight

004

Preliminary Size Reduction for Solid Phase of Waste Sample

Sample I. D. Number	Is Particle Size Reduction Required?	
	Yes	No
X01C0130-001	Y	N/A
001D		
002		
003		
004		
005		
006		
007		
008		
009		

007

345

Analyst: Bruce K Jorden Date: 5-17-01

Preliminary Percent Solids by Wet Weight Determination

Sample I.D. Number	Free Liq?	Solids/ Liquids Sample Preliminary Data					pH + H2O	pH + HCL	Final % Solids
		NWST(gm)	GFW (gm)	FCW (gm)	NFW (gm)	FSW (gm)			
X01C0130-010	N	5.0004	—	—	—	—	7.28	1.80	100
X01C0131-001	Y	19.4614	21.9601	10.9603	10.9998	8.4616	6.23	2.12	43.4786
X01C0131-002	Y	18.9597	22.0496	11.0556	10.9940	7.9657	7.50	3.06	42.0138
X TCLP Ext. #1	Y	74.1542	88.1468	14.0111	74.1357	0.0185	—	—	.0249
				RK					
				5/18/01					

NWST = Net Weight of Original Sample Transferred
GFW = Gross Filtrate + Container Weight
FCW = Filtrate Container Tare Weight
NFW = Net Filtrate Weight
FSW = Filtered Solids Weight

005

Preliminary Size Reduction for Solid Phase of Waste Sample

Sample I. D. Number	Is Particle Size Reduction Required?	
	Yes	No
X01C0130-010	Y	N/A
X01C0131-001	N/A	N
X01C0131-002	N/A	N
X TCLP Ext. #1	N/A	N

008

3416

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce A. Jordan Extraction Bottle Number: 0130-001

Sample I. D.: X01C0130-001

Sample (COC) Collection Date: 4-20-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 4.15 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes N/A pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0002	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0002	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

Rocky Flats Plant (559 Laboratories)

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REV: L-4108-E

M.D. 5-23

009

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-001 Extraction Bottle Number: 0130-001

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples)	100.0	ml
TCLP Final Solids Extract pH, (Solids Samples)	4.99	pH Units
TCLP Final Extract Volume , (Liquid Samples)	N/A	ml
TCLP Final Liquid Extract pH, (Liquid Samples)		pH Units
(Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase)		ml
TCLP Final Combined Extract pH		pH Units
(Non-Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Initial Liquid Phase pH		pH Units
TCLP Final Solids Phase Extract pH		pH Units

Comments:

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REV: L-4108-E

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0010

5-23-01

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce A Jordan Extraction Bottle Number: 0130-001D

Sample I. D.: X01C-0130-001D

Sample (COC) Collection Date: 4-20-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 4.86 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes N/A pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0004	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0004	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

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TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-001D Extraction Bottle Number: 0130-001D

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22 °C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : 100.0 ml
TCLP Final Solids Extract pH, (Solids Samples) : 4.98 pH Units

TCLP Final Extract Volume , (Liquid Samples) : N/A ml
TCLP Final Liquid Extract pH, (Liquid Samples) : _____ pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : _____ ml

TCLP Final Combined Extract pH : _____ pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Initial Liquid Phase pH : _____ pH Units

TCLP Final Solids Phase Extract pH : _____ pH Units

Comments: _____

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REV: L-4108-E

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TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-002

Sample I. D.: X01C0130-002

Sample (COC) Collection Date: 4-20-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 4.86 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes N/A pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0001	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0001	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

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MM 5-23-01

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: XOIC0130-002 Extraction Bottle Number: 0130-002

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : 100.0 ml
TCLP Final Solids Extract pH, (Solids Samples) : 4.96 pH Units

TCLP Final Extract Volume , (Liquid Samples) : N/A ml
TCLP Final Liquid Extract pH, (Liquid Samples) : _____ pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : _____ ml

TCLP Final Combined Extract pH : _____ pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Initial Liquid Phase pH : _____ pH Units

TCLP Final Solids Phase Extract pH : _____ pH Units

Comments: _____

Rocky Flats Plant (559 Laboratories)

REV: L-4108-E

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TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-003

Sample I. D.: X01C-0130-003

Sample (COC) Collection Date: 5-1-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 4.85 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes N/A pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0010	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0010	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: XOIC0130-003 Extraction Bottle Number: 0130-003

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : 100.0 ml
TCLP Final Solids Extract pH, (Solids Samples) : 4.98 pH Units

TCLP Final Extract Volume , (Liquid Samples) : N/A ml
TCLP Final Liquid Extract pH, (Liquid Samples) : _____ pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : _____ ml

TCLP Final Combined Extract pH : _____ pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Initial Liquid Phase pH : _____ pH Units

TCLP Final Solids Phase Extract pH : _____ pH Units

Comments: _____

Rocky Flats Plant (559 Laboratories)

REV: L-4108-E

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5-23-0

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-004

Sample I. D.: X01C0130-004

Sample (COC) Collection Date: 5-1-01 TCLP Sample Prep Date: 5.17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 5.22 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes 1.77 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0001	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0001	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

MD 5-23-01

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REV: L-4108-E

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TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: XO1C0130-004 Extraction Bottle Number: 0130-004

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22 °C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples)	100.0	ml
TCLP Final Solids Extract pH, (Solids Samples)	4.99	pH Units
TCLP Final Extract Volume , (Liquid Samples)	N/A	ml
TCLP Final Liquid Extract pH, (Liquid Samples)		pH Units
(Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase)		ml
TCLP Final Combined Extract pH		pH Units
(Non-Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Initial Liquid Phase pH		pH Units
TCLP Final Solids Phase Extract pH		pH Units

Comments:

Rocky Flats Plant (559 Laboratories)

REV: L-4108-E

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ML 5-23-01

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-005

Sample I. D.: X01C0130-005

Sample (COC) Collection Date: 5-1-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 6.19 pH Units
pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes 1.77 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0002	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0002	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

Rocky Flats Plant (559 Laboratories)

REV: L-4108-E

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: ~~01C0130-005~~ XO1C0130-005 5-17-01 Extraction Bottle Number: 0130-005

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples .

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22 °C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples)	100.0	ml
TCLP Final Solids Extract pH, (Solids Samples)	4.98	pH Units
TCLP Final Extract Volume , (Liquid Samples)	N/A	ml
TCLP Final Liquid Extract pH, (Liquid Samples)		pH Units
(Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase)		ml
TCLP Final Combined Extract pH		pH Units
(Non-Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Initial Liquid Phase pH		pH Units
TCLP Final Solids Phase Extract pH		pH Units

Comments: _____

Rocky Flats Plant (559 Laboratories)

REV: L-4108-E

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MD 5-23-

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-006

Sample I. D.: X01C-0130-006

Sample (COC) Collection Date: 4-20-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 6.11 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes 1.67 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0005	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0005	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

Rocky Flats Plant (559 Laboratories)

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REV: L-4108-E

MD 5-23-01

0021

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-006 Extraction Bottle Number: 0130-006

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : 100.0 ml
TCLP Final Solids Extract pH, (Solids Samples) : 5.29 pH Units

TCLP Final Extract Volume , (Liquid Samples) : N/A ml
TCLP Final Liquid Extract pH, (Liquid Samples) : _____ pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : _____ ml

TCLP Final Combined Extract pH : _____ pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Initial Liquid Phase pH : _____ pH Units

TCLP Final Solids Phase Extract pH : _____ pH Units

Comments: _____

Rocky Flats Plant (559 Laboratories)

REV: L-4108-E

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MD 5-23-01

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-007

Sample I. D.: X01C0130-007

Sample (COC) Collection Date: 5-1-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 6.70 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes 1.86 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0000	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0000	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

Rocky Flats Plant (559 Laboratories)

REV: L-4108-E

MD 5-23-01

0023

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-007 Extraction Bottle Number: 0130-007

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples)	100.0	ml
TCLP Final Solids Extract pH, (Solids Samples)	5.96	pH Units
TCLP Final Extract Volume , (Liquid Samples)	N/A	ml
TCLP Final Liquid Extract pH, (Liquid Samples)		pH Units
(Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase)		ml
TCLP Final Combined Extract pH		pH Units
(Non-Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Initial Liquid Phase pH		pH Units
TCLP Final Solids Phase Extract pH		pH Units

Comments: _____

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce A Jordan Extraction Bottle Number: 0130-008

Sample I. D.: X01C-0130-008

Sample (COC) Collection Date: 5-1-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 6.89 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes 1.83 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0013	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0013	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

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REV: L-4108-E

MA 5-23-01

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-088 Extraction Bottle Number: 0130-089

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22 °C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples)	100.0	ml
TCLP Final Solids Extract pH, (Solids Samples)	5.47	pH Units
TCLP Final Extract Volume , (Liquid Samples)	N/A	ml
TCLP Final Liquid Extract pH, (Liquid Samples)		pH Units
(Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase)		ml
TCLP Final Combined Extract pH		pH Units
(Non-Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Initial Liquid Phase pH		pH Units
TCLP Final Solids Phase Extract pH		pH Units

Comments:

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5-23-01

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce A Jordan Extraction Bottle Number: 0130-009

Sample I. D.: X01C-0130-009

Sample (COC) Collection Date: 5-8-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 7.14 pH Units
pH of Sample Water Test Solution + (1.4 ml of 1 N HCl)
Heat to 50EC, maintain for 10 minutes 6.75 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0002	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0002	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

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REV: L-4108-E

MA 5-23-01

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-009 Extraction Bottle Number: 0130-009

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples)	100.0	ml
TCLP Final Solids Extract pH, (Solids Samples)	5.67	pH Units
TCLP Final Extract Volume , (Liquid Samples)	N/A	ml
TCLP Final Liquid Extract pH, (Liquid Samples)		pH Units
(Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase)		ml
TCLP Final Combined Extract pH		pH Units
(Non-Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Initial Liquid Phase pH		pH Units
TCLP Final Solids Phase Extract pH		pH Units

Comments: _____

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REV: L-4108-E

MJ 5-23-

3666

0028

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-010

Sample I. D.: X01C0130-010

Sample (COC) Collection Date: 5-8-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 7.28 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes 1.80 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0004	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0004	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

Rocky Flats Plant (559 Laboratories)

REV: L-4108-E

5-23-

0029

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-010 Extraction Bottle Number: 0130-010

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22 °C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : 100.0 ml
TCLP Final Solids Extract pH, (Solids Samples) : 6.08 pH Units

TCLP Final Extract Volume , (Liquid Samples) : N/A ml
TCLP Final Liquid Extract pH, (Liquid Samples) : _____ pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : _____ ml

TCLP Final Combined Extract pH : _____ pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Initial Liquid Phase pH : _____ pH Units

TCLP Final Solids Phase Extract pH : _____ pH Units

Comments: _____

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REV: L-4108-E

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5-23-01

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Brad K. Jordan Extraction Bottle Number: 0131-001

Sample I. D.: X01C0131-001

Sample (COC) Collection Date: 4-20-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid___ , Liquid___ , Multi-Phasic (Compatible) X , Multi-Phasic (Non-Compatible)___

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes___ No X

Describe Means of Particle-Size Reduction Applied ? None

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 6.23 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes 2.12 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen _____

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	39.4471	grams
Tare Weight of Container Weight	(DCW) =	~~19.4614~~ 19.9857 RL 5/18/01	grams
Net Weight of Sample Transferred	(NWST) =	19.4614	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	21.9601	grams
Tare Weight of the Filtrate Container	(FCW) =	10.9603	grams
Net Weight of the Collected Sample Filtrate,	(NFW) =	10.9998	grams
Net Volume of the Collected Sample Filtrate,	(NFV) =	11.0	ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =	8.4616	grams

Percent Solids: 43.4788%

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TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0131-001 Extraction Bottle Number: 0131-001

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 169.2 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22 °C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : N/A ml
TCLP Final Solids Extract pH, (Solids Samples) : ↓ pH Units

TCLP Final Extract Volume , (Liquid Samples) : ↓ ml
TCLP Final Liquid Extract pH, (Liquid Samples) : N/A pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : 169.2 ml

TCLP Initial Liquid Phase Volume : 11.0 ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : 180.2 ml

TCLP Final Combined Extract pH : 5.67 pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : N/A ml

TCLP Initial Liquid Phase Volume : ↓ ml

TCLP Initial Liquid Phase pH : ↓ pH Units

TCLP Final Solids Phase Extract pH : N/A pH Units

Comments: _____

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REV: L-4108-E

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MA 5-2

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: BK Gordan Extraction Bottle Number: 0131-002

Sample I. D.: X01C 0131-002

Sample (COC) Collection Date: 4-20-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid ___ , Liquid ___ , Multi-Phasic (Compatible) X , Multi-Phasic (Non-Compatible) ___

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes ___ No X

Describe Means of Particle-Size Reduction Applied ? None

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 7.50 pH Units
pH of Sample Water Test Solution + (1.4 ml of 1 N HCl)
Heat to 50EC, maintain for 10 minutes 3.06 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	39.2761	grams
Tare Weight of Container Weight	(DCW) =	20.3164	grams
Net Weight of Sample Transferred	(NWST) =	18.9597	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	22.0496	grams
Tare Weight of the Filtrate Container	(FCW) =	11.0556	grams
Net Weight of the Collected Sample Filtrate,	(NFW) =	10.9940	grams
Net Volume of the Collected Sample Filtrate,	(NFV) = 5-17-01 ~~BK~~ ~~10.9~~	11.0	ml
Net Weight of Sample Solids Left on Filter ,	(FSW) ~~BK~~ 5-17-01 ~~7.6~~	7.9657	grams

Percent Solids: 42.0138 %

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REV: L-4108-E

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TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0131-002 Extraction Bottle Number: 0131-002

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 159.3 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples)	N/A	ml
TCLP Final Solids Extract pH, (Solids Samples)		pH Units
TCLP Final Extract Volume , (Liquid Samples)	↓	ml
TCLP Final Liquid Extract pH, (Liquid Samples)	N/A	pH Units
(Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume	158.3	ml
TCLP Initial Liquid Phase Volume	11.0	ml
TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase)	170.3	ml
TCLP Final Combined Extract pH	6.03	pH Units
(Non-Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume	N/A	ml
TCLP Initial Liquid Phase Volume	↓	ml
TCLP Initial Liquid Phase pH	↓	pH Units
TCLP Final Solids Phase Extract pH	N/A	pH Units

Comments:

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REV: L-4108-E

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TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: BK Jordan Extraction Bottle Number: Ext #1

Sample I. D.: XTCLP Ext #1

Sample (COC) Collection Date: 5-17-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid ___ , Liquid X , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes ___ No X

Describe Means of Particle-Size Reduction Applied ? None.

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) N/A pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes ___ pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen ✓

Final Test pH > 5.0 = Extraction Fluid # 2 chosen N/A

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	87.5321	grams
Tare Weight of Container Weight	(DCW) =	13.3779	grams
Net Weight of Sample Transferred	(NWST) =	74.1542	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	88.1468	grams
Tare Weight of the Filtrate Container	(FCW) =	14.0111	grams
Net Weight of the Collected Sample Filtrate,	(NFW) =	74.1357	grams
Net Volume of the Collected Sample Filtrate,	(NFV) =	74.0	ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =	.0185	grams

Percent Solids: .0249 %

Rocky Flats Plant (559 Laboratories)

MH 5-21

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REV: L-4108-E

0035

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: XTCLP Ext # 1 Extraction Bottle Number: Ext # 1

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = N/A ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : N/A ml
TCLP Final Solids Extract pH, (Solids Samples) : N/A pH Units

TCLP Final Extract Volume , (Liquid Samples) : 74.0 ml
TCLP Final Liquid Extract pH, (Liquid Samples) : 4.96 pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : N/A ml

TCLP Initial Liquid Phase Volume : ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : ml

TCLP Final Combined Extract pH : pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : ml

TCLP Initial Liquid Phase Volume : ml

TCLP Initial Liquid Phase pH : pH Units

TCLP Final Solids Phase Extract pH : N/A pH Units

Comments:

Rocky Flats Plant (559 Laboratories)

REV: L-4108-E

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EBERLINE SERVICES

May 29, 2001

ENTERED 5-30-01

RECEIVED MAY 30 2001

Chuck Hoelzel
Kaiser-Hill, L.L.C.
Rocky Flats Environmental Technology Site
Analytical Services
10808 Highway 93, Unit B
Golden, CO 80403

COPY

RIN Number: **01C0130**
Lab Code: TNU
Subcontract No. KH700093EP6

COVER PAGE

Chuck,

Enclosed please find results for 10 samples which were received at Eberline Services - Rocky Flats on May 8, 2001. The samples were submitted for gross alpha/gross beta activity for assessment under the No-Rad-Added program with a Routine TAT (30 day).

Results for the following sample(s) are included in this report:

ASD Sample ID	Lab Sample ID
01C0130-001.003	1004307-01
01C0130-002.003	1004307-02
01C0130-003.003	1004307-03
01C0130-004.003	1004307-04
01C0130-005.003	1004307-05
01C0130-006.003	1004307-06
01C0130-007.003	1004307-07
01C0130-008.003	1004307-08
01C0130-009.003	1004307-09
01C0130-010.003	1004307-10
01C0130-010.003	1004307-11 D (Duplicate of 1004307-10)

"I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy sample data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the laboratory manager or the manager's designee, as verified by the following signature."

Laboratory Manager

5/30/01
Date

0000

Analytical Service
Rocky Flats Environmental Technology Sit
10808 Highway 93, Unit
Building No. T886
Golden, Colorado 80403-820
(303) 966-7765 Fax (303) 966-430
Toll free (800) 269-015
www.eberlineservices.co

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Data Package Review Signature Page

Kathy Hoagland
Technical Review

5/29/01
Date

Patricia B. Newton
Quality Assurance Review

5-30-01
Date

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CHAIN - OF - CUSTODY

Commodore Advanced Sciences

RFETS

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # 01C0130#002

Sampler(s) Sorell 512570 / [signature] (time/date) 512632	Contact/Requester TRICE, CONRAD/BOB CATHEL	Telephone No. 2490/3268
RIN 01C0130 JOHN GOOLSBY	Sampling Origin OUTSIDE, B776	Purchase Order/Charge Code DAD01ANA
Project Title B776, OUTSIDE, CT 712, CT 713, WOOD SAMPLES	Logbook No. N/A 94 DODGE	Ice Chest No. N/A Temp. N/A
To (Lab) Thermo NuTech	Method of Shipment Commodore Advanced sciences	Bill of Lading/Air Bill No. N/A
Protocol CAS SOP.003 REV 3	Related COC (if any) 01C0130#001	PRE N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** IDC-1927 **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0130-001.003	CT-712-1	SOLID	4/20/01	1020	OUTSIDE, B776	125-G / P/G /1	OS01A007 (Gross Alpha/Beta - MDA) [Routine]	None None
01C0130-002.003	CT-712-2	SOLID	↓	1050	OUTSIDE, B776	125-G / P/G /1	OS01A007 (Gross Alpha/Beta - MDA) [Routine]	None None
01C0130-003.003	CT-712-3	SOLID	5/01/01	1045	OUTSIDE, B776	125-G / P/G /1	OS01A007 (Gross Alpha/Beta - MDA) [Routine]	None None
01C0130-004.003	CT-712-4	SOLID	↓	1015	OUTSIDE, B776	125-G / P/G /1	OS01A007 (Gross Alpha/Beta - MDA) [Routine]	None None
01C0130-005.003	CT-712-5	SOLID	↓	0945	OUTSIDE, B776	125-G / P/G /1	OS01A007 (Gross Alpha/Beta - MDA) [Routine]	None None
01C0130-006.003	CT-713-1	SOLID	4/20/01	1400	OUTSIDE, B776	125-G / P/G /1	OS01A007 (Gross Alpha/Beta - MDA) [Routine]	None None
01C0130-007.003	CT-713-2	SOLID	5/01/01	1300	OUTSIDE, B776	125-G / P/G /1	OS01A007 (Gross Alpha/Beta - MDA) [Routine]	None None

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature] CAS	1520 4/20/01	T130A FRIDGE #2	1520 4/20/01	[signature]	5/8/01 1530	BS	5/8/01 1530
[signature] CAS	1520 5/01/01	T130A FRIDGE #2	1520 5/01/01				
T130A FRIDGE #2	0730 5/08/01	[signature]	0730 5/08/01				
[signature] CAS	1515 5/08/01	[signature]	5/8/01 1515				

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

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Commodore Advanced Sciences	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # 01C0130#002
		Page 2 of 2

RIN	Contact/Requestor	Telephone No.
01C0130	TRICE, CONRAD/BOB CATHEL	2490/3268

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0130-008.003	CT-713-3	SOLID	5/01/01	1345	OUTSIDE, B776	125-G / P/G /1	OS01A007 (Gross Alpha/Beta - MDA) [Routine]	None None
01C0130-009.003	CT-713-4	SOLID	5/08/01	1045	OUTSIDE, B776	125-G / P/G /1	OS01A007 (Gross Alpha/Beta - MDA) [Routine]	None None
01C0130-010.003	CT-713-5	SOLID	↓	1220	OUTSIDE, B776	125-G / P/G /1	OS01A007 (Gross Alpha/Beta - MDA) [Routine]	None None

4/20/01

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[illegible]	1530	T30B FRIDGE #2	1529				
T30B FRIDGE #2	0730	[illegible]	0730				
[illegible]	1515	[illegible] 5/8/01	1515				
[illegible] 5/8/01	1530	B5 5/8/01	1530				

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

3 of 3

Send Confirmation

WorkCentre 450c report for
RECFAX
3039666595
May-08-01 03:36 PM

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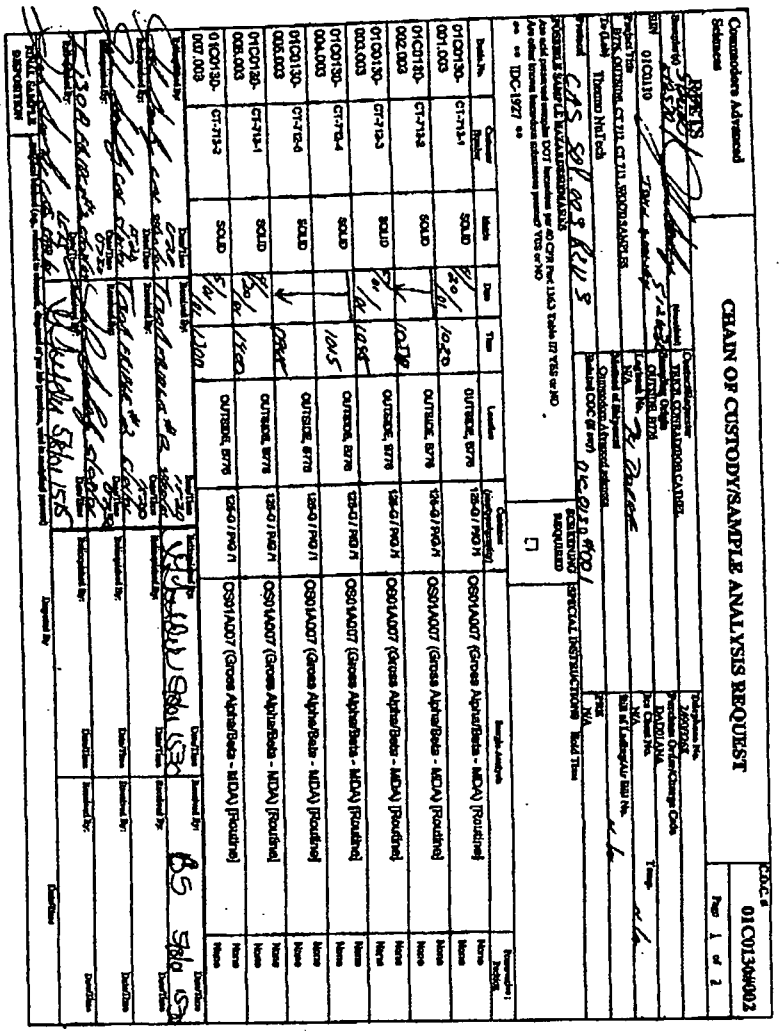
Pages scanned 2
Pages confirmed 2

Job	Sent	To Remote Station	Duration	Mode	Pages	Results
076	May-08 03:35pm	303 966 8345	01:13	ECM	2/ 2	OK,144

$$$ Phone charge code	F Forward	P Poll	48 4800 bps chosen
A Auto-distribute	G Group dial	PC to/from PC	96 9600 bps chosen
C Cover page	M Mailbox	PW Password	144 14400 bps chosen
ECM Error Correction		RM Receive to memory	



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CASE NARRATIVE

Eberline Services - Rocky Flats
RFETS, Building T886D
Golden, Colorado 80403
(303) 966-7765

RIN: 01C0130
Report Date: 05/29/2001

Method Summary

Gross alpha and gross beta activities are measured by evaporating an aliquot of the prepared sample onto a counting planchet and counting the alpha and beta activities in a low background, thin-windowed, gas flow proportional counter. Organics or combustible solids are ashed, the residue dissolved in acid, and the solution or an aliquot of the solution is evaporated onto a counting planchet. Aqueous samples are concentrated and then evaporated onto a counting planchet. The initial preparation of soils, sludges, and sediments is described in detail in procedure ATP-002, *"Initial Preparation of Soils/Sludges/Sediments for Dissolution."* Analysis of prepared non-aqueous samples is described in detail in procedure ATP-026, *"Sample Preparation for Analysis of Gross Alpha and Gross Beta Activity in Solid Samples."* Analysis of prepared aqueous samples is described in detail in procedure ATP-015, *"Sample Preparation for Analysis of Gross Alpha and Gross Beta Activity in Aqueous Samples."* Preparation of oils, solvents and other combustible organics is described in procedure ATP-005, *"Preparation of Oils and Solvents for Analysis of Gross Alpha and Gross Beta Activity."* The counting procedure is described in procedure ATP-008, *"Operation of the Tennelec LB4100 Gas Proportional Counters."*

The detector counting efficiency and self-absorption effects of the salt residue on the planchet are determined from calibration curves which are generated by counting several planchets prepared with a known amount of alpha or beta activity and increasing amounts of salt (0 to 100 mg). Americium-241 is used as the spike for the alpha curves and a solution of Sr-90, Y-90 is used for the beta curves. These standards are prepared from certified reference material which is traceable to the National Institute of Standards Technology (NIST).

The theoretical minimum detectable activity (MDA) for the analysis is based on the detector background, detector efficiency and self-absorption effects, count time and quantity of sample analyzed. The MDA for each analysis is calculated and is also reported. If the reported result is based on the average of two or more counts, the average MDA is reported.

Quality Control Summary

A sample batch consists of eleven or fewer samples, a duplicate of one of the samples, an alpha and a beta laboratory control sample, and a preparation blank. Each set of samples forms a "QC Batch" and is assigned a QC batch number. A sample can be traced back to its corresponding quality control samples through the QC Batch number. The preparation blank (PB), an aliquot of deionized, distilled water, is prepared and analyzed with the samples to confirm that the samples were not contaminated during the analysis. The activities reported for samples and standards were not corrected for preparation blank activity. The alpha and beta laboratory control samples are aqueous standards of ^{241}Am and ^{90}Sr, respectively. The SRM standards used to prepare these standards are traceable to NIST. The duplicate, designated as the sample ID followed by a "D", is a second aliquot of one of the samples in the QC Batch which is carried through the procedure as a separate sample.

The instrument QC includes determining instrument backgrounds weekly and counting an instrument check source daily on the Tennelec LB4100 multidetector gas proportional counters. The instrument backgrounds are based on the average of at least five, and normally ten or more, 4 hour counts. The instrument check sources are counted daily to verify that the efficiencies of the detectors have not changed. A summary of the instrument backgrounds is included in the instrument raw data section of this report. The daily check source information is available in the supporting documentation package.

Narrative

The samples, described as wood outside Building 776 (CT 712, CT 713), were submitted for analysis of gross alpha/gross beta activity for No-Rad-Added assessment. The samples were analyzed in QC batch 01AB077 using procedure ATP-005, *"Preparation of Oils, Solvents and Combustibles for Analysis of Gross Alpha and Gross Beta Activity."* When the planchets prepared in QC batch 01AB077 were counted, the MDAs exceeded the RDLs of 0.3 pCi/g alpha and/or 0.6 pCi/g beta for samples 1004307-02, -03, -06, and -07. This does not adversely effect the quality of the data for these samples since the gross alpha and/or gross beta activities in these samples were significantly higher (5 times or more) than their respective MDAs. Therefore, increasing the count time to 12 hours to reduce the MDAs was not necessary. The alpha counts for the two planchets prepared for sample 1004307-02 were statistically different. When the prepared planchets for this sample were recounted, the beta counts were statistically different. The reported beta activity for this sample is based on the first count and the reported alpha activity is from the recount.

Eberline Services - Rocky Flats
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(303) 966-7765

RIN: 01C0130
Report Date: 05/29/2001

Narrative (continued)

The gross alpha MDAs for samples 1004307-04, -09, -10, and -11 D exceeded the RDL of 0.3 pCi/g alpha. The initial count data from the 4 hour count time were rejected for these samples and the planchets prepared for these samples were recounted for an extended count time (12 hour.) The beta counts of the two planchets prepared for sample 1004307-09 were statistically different. The planchets for this sample were recounted again for 12 hours with acceptable results. The reported results for sample 1004307-09 are the averages and propagated uncertainty of the statistically equivalent 12 hour count data. Sample 1004307-11 D is a duplicate of sample 1004307-10. There were no other problems noted with these analyses and all QC data are acceptable.

Sample and QC Sample Result Summaries

Eberline Services - Rocky Flats
RFETS, Building T886D
Golden, Colorado 80403
(303) 966-7765

RIN: 01C0130
Report Date: 05/29/2001

Sample and Duplicate Analysis Results

Customer Sample ID	Lab Sample ID	Gross Alpha			Gross Beta			Units	QC Batch
		Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA		
01C0130-001.003	1004307-01	0.59	0.18	0.32	0.77	0.19	0.39	pCi/g	01AB077
01C0130-002.003	1004307-02	7.8	0.8	1.2	7.6	0.6	0.7	pCi/g	01AB077
01C0130-003.003	1004307-03	2.2	0.3	0.5	2.5	0.3	0.5	pCi/g	01AB077
01C0130-004.003	1004307-04	0.62	0.13	0.26	0.93	0.16	0.33	pCi/g	01AB077
01C0130-005.003	1004307-05	0.60	0.16	0.28	0.75	0.18	0.38	pCi/g	01AB077
01C0130-006.003	1004307-06	1.5	0.2	0.4	1.8	0.2	0.3	pCi/g	01AB077
01C0130-007.003	1004307-07	5.5	0.6	1.0	5.4	0.5	0.7	pCi/g	01AB077
01C0130-008.003	1004307-08	0.91	0.18	0.29	0.92	0.18	0.35	pCi/g	01AB077
01C0130-009.003	1004307-09	0.19	0.07	0.22	0.36	0.13	0.30	pCi/g	01AB077
01C0130-010.003	1004307-10	1.2	0.2	0.3	1.2	0.2	0.3	pCi/g	01AB077
01C0130-010.003	1004307-11 D	1.2	0.2	0.4	1.5	0.2	0.4	pCi/g	01AB077

Preparation Blank Results

QC Batch	Lab Sample ID	Gross Alpha			Gross Beta			Units	
		Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA		
01AB077	1004307-12	0.00	0.06	0.15	-0.05	0.12	0.30	pCi/g	

LCS Results

QC Batch	Lab Sample ID	Gross Alpha			Gross Beta			Units	SRM
		Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA		
01AB077	1004307-13	9.5	0.9	1.3	10.6	0.9	1.4	pCi/ml	STD_79

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PREPARATION LOGS

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GROSS ALPHA/BETA IN SOLID SAMPLES
PREPARATION BENCHSHEET

ATP-005

QC Batch: 01AB077
Prep Start Date: 5/9/01
Prep Complete: 5/15/01
Analyst: JN /JS

Procedure: ATP-026, Rev.0, 09/20/00
Prep Method (Check One): ~~Subsection 8.3 (Dissolution)~~ / Subsection 8.4 (Acid Leach)
Add'l Procedure(s): JN 5/14/01

RIN	SAMPLE ID	P	INITIAL ALIQUOT WT. (g)	DISSOLVED VOLUME (ml)	VOLUME OF SOL'N ON PLANCHET (ml)	SAMPLE ALIQUOT PLANCHET (g)	PLANCHET PREPARATION TARE WT. (g)	GROSS WT. (g)	NET WT. (g)	COMMENTS
01C0130	1004307-01	1A	1.9927	25	11	0.87679 ✓	7.2923	7.3540	0.0617 ✓	001.003 wood
↓	-01	2B	↓	↓	↓	↓	7.2225	7.2872	0.0647 ✓	↓
	-02	3A	2.0186		6.5	0.52484 ✓	7.1884	7.2493	0.0609 ✓	002.003
	-02	4B	↓		↓	↓	7.2441	7.3110	0.0669 ✓	↓
	-03	5A	2.0038		8	0.64122 ✓	7.2406	7.3000	0.0594 ✓	003.003
	-03	6B	↓		↓	↓	7.2317	7.2947	0.0630 ✓	↓
	-04	7A	2.0153		8	5/15/01 JN 0.64490 ✓	7.2822	7.3355	0.0533 ✓	004.003
	-04	8B	↓		↓	↓	7.1987	7.2539	0.0552 ✓	↓
	-05	9A	2.0261		11	0.89148 ✓	7.2201	7.2739	0.0538 ✓	005.003
	-05	10B	↓		↓	↓	7.1648	5/15/01 JN 7.2~~556~~ 266	0.0~~908~~ 618 ✓	5/15/01 JN ↓
	-06	11A	2.0196		12.5	1.0098 ✓	7.1966	7.2507	0.0541 ✓	006.003
	-06	12B	↓		↓	↓	7.1960	5/15/01 JN 7.~~3215~~ 2565	0.0605 ✓	↓
	-07	13A	2.0199		6	0.48478 ✓	7.2603	5/15/01 JN 7.32~~30~~ 32	0.0619 ✓	007.003
↓	-07	14B	↓	↓	↓	↓	7.2604	7.3232	0.0628 ✓	↓

LABORATORY COC Transfer Information	Date/Time	By	Comment	BALANCE INFORMATION Balance ID	Date/Initials	PIPETTE INFORMATION Pipette #	Date/Initials	COUNTING INFORMATION Date	System	Filename
110/B5 to 108	5/9/01 1400	JN		Louie	5/9/01 JN	P-13	5/9/01 JN	5/16/01	2	S0113608 (P# 1-6)
108 to 110/B5	↓ 1433	JN		Nuey	5/14/01 JN	P-13	5/15/01 JN	5/16/01	2	S0113609 (P# 7-12)
to	/			Nuey	5/15/01 JN	P-12	↓ JN	5/17/01	2	S0113703 (P# 13-18)
to	/					P-11	↓ JN	5/17/01	2	S0113705 (P# 19/20)

PROCEDURE COMMENTS: Sample Aliquot = (Initial Aliquot/Dissolved Volume) * Vol on Planchet

planchets

10B	GROSS	7.2266	Counting Info cont. 5/17/01 2	S0113704 (P# 21-26)
12B	GROSS	7.2565		
13A	GROSS	7.3222	5/18/01 2	S0113803 (P# 34) 4 hr recov
16B	GROSS	7.2608	5/21/01 2	S0114109 (P# 7,8 17-22)
21A	GROSS	7.3242	5/22/01 2	S0114212 (P# 17/18) 12 hr cov

REVIEWED BY: K Clark DATE: 5/17/01

REVIEW COMMENTS:

Thermo NUtech Rocky Flats
RFETS, Building T886D
Golden, Colora
(303) 966-776

0013
3886

GROSS ALPHA/BETA IN SOLID SAMPLES
PREPARATION BENCHSHEET
CONTINUATION SHEET QC BATCH 01AB077

RIN	SAMPLE ID	P	INITIAL ALIQUOT WT. (g)	DISSOLVED VOLUME (ml)	VOLUME OF SOL'N ON PLANCHET (ml)	SAMPLE ALIQUOT PLANCHET (g)	PLANCHET PREPARATION TARE WT. (g)	GROSS WT. (g)	NET WT. (g)	COMMENTS
01C0130	1004307 -08	15A	2.0221	25	12.5	1.01105 ✓	7.2061	7.2752	0.0691	008.003 wood
	-08	16B	↓		↓	↓	7.1890	7.2608	0.0718	↓
	-09	17A	2.0134		9	0.72482 ✓	7.2300	7.3006	0.0706	009.003
	-09	18B	↓		↓	↓	7.2375	7.3111	0.0736	↓
	-10	19A	2.0099		8	0.64317 ✓	7.2075	7.2793	0.0718	010.003
	-10	20B	↓		↓	↓	7.2323	7.3063	0.0740	↓
	-11 dup	21A	2.0098		8	0.64314 ✓	7.2447	7.3246	0.0799	010.003 LAP dup
	-11 dup	22B	↓		↓	↓	7.2225	7.2931	0.0706	↓ ↓ ↓
N/A	-12 PB	23A	2.0		12.5	1.0 ✓	7.2058	7.2051	-0.0007	Prep Blank
	-13 PB	24B	↓		↓	↓	7.2862	7.2853	-0.0009	↓ ↓
	-13 LCS	25A	0.5		12.5	0.25 ✓	7.3053	7.3248	0.0195	Std - 79 +0.5 mlSulf
	-13 LCS	26B	↓		↓	↓	7.2068	7.2265	0.0197	↓ ↓

5/14/01 KH

Thermo NUtech Rocky Flats
RFETS, Building T886D
Golden, Colorado 80401
(303) 966-7747

GROSS ALPHA/GROSS BETA
TOTAL SOLIDS BENCHSHEET
QC BATCH 01AB077

Bucket #	Sample ID	Aliquot (ml)	Planchet Tare Wt. (g)	Planchet Gross Wt. (g)	Residue Net Wt. (g)	Total Solids (mg/ml)	
1	1004307-01	1	7.2923	7.2993	0.007	7.0	11mls
3	-02		7.1884	7.2008	0.0124	12.4	6.5mls
5	-03		7.2406	7.2505	0.0099	9.9	8mls
7	-04		7.2822	7.2913	0.0091	9.1	8mls
9	-05		7.2201	7.2272	0.0071	7.1	11mls
11	-06		7.1964	7.2024	0.0058	5.8	~~3mls~~ splits
13	-07		7.2603	7.2721	0.0118	11.8	6
15	-08		7.2061	7.2118	0.0057	5.7	split
17	-09		7.2300	7.2384	0.0084	8.4	9 mls
19	-10		7.2075	7.2175	0.010	10	8 mls
21	-11dup		7.2447	7.2533	0.0086	8.6	8mls

COMMENTS:

Eberline Services Rocky Flats
RFETS, Building T886D
Golden, Colorado 80403
(303) 966-77

0015

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STANDARD SUMMARY

Lab Control Sample Description

LCS - STD_79

STD_79
Isotope: ^{241}Am
SV: 10.15 ± 0.24 pCi/ml
Certification Date: 4/20/2000
Expiration Date: 4/2002

Isotope: ^{90}Sr/^{90}Y
SV: 10.66 ± 0.29 pCi/ml
Certification Date: 4/20/2000
Expiration Date: 4/2002

Standard Values (Decayed to Analysis Date)

Alpha Standard Value:	10.2 ± 0.2 pCi/ml
Beta Standard Value:	10.4 ± 0.3 pCi/ml

INSTRUMENT RAW DATA

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⊗ Dup Eval.
αF=0.055 ✓
E=0.378
βF=0.268 ✓
E=0.381
(F<E @ 30)

QC Batch	01AB077
Counting Unit ID	Blue
Date	5/23/01
Filename(s)	S0113608, S0113609, S0113703, S0113705, S0113709
	S0113803 (4 Hour Recount), S0114109 (12 Hour Count), S0114212 (12 Hour Recount)

Sample ID	Gross Alpha (pCi/g)			Gross Beta (pCi/g)			Comment
	Activity	Unc 2s	MDA	Activity	Unc 2s	MDA	
01C0130 1004307-01 A	0.599	0.253	0.331	0.813	0.272	0.397	
01C0130 1004307-01 B	0.574	0.243	0.314	0.721	0.258	0.381	
Average	0.586	0.175	0.323	0.767	0.187	0.389	
01C0130 1004307-02 A	8.606 >*	1.092	1.160	7.546	0.780	0.731	*Alpha counts stat. diff;
01C0130 1004307-02 B	7.560 >*	1.059	1.189	7.727	0.800	0.707	Not used in average.
01C0130 1004307-02 A	7.968	1.087	1.133	6.811 >*	0.755	0.727	*Beta counts stat. diff.;
01C0130 1004307-02 B	7.689	1.109	1.280	7.815 >*	0.783	0.699	Not used in average.
Average	7.828	0.776	1.206	7.636	0.659	0.719	
01C0130 1004307-03 A	2.025	0.473	0.552	2.519	0.437	0.548	
01C0130 1004307-03 B	2.379	0.494	0.533	2.390	0.425	0.535	
Average	2.202	0.342	0.542	2.454	0.305	0.541	
01C0130 1004307-04 A	0.729	0.307	0.393	0.638	0.342	0.531	4 Hour Count Not Used
01C0130 1004307-04 B	0.555	0.291	0.403	1.001	0.345	0.508	
01C0130 1004307-04 A	0.604	0.187	0.258	0.862	0.228	0.335	12 Hour Count
01C0130 1004307-04 B	0.632	0.190	0.263	0.990	0.225	0.324	
Average	0.618	0.133	0.260	0.926	0.160	0.329	
01C0130 1004307-05 A	0.634	0.226	0.277	0.691	0.258	0.386	
01C0130 1004307-05 B	0.571	0.224	0.283	0.802	0.261	0.381	
Average	0.602	0.159	0.280	0.746	0.184	0.384	
01C0130 1004307-06 A	1.526	0.317	0.361	1.869	0.289	0.348	
01C0130 1004307-06 B	1.480	0.314	0.355	1.749	0.280	0.338	
Average	1.503	0.223	0.358	1.809	0.201	0.343	
01C0130 1004307-07 A	5.345	0.917	1.018	5.519	0.711	0.758	
01C0130 1004307-07 B	5.655	0.910	0.951	5.227	0.675	0.730	
Average	5.500	0.646	0.984	5.373	0.490	0.744	
01C0130 1004307-08 A	0.850	0.250	0.290	0.855	0.246	0.351	
01C0130 1004307-08 B	0.975	0.262	0.292	0.993	0.250	0.345	
Average	0.912	0.181	0.291	0.924	0.175	0.348	
01C0130 1004307-09 A	0.137	0.221	0.363	0.402 >*	0.300	0.479	4 Hour Count Not Used
01C0130 1004307-09 B	0.215	0.218	0.336	0.075 >*	0.277	0.464	*Beta counts stat. diff.
01C0130 1004307-09 A	0.138	0.133	0.212	0.357 >*	0.192	0.304	12 Hour Count
01C0130 1004307-09 B	0.189	0.129	0.197	0.225 >*	0.184	0.298	*Beta counts stat. diff.;
01C0130 1004307-09 A	0.250	0.152	0.232	0.381	0.194	0.306	Not used in average.
01C0130 1004307-09 B	0.166	0.142	0.224	0.329	0.186	0.294	
Average	0.186	0.070	0.216	0.355	0.134	0.300	
01C0130 1004307-10 A	0.926	0.382	0.504	1.301	0.386	0.552	4 Hour Count Not Used
01C0130 1004307-10 B	1.039	0.386	0.489	1.354	0.375	0.529	
01C0130 1004307-10 A	1.193	0.248	0.315	1.182	0.248	0.351	12 Hour Count
01C0130 1004307-10 B	1.155	0.245	0.316	1.268	0.245	0.339	
Average ⊗	1.174	0.174	0.315	1.225	0.174	0.345	
01C0130 1004307-11 DUP A	0.757	0.415	0.609	1.955	0.423	0.558	4 Hour Count Not Used
01C0130 1004307-11 DUP B	0.993	0.379	0.489	1.475	0.379	0.526	
01C0130 1004307-11 DUP A	1.222	0.267	0.385	1.665	0.266	0.345	12 Hour Count
01C0130 1004307-11 DUP B	1.236	0.246	0.324	1.321	0.256	0.356	Dup of 1004307-10
Average ⊗	1.229	0.182	0.354	1.493	0.185	0.351	
01AB077 1004307-12 PB A	-0.009	0.085	0.154	-0.124	0.176	0.308	
01AB077 1004307-12 PB B	0.003	0.083	0.147	0.031	0.179	0.301	
Average	-0.003 ✓	0.059	0.150	-0.047 ✓	0.125	0.305	
01AB077 1004307-13 LCS A	9.386	1.325	1.308	10.260	1.273	1.396	
01AB077 1004307-13 LCS B	9.694	1.341	1.328	10.868	1.284	1.360	STD_79
Average	9.540	0.943	1.318	10.564	0.904	1.378	

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Soil Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0113608
Batch Ended: 5-16-01 17:01

Alpha activity action level (pCi/g): 2.00E+01
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Beta activity action level (pCi/g): 4.00E+01
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB077 WOOD CHIPS (P #1-6)

Detector ID	Sample ID	Alpha Activity pCi/g	Alpha Activity 2σ	Alpha Activity flags	Alpha Activity MDA	Beta Activity pCi/g	Beta Activity 2σ	Beta Activity flags	Beta Activity MDA	Masses Residual g	Masses Sample g
A1	01C0130 1004307-01 A	0.599	0.253	<AL	0.331 ✓	0.813	0.272	<AL	0.397 ✓	0.0617 ✓	0.8768 ✓
A2	01C0130 1004307-01 B	0.574	0.243	<AL	0.314 ✓	0.721	0.258	<AL	0.381 ✓	0.0647 ✓	0.8768 ✓
B1	01C0130 1004307-02 A	8.606	1.092	<AL	1.160 ⊛	7.546	0.780	<AL	0.731 ⊛	0.0609 ✓	0.5248 ✓
B2	01C0130 1004307-02 B	7.560	1.059	<AL	1.189 ⊛	7.727	0.800	<AL	0.707 ⊛	0.0669 ✓	0.5248 ✓
B3	01C0130 1004307-03 A	2.025	0.473	<AL	0.552 ⊛	2.519	0.437	<AL	0.548	0.0594 ✓	0.6412 ✓
B4	01C0130 1004307-03 B	2.379	0.494	<AL	0.533 ⊛	2.390	0.425	<AL	0.535	0.0630 ✓	0.6412 ✓

5/16/01 LN

* MDAs exceed RDL of 0.3 pCi/g α. Recount planchets for 12 hours.

⊛ MDAs exceed RDLS of 0.3 pCi/g α and/or 0.6 pCi/g β. However, activity significantly greater than MDA. No 12 hour count necessary. Conclusively shows material to ~~have~~ contain ~~activity~~ measureable activity. LC 5/17 LC 5/17/01

K L Clark 5/17/01

001
394

Raw Data Summary
Tennelec LB4100

Filename: ***S0113608***
Unit ID: ***Blue***

Detector ID	*Sample ID*	*Alpha Counts*	*Beta Counts*	*Guard Counts*	*Count Time (minutes)*	*Event*	*Date*
A1	01C0130 1004307-01 A	59	710	177623	240	0	5/16/01
A2	01C0130 1004307-01 B	54	673	177622	240	0	5/16/01
B1	01C0130 1004307-02 A	469	1695	181748	240	0	5/16/01
B2	01C0130 1004307-02 B	397	1667	181746	240	0	5/16/01
B3	01C0130 1004307-03 A	141	1015	181745	240	0	5/16/01
B4	01C0130 1004307-03 B	161	981	181747	240	0	5/16/01

✓ = Counts Statistically Equivalent (2 Sigma)
• = Counts Statistically Different (2 Sigma)

recount A & B Fractions 4 hours

* Statistically different

Soil Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0113609
Batch Ended: 5-16-01 21:05

Alpha activity action level (pCi/g): 2.00E+01
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Beta activity action level (pCi/g): 4.00E+01
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB077 - WOOD CHIPS (P #7-12)

Detector ID	Sample ID	Alpha Activity				Beta Activity				Masses	
		pCi/g	2σ	flags	MDA	pCi/g	2σ	flags	MDA	Residual	Sample
										g	g
A1	01C0130 1004307-04 A	0.729	0.307	<AL	0.393 *	0.638	0.342	<AL	0.531 ✓	0.0533 ✓	0.6449 ✓
A2	01C0130 1004307-04 B	0.555	0.291	<AL	0.403 *	1.001	0.345	<AL	0.508 ✓	0.0552 ✓	0.6449 ✓
B1	01C0130 1004307-05 A	0.634	0.226	<AL	0.277 ✓	0.691	0.258	<AL	0.386 ✓	0.0538 ✓	0.8915 ✓
B2	01C0130 1004307-05 B	0.571	0.224	<AL	0.283 ✓	0.802	0.261	<AL	0.381 ✓	0.0618 ✓	0.8915 ✓
B3	01C0130 1004307-06 A	1.526	0.317	<AL	0.361 ⊛	1.869	0.289	<AL	0.348 ✓	0.0541 ✓	1.0098 ✓
B4	01C0130 1004307-06 B	1.480	0.314	<AL	0.355 ⊛	1.749	0.280	<AL	0.338 ✓	0.0605 ✓	1.0098 ✓

* MDAs exceed RDL of 0.3 pCi/g α. Recount planchets for 12 hours.

⊛ MDA exceeds RDLs of 0.3 pCi/g α. However, activity significantly greater than MDA. No 12 hour recount necessary. Conclusively shows material to contain measurable activity.

KLClark 5/17/01

3/6 002

Raw Data Summary
Tennelec LB4100

Filename: ***S0113609***
Unit ID: ***Blue***

Detector ID	*Sample ID*	*Alpha Counts*		*Beta Counts*		*Guard Counts*	*Count Time (minutes)*	*Event*	*Date*
A1	01C0130 1004307-04 A	57	✓	639	✓	177013	240	0	5/16/01
A2	01C0130 1004307-04 B	43		676		177011	240	0	5/16/01
B1	01C0130 1004307-05 A	67	✓	741	✓	181247	240	0	5/16/01
B2	01C0130 1004307-05 B	57		741		181247	240	0	5/16/01
B3	01C0130 1004307-06 A	173	✓	1099	✓	181246	240	0	5/16/01
B4	01C0130 1004307-06 B	161		1043		181246	240	0	5/16/01

✓ = Counts Statistically Equivalent (2 Sigma)
* = Counts Statistically Different (2 Sigma)

Soil Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0113703
Batch Ended: 5-17-01 11:06

Alpha activity action level (pCi/g): 2.00E+01
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Beta activity action level (pCi/g): 4.00E+01
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB077 WOOD CHIPS (P #13-18)

Detector ID	Sample ID	Alpha Activity pCi/g	Alpha Activity 2σ	Alpha Activity flags	Alpha Activity MDA	Beta Activity pCi/g	Beta Activity 2σ	Beta Activity flags	Beta Activity MDA	Masses Residual g	Masses Sample g
A1	01C0130 1004307-07 A	5.345	0.917	<AL	1.018 ⊛	5.519	0.711	<AL	0.758 ⊛	0.0619 ✓	0.4848 ✓
A2	01C0130 1004307-07 B	5.655	0.910	<AL	0.951 ⊛	5.227	0.675	<AL	0.730 ⊛	0.0628 ✓	0.4848 ✓
B1	01C0130 1004307-08 A	0.850	0.250	<AL	0.290	0.855	0.246	<AL	0.351	0.0691 ✓	1.0111 ✓
B2	01C0130 1004307-08 B	0.975	0.262	<AL	0.292	0.993	0.250	<AL	0.345	0.0718 ✓	1.0111 ✓
B3	01C0130 1004307-09 A	0.137	0.221	<MDA	0.363 *	0.402	0.300	<AL	0.479	0.0706 ✓	0.7248 ✓
B4	01C0130 1004307-09 B	0.215	0.218	<AL	0.336 *	0.075	0.277	<MDA	0.464	0.0736 ✓	0.7248 ✓

5/17/01 JN

KLClark 5/18/01

* MDAs exceed RDL of 0.3 pCi/g α. Recount planchets 12 hours.

⊛ MDAs exceed RDLs of 0.3 pCi/g α and 0.6 pCi/g β. However, activity significantly greater than MDA. Conclusively shows material to contain measureable activity. No 12 hour recount necessary.

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Raw Data Summary
Tennelec LB4100

Filename: S0113703
Unit ID: Blue

Detector ID	Sample ID	Alpha Counts	Beta Counts	Guard Counts	Count Time (minutes)	Event	Date
A1	01C0130 1004307-07 A	256	1242	176950	240	0	5/17/01
A2	01C0130 1004307-07 B	271	1210	176947	240	0	5/17/01
B1	01C0130 1004307-08 A	88	803	180641	240	0	5/17/01
B2	01C0130 1004307-08 B	98	820	180641	240	0	5/17/01
B3	01C0130 1004307-09 A	17	641	180644	240	0	5/17/01
B4	01C0130 1004307-09 B	21	561	180643	240	0	5/17/01

✓ = Counts Statistically Equivalent (2 Sigma)
* = Counts Statistically Different (2 Sigma)

* Statistically different
recount A & B Planchets
12 hours.

399 0024

Soil Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0113705
Batch Ended: 5-17-01 15:12

Alpha activity action level (pCi/g): 2.00E+01
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Beta activity action level (pCi/g): 4.00E+01
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB077 - WOOD CHIPS (P# 19-20)

Detector ID	Sample ID	Alpha Activity pCi/g	2σ	flags	MDA	Beta Activity pCi/g	2σ	flags	MDA	Masses Residual g	Masses Sample g
A1	01C0130 1004307-10 A	0.926	0.382	<AL	0.504 *	1.301	0.386	<AL	0.552	0.0718 ✓	0.6432 ✓
A2	01C0130 1004307-10 B	1.039	0.386	<AL	0.489 *	1.354	0.375	<AL	0.529	0.0740 ✓	0.6432 ✓

5/17/01 JH

* MDAs exceed RDL of 0.3 pCi/g α.
Recount planchets for 12 hours.

5/18/01

0025

Raw Data Summary
Tennelec LB4100

Filename: ***S0113705***
Unit ID: ***Blue***

Detector ID	*Sample ID*	*Alpha Counts*	*Beta Counts*	*Guard Counts*	*Count Time (minutes)*	*Event*	*Date*
A1	01C0130 1004307-10 A	61	736	177526	240	0	5/17/01
A2	01C0130 1004307-10 B	65	731	177525	240	0	5/17/01

✓ = Counts Statistically Equivalent (2 Sigma)
* = Counts Statistically Different (2 Sigma)

Soil Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0113709
Batch Ended: 5-17-01 20:29

Alpha activity action level (pCi/g): 2.00E+01
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Beta activity action level (pCi/g): 4.00E+01
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB077 - WOOD CHIPS (P#21-26)

Detector ID	Sample ID	Alpha Activity				Beta Activity				Masses	
		pCi/g	2σ	flags	MDA	pCi/g	2σ	flags	MDA	Residual	Sample
										g	g
A1	01C0130 1004307-11 DUP A	0.757	0.415	<AL	0.609 *	1.955	0.423	<AL	0.558	0.0795	0.6431
A2	01C0130 1004307-11 DUP B	0.993	0.379	<AL	0.489 *	1.475	0.379	<AL	0.526	0.0706	0.6431
B1	01AB077 1004307-12 PB A	-0.009	0.085	<MDA	0.154	-0.124	0.176	<MDA	0.308	0.0000	1.0000
B2	01AB077 1004307-12 PB B	0.003	0.083	<MDA	0.147	0.031	0.179	<MDA	0.301	0.0000	1.0000
B3	01AB077 1004307-13 LCS A	9.386	1.325	<AL	1.308	10.260	1.273	<AL	1.396	0.0195	0.2500
B4	01AB077 1004307-13 LCS B	9.694	1.341	<AL	1.328	10.868	1.284	<AL	1.360	0.0197	0.2500

JSouth 5/18/01

* MDAs exceed RDL of 0.3 pCi/gd.
Recount planchets 12 hours.

KLClark 5/18/01

002

Raw Data Summary
Tennelec LB4100

Filename: ***S0113709***
Unit ID: ***Blue***

Detector ID	*Sample ID*	*Alpha Counts*	*Beta Counts*	*Guard Counts*	*Count Time (minutes)*	*Event*	*Date*
A1	01C0130 1004307-11 DUP A	49 ✓	827 ✓	177576	240	0	5/17/01
A2	01C0130 1004307-11 DUP B	64	751	177578	240	0	5/17/01
B1	01AB077 1004307-12 PB A	4 ✓	531 ✓	180768	240	0	5/17/01
B2	01AB077 1004307-12 PB B	5	555	180768	240	0	5/17/01
B3	01AB077 1004307-13 LCS A	343 ✓	1381 ✓	180768	240	0	5/17/01
B4	01AB077 1004307-13 LCS B	355	1417	180770	240	0	5/17/01

✓ = Counts Statistically Equivalent (2 Sigma)
• = Counts Statistically Different (2 Sigma)

Soil Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0113803
Batch Ended: 5-18-01 12:44

Alpha activity action level (pCi/g): 2.00E+01
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Beta activity action level (pCi/g): 4.00E+01
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB077 WOOD CHIPS (P #3-4) 4 HOUR RECOUNT

Detector ID	Sample ID	Alpha Activity				Beta Activity				Masses	
		pCi/g	2σ	flags	MDA	pCi/g	2σ	flags	MDA	Residual	Sample
										g	g
A1	01C0130 1004307-02 A	7.968	1.087	<AL	1.133	6.811	0.755	<AL	0.727	0.0609 ✓	0.5248 ✓
A2	01C0130 1004307-02 B	7.689	1.109	<AL	1.280	7.815	0.783	<AL	0.699	0.0669 ✓	0.5248 ✓

5/18/01

0002

Raw Data Summary
Tennelec LB4100

Filename: ***S0113803***
Unit ID: ***Blue***

Detector ID	*Sample ID*	*Alpha Counts*	*Beta Counts*	*Guard Counts*	*Count Time (minutes)*	*Event*	*Date*
A1	01C0130 1004307-02 A	411 ✓	1508 ✓	177194	240	0	5/18/01
A2	01C0130 1004307-02 B	383 ✓	1622 *	177197	240	0	5/18/01

✓ = Counts Statistically Equivalent (2 Sigma)
* = Counts Statistically Different (2 Sigma)

Soil Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0114109
Batch Ended: 5-22-01 4:18

Alpha activity action level (pCi/g): 2.00E+01
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Beta activity action level (pCi/g): 4.00E+01
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB077 WOOD CHIPS (P#7,8, 17-22) 12 HR COUNT

Detector ID	Sample ID	Alpha Activity				Beta Activity				Masses	
		pCi/g	2σ	flags	MDA	pCi/g	2σ	flags	MDA	Residual	Sample
										g	g
A1	01C0130 1004307-04 A	0.604	0.187	<AL	0.258	0.862	0.228	<AL	0.335	0.0533 ✓	0.6449 ✓
A2	01C0130 1004307-04 B	0.632	0.190	<AL	0.263	0.990	0.225	<AL	0.324	0.0552 ✓	0.6449 ✓
B1	01C0130 1004307-09 A	0.138	0.133	<AL	0.212	0.357	0.192	<AL	0.304	0.0706 ✓	0.7248 ✓
B2	01C0130 1004307-09 B	0.189	0.129	<AL	0.197	0.225	0.184	<AL	0.298	0.0736 ✓	0.7248 ✓
B3	01C0130 1004307-10 A	1.193	0.248	<AL	0.315	1.182	0.248	<AL	0.351	0.0718 ✓	0.6432 ✓
B4	01C0130 1004307-10 B	1.155	0.245	<AL	0.316	1.268	0.245	<AL	0.339	0.0740 ✓	0.6432 ✓
C2	01C0130 1004307-11 DUP A	1.222	0.267	<AL	0.385	1.665	0.266	<AL	0.345	0.0795 ✓	0.6431 ✓
C3	01C0130 1004307-11 DUP B	1.236	0.246	<AL	0.324	1.321	0.256	<AL	0.356	0.0706 ✓	0.6431 ✓

KLCheck 5/22/01

003

Raw Data Summary
Tennelec LB4100

Filename: ***S0114109***
Unit ID: ***Blue***

Detector ID	*Sample ID*	*Alpha Counts*		*Beta Counts*		*Guard Counts*	*Count Time (minutes)*	*Event*	*Date*
A1	01C0130 1004307-04 A	140	✓	2035	✓	531161	720	0	5/22/01
A2	01C0130 1004307-04 B	144		2069		531164	720	0	5/22/01
B1	01C0130 1004307-09 A	45	✓	1892	*	544254	720	0	5/22/01
B2	01C0130 1004307-09 B	52		1765		544255	720	0	5/22/01
B3	01C0130 1004307-10 A	230	✓	2369	✓	544261	720	0	5/22/01
B4	01C0130 1004307-10 B	223		2353		544259	720	0	5/22/01
C2	01C0130 1004307-11 DUP A	236	✓	2499	✓	538333	720	0	5/22/01
C3	01C0130 1004307-11 DUP B	254		2404		538326	720	0	5/22/01

✓ = Counts Statistically Equivalent (2 Sigma)
* = Counts Statistically Different (2 Sigma)

*recount A+B Planchet 12 hours.

Soil Sample Analysis

Unit Type: LB4100/W
Counting Unit ID: Blue
Data file name: S0114212
Batch Ended: 5-23-01 3:54

Alpha activity action level (pCi/g): 2.00E+01
Alpha efficiency logfile: ALPHAEFF
Alpha attenuation logfile: ALPHAATT
Alpha Activity Multiplier: 1.00E+00

Beta activity action level (pCi/g): 4.00E+01
Beta efficiency logfile: BETAEFF
Beta attenuation logfile: BETAATT
Beta Activity Muliplier: 1.00E+00

Certainty level for MDA and flags: 95.00%
High Voltage Mode: Simultaneous

Application Revision: 1
Application Version: Thermo NUtech

Batch ID: 01AB077 12 HOUR RECOUNT

Detector ID	Sample ID	Alpha Activity				Beta Activity				Masses	
		pCi/g	2σ	flags	MDA	pCi/g	2σ	flags	MDA	Residual g	Sample g
A1	01C0130 1004307-09 A	0.250	0.152	<AL	0.232	0.381	0.194	<AL	0.306	0.0706 ✓	0.7248 ✓
A2	01C0130 1004307-09 B	0.166	0.142	<AL	0.224	0.329	0.186	<AL	0.294	0.0736 ✓	0.7248 ✓

KLCAUL 5/23/01

003
408

Raw Data Summary
Tennelec LB4100

Filename: ***S0114212***
Unit ID: ***Blue***

Detector ID	*Sample ID*	*Alpha Counts*	*Beta Counts*	*Guard Counts*	*Count Time (minutes)*	*Event*	*Date*
A1	01C0130 1004307-09 A	68	1800	525499	720	0	5/23/01
A2	01C0130 1004307-09 B	50	1733	525497	720	0	5/23/01

✓ = Counts Statistically Equivalent (2 Sigma)
* = Counts Statistically Different (2 Sigma)

INSTRUMENT CALIBRATION SUMMARIES

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General Counting Parameters/Detector Information

Application definitions

Application Name	Soil Sample
Macro File	SOILAB
Data Filename	S0113608
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB077 WOOD CHIPS (P #1-6)
CreateDate	5/16/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	5/16/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0113608***
Unit ID: ***Blue***

Detector	Date	Alpha		Beta	
		Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	5/10/01	0.0363	0.0033	2.1801	0.0255
A2	5/10/01	0.0256	0.0028	2.0958	0.0250
A3	5/4/01	0.0229	0.0026	2.0030	0.0244
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	5/10/01	0.0229	0.0026	2.3586	0.0265
B2	5/10/01	0.0185	0.0023	2.2759	0.0260
B3	5/10/01	0.0318	0.0031	2.3589	0.0265
B4	5/10/01	0.0271	0.0028	2.2631	0.0260
C1	5/14/01	0.0275	0.0048	2.4917	0.0456
C2	5/14/01	0.0258	0.0046	2.4458	0.0451
C3	5/14/01	0.0233	0.0044	2.3892	0.0446
C4	5/14/01	0.0225	0.0043	2.2467	0.0433
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

Alpha Calibration
Tennelec LB4100

Filename: S0113608
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$ $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Filename: S0113608
Unit ID: Blue

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$; $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

General Counting Parameters/Detector Information

Application definitions

Application Name	Soil Sample
Macro File	SOILAB
Data Filename	S0113609
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB077 - WOOD CHIPS (P #7-12)
CreateDate	5/16/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	5/16/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0113609***
Unit ID: ***Blue***

Detector	Date	Alpha		Beta	
		Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	5/10/01	0.0363	0.0033	2.1801	0.0255
A2	5/10/01	0.0256	0.0028	2.0958	0.0250
A3	5/4/01	0.0229	0.0026	2.0030	0.0244
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	5/10/01	0.0229	0.0026	2.3586	0.0265
B2	5/10/01	0.0185	0.0023	2.2759	0.0260
B3	5/10/01	0.0318	0.0031	2.3589	0.0265
B4	5/10/01	0.0271	0.0028	2.2631	0.0260
C1	5/14/01	0.0275	0.0048	2.4917	0.0456
C2	5/14/01	0.0258	0.0046	2.4458	0.0451
C3	5/14/01	0.0233	0.0044	2.3892	0.0446
C4	5/14/01	0.0225	0.0043	2.2467	0.0433
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

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Alpha Calibration
Tennelec LB4100

Filename: S0113609
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$ $\qquad$ $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Filename: S0113609
Unit ID: Blue

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$; $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

General Counting Parameters/Detector Information

Application definitions

Application Name	Soil Sample
Macro File	SOILAB
Data Filename	S0113703
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB077 WOOD CHIPS (P #13-18)
CreateDate	5/17/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	5/17/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0113703***
Unit ID: ***Blue***

Detector	Date	Alpha		Beta	
		Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	5/10/01	0.0363	0.0033	2.1801	0.0255
A2	5/10/01	0.0256	0.0028	2.0958	0.0250
A3	5/4/01	0.0229	0.0026	2.0030	0.0244
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	5/10/01	0.0229	0.0026	2.3586	0.0265
B2	5/10/01	0.0185	0.0023	2.2759	0.0260
B3	5/10/01	0.0318	0.0031	2.3589	0.0265
B4	5/10/01	0.0271	0.0028	2.2631	0.0260
C1	5/14/01	0.0275	0.0048	2.4917	0.0456
C2	5/14/01	0.0258	0.0046	2.4458	0.0451
C3	5/14/01	0.0233	0.0044	2.3892	0.0446
C4	5/14/01	0.0225	0.0043	2.2467	0.0433
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

Alpha Calibration
Tennelec LB4100

Filename: S0113703
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}_{major}$ $K_{minor} = b_{minor} * a^{u}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Filename: S0113703
Unit ID: Blue

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}_{major}$; $K_{minor} = b_{minor} * a^{u}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

General Counting Parameters/Detector Information

Application definitions

Application Name	Soil Sample
Macro File	SOILAB
Data Filename	S0113705
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB077 - WOOD CHIPS (P# 19-20)
CreateDate	5/17/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	5/17/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0113705***
Unit ID: ***Blue***

Detector	Date	Alpha		Beta	
		Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	5/10/01	0.0363	0.0033	2.1801	0.0255
A2	5/10/01	0.0256	0.0028	2.0958	0.0250
A3	5/4/01	0.0229	0.0026	2.0030	0.0244
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	5/10/01	0.0229	0.0026	2.3586	0.0265
B2	5/10/01	0.0185	0.0023	2.2759	0.0260
B3	5/10/01	0.0318	0.0031	2.3589	0.0265
B4	5/10/01	0.0271	0.0028	2.2631	0.0260
C1	5/14/01	0.0275	0.0048	2.4917	0.0456
C2	5/14/01	0.0258	0.0046	2.4458	0.0451
C3	5/14/01	0.0233	0.0044	2.3892	0.0446
C4	5/14/01	0.0225	0.0043	2.2467	0.0433
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

Alpha Calibration
Tennelec LB4100

Filename: S0113705
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$ $\qquad$ $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Filename: **S0113705**
Unit ID: **Blue**

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: ***Self absorption curves have the following format:***

$K_{major} = b_{major} * a^{u}{}_{major}$; $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).

Errors are 1 sigma.

General Counting Parameters/Detector Information

Application definitions

Application Name	Soil Sample
Macro File	SOILAB
Data Filename	S0113709
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB077 - WOOD CHIPS (P#21-26)
CreateDate	5/17/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	5/17/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0113709***
Unit ID: ***Blue***

Detector	Date	Alpha		Beta	
		Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	5/10/01	0.0363	0.0033	2.1801	0.0255
A2	5/10/01	0.0256	0.0028	2.0958	0.0250
A3	5/4/01	0.0229	0.0026	2.0030	0.0244
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	5/10/01	0.0229	0.0026	2.3586	0.0265
B2	5/10/01	0.0185	0.0023	2.2759	0.0260
B3	5/10/01	0.0318	0.0031	2.3589	0.0265
B4	5/10/01	0.0271	0.0028	2.2631	0.0260
C1	5/14/01	0.0275	0.0048	2.4917	0.0456
C2	5/14/01	0.0258	0.0046	2.4458	0.0451
C3	5/14/01	0.0233	0.0044	2.3892	0.0446
C4	5/14/01	0.0225	0.0043	2.2467	0.0433
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

Alpha Calibration
Tennelec LB4100

Filename: S0113709
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: *Self absorption curves have the following format:*

$K_{major} = b_{major} * a^{u}{}_{major}$ $\qquad$ $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Filename: S0113709
Unit ID: Blue

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$; $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

General Counting Parameters/Detector Information

Application definitions

Application Name	Soil Sample
Macro File	SOILAB
Data Filename	S0113803
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB077 WOOD CHIPS (P #3-4) 4 HOUR RECOUNT
CreateDate	5/18/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	5/18/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0113803***
Unit ID: ***Blue***

Detector	Date	Alpha		Beta	
		Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	5/10/01	0.0363	0.0033	2.1801	0.0255
A2	5/10/01	0.0256	0.0028	2.0958	0.0250
A3	5/4/01	0.0229	0.0026	2.0030	0.0244
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	5/10/01	0.0229	0.0026	2.3586	0.0265
B2	5/10/01	0.0185	0.0023	2.2759	0.0260
B3	5/10/01	0.0318	0.0031	2.3589	0.0265
B4	5/10/01	0.0271	0.0028	2.2631	0.0260
C1	5/14/01	0.0275	0.0048	2.4917	0.0456
C2	5/14/01	0.0258	0.0046	2.4458	0.0451
C3	5/14/01	0.0233	0.0044	2.3892	0.0446
C4	5/14/01	0.0225	0.0043	2.2467	0.0433
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

Alpha Calibration
Tennelec LB4100

Filename: S0113803
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: *Self absorption curves have the following format:*

$K_{major} = b_{major} * a^{u}{}_{major}$ $\qquad$ $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Filename: S0113803
Unit ID: Blue

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: *Self absorption curves have the following format:*

$K_{major} = b_{major} * a^{u}{}_{major}$; $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

General Counting Parameters/Detector Information

Application definitions

Application Name	Soil Sample
Macro File	SOILAB
Data Filename	S0114109
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB077 WOOD CHIPS (P#7,8, 17-22) 12 HR COUNT
CreateDate	5/21/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	5/22/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0114109***
Unit ID: ***Blue***

Detector	Date	Alpha		Beta	
		Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	5/18/01	0.0274	0.0029	2.2080	0.0256
A2	5/18/01	0.0250	0.0027	2.1533	0.0253
A3	5/18/01	0.0295	0.0030	2.1223	0.0251
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	5/18/01	0.0229	0.0026	2.3518	0.0265
B2	5/18/01	0.0188	0.0024	2.2693	0.0260
B3	5/18/01	0.0235	0.0026	2.4208	0.0268
B4	5/18/01	0.0229	0.0026	2.3339	0.0264
C1	5/18/01	0.0256	0.0028	2.3649	0.0265
C2	5/18/01	0.0211	0.0025	2.2973	0.0261
C3	5/18/01	0.0313	0.0030	2.3905	0.0267
C4	5/18/01	0.0307	0.0030	2.2824	0.0261
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

Alpha Calibration
Tennelec LB4100

Filename: S0114109
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: *Self absorption curves have the following format:*

$K_{major} = b_{major} * a^{u}_{major}$ $\qquad$ $K_{minor} = b_{minor} * a^{u}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Filename: S0114109
Unit ID: Blue

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: *Self absorption curves have the following format:*

$K_{major} = b_{major} * a^{u}{}_{major}$; $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

General Counting Parameters/Detector Information

Application definitions

Application Name	Soil Sample
Macro File	SOILAB
Data Filename	S0114212
UnitType	LB4100/W
Unit Id	Blue
Batch ID	01AB077 12 HOUR RECOUNT
CreateDate	5/22/01
Bias Mode	Simultaneous
Application Revision:	1
Application Version:	Thermo NUtech
RunDate	5/23/01

Voltage Settings

Drawer	Date	Bias	Step
A	5/15/00	1320	0
B	5/3/00	1350	0
C	5/3/00	1320	0
D	5/15/00	1320	0

Discriminator Settings

Detector	Date	Threshold	bLL	bUL	aLL	aUL
A1	5/16/00	0.1	0	18.19	37.82	100
A2	5/16/00	0.1	0	20.12	43.8	100
A3	5/16/00	0.1	0	19.85	43.36	100
A4	5/16/00	0.1	0	20.41	44.39	100
B1	5/16/00	0.1	0	21.19	46.27	100
B2	5/16/00	0.1	0	20.97	46.27	100
B3	5/16/00	0.1	0	22.19	46.64	100
B4	5/16/00	0.1	0	26.56	57.11	100
C1	5/16/00	0.1	0	19.97	45.15	100
C2	5/16/00	0.1	0	21.19	45.07	100
C3	5/16/00	0.1	0	21.9	46.42	100
C4	5/16/00	0.1	0	22.29	49.08	100
D1	5/16/00	0.1	0	22.73	48.74	100
D2	5/16/00	0.1	0	19.46	41.26	100
D3	5/16/00	0.1	0	16.11	36.31	100
D4	5/16/00	0.1	0	17.28	38.26	100

Instrument Backgrounds
Tennelec LB4100

Filename: ***S0114212***
Unit ID: ***Blue***

Detector	Date	Alpha		Beta	
		Bkg (cpm)	Error (1s)	Bkg (cpm)	Error (1s)
A1	5/18/01	0.0274	0.0029	2.2080	0.0256
A2	5/18/01	0.0250	0.0027	2.1533	0.0253
A3	5/18/01	0.0295	0.0030	2.1223	0.0251
A4	2/9/01	0.0000	0.0003	15.1753	0.0672
B1	5/18/01	0.0229	0.0026	2.3518	0.0265
B2	5/18/01	0.0188	0.0024	2.2693	0.0260
B3	5/18/01	0.0235	0.0026	2.4208	0.0268
B4	5/18/01	0.0229	0.0026	2.3339	0.0264
C1	5/18/01	0.0256	0.0028	2.3649	0.0265
C2	5/18/01	0.0211	0.0025	2.2973	0.0261
C3	5/18/01	0.0313	0.0030	2.3905	0.0267
C4	5/18/01	0.0307	0.0030	2.2824	0.0261
D1	2/9/01	0.0000	0.0003	0.0000	0.0003
D2	2/9/01	0.0000	0.0003	0.0000	0.0003
D3	2/9/01	0.0000	0.0003	0.0000	0.0003
D4	2/9/01	0.0000	0.0003	0.0000	0.0003

Alpha Calibration
Tennelec LB4100

Filename: S0114212
Unit ID: Blue

Alpha Efficiency Data Summary

Detector	Date	Source ID	Alpha Efficiency	Efficiency Error (1s)	Alpha to Beta Crosstalk	Crosstalk Error (1s)
A1	5/17/00	CAL_219	0.2911	0.0048	0.1511	0.0026
A2	5/17/00	CAL_219	0.2890	0.0047	0.1555	0.0027
A3	5/17/00	CAL_219	0.2813	0.0046	0.1455	0.0025
A4	5/17/00	CAL_219	0.2922	0.0048	0.1609	0.0028
B1	5/17/00	CAL_219	0.3050	0.0050	0.1609	0.0028
B2	5/17/00	CAL_219	0.3068	0.0050	0.1578	0.0027
B3	5/17/00	CAL_219	0.2995	0.0049	0.1588	0.0027
B4	5/17/00	CAL_219	0.3034	0.0050	0.1614	0.0028
C1	5/17/00	CAL_219	0.3028	0.0049	0.1560	0.0027
C2	5/17/00	CAL_219	0.3088	0.0050	0.1592	0.0027
C3	5/17/00	CAL_219	0.3005	0.0049	0.1524	0.0026
C4	5/17/00	CAL_219	0.3021	0.0049	0.1555	0.0027
D1	5/17/00	CAL_219	0.3066	0.0050	0.1574	0.0027
D2	5/17/00	CAL_219	0.3069	0.0050	0.1549	0.0027
D3	5/17/00	CAL_219	0.3011	0.0049	0.1521	0.0026
D4	5/17/00	CAL_219	0.2948	0.0048	0.1488	0.0026

Alpha Self-Absorption Curve Summary

		Major Channel (Alpha)				Minor Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/18/00	0.9914	0.0003	1.0446	0.0184	0.9880	0.0009	0.7723	0.0527
A2	5/18/00	0.9917	0.0003	1.0568	0.0165	0.9879	0.0009	0.7844	0.0498
A3	5/18/00	0.9915	0.0003	1.0630	0.0195	0.9880	0.0009	0.7796	0.0514
A4	5/18/00	0.9916	0.0004	1.0558	0.0202	0.9879	0.0009	0.7856	0.0490
B1	5/18/00	0.9918	0.0003	1.0381	0.0151	0.9876	0.0010	0.7656	0.0545
B2	5/18/00	0.9916	0.0003	1.0612	0.0169	0.9874	0.0009	0.7730	0.0521
B3	5/18/00	0.9917	0.0003	1.0513	0.0151	0.9877	0.0009	0.7718	0.0533
B4	5/18/00	0.9919	0.0002	1.0426	0.0133	0.9876	0.0009	0.7838	0.0506
C1	5/19/00	0.9926	0.0002	1.0221	0.0128	0.9889	0.0010	0.7502	0.0594
C2	5/19/00	0.9927	0.0002	1.0212	0.0087	0.9890	0.0012	0.7332	0.0661
C3	5/19/00	0.9926	0.0002	1.0190	0.0096	0.9889	0.0011	0.7383	0.0652
C4	5/19/00	0.9926	0.0002	1.0333	0.0122	0.9894	0.0011	0.7384	0.0632
D1	5/19/00	0.9930	0.0002	1.0181	0.0101	0.9895	0.0011	0.7371	0.0627
D2	5/19/00	0.9930	0.0003	1.0310	0.0148	0.9893	0.0010	0.7514	0.0590
D3	5/19/00	0.9931	0.0002	1.0268	0.0117	0.9892	0.0011	0.7439	0.0616
D4	5/19/00	0.9930	0.0002	1.0271	0.0099	0.9893	0.0011	0.7460	0.0613

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}_{major}$ $K_{minor} = b_{minor} * a^{u}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Beta Calibration
Tennelec LB4100

Filename: S0114212
Unit ID: Blue

Beta Efficiency Data Summary

Detector	Date	Source ID	Beta Efficiency	Efficiency Error	Beta to Alpha Crosstalk	Crosstalk Error
A1	5/17/00	CAL_166	0.5197	0.0092	0.0007	0.0001
A2	5/17/00	CAL_166	0.5208	0.0092	0.0006	0.0001
A3	5/17/00	CAL_166	0.5282	0.0093	0.0007	0.0001
A4	5/17/00	CAL_166	0.5276	0.0093	0.0007	0.0001
B1	5/17/00	CAL_166	0.5336	0.0094	0.0011	0.0001
B2	5/17/00	CAL_166	0.5426	0.0096	0.0010	0.0001
B3	5/17/00	CAL_166	0.5355	0.0094	0.0007	0.0001
B4	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C1	5/17/00	CAL_166	0.5402	0.0095	0.0009	0.0001
C2	5/17/00	CAL_166	0.5471	0.0096	0.0008	0.0001
C3	5/17/00	CAL_166	0.5368	0.0095	0.0005	0.0001
C4	5/17/00	CAL_166	0.5424	0.0096	0.0004	0.0001
D1	5/17/00	CAL_166	0.5424	0.0096	0.0009	0.0001
D2	5/17/00	CAL_166	0.5339	0.0094	0.0005	0.0001
D3	5/17/00	CAL_166	0.5323	0.0094	0.0006	0.0001
D4	5/17/00	CAL_166	0.5263	0.0093	0.0006	0.0001

Beta Self-Absorption Curve Summary

		Minor Channel (Alpha)				Major Channel (Beta)			
Detector	Date	a	a error	b	b error	a	a error	b	b error
A1	5/19/00	1.0031	0.0047	1.1523	0.2777	0.9981	0.0002	0.9745	0.0111
A2	5/19/00	0.9920	0.0055	0.9645	0.3236	0.9983	0.0001	0.9898	0.0089
A3	5/19/00	0.9942	0.0046	0.6350	0.2740	0.9983	0.0002	0.9722	0.0110
A4	5/19/00	0.9951	0.0055	0.8091	0.3236	0.9982	0.0002	0.9538	0.0125
B1	5/19/00	1.0096	0.0049	1.0496	0.2906	0.9982	0.0002	0.9795	0.0096
B2	5/19/00	1.0084	0.0041	0.6544	0.2425	0.9983	0.0002	0.9681	0.0118
B3	5/19/00	1.0055	0.0048	1.1894	0.2819	0.9983	0.0001	0.9816	0.0087
B4	5/19/00	1.0064	0.0047	0.6655	0.2799	0.9983	0.0002	0.9741	0.0093
C1	5/18/00	0.9946	0.0048	0.7304	0.2830	0.9983	0.0002	0.9781	0.0103
C2	5/18/00	0.9933	0.0048	0.8957	0.2835	0.9981	0.0002	0.9747	0.0104
C3	5/18/00	1.0021	0.0043	0.9881	0.2573	0.9981	0.0002	0.9665	0.0089
C4	5/18/00	1.0025	0.0027	0.9733	0.1597	0.9981	0.0002	0.9743	0.0110
D1	5/18/00	1.0094	0.0047	1.1879	0.2759	0.9983	0.0002	0.9706	0.0097
D2	5/18/00	1.0092	0.0052	1.3541	0.3088	0.9980	0.0002	0.9669	0.0105
D3	5/18/00	1.0041	0.0043	0.5156	0.2562	0.9981	0.0002	0.9809	0.0099
D4	5/18/00	1.0118	0.0050	0.5969	0.2936	0.9982	0.0002	0.9735	0.0096

NOTE: Self absorption curves have the following format:

$K_{major} = b_{major} * a^{u}{}_{major}$; $K_{minor} = b_{minor} * a^{u}{}_{minor}$

Where: K = self absorption correction factor for residue weight u (mg).
Errors are 1 sigma.

Safe Sites OF COLORADO, L.L.C.
Rocky Flats Environmental Technology Site

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INTEROFFICE CORRESPONDENCE

DATE: May 16, 2001

TO: V. Ideker, ASD, Bldg. 881, X3437

FROM: M. S. Brugh, Radiological Inorganic Lab Manager, Bldg. 559, X7709

SUBJECT: SAMPLE PACKAGE SUBMITTAL

Attached are reports which have been analyzed by the 559 Radiochemistry Laboratory. Analyses performed:

α/β screen · gross α/β · D.O.T. screen · fingerprint · pH · Total α · other _____

The samples in this Sample Package are:

01C0130-001	002	009	
	003	010	
	004		
	005		
	006		
	007		
	008		

Please see the Summary Narrative for all information pertaining to any anomalies for these samples.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions details in the narrative summary. Release of the data contained in this hard copy data and package and in the computer-readable data submitted has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

Mark S. Brugh
Manager, Radiological Inorganic Laboratory

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559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	*Company*	
APO Sample ID	01C0130-001.001		
Date Received	5/10/01		
Date Analyzed	5/15/01		
Date Reported	5/15/01		
Case Narrative	This sample was received by the 559 Radiochemistry Laboratory for fingerprint analysis. No anomalies occurred during analysis. All QA/QC was within limits.		
Physical Description	Solid, various shades of brown, various sizes from small pieces like dust to 3X5 inches and 1/8 inch thick. Surfaces are smooth to rough. Looks like wood. Many tests could not be performed due to sample matrix. For pH analysis, some sample was added to DI water, which begins with 5.0 pH. Used H2O volume displacement for specific gravity analysis.		
Water Test			
pH	5.00	*Standard pH units*	
Specific Gravity	0.6490	*Relative to water @ 20 C*	
Miscibility			
Water Reactivity	No		
Ignitability		*degrees C*	
Chlorinated Solvents		*ppm*	

Approval John E. Fraser

Peer Review Roger A. Henderson

444

559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	*Company*	
APO Sample ID	01C0130-002.001		
Date Received	5/10/01		
Date Analyzed	5/15/01		
Date Reported	5/15/01		
Case Narrative	This sample was received by the 559 Radiochemistry Laboratory for fingerprint analysis. No anomalies occurred during analysis. All QA/QC was within limits.		
Physical Description	Solid, medium brown, with sizes ranging from dust-like particles to 1/2" X 1/8" chunks. Looks like wood. Many tests could not be performed due to sample matrix. For pH analysis, some sample was added to DI water, which begins with 5.0 pH. Used H2O volume displacement for specific gravity analysis.		
Water Test			
pH	5.00	*Standard pH units*	
Specific Gravity	0.5706	*Relative to water @ 20 C*	
Miscibility			
Water Reactivity	No		
Ignitability		*degrees C*	
Chlorinated Solvents		*ppm*	

Approval John S Trost

Peer Review Roger A Henderson

445

559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	***Company***	
APO Sample ID	01C0130-003.001		
Date Received	5/10/01		
Date Analyzed	5/15/01		
Date Reported	5/15/01		
Case Narrative	This sample was received by the 559 Radiochemistry Laboratory for fingerprint analysis. No anomalies occurred during analysis. All QA/QC was within limits.		
Physical Description	Solid, brown to reddish-brown in color, with sizes ranging from dust-like particles to 1" X 2" X 1/8" chunks. Looks like wood. Many tests could not be performed due to sample matrix. For pH analysis, some sample was added to DI water, which begins with 5.0 pH. Used H2O volume displacement for specific gravity analysis.		
Water Test			
pH	5.00	***Standard pH units***	
Specific Gravity	0.5225	***Relative to water @ 20 C***	
Miscibility			
Water Reactivity	No		
Ignitability		***degrees C***	
Chlorinated Solvents		***ppm***	

Approval John S. Frost

Peer Review Roger A. Henderson

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559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	*Company*	
APO Sample ID	01C0130-004.001		
Date Received	5/10/01		
Date Analyzed	5/15/01		
Date Reported	5/15/01		

Case Narrative	This sample was received by the 559 Radiochemistry Laboratory for fingerprint analysis. No anomalies occurred during analysis. All QA/QC was within limits.
Physical Description	Solid, various shades of brown, with sizes ranging from dust-like particles to 1/2" X 1" X 1/16" chunks. Looks like wood. Many tests could not be performed due to sample matrix. For pH analysis, some sample was added to DI water, which begins with 5.0 pH. Used H2O volume displacement for specific gravity analysis.

Water Test		
pH	5.00	*Standard pH units*
Specific Gravity	0.3849	*Relative to water @ 20 C*
Miscibility		
Water Reactivity	No	
Ignitability		*degrees C*
Chlorinated Solvents		*ppm*

Approval John S. Fraser

Peer Review Roger A. Henderson

447

559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	***Company***	
APO Sample ID	01C0130-005.001		
Date Received	5/10/01		
Date Analyzed	5/15/01		
Date Reported	5/15/01		
Case Narrative	This sample was received by the 559 Radiochemistry Laboratory for fingerprint analysis. No anomalies occurred during analysis. All QA/QC was within limits.		
Physical Description	Solid, various shades of brown, with sizes ranging from dust-like particles to 1/4" X 1" X 1/8" chunks. Looks like wood. Many tests could not be performed due to sample matrix. For pH analysis, some sample was added to DI water, which begins with 5.0 pH. Used H2O volume displacement for specific gravity analysis.		
Water Test			
pH	5.00	***Standard pH units***	
Specific Gravity	0.8014	***Relative to water @ 20 C***	
Miscibility			
Water Reactivity	No		
Ignitability		***degrees C***	
Chlorinated Solvents		***ppm***	

Approval John S. Trost

Peer Review Roger A. Henderson

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559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	***Company***	
APO Sample ID	01C0130-006.001		
Date Received	5/10/01		
Date Analyzed	5/15/01		
Date Reported	5/15/01		
Case Narrative	This sample was received by the 559 Radiochemistry Laboratory for fingerprint analysis. No anomalies occurred during analysis. All QA/QC was within limits.		
Physical Description	Solid, various colors of dark brown with some green, sizes ranging from 1/8" X 2" to 1/2" X 1" X 1/4" chunks. Looks like wood. Looks wet. Many tests could not be performed due to sample matrix. For pH analysis, some sample was added to DI water, which begins with 5.0 pH. Used H2O volume displacement for specific gravity analysis.		
Water Test			
pH	5.00	***Standard pH units***	
Specific Gravity	0.5782	***Relative to water @ 20 C***	
Miscibility			
Water Reactivity	No		
Ignitability		***degrees C***	
Chlorinated Solvents		***ppm***	

Approval John S. Trask

Peer Review Roger A. Hankins

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559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	***Company***	
APO Sample ID	01C0130-007.001		
Date Received	5/10/01		
Date Analyzed	5/15/01		
Date Reported	5/15/01		
Case Narrative	This sample was received by the 559 Radiochemistry Laboratory for fingerprint analysis. No anomalies occurred during analysis. All QA/QC was within limits.		
Physical Description	Solid, various colors of brown, sizes ranging from dust-like particles to 1/2" X 2" X 1/8" chunks. Looks like wood. Many tests could not be performed due to sample matrix. For pH analysis, some sample was added to DI water, which begins with 5.0 pH. Used H2O volume displacement for specific gravity analysis.		
Water Test			
pH	5.00	***Standard pH units***	
Specific Gravity	1.0778	***Relative to water @ 20 C***	
Miscibility			
Water Reactivity	No		
Ignitability		***degrees C***	
Chlorinated Solvents		***ppm***	

Approval John T. Fraser

Peer Review Roger A. Henderson

450

559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	*Company*	
APO Sample ID	01C0130-008.001		
Date Received	5/10/01		
Date Analyzed	5/15/01		
Date Reported	5/15/01		

Case Narrative	This sample was received by the 559 Radiochemistry Laboratory for fingerprint analysis. No anomalies occurred during analysis. All QA/QC was within limits.
Physical Description	Solid, various colors of brown, sizes ranging from dust-like particles to 1" X 2" X 1/4" chunks. Looks like wood. Many tests could not be performed due to sample matrix. For pH analysis, some sample was added to DI water, which begins with 5.0 pH. Used H2O volume displacement for specific gravity analysis.

Water Test		
pH	5.00	*Standard pH units*
Specific Gravity	0.9605	*Relative to water @ 20 C*
Miscibility		
Water Reactivity	No	
Ignitability		*degrees C*
Chlorinated Solvents		*ppm*

Approval John S. Rose

Peer Review Roger A. Henderson

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559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	*Company*	
APO Sample ID	01C0130-009.001		
Date Received	5/10/01		
Date Analyzed	5/15/01		
Date Reported	5/15/01		

Case Narrative: This sample was received by the 559 Radiochemistry Laboratory for fingerprint analysis. No anomalies occurred during analysis. All QA/QC was within limits.

Physical Description: Solid, colors range from cream to dark brown, sizes ranging from dust-like particles to 1" X 2" X 1/4" chunks. Looks like wood.
Many tests could not be performed due to sample matrix.
For pH analysis, some sample was added to DI water, which begins with 5.0 pH.
Used H2O volume displacement for specific gravity analysis.

Water Test		
pH	5.00	*Standard pH units*
Specific Gravity	0.3468	*Relative to water @ 20 C*
Miscibility		
Water Reactivity	No	
Ignitability		*degrees C*
Chlorinated Solvents		*ppm*

Approval John T. Trask

Peer Review Roger A. Henderson

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559 Laboratories Analytical Report

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniflash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniflash method with the approved Setaflash method. The method has been approved by the APO on 6/19/1997.

Sample Owner	Cathel, Bob	***Company***	
APO Sample ID	01C0130-010.001		
Date Received	5/10/01		
Date Analyzed	5/15/01		
Date Reported	5/15/01		
Case Narrative	This sample was received by the 559 Radiochemistry Laboratory for fingerprint analysis. No anomalies occurred during analysis. All QA/QC was within limits.		
Physical Description	Solid, various shades of brown, sizes ranging from dust-like particles to 1/2" X 1/2" X 1/4" chunks. Looks like wood. Many tests could not be performed due to sample matrix. For pH analysis, some sample was added to DI water, which begins with 5.0 pH. Used H2O volume displacement for specific gravity analysis.		
Water Test			
pH	5.00	***Standard pH units***	
Specific Gravity	0.7853	***Relative to water @ 20 C***	
Miscibility			
Water Reactivity	No		
Ignitability		***degrees C***	
Chlorinated Solvents		***ppm***	

Approval John E. Fraser

Peer Review Roger A. Henderson

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Commodore Advanced Sciences	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # 01C0130#001
RFETS		Page 1 of 3

Sampler(s) Stowell 512570 (time/date)	Contact/Requester TRICE, CONRAD/BOB CATHEL	Telephone No. 2490/6880
RIN 01C0130	Sampling Origin OUTSIDE B776	Purchase Order/Charge Code DAD01ANA
Project Title B776, OUTSIDE, CT 712, CT 713 ,WOOD SAMPLES	Logbook No. N/A	Ice Chest No. N/A Temp. N/A
To (Lab) Building 559 Laboratory	Method of Shipment Commodore Advanced Sciences	Bill of Lading/Air Bill No. N/A
Protocol CH SOP-003 Rev 3	Related COC (if any) 01C0130 #002	PRE N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** IDC-1927 **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
IDC 827

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0130-001.001	CT-712-1	SOLID	4/20/01	1020	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-001.002	CT-712-1	SOLID			OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-002.001	CT-712-2	SOLID		1050	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-002.002	CT-712-2	SOLID			OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-003.001	CT-712-3	SOLID	5/01/01	1045	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-003.002	CT-712-3	SOLID			OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-004.001	CT-712-4	SOLID		1015	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
CAS	4/20/01 1520	T130A FRIDGE #2	4/20/01 1520				
CAS	5/01/01 1520	T130A FRIDGE #2	5/01/01 1520				
T130A FRIDGE #2	5/02/01 0730	CAS	5/02/01 0730				
CAS	5/08/01 1450	J B Johnson	5/8/01 1450.				

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

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Commodore Advanced Sciences

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

01C0130#001

RIN	Contact/Requestor	Telephone No.
01C0130	TRICE, CONRAD/BOB CATHEL	2490/6880

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0130-004.002	CT-712-4	SOLID	5/1/01	1015	OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-005.001	CT-712-5	SOLID		0945	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-005.002	CT-712-5	SOLID			OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-006.001	CT-713-1	SOLID	4/20/01	1400	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-006.002	CT-713-1	SOLID			OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-007.001	CT-713-2	SOLID	5/01/01	1300	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-007.002	CT-713-2	SOLID			OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-008.001	CT-713-3	SOLID		1345	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-008.002	CT-713-3	SOLID			OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-009.001	CT-713-4	SOLID	5/08/01	1045	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-009.002	CT-713-4	SOLID			OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
CAS	1520 4/20/01	T130 FRIDGE #2	1520 4/20/01				
CAS	1520 5/01/01	T130 FRIDGE #2	1520 5/01/01				
T130A FRIDGE #2	0750 5/08/01		0750 5/08/01				
CAS	1450 5/08/01	[signature] Johnson	5/8/01 1450				

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

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Commodore Advanced Sciences

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # 01C0130#001

RIN	Contact/Requestor	Telephone No.
01C0130	TRICE, CONRAD/BOB CATHEL	2490/6880

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0130-010.001	CT-713-5	SOLID	5/8/01	1220	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-010.002	CT-713-5	SOLID	↓	↓	OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None

4/20/01

LABORATORY USE ONLY

	Initials/Date	Y/N
Cooler Custody Seal Intact:		
Outer TID Intact:		
~~TID # (if applicable):~~		
TID Removed by/Date:		
Sample Custody Seals Intact:	PBJ 5/8/01	
Labels & COC Agree:		

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	1450	P B Johnson 5/8/01	1450				
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time

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

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SS08
Data Quality Assessment Report
Rocky Flats Environmental Technology Site

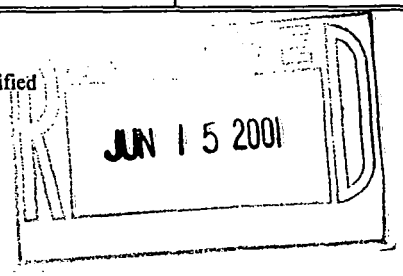
RIN Number	Analytical Method/PSA Line Item	Review Level
01C0130 (SDG: MAY 08)	TCLP Metals including Mercury/RS08/A006	Complete Verification

Analytical Laboratory	Assessment Performed by	Number of Samples/ Matrix
559 Radiological Laboratory	TechLaw, Inc.	10/leachate/A006

Sample Numbers: 01C0130-001.002, 01C0130-002.002, 01C0130-003.002, 01C0130-004.002, 01C0130-005.002, 01C0130-006.002, 01C0130-007.002, 01C0130-008.002, 01C0130-009.002, 01C0130-010.002

Quality Control Item	Reviewed (Y or N)	Non-Compliance Identified
General (Cover Page, Table of Contents, DRC Checklist, General SDP Requirements Narrative)	Y	N
Chain of Custody, Preservation, and Holdings	Y	N
Sample Results	Y	N
Calibration Verification, CRDL Standard	Y	Action Item 1
Verification and Preparation Blanks	Y	Action Item 2
Interference Check Sample	Y	N
Matrix Spike	Y	N
Duplicates	Y	Action Item 3
Laboratory Control Sample	Y	N
Standard Additions	NA	N
ICP Serial Dilution	Y	N
Instrument Detection Limits	Y	N
Other: Interelement Correction Factors, Linear Range Studies, Preparation Logs, Instrument Run Log	Y	N
Preparation and Instrument RAW Data	N	N
Standards	N	N
EDD	NA	N

Y Item was reviewed or non-compliance was identified
N Item was not reviewed or non-compliance was not identified
N/A Item is not applicable to the Line Item



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Data Quality Assessment Report
Rocky Flats Environmental Technology Site

Data Assessment results are classified as either Action Items or Comments. Action Items are technical non-compliances that result in qualification of analytical results. Data may be qualified as valid (V), estimated (J), presumptively estimated (NJ), estimated at an elevated level of detection (UJ), or rejected (R). Multiple qualifiers may be associated with any given data point based on the number of problems identified, however, the assigned qualifier is based upon the following hierarchy: R, UJ, NJ, J, V. All data points that are not qualified based upon action items in this report are considered valid (V). Comments are technical non-compliances or contractual non-compliances that do not result in qualification of data.

Action Items:

1. The following sample results are qualified as estimated (J) because the CRDL standard recoveries were outside the QC criteria of 80-120% and the sample results were less than 3X the RDL:
   - Arsenic, beryllium, cadmium, cobalt, lead, molybdenum, nickel, strontium, titanium, and vanadium in all ten samples
   - Chromium in samples 01C0130-002.002, 01C0130-003.002, 01C0130-006.002, 01C0130-007.002, 01C0130-008.002, 01C0130-009.002, 01C0130-010.002
   - Copper in samples 01C0130-006.002, 01C0130-007.002, 01C0130-008.002, 01C0130-009.002, 01C0130-010.002
   - Iron in samples 01C0130-001.002, 01C0130-004.002, 01C0130-005.002, 01C0130-006.002, 01C0130-007.002, 01C0130-008.002, 01C0130-009.002, 01C0130-010.002
   - Phosphorus, and zinc in samples 01C0130-004.002, 01C0130-005.002, 01C0130-006.002, 01C0130-008.002, 01C0130-009.002, 01C0130-010.002. **[105]**
2. The following sample result is qualified as estimated (J) because of negative bias as indicated in the blanks:
   - Thallium, and selenium in all ten samples. **[107]**
3. The following sample results are qualified as estimated (J) because the matrix duplicate criteria were not met:
   - Manganese, and zinc in all ten samples. **[111]**

Comments:

None

Verification/Validation Signature _____ Date: 6/13/01

Reviewer Signature _____ Date: _____
(Validation Only)

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Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-001 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 04/20/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M	
Aluminum	0.78	B		05/18/2001 13:07	05/18/2001	P	
Antimony	0.30	U		05/18/2001 13:07	05/18/2001	P	
Arsenic	0.30	U		05/18/2001 13:07	05/18/2001	P	J105
Barium	0.29	B		05/18/2001 13:07	05/18/2001	P	
Beryllium	0.015	U		05/18/2001 13:07	05/18/2001	P	J105
Cadmium	0.042	B		05/18/2001 13:07	05/18/2001	P	J105
Calcium	70.			05/18/2001 13:07	05/18/2001	P	
Chromium	3.5			05/18/2001 13:07	05/18/2001	P	
Cobalt	0.15	U		05/18/2001 13:07	05/18/2001	P	J105
Copper	23.			05/18/2001 13:07	05/18/2001	P	
Iron	0.65			05/18/2001 13:07	05/18/2001	P	J105
Lead	0.15	U		05/18/2001 13:07	05/18/2001	P	J105
Magnesium	5.3	B		05/18/2001 13:07	05/18/2001	P	
Manganese	0.57		•	05/18/2001 13:07	05/18/2001	P	J111
Mercury	0.0020	U	~~H~~ RL 5/21/01	05/21/2001 13:18	05/21/2001	CV	
Molybdenum	0.15	U		05/18/2001 13:07	05/18/2001	P	J105
Nickel	0.12	U		05/18/2001 13:07	05/18/2001	P	J105
Phosphorus	2.2	B		05/18/2001 13:07	05/18/2001	P	
Selenium	0.30	U		05/18/2001 13:07	05/18/2001	P	J107
Silver	0.090	U		05/18/2001 13:07	05/18/2001	P	
Strontium	0.39	B		05/18/2001 13:07	05/18/2001	P	J105
Thallium	0.30	U		05/18/2001 13:07	05/18/2001	P	J107
Titanium	0.060	U		05/18/2001 13:07	05/18/2001	P	J105
Vanadium	0.15	U		05/18/2001 13:07	05/18/2001	P	J105
Zinc	1.7		*	05/18/2001 13:07	05/18/2001	P	J111

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-002 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 04/20/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M	
Aluminum	6.1			05/18/2001 13:21	05/18/2001	P	
Antimony	0.30	U		05/18/2001 13:21	05/18/2001	P	
Arsenic	0.30	U		05/18/2001 13:21	05/18/2001	P	J105
Barium	0.44	B		05/18/2001 13:21	05/18/2001	P	
Beryllium	0.015	U		05/18/2001 13:21	05/18/2001	P	J105
Cadmium	0.030	U		05/18/2001 13:21	05/18/2001	P	J105
Calcium	200.			05/18/2001 13:21	05/18/2001	P	
Chromium	0.15	U		05/18/2001 13:21	05/18/2001	P	J105
Cobalt	0.15	U		05/18/2001 13:21	05/18/2001	P	J105
Copper	3.9			05/18/2001 13:21	05/18/2001	P	
Iron	3.6			05/18/2001 13:21	05/18/2001	P	
Lead	0.15	U		05/18/2001 13:21	05/18/2001	P	J105
Magnesium	47.			05/18/2001 13:21	05/18/2001	P	
Manganese	3.0		•	05/18/2001 13:21	05/18/2001	P	J111
Mercury	0.0020	U	~~H~~ RK 5/21/01	05/21/2001 13:25	05/21/2001	CV	
Molybdenum	0.15	U		05/18/2001 13:21	05/18/2001	P	J105
Nickel	0.12	U		05/18/2001 13:21	05/18/2001	P	J105
Phosphorus	8.3			05/18/2001 13:21	05/18/2001	P	
Selenium	0.30	U		05/18/2001 13:21	05/18/2001	P	J107
Silver	0.090	U		05/18/2001 13:21	05/18/2001	P	
Strontium	1.2			05/18/2001 13:21	05/18/2001	P	J105
Thallium	0.32	B		05/18/2001 13:21	05/18/2001	P	J107
Titanium	0.060	U		05/18/2001 13:21	05/18/2001	P	J105
Vanadium	0.19	B		05/18/2001 13:21	05/18/2001	P	J105
Zinc	1.9		*	05/18/2001 13:21	05/18/2001	P	J111

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-003 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT SDG No: MAY08

Date Sampled: 05/01/2001 QC Report No: SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M	
Aluminum	3.6			05/18/2001 13:23	05/18/2001	P	
Antimony	0.30	U		05/18/2001 13:23	05/18/2001	P	
Arsenic	0.30	U		05/18/2001 13:23	05/18/2001	P	J105
Barium	0.39	B		05/18/2001 13:23	05/18/2001	P	
Beryllium	0.015	U		05/18/2001 13:23	05/18/2001	P	J105
Cadmium	0.030	U		05/18/2001 13:23	05/18/2001	P	J105
Calcium	110.			05/18/2001 13:23	05/18/2001	P	
Chromium	0.15	U		05/18/2001 13:23	05/18/2001	P	J105
Cobalt	0.15	U		05/18/2001 13:23	05/18/2001	P	J105
Copper	2.3			05/18/2001 13:23	05/18/2001	P	
Iron	2.2			05/18/2001 13:23	05/18/2001	P	
Lead	0.15	U		05/18/2001 13:23	05/18/2001	P	J105
Magnesium	15.	B		05/18/2001 13:23	05/18/2001	P	
Manganese	1.4		•	05/18/2001 13:23	05/18/2001	P	J111
Mercury	0.0020	U		05/21/2001 13:26	05/21/2001	CV	
Molybdenum	0.15	U		05/18/2001 13:23	05/18/2001	P	J105
Nickel	0.12	U		05/18/2001 13:23	05/18/2001	P	J105
Phosphorus	4.2			05/18/2001 13:23	05/18/2001	P	
Selenium	0.30	U		05/18/2001 13:23	05/18/2001	P	J107
Silver	0.090	U		05/18/2001 13:23	05/18/2001	P	
Strontium	0.62	B		05/18/2001 13:23	05/18/2001	P	J105
Thallium	0.30	U		05/18/2001 13:23	05/18/2001	P	J107
Titanium	0.060	U		05/18/2001 13:23	05/18/2001	P	J105
Vanadium	0.15	U		05/18/2001 13:23	05/18/2001	P	J105
Zinc	1.0		•	05/18/2001 13:23	05/18/2001	P	J111

Color Before: yellow Clarity Before: clear

Color After: colorless Clarity After: clear

Texture: Artifacts:

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-004 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 05/01/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M	
Aluminum	0.83	B		05/18/2001 13:25	05/18/2001	P	
Antimony	0.30	U		05/18/2001 13:25	05/18/2001	P	
Arsenic	0.30	U		05/18/2001 13:25	05/18/2001	P	J105
Barium	0.17	B		05/18/2001 13:25	05/18/2001	P	
Beryllium	0.015	U		05/18/2001 13:25	05/18/2001	P	J105
Cadmium	0.030	U		05/18/2001 13:25	05/18/2001	P	J105
Calcium	200.			05/18/2001 13:25	05/18/2001	P	
Chromium	7.0			05/18/2001 13:25	05/18/2001	P	
Cobalt	0.15	U		05/18/2001 13:25	05/18/2001	P	J105
Copper	31.			05/18/2001 13:25	05/18/2001	P	
Iron	0.41	B		05/18/2001 13:25	05/18/2001	P	J105
Lead	0.15	U		05/18/2001 13:25	05/18/2001	P	J105
Magnesium	30.	B		05/18/2001 13:25	05/18/2001	P	
Manganese	0.80		*	05/18/2001 13:25	05/18/2001	P	J111
Mercury	0.0020	U		05/21/2001 13:28	05/21/2001	CV	
Molybdenum	0.15	U		05/18/2001 13:25	05/18/2001	P	J105
Nickel	0.12	U		05/18/2001 13:25	05/18/2001	P	J105
Phosphorus	2.6	B		05/18/2001 13:25	05/18/2001	P	J105
Selenium	0.30	U		05/18/2001 13:25	05/18/2001	P	J107
Silver	0.090	U		05/18/2001 13:25	05/18/2001	P	
Strontium	1.1	B		05/18/2001 13:25	05/18/2001	P	J105
Thallium	0.30	U		05/18/2001 13:25	05/18/2001	P	J107
Titanium	0.060	U		05/18/2001 13:25	05/18/2001	P	J105
Vanadium	0.15	U		05/18/2001 13:25	05/18/2001	P	J105
Zinc	0.49		*	05/18/2001 13:25	05/18/2001	P	J105, 111

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-005 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 05/01/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M	
Aluminum	0.60	U		05/18/2001 13:26	05/18/2001	P	
Antimony	0.30	U		05/18/2001 13:26	05/18/2001	P	
Arsenic	0.30	U		05/18/2001 13:26	05/18/2001	P	J105
Barium	0.27	B		05/18/2001 13:26	05/18/2001	P	
Beryllium	0.015	U		05/18/2001 13:26	05/18/2001	P	J105
Cadmium	0.030	U		05/18/2001 13:26	05/18/2001	P	J105
Calcium	40.			05/18/2001 13:26	05/18/2001	P	
Chromium	2.0			05/18/2001 13:26	05/18/2001	P	
Cobalt	0.15	U		05/18/2001 13:26	05/18/2001	P	J105
Copper	13.			05/18/2001 13:26	05/18/2001	P	
Iron	0.30	U		05/18/2001 13:26	05/18/2001	P	J105
Lead	0.15	U		05/18/2001 13:26	05/18/2001	P	J105
Magnesium	4.0	B		05/18/2001 13:26	05/18/2001	P	
Manganese	0.36		•	05/18/2001 13:26	05/18/2001	P	J111
Mercury	0.0020	U		05/21/2001 13:33	05/21/2001	CV	
Molybdenum	0.15	U		05/18/2001 13:26	05/18/2001	P	J105
Nickel	0.12	U		05/18/2001 13:26	05/18/2001	P	J105
Phosphorus	1.5	U		05/18/2001 13:26	05/18/2001	P	J105
Selenium	0.30	U		05/18/2001 13:26	05/18/2001	P	J107
Silver	0.090	U		05/18/2001 13:26	05/18/2001	P	
Strontium	0.25	B		05/18/2001 13:26	05/18/2001	P	J105
Thallium	0.30	U		05/18/2001 13:26	05/18/2001	P	J107
Titanium	0.060	U		05/18/2001 13:26	05/18/2001	P	J105
Vanadium	0.15	U		05/18/2001 13:26	05/18/2001	P	J105
Zinc	0.83		•	05/18/2001 13:26	05/18/2001	P	J105, 111

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-006 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 04/20/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M	
Aluminum	0.71	B		05/18/2001 13:28	05/18/2001	P	
Antimony	0.30	U		05/18/2001 13:28	05/18/2001	P	
Arsenic	0.30	U		05/18/2001 13:28	05/18/2001	P	J105
Barium	0.69			05/18/2001 13:28	05/18/2001	P	
Beryllium	0.015	U		05/18/2001 13:28	05/18/2001	P	J105
Cadmium	0.030	U		05/18/2001 13:28	05/18/2001	P	J105
Calcium	270.			05/18/2001 13:28	05/18/2001	P	
Chromium	0.15	U		05/18/2001 13:28	05/18/2001	P	J105
Cobalt	0.15	U		05/18/2001 13:28	05/18/2001	P	J105
Copper	0.42			05/18/2001 13:28	05/18/2001	P	J105
Iron	0.65			05/18/2001 13:28	05/18/2001	P	J105
Lead	0.15	U		05/18/2001 13:28	05/18/2001	P	J105
Magnesium	26.	B		05/18/2001 13:28	05/18/2001	P	
Manganese	0.67		•	05/18/2001 13:28	05/18/2001	P	J111
Mercury	0.0020	U	~~H~~ KK 5/21/01	05/21/2001 13:35	05/21/2001	CV	
Molybdenum	0.15	U		05/18/2001 13:28	05/18/2001	P	J105
Nickel	0.12	U		05/18/2001 13:28	05/18/2001	P	J105
Phosphorus	2.7	B		05/18/2001 13:28	05/18/2001	P	J105
Selenium	0.30	U		05/18/2001 13:28	05/18/2001	P	J107
Silver	0.090	U		05/18/2001 13:28	05/18/2001	P	
Strontium	1.4			05/18/2001 13:28	05/18/2001	P	J105
Thallium	0.30	U		05/18/2001 13:28	05/18/2001	P	J107
Titanium	0.060	U		05/18/2001 13:28	05/18/2001	P	J105
Vanadium	0.15	U		05/18/2001 13:28	05/18/2001	P	J105
Zinc	0.79		•	05/18/2001 13:28	05/18/2001	P	J105, 111

Color Before: colorless **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-007 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 05/01/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M	
Aluminum	1.2	B		05/18/2001 13:30	05/18/2001	P	
Antimony	0.30	U		05/18/2001 13:30	05/18/2001	P	
Arsenic	0.30	U		05/18/2001 13:30	05/18/2001	P	J105
Barium	0.54	B		05/18/2001 13:30	05/18/2001	P	
Beryllium	0.015	U		05/18/2001 13:30	05/18/2001	P	J105
Cadmium	0.030	U		05/18/2001 13:30	05/18/2001	P	J105
Calcium	610.			05/18/2001 13:30	05/18/2001	P	
Chromium	0.15	U		05/18/2001 13:30	05/18/2001	P	J105
Cobalt	0.15	U		05/18/2001 13:30	05/18/2001	P	J105
Copper	0.84			05/18/2001 13:30	05/18/2001	P	J105
Iron	0.53	B		05/18/2001 13:30	05/18/2001	P	J105
Lead	0.15	U		05/18/2001 13:30	05/18/2001	P	J105
Magnesium	48.			05/18/2001 13:30	05/18/2001	P	
Manganese	0.57		*	05/18/2001 13:30	05/18/2001	P	J111
Mercury	0.0020	U		05/21/2001 13:36	05/21/2001	CV	
Molybdenum	0.15	U		05/18/2001 13:30	05/18/2001	P	J105
Nickel	0.12	U		05/18/2001 13:30	05/18/2001	P	J105
Phosphorus	7.3			05/18/2001 13:30	05/18/2001	P	
Selenium	0.30	U		05/18/2001 13:30	05/18/2001	P	J107
Silver	0.090	U		05/18/2001 13:30	05/18/2001	P	
Strontium	2.7			05/18/2001 13:30	05/18/2001	P	J105
Thallium	0.30	U		05/18/2001 13:30	05/18/2001	P	J107
Titanium	0.060	U		05/18/2001 13:30	05/18/2001	P	J105
Vanadium	0.15	U		05/18/2001 13:30	05/18/2001	P	J105
Zinc	1.5		*	05/18/2001 13:30	05/18/2001	P	J111

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-008 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 05/01/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M	
Aluminum	0.61	B		05/18/2001 13:32	05/18/2001	P	
Antimony	0.30	U		05/18/2001 13:32	05/18/2001	P	
Arsenic	0.30	U		05/18/2001 13:32	05/18/2001	P	J105
Barium	0.54	B		05/18/2001 13:32	05/18/2001	P	
Beryllium	0.015	U		05/18/2001 13:32	05/18/2001	P	J105
Cadmium	0.030	U		05/18/2001 13:32	05/18/2001	P	J105
Calcium	310.			05/18/2001 13:32	05/18/2001	P	
Chromium	0.15	U		05/18/2001 13:32	05/18/2001	P	J105
Cobalt	0.15	U		05/18/2001 13:32	05/18/2001	P	J105
Copper	0.31			05/18/2001 13:32	05/18/2001	P	J105
Iron	0.42	B		05/18/2001 13:32	05/18/2001	P	J105
Lead	0.15	U		05/18/2001 13:32	05/18/2001	P	J105
Magnesium	18.	B		05/18/2001 13:32	05/18/2001	P	
Manganese	0.26		*	05/18/2001 13:32	05/18/2001	P	J111
Mercury	0.0020	U		05/21/2001 13:38	05/21/2001	CV	
Molybdenum	0.15	U		05/18/2001 13:32	05/18/2001	P	J105
Nickel	0.12	U		05/18/2001 13:32	05/18/2001	P	J105
Phosphorus	2.1	B		05/18/2001 13:32	05/18/2001	P	J105
Selenium	0.30	U		05/18/2001 13:32	05/18/2001	P	J107
Silver	0.090	U		05/18/2001 13:32	05/18/2001	P	
Strontium	1.3			05/18/2001 13:32	05/18/2001	P	J105
Thallium	0.30	U		05/18/2001 13:32	05/18/2001	P	J107
Titanium	0.060	U		05/18/2001 13:32	05/18/2001	P	J105
Vanadium	0.15	U		05/18/2001 13:32	05/18/2001	P	J105
Zinc	0.50		*	05/18/2001 13:32	05/18/2001	P	J105, 111

Color Before: colorless **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-009 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 05/08/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M	
Aluminum	0.78	B		05/18/2001 13:33	05/18/2001	P	
Antimony	0.30	U		05/18/2001 13:33	05/18/2001	P	
Arsenic	0.31	B		05/18/2001 13:33	05/18/2001	P	J105
Barium	0.57	B		05/18/2001 13:33	05/18/2001	P	
Beryllium	0.015	U		05/18/2001 13:33	05/18/2001	P	J105
Cadmium	0.030	U		05/18/2001 13:33	05/18/2001	P	J105
Calcium	540.			05/18/2001 13:33	05/18/2001	P	
Chromium	0.15	U		05/18/2001 13:33	05/18/2001	P	J105
Cobalt	0.15	U		05/18/2001 13:33	05/18/2001	P	J105
Copper	0.34			05/18/2001 13:33	05/18/2001	P	J105
Iron	0.41	B		05/18/2001 13:33	05/18/2001	P	J105
Lead	0.15	U		05/18/2001 13:33	05/18/2001	P	J105
Magnesium	63.			05/18/2001 13:33	05/18/2001	P	
Manganese	0.23		•	05/18/2001 13:33	05/18/2001	P	J111
Mercury	0.0020	U		05/21/2001 13:40	05/21/2001	CV	
Molybdenum	0.15	U		05/18/2001 13:33	05/18/2001	P	J105
Nickel	0.12	U		05/18/2001 13:33	05/18/2001	P	J105
Phosphorus	3.7			05/18/2001 13:33	05/18/2001	P	J105
Selenium	0.30	U		05/18/2001 13:33	05/18/2001	P	J107
Silver	0.090	U		05/18/2001 13:33	05/18/2001	P	
Strontium	2.7			05/18/2001 13:33	05/18/2001	P	J105
Thallium	0.30	U		05/18/2001 13:33	05/18/2001	P	J107
Titanium	0.060	U		05/18/2001 13:33	05/18/2001	P	J105
Vanadium	0.20	B		05/18/2001 13:33	05/18/2001	P	J105
Zinc	0.35		•	05/18/2001 13:33	05/18/2001	P	J105, 111

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-010 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 05/08/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M	
Aluminum	0.75	B		05/18/2001 13:35	05/18/2001	P	
Antimony	0.30	U		05/18/2001 13:35	05/18/2001	P	
Arsenic	0.30	U		05/18/2001 13:35	05/18/2001	P	J105
Barium	0.65			05/18/2001 13:35	05/18/2001	P	
Beryllium	0.015	U		05/18/2001 13:35	05/18/2001	P	J105
Cadmium	0.030	U		05/18/2001 13:35	05/18/2001	P	J105
Calcium	510.			05/18/2001 13:35	05/18/2001	P	
Chromium	0.15	U		05/18/2001 13:35	05/18/2001	P	J105
Cobalt	0.26	B		05/18/2001 13:35	05/18/2001	P	J105
Copper	0.30			05/18/2001 13:35	05/18/2001	P	J105
Iron	0.53	B		05/18/2001 13:35	05/18/2001	P	J105
Lead	0.15	U		05/18/2001 13:35	05/18/2001	P	J105
Magnesium	36.			05/18/2001 13:35	05/18/2001	P	
Manganese	0.27		*	05/18/2001 13:35	05/18/2001	P	J111
Mercury	0.0020	U		05/21/2001 13:41	05/21/2001	CV	
Molybdenum	0.15	U		05/18/2001 13:35	05/18/2001	P	J105
Nickel	0.12	U		05/18/2001 13:35	05/18/2001	P	J105
Phosphorus	3.6			05/18/2001 13:35	05/18/2001	P	J105
Selenium	0.30	U		05/18/2001 13:35	05/18/2001	P	J107
Silver	0.090	U		05/18/2001 13:35	05/18/2001	P	
Strontium	2.1			05/18/2001 13:35	05/18/2001	P	J105
Thallium	0.30	U		05/18/2001 13:35	05/18/2001	P	J107
Titanium	0.060	U		05/18/2001 13:35	05/18/2001	P	J105
Vanadium	0.15	U		05/18/2001 13:35	05/18/2001	P	J105
Zinc	0.34		*	05/18/2001 13:35	05/18/2001	P	J105, 111

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

COPY

KAISER ◆ HILL
COMPANY

ENTERED 5-29-01

RECEIVED
MAY 24 2001

INTEROFFICE MEMORANDUM

DATE: May 23, 2001

TO: V. Ideker, Analytical Projects Office, Bldg. T130C, X3437/d-212-3191

FROM: M. S. Brugh, Radiological Inorganic Lab, Bldg. 559, x7709/d-212-4547

SUBJECT: SAMPLE DATA PACKAGE COVER PAGE

The enclosed solid samples were received in Building 559 Radiological Laboratory for TCLP/Total Metals and TCLP/Mercury Analysis.

Sample ID#	APO#	Sample ID#	APO#
X01C0130	001	X01C0130	006
X01C0130	002	X01C0130	007
X01C0130	003	X01C0130	008
X01C0130	004	X01C0130	009
X01C0130	005	X01C0130	010

Please see the Summary Narrative for all information pertaining to any anomalies for the sample.

Comments:

"I certify that this data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package and the computer-readable EDD, as applicable, submitted on diskette or by modem, has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature."

5/24/01

Mark S. Brugh — Date
Manager, Radiological Inorganic Laboratory

VERIFICATION
JUN 1 2001
SOM ANALYTICAL SERVICES

TABLE OF CONTENTS

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10.0	Electronic Data Deliverable (EDD)	NA

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DATA REVIEW CHECKLIST

471

METALS DATA COMPLETENESS CHECKLIST

RIN # X01C0130

- Case Narrative Report Information

✓ TCLP Extraction for Inorganic Metals Report and Sample Description Information
✓ ICP Inorganic Metals Report
NA Flame AA Inorganic Metals Report
✓ Cold Vapor AA Mercury Report

- Metals Analysis Forms

✓ Inorganic Analysis Data Package (Cover Page)
✓ Inorganic Analysis Data Results (Form 1A)
✓ Initial and Continuing Calibration Verification Results (Form 2A)
✓ CRDL Standard for AA and/or ICP Results (Form 2B)
✓ Blank Analysis Results (Form 3A)
✓ ICP Interference Check Sample Results (Form 4A)
✓ Pre-Digestion Spike Sample Recovery Results (Form 5A)
✓ Post-Digestion Spike Sample Recovery Results (Form 5B)
✓ Duplicate Sample Results (Form 6A)
NA Aqueous Laboratory Control Sample Results (Form 7A)
✓ Solid Laboratory Control Sample Results (Form 7B)
NA Instrument Method of Addition Results (Form 8A)
✓ ICP Serial Dilution Results (Form 9A)
✓ Instrument Detection Limits (Form 10A)
✓ ICP Instrument Inter-Element Correction Factors (Form 11A-11E)
✓ Linear Ranges (Form 12A)
✓ TCLP Sample Preparation Log (Form 13A)
✓ Total Metals Sample Preparation Log (Form 13B)
✓ Instrument Analysis Run Log (Form 14A)
NA Sample Holding Times Log (Form 15A)

- Metals Analysis Raw Data

✓ ICP Raw Data
NA Flame AA Raw Data
✓ Mercury Cold Vapor AA Raw Data

- Metals Analysis Sample Preparation and Sample Digestion Logs

✓ TCLP Inorganic Extraction Log Sheet Information
✓ Total Metals Digestion Log Sheet Information
✓ Instrument Analysis Run Sheet
✓ Calibration Standard and QA/QC Standard Summary Sheets
✓ Chain-of Custody Records

- Other Information

✓ Data Review Checklist
✓ Metals Data Package Completeness Checklist
✓ Table of Content
✓ Sample Data Package Cover Page

Sign-off: Midge Durham
Date : 5-23-01

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Data Review Checklist

SS05 Sample Data Package

1. SAMPLE DATA PACKAGE COVER PAGE	*Reply*	√	C#
a) The laboratory name, code, subcontract number, RIN, Site sample numbers, Line Item codes (LIC-analyses), sample matrix, and report dates are accurately recorded.	Y	✓	
b) All Site sample identifications are cross-referenced with all lab identifications.	Y	✓	
c) The verbatim compliance and authorization statement is present with the dated signature of the Laboratory Manager or designee.	Y	✓	
d) Any problems with the receipt are explained (e.g., broken containers, incorrect COC documentation, etc.)	Y	✓	

2. TABLE OF CONTENTS	*Reply*	√	C#
a) The Table of Contents is included and contains all Sample Data Package Deliverable Section Titles with their beginning page numbers.	Y	✓	

3. DATA REVIEW CHECKLIST (DRC) and SS05 SAMPLE DATA PACKAGE (SDP)	Reply	√	C#
a) The SS05 DRC is present and in strict conformance with the formatting and content of the form contained in the current version of the SS05, Appendix A. All discrepancies were identified and documented, accordingly.	Y	✓	
b) All DRC ***Reply*** **blocks are completed with either a "Y", "N" or "N/A".**	Y	✓	
c) All DRC ***Reply*** **blocks completed with an "N"** are explained in the Narrative.	Y	✓	
d) The DRC footer is completed for each page; the laboratory manager or designee signed and dated the DRC.	Y	✓	
e) All SDP deliverable sections appear in the SDP in order by deliverable section number	Y	✓	
f) Only one SDP is submitted for each SS05 and RIN request.	Y	✓	N/A
g) All components of the SDP deliverables contain original documents where possible.	Y	✓	Φ
h) There is no inclusion of required items in the SDP by reference to another SDP.	Y	✓	Φ
i) Site samples are exclusively used for sample matrix QC	Y	✓	Φ
j) Site and non Site samples are not reported together in any way	Y	✓	Φ
k) The complete sample data package is single sided and consecutively paginated.	Y	✓	

4. CHAIN-OF-CUSTODY, HOLDING TIMES, AND SAMPLE PRESERVATION	Reply	√	C#
a) The continuity of each sample's custody is evidenced by the chain of the date, time and signatures of each transaction from sample collection to receipt by the laboratory.	Y	✓	See narrative concerning internal COC. RK 5/22/01
b) If the continuity was corrupted, documentation of correspondence with the CTR is included.	Y	✓	
c) All samples are identified on the COC with the corresponding Line Item Codes (analyses).	Y	✓	
d) The pH of each sample and the shipping container temperature are recorded, where applicable; Preservation was consistent with PSA Module.	Y	✓	
e) Any conflicting, incorrect, or missing information are identified and documented; and there is documentation of the resolution.	Y	✓	
f) Analytical and preparation holding times were met for all sample analyses.	Y	✓	
g) Following sample receipt by the lab, samples were properly adjusted to the correct pH and were stored at the appropriate temperature, if required. Internal COCs are included.	N	✓	

RIN: X01C0130 Lab Name: B 559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): SD050801.RPT

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Data Review Checklist

SS05 Sample Data Package

5. NARRATIVE	Reply	√	C#
a) Contains a synopsis of the analytical and preparation methods; identifies base methods and any deviations of the base methods.	Y	✓	
b) Contains a description of the samples; describes samples which are of a similar matrix.	Y	✓	
c) Contains synopsis of Analytical Batch QC assessment. All anomalies, deficiencies, interferences, reanalyses, and deviations from approved SOPs related to the analysis are explained. Contains a QC assessment for the RIN which includes a discussion of all items with an "N" reply on the SS05 DRC.	Y	✓	
1) statement about N, *, and E flags	Y	✓	
2) statement if dilutions were required, and all dilutions explained	Y	✓	
3) statement that RDLs were or were not met for all analytes	Y	✓	
4) discussion of any RDLs which were not met	Y	✓	
5) discussion of all analyses performed by Method of Additions	n/a	✓	
d) Samples requiring reanalysis are identified with the reason for reanalysis, the original and reanalysis Analytical Batch Identification Numbers, and a synopsis of the reanalysis Analytical Batch QC assessment is included.	n/a	✓	
e) For any deviations that required CTR approval, the correspondence and approval are documented.	Y	✓	
f) All holding-time compliances and violations are described in Narrative.	Y	✓	

6. SAMPLE AND QC SAMPLE RESULTS SUMMARY	Reply	√	C#
The Sample and QC Sample Results Summary Package is present and all pages are labeled with the Lab Code and the RIN. The Sample and QC Sample Results Summary Package includes:	Y	✓	
a) Form 1s (Sample Results) are present for each sample in the RIN for this PSA Module and each includes:	Y	✓	
1) one and only one result for each requested analyte.	Y	✓	
2) correct results reported in the correct units for each requested analyte.	Y	✓	
3) results for detected analytes factored by all dilutions.	Y	✓	
4) results for non-detected analytes reported as IDLs factored by all dilutions.	Y	✓	
5) results reported to the correct number of significant figures.	Y	✓	
6) C and M qualifiers entered correctly for each analyte.	Y	✓	
7) Q qualifiers entered for all samples associated with QC samples receiving qualifiers.	Y	✓	
8) the (IDL * dilution factor) for non-detected analyte is ≤ the specified RDLs.	Y	✓	
b) Form 2As (Calibration Verification) are present and each includes:	Y	✓	
1) all ICV and CCV results for all requested analytes	Y	✓	
2) results for an ICV from the beginning of the run, and a CCV at the end of the run.	Y	✓	Φ
3) CCV results reported such that no more than 10 solutions (except CCB or ICB) were analyzed between analysis of ICVs or CCVs.	Y	✓	Φ
4) all ICV and CCV results within limits.	Y	✓	
5) if the preceding item was marked "N", no sample data were reported when results were not within limits.	n/a	✓	
6) at least the minimum number of standards prescribed for each method were used to establish the initial calibration	Y	✓	Φ
7) The correlation coefficients of the calibration curves were > 0.995 for all GFAA and CVAA analyses.	n/a	✓	Φ
8) The calibration and ICV standards were from independent sources.	Y	✓	Φ

RIN: X01C0130 Lab Name: B.559 Inorg Lab Initials: RK

Analytical Batch Identification No.(s): 5D050801.RPT

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Data Review Checklist

SS05 Sample Data Package

(continued)	Reply	√	C#
c) Form 2Bs (CRDL Standard)are present and each includes:	Y	✓	
1) RDL standard results at specified concentrations for every requested analyte.	Y	✓	Φ
2) RDL standard results for the beginning, end, and each 8 hours within each ICPES run and at the beginning of each GFAAS and CVAA run.	Y	✓	Φ
3) RDL standard results were within 80-120% limits for ICP analyses.	n/a	✓	
d) Form 3s (Verification and Preparation Blanks) are present and each includes:	Y	✓	
1) all ICB and CCB results for all requested analytes; results reported to IDLs.	Y	✓	
2) results for an ICB from the beginning of the run, and a CCB at the end of the run.	Y	✓	Φ
3) CCB results reported such that no more than 10 solutions (except CCV) were analyzed between analysis of ICBs or CCBs.	Y	✓	Φ
4) the absolute values of all ICB and CCB results are less than specified IDLs.	N	✓	See narrative concerning blanks.
5) if the preceding item was marked "N" and the blank results are > RDL, then only results >10* the blank concentration are reported from the non-conforming analytical batch	n/a	✓	
6) PB results for all analytes for each analytical batch in the RIN; results reported to IDLs.	Y	✓	
7) the absolute values of analyte concentrations in all PBs are less than specified IDLs.	N	✓	
8) if the preceding item was marked "N" and the PB results are > RDL, then the samples containing >10* the PB concentration only are reported for that analyte from the non-conforming analytical batch.	n/a	✓	RK 5/22/01
e) Form 4s (Interference Check Sample) are present and each includes:	Y	✓	
1) ICSA & ICSAB results as specified for every requested analyte determined by ICPES.	Y	✓	
2) ICSA & ICSAB results for the beginning, end, and each 8 hours within each ICPES run	Y	✓	
3) all ICSA, ICSAB, and other interference check sample results within limits	Y	✓	Φ
f) Form 5As (Matrix Spike) are present and each includes:	Y	✓	
1) one Form 5A for each matrix, waste type, and analytical batch (max. of 20 samples).	Y	✓	
2) control limits for %R assigned according to CLP-SOW	Y	✓	
3) Spikes reported and completed for all applicable elements according to CLP-SOW and SS05.	Y	✓	
4) "N" flags present in the Q column if %R is outside limits according to CLP-SOW	Y	✓	
g) Form 5Bs (Post Digestion Spike) are present for each matrix and for analytes receiving N flag for ICPES or FLAAS analyses.	Y	✓	
h) Form 6s (Duplicate) are present and each includes:	Y	✓	
1) one Form 6 for each matrix, waste type, and analytical batch (max. of 20 samples).	Y	✓	
2) control limits for RPD assigned according to CLP-SOW	Y	✓	
3) RPDs reported and calculated according to CLP-SOW	Y	✓	
4) "*" flag present in the Q column if RPD is outside limits according to CLP-SOW.	Y	✓	
i) Form 7s (Laboratory Control Sample) are present and each includes:	Y	✓	
1) A Form 7 or LCS result for each analytical batch is present; results for all requested elements.	Y	✓	
2) LCS results for all requested analytes and percent recoveries within the control limits.	Y	✓	
j) Form 8s (Standard Additions) are present for each sample and analyte with Form I results indicating analysis by MSA.	n/a	✓	
k) Form 9s (Serial Dilution) are present and each includes:	Y	✓	
1) one Form 9 serial dilution for at least one sample from each matrix type and for each analytical batch analyzed by ICPES or ICP/MS.	Y	✓	
2) control limits for %D assigned according to CLP-SOW	Y	✓	
3) %D reported and calculated according to CLP-SOW	Y	✓	

RIN: X0100130 Lab Name: B. 559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): SD050801.RPT

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Data Review Checklist

SS05 Sample Data Package

(continued)	Reply	√	C#
4) E" flags present in the Q column if the %D is outside limits according to CLP-SOW.	Y	✓	
l) Forms 10 (Instrument Detection Limits) are present and include IDL values for each method reported; for all reported analytes, that are less than or equal to the required RDLs.	Y	✓	
1) A valid IDL study was prepared within 3 months of date of analysis for all methods	Y	✓	
m) Form 11s (Interelement Correction Factors) are present for each ICPES instrument used to report data	Y	✓	
n) Form 12 (Linear Range Studies) is present for each ICPES instrument used to report data	Y	✓	
1) All reported results are from analyses within the linear range of each instrument	Y	✓	Φ
o) Form 13 (Preparation Logs) is present for each analytical batch reported and includes:	Y	✓	
1) preparation data for all reported samples.	Y	✓	Φ
2) properly identified samples, duplicates, spikes, PBs, and LCSs.	Y	✓	Φ
3) QC Sample Identifiers clearly link each preparation batch QC sample (duplicate, spike, LCS, and preparation blank) with associated Site samples.	Y	✓	Φ
4) at least one set of duplicates, spikes, PBs, LCSs samples for each analytical batch.	Y	✓	Φ
5) at least one sample from each matrix type in the batch run in duplicate and spiked.	Y	✓	Φ
6) batch sizes of < 20 analytical samples.	Y	✓	Φ
p) Form 14s (Instrument Run Log) are present for each run performed and include:	Y	✓	Φ
1) all information (e.g., instrument Ids, analysis run dates, DF) are correctly entered.	Y	✓	Φ
2) analytical spike recoveries correctly entered for each GFAAS run.	N/A	✓	Φ
3) reported data indicated as specified in CLP-SOW.	Y	✓	Φ

7. PREPARATION RAW DATA	Reply	√	C#
a) The preparation raw data (benchsheets and/or preparation logs) are included and document the required items as specified in the Preparation Summary Section of SS05, Exhibit B.	Y	✓	Φ
b) Sufficient raw data are included to allow manual calculation of the final sample results and QC sample recoveries.	Y	✓	Φ
c) Samples were prepared using an approved procedure in SS05 Exhibit C.	Y	✓	

8. STANDARDS SUMMARY	Reply	√	C#
a) For primary standards that were diluted and used for LCS and any in-house prepared instrument calibration sources, the required items as specified in the Standards Summary Section of SS05, Exhibit B are included.	Y	✓	Φ
b) All standard identifiers are traceable to primary certificates, which are traceable to NIST.	Y	✓	Φ
c) All standards and sources traceable to NIST were valid (not expired) at the time of use.	Y	✓	Φ

9. INSTRUMENT RAW DATA	Reply	√	C#
a) The instrument raw data for the RIN are included and document the required items as specified in SS05 Exhibit B Section 2. All data entries were verified as accurate by the reviewer.	Y	✓	Φ
b) The data were reviewed, signed, and dated by the area spectroscopist as acceptable.	Y	✓	Φ
c) Sufficient raw data are included to allow manual calculation of the final sample results and QC sample chemical recoveries.	Y	✓	Φ
d) All batch QC samples were prepared and analyzed in the same manner as the samples in the Analytical Batch, in the same time frame, and using the same instrument parameters, etc.	Y	✓	Φ

RIN: X01C0130 Lab Name: B. 559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): SD050801.RPT

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Data Review Checklist

SS05 Sample Data Package

10. ELECTRONIC DATA DELIVERABLE (EDD)	Reply	✓	C#
a) The EDD accurately reflects the data contained in the Sample Data Package	Y	✓	
b) The hard copy of the EDD as specified in GR01 Exhibit B, Section 4 is included with the Sample Data Package. The hard copy includes data file name and means of transmittal.	Y	✓	
c) An automated EDD verification check has been performed.	Y	✓	N/A

Shaded areas are for Site use only.
Respond to each checklist item in the "Reply." column with a Y (yes), N (no), or NA (not applicable).
Complete footer information, including the initials of the laboratory manager or designee on each page.
Refer to Module GR01, Exhibit B, Section 4 for instructions to complete this form.

I certify that all responses to this checklist accurately reflect the completeness and quality aspects of this sample data package as outlined in GR01 and SS05. Furthermore, I understand that inaccuracies in the completion of this checklist will be considered a nonconformance to Subcontract Requirements as evidenced by the following signature of the laboratory manager or designee.

Print/Typed Name: R.C. Keller Title: Chemist

Signature RC-Keller Date 5/22/01

For Data Assessment Use Only

DATA REVIEW CHECKLIST EXAMINATION

Assessment of this Sample Data Package is based on the following documents:

DA-GR01 Version ____ DA-SS05 Version ____

This Sample Data Package requires the following assessment level:

☐ No Further Assessment ☐ Partial Verification ☐ Complete Verification ☐ Validation

Assessment Level is based on: ☒ Examination ☐ Customer ☐ Laboratory Assessment Program

Notes: Data package was reviewed and is acceptable.

Conrad Trice	Conrad Trice	5/31/2001
Examiner	Signature	Date

RIN: X01C0130 Lab Name: B 559 Inorg Lab Initials: RK

Analytical Batch Identification No.(s): SD050801.RPT

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PARTIAL VERIFICATION

- ☐ **This Sample Data Package requires no further assessment (See attached Data Quality Assessment Report)**
- ☐ This Sample Data Package requires further assessment at the following level:
  - ☐ Complete Verification ☐ Validation

Notes:

Data Verifier	Signature	Date

COMPLETE VERIFICATION

- ☐ **This Sample Data Package requires no further assessment (See attached Data Quality Assessment Report)**
- ☐ This Sample Data Package requires validation

Notes:

Data Verifier	Signature	Date

RIN: X01C0130 Lab Name: B 559 Inorg Lab Initials: RK

Analytical Batch Identification No.(s): SD050801-RPT

0010

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Data Review Checklist

SS05 Sample Data Package

1. SAMPLE DATA PACKAGE COVER PAGE	Reply	√	C#
a) The laboratory name, code, subcontract number, RIN, Site sample numbers, Line Item codes (LIC-analyses), sample matrix, and report dates are accurately recorded.	Y	✓	
b) All Site sample identifications are cross-referenced with all lab identifications.	Y	✓	
c) The verbatim compliance and authorization statement is present with the dated signature of the Laboratory Manager or designee.	Y	✓	
d) Any problems with the receipt are explained (e.g., broken containers, incorrect COC documentation, etc.)	Y	✓	

2. TABLE OF CONTENTS	Reply	√	C#
a) The Table of Contents is included and contains all Sample Data Package Deliverable Section Titles with their beginning page numbers.	Y	✓	

3. DATA REVIEW CHECKLIST (DRC) and SS05 SAMPLE DATA PACKAGE (SDP)	Reply	√	C#
a) The SS05 DRC is present and in strict conformance with the formatting and content of the form contained in the current version of the SS05, Appendix A. All discrepancies were identified and documented, accordingly.	Y	✓	
b) All DRC *Reply* **blocks are completed with either a "Y", "N" or "N/A".**	Y	✓	
c) All DRC *Reply* **blocks completed with an "N"** are explained in the Narrative.	Y	✓	
d) The DRC footer is completed for each page; the laboratory manager or designee signed and dated the DRC.	Y	✓	
e) All SDP deliverable sections appear in the SDP in order by deliverable section number	Y	✓	
f) Only one SDP is submitted for each SS05 and RIN request.	Y	✓	N/A
g) All components of the SDP deliverables contain original documents where possible.	Y	✓	Φ
h) There is no inclusion of required items in the SDP by reference to another SDP.	Y	✓	Φ
i) Site samples are exclusively used for sample matrix QC	Y	✓	Φ
j) Site and non Site samples are not reported together in any way	Y	✓	Φ
k) The complete sample data package is single sided and consecutively paginated.	Y	✓	

4. CHAIN-OF-CUSTODY, HOLDING TIMES, AND SAMPLE PRESERVATION	Reply	√	C#
a) The continuity of each sample's custody is evidenced by the chain of the date, time and signatures of each transaction from sample collection to receipt by the laboratory.	Y	✓	See narrative concerning internal COC.
b) If the continuity was corrupted, documentation of correspondence with the CTR is included.	Y	✓	
c) All samples are identified on the COC with the corresponding Line Item Codes (analyses).	Y	✓	
d) The pH of each sample and the shipping container temperature are recorded, where applicable; Preservation was consistent with PSA Module.	Y	✓	
e) Any conflicting, incorrect, or missing information are identified and documented; and there is documentation of the resolution.	Y	✓	
f) Analytical and preparation holding times were met for all sample analyses.	Y	✓	RK 5/22/01
g) Following sample receipt by the lab, samples were properly adjusted to the correct pH and were stored at the appropriate temperature, if required. Internal COCs are included.	N+		

RIN: X01C0130 Lab Name: B.559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): SD050801.HGT

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0011

Data Review Checklist

SS05 Sample Data Package

5. NARRATIVE	Reply	√	C#
a) Contains a synopsis of the analytical and preparation methods; identifies base methods and any deviations of the base methods.	Y	✓	
b) Contains a description of the samples; describes samples which are of a similar matrix.	Y	✓	
c) Contains synopsis of Analytical Batch QC assessment. All anomalies, deficiencies, interferences, reanalyses, and deviations from approved SOPs related to the analysis are explained. Contains a QC assessment for the RIN which includes a discussion of all items with an "N" reply on the SSO5 DRC.	Y	✓	
1) statement about N, *, and E flags	Y	✓	
2) statement if dilutions were required, and all dilutions explained	Y	✓	
3) statement that RDLs were or were not met for all analytes	Y	✓	
4) discussion of any RDLs which were not met	Y	✓	
5) discussion of all analyses performed by Method of Additions	n/a	✓	
d) Samples requiring reanalysis are identified with the reason for reanalysis, the original and reanalysis Analytical Batch Identification Numbers, and a synopsis of the reanalysis Analytical Batch QC assessment is included.	n/a	✓	
e) For any deviations that required CTR approval, the correspondence and approval are documented.	Y	✓	
f) All holding-time compliances and violations are described in Narrative.	Y	✓	

6. SAMPLE AND QC SAMPLE RESULTS SUMMARY	Reply	√	C#
The Sample and QC Sample Results Summary Package is present and all pages are labeled with the Lab Code and the RIN. The Sample and QC Sample Results Summary Package includes:	Y	✓	
a) Form 1s (Sample Results) are present for each sample in the RIN for this PSA Module and each includes:	Y	✓	
1) one and only one result for each requested analyte.	Y	✓	
2) correct results reported in the correct units for each requested analyte.	Y	✓	
3) results for detected analytes factored by all dilutions.	Y	✓	
4) results for non-detected analytes reported as IDLs factored by all dilutions.	Y	✓	
5) results reported to the correct number of significant figures.	Y	✓	
6) C and M qualifiers entered correctly for each analyte.	Y	✓	
7) Q qualifiers entered for all samples associated with QC samples receiving qualifiers.	Y	✓	
8) the (IDL * dilution factor) for non-detected analyte is ≤ the specified RDLs.	Y	✓	
b) Form 2As (Calibration Verification) are present and each includes:	Y	✓	
1) all ICV and CCV results for all requested analytes	Y	✓	
2) results for an ICV from the beginning of the run, and a CCV at the end of the run.	Y	✓	Φ
3) CCV results reported such that no more than 10 solutions (except CCB or ICB) were analyzed between analysis of ICVs or CCVs.	Y	✓	Φ
4) all ICV and CCV results within limits.	Y	✓	
5) if the preceding item was marked "N", no sample data were reported when results were not within limits.	n/a	✓	
6) at least the minimum number of standards prescribed for each method were used to establish the initial calibration	Y	✓	Φ
7) The correlation coefficients of the calibration curves were > 0.995 for all GFAA and CVAA analyses.	Y	✓	Φ
8) The calibration and ICV standards were from independent sources.	Y	✓	Φ

RIN: X01C0130 Lab Name: B.559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): 5D050801.HGT

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0012

Data Review Checklist

SS05 Sample Data Package

(continued)		Reply	√	C#
c)	Form 2Bs (CRDL Standard)are present and each includes:	Y	✓	
	1) RDL standard results at specified concentrations for every requested analyte.	Y	✓	Φ
	2) RDL standard results for the beginning, end, and each 8 hours within each ICPES run and at the beginning of each GFAAS and CVAA run.	Y	✓	Φ
	3) RDL standard results were within 80-120% limits for ICP analyses.	n/a	✓	
d)	Form 3s (Verification and Preparation Blanks) are present and each includes:	Y	✓	
	1) all ICB and CCB results for all requested analytes; results reported to IDLs.	Y	✓	
	2) results for an ICB from the beginning of the run, and a CCB at the end of the run.	Y	✓	Φ
	3) CCB results reported such that no more than 10 solutions (except CCV) were analyzed between analysis of ICBs or CCBs.	Y	✓	Φ
	4) the absolute values of all ICB and CCB results are less than specified IDLs.	Y	✓	
	5) if the preceding item was marked "N" and the blank results are > RDL, then only results >10* the blank concentration are reported from the non-conforming analytical batch	n/a	✓	
	6) PB results for all analytes for each analytical batch in the RIN; results reported to IDLs.	Y	✓	
	7) the absolute values of analyte concentrations in all PBs are less than specified IDLs.	Y	✓	
	8) if the preceding item was marked "N" and the PB results are > RDL, then the samples containing >10* the PB concentration only are reported for that analyte from the non-conforming analytical batch.	n/a	✓	
e)	Form 4s (Interference Check Sample) are present and each includes:	n/a	✓	
	1) ICSA & ICSAB results as specified for every requested analyte determined by ICPES.	n/a	✓	
	2) ICSA & ICSAB results for the beginning, end, and each 8 hours within each ICPES run	n/a	✓	
	3) all ICSA, ICSAB, and other interference check sample results within limits	n/a	✓	Φ
f)	Form 5As (Matrix Spike) are present and each includes:	Y	✓	
	1) one Form 5A for each matrix, waste type, and analytical batch (max. of 20 samples).	Y	✓	
	2) control limits for %R assigned according to CLP-SOW	Y	✓	
	3) Spikes reported and completed for all applicable elements according to CLP-SOW and SS05.	Y	✓	
	4) "N" flags present in the Q column if %R is outside limits according to CLP-SOW	Y	✓	
g)	Form 5Bs (Post Digestion Spike) are present for each matrix and for analytes receiving N flag for ICPES or FLAAS analyses.	Y	✓	
h)	Form 6s (Duplicate) are present and each includes:	Y	✓	
	1) one Form 6 for each matrix, waste type, and analytical batch (max. of 20 samples).	Y	✓	
	2) control limits for RPD assigned according to CLP-SOW	Y	✓	
	3) RPDs reported and calculated according to CLP-SOW	Y	✓	
	4) "*" flag present in the Q column if RPD is outside limits according to CLP-SOW.	Y	✓	
i)	Form 7s (Laboratory Control Sample) are present and each includes:	Y	✓	
	1) A Form 7 or LCS result for each analytical batch is present; results for all requested elements.	Y	✓	
	2) LCS results for all requested analytes and percent recoveries within the control limits.	Y	✓	
j)	Form 8s (Standard Additions) are present for each sample and analyte with Form 1 results indicating analysis by MSA.	n/a	✓	
k)	Form 9s (Serial Dilution) are present and each includes:	n/a	✓	
	1) one Form 9 serial dilution for at least one sample from each matrix type and for each analytical batch analyzed by ICPES or ICP/MS.	n/a	✓	
	2) control limits for %D assigned according to CLP-SOW	n/a	✓	
	3) %D reported and calculated according to CLP-SOW	n/a	✓	

RIN: X01C0130 Lab Name: B. 559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): SD050801.HGT

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Data Review Checklist

SS05 Sample Data Package

(continued)	Reply	√	C#
4) E" flags present in the Q column if the %D is outside limits according to CLP-SOW.	n/a	✓	
l) Forms 10 (Instrument Detection Limits) are present and include IDL values for each method reported; for all reported analytes, that are less than or equal to the required RDLs.	Y	/	
1) A valid IDL study was prepared within 3 months of date of analysis for all methods	Y	/	
m) Form 11s (Interelement Correction Factors) are present for each ICPES instrument used to report data	n/a	/	
n) Form 12 (Linear Range Studies) is present for each ICPES instrument used to report data	n/a	/	
1) All reported results are from analyses within the linear range of each instrument	Y	/	Φ
o) Form 13 (Preparation Logs) is present for each analytical batch reported and includes:	Y	/	
1) preparation data for all reported samples.	Y	/	Φ
2) properly identified samples, duplicates, spikes, PBs, and LCSs.	Y	/	Φ
3) QC Sample Identifiers clearly link each preparation batch QC sample (duplicate, spike, LCS, and preparation blank) with associated Site samples.	Y	/	Φ
4) at least one set of duplicates, spikes, PBs, LCSs samples for each analytical batch.	Y	/	Φ
5) at least one sample from each matrix type in the batch run in duplicate and spiked.	Y	/	Φ
6) batch sizes of < 20 analytical samples.	Y	/	Φ
p) Form 14s (Instrument Run Log) are present for each run performed and include:	Y	/	Φ
1) all information (e.g., instrument Ids, analysis run dates, DF) are correctly entered.	Y	/	Φ
2) analytical spike recoveries correctly entered for each GFAAS run.	n/a	/	Φ
3) reported data indicated as specified in CLP-SOW.	Y	/	Φ

7. PREPARATION RAW DATA	Reply	√	C#
a) The preparation raw data (benchsheets and/or preparation logs) are included and document the required items as specified in the Preparation Summary Section of SS05, Exhibit B.	Y	/	Φ
b) Sufficient raw data are included to allow manual calculation of the final sample results and QC sample recoveries.	Y	/	Φ
c) Samples were prepared using an approved procedure in SS05 Exhibit C.	Y	/	

8. STANDARDS SUMMARY	Reply	√	C#
a) For primary standards that were diluted and used for LCS and any in-house prepared instrument calibration sources, the required items as specified in the Standards Summary Section of SS05, Exhibit B are included.	Y	/	Φ
b) All standard identifiers are traceable to primary certificates, which are traceable to NIST.	Y	/	Φ
c) All standards and sources traceable to NIST were valid (not expired) at the time of use.	Y	/	Φ

9. INSTRUMENT RAW DATA	Reply	√	C#
a) The instrument raw data for the RIN are included and document the required items as specified in SS05 Exhibit B Section 2. All data entries were verified as accurate by the reviewer.	Y	/	Φ
b) The data were reviewed, signed, and dated by the area spectroscopist as acceptable.	Y	/	Φ
c) Sufficient raw data are included to allow manual calculation of the final sample results and QC sample chemical recoveries.	Y	/	Φ
d) All batch QC samples were prepared and analyzed in the same manner as the samples in the Analytical Batch, in the same time frame, and using the same instrument parameters, etc.	Y	/	Φ

RIN: X01C0130 Lab Name: B.559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): SD050801-HGT

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0014

Data Review Checklist

SS05 Sample Data Package

10. ELECTRONIC DATA DELIVERABLE (EDD)	Reply	√	C#
a) The EDD accurately reflects the data contained in the Sample Data Package	Y	/	
b) The hard copy of the EDD as specified in GR01 Exhibit B, Section 4 is included with the Sample Data Package. The hard copy includes data file name and means of transmittal.	Y	/	
c) An automated EDD verification check has been performed.	Y	/	N/A

Shaded areas are for Site use only.
Respond to each checklist item in the "Reply" column with a Y (yes), N (no), or NA (not applicable).
Complete footer information, including the initials of the laboratory manager or designee on each page.
Refer to Module GR01, Exhibit B, Section 4 for instructions to complete this form.

I certify that all responses to this checklist accurately reflect the completeness and quality aspects of this sample data package as outlined in GR01 and SS05. Furthermore, I understand that inaccuracies in the completion of this checklist will be considered a nonconformance to Subcontract Requirements as evidenced by the following signature of the laboratory manager or designee.

Print/Typed Name: R. C. Keller Title: Chemist

Signature R.C. Keller Date 5/22/01

For Data Assessment Use Only

DATA REVIEW CHECKLIST EXAMINATION

Assessment of this Sample Data Package is based on the following documents:

DA-GR01 Version ____ DA-SS05 Version ____

This Sample Data Package requires the following assessment level:

☐ No Further Assessment ☐ Partial Verification ☐ Complete Verification ☐ Validation

Assessment Level is based on: ☒ Examination ☐ Customer ☐ Laboratory Assessment Program

Notes: Data package was reviewed and is acceptable.

Conrad Trice	Conrad Trice	5/31/2001
Examiner	Signature	Date

RIN: X01C0130 Lab Name: B. 559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): SD050801-HGT

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PARTIAL VERIFICATION

- ☐ **This Sample Data Package requires no further assessment (See attached Data Quality Assessment Report)**
- ☐ This Sample Data Package requires further assessment at the following level:
  - ☐ Complete Verification ☐ Validation

Notes:

Data Verifier	Signature	Date

COMPLETE VERIFICATION

- ☐ **This Sample Data Package requires no further assessment (See attached Data Quality Assessment Report)**
- ☐ This Sample Data Package requires validation

Notes:

Data Verifier	Signature	Date

RIN: X01C0130 Lab Name: B.559 Inorg. Lab Initials: RK

Analytical Batch Identification No.(s): SD050801-HGT

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CHAIN OF CUSTODY

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Commodore Advanced Sciences

RFETS

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.: 01C0130#001

Page 1 of 3

Sampler(s) Stovall 512570 (time/date)	Contact/Requester TRICE, CONRAD/BOB CATHEL	Telephone No. 2490/6880
RIN 01C0130	Sampling Origin OUTSIDE B776	Purchase Order/Charge Code DAD01ANA
Project Title B776, OUTSIDE, CT 712, CT 713 ,WOOD SAMPLES	Logbook No. N/A	Ice Chest No. N/A Temp. N/A
To (Lab) Building 559 Laboratory	Method of Shipment Commodore Advanced Sciences	Bill of Lading/Air Bill No. N/A
Protocol CH SOP-003 Rev 3	Related COC (if any) 01C0130 #002	PRE N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES or NO
Are other known hazardous substances present? YES or NO
** ** IDC-1927 **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time
IDC 1927

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0130-001.001	CT-712-1	SOLID	4/20/01	1020	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-001.002	CT-712-1	SOLID			OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-002.001	CT-712-2	SOLID		1020	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-002.002	CT-712-2	SOLID			OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-003.001	CT-712-3	SOLID	5/01/01	1045	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-003.002	CT-712-3	SOLID			OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-004.001	CT-712-4	SOLID		1015	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
CAS	1520 4/20/01	T30A FRIDGE #2	1520 4/20/01				
CAS	1520 5/01/01	T30A FRIDGE #2	1520 5/01/01				
T30A FRIDGE #2	0730 5/8/01	CAS	0730 5/8/01				
CAS	1490 5/08/01	N B Johnson	5/8/01 1450.				

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

0018

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Commodore Advanced Sciences	**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**	C.O.C.# 01C0130#001
		Page 2 of 3

RIN	Contact/Requestor	Telephone No.
01C0130	TRICE, CONRAD/BOB CATHEL	2490/6880

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0130-004.002	CT-712-4	SOLID	5/1/01	1015	OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-005.001	CT-712-5	SOLID	↓	0945	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-005.002	CT-712-5	SOLID	↓	↓	OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-006.001	CT-713-1	SOLID	4/20/01	1400	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-006.002	CT-713-1	SOLID	↓	↓	OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-007.001	CT-713-2	SOLID	5/01/01	1300	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-007.002	CT-713-2	SOLID	↓	↓	OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-008.001	CT-713-3	SOLID	↓	1345	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-008.002	CT-713-3	SOLID	↓	↓	OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None
01C0130-009.001	CT-713-4	SOLID	5/08/01	1045	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-009.002	CT-713-4	SOLID	↓	↓	OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
CAS	1520 4/30/01	T130 ARRIDGE #2	1520 4/30/01				
CAS	1520 5/01/01	T130 ARRIDGE #2	1530 5/01/01				
T130A FRUGE #2	0750 5/08/01		0730 5/8/01				
CAS	1450 5/8/01		1450				

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

0019

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Commodore Advanced Sciences	**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST**	C.O.C. # 01C0130#001
		Page 3 of 3

RIN	Contact/Requestor	Telephone No.
01C0130	TRICE, CONRAD/BOB CATHEL	2490/6880

Bottle No.	Customer Number	Matrix	Date	Time	Location	Container (size/type/quantity)	Sample Analysis	Preservative ; Packing
01C0130-010.001	CT-713-5	SOLID	5/8/01	1220	OUTSIDE, B776	20-G / P/G /1	PA03A028 (Fingerprint) [Routine]	N/A None
01C0130-010.002	CT-713-5	SOLID	↓	↓	OUTSIDE, B776	20-G / P/G /1	RS08A006 (TCLP Metals with Hg SW846 1311) [Routine]	None None

LABORATORY USE ONLY

	Initials/Date	Y/N
Cooler Custody Seal Intact:		☐
Outer TID Intact:		☐
TID # (if applicable):		☐
TID Removed by/Date:		☐
Sample Custody Seals Intact:		☐
Labels & COC Agree:	5/8/01	☐

4/20/01

Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	1450	P B Johnson	5/8/01 1450				
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time	Relinquished By:	Date/Time	Received By:	Date/Time

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

0020

4/20

NARRATIVE

Kaiser Hill Company
Rocky Flats Environmental Technology Site

ICP ATOMIC EMISSION SPECTROSCOPY REPORT TOTAL METALS BY ICP
Date : (5/22/01)
Lab #'s : X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002

Narrative for Samples X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002 Collected from Building 776

TCLP Extracts from Building 776 Solid Samples and an extraction fluid reagent blank (TCLP Ext. #1), were prepared for total metals only, outside of glovebox containment, in accordance with EPA Reference SW-846 "Test Methods for Evaluating Solid Waste", Method 3010. Each total metals sample digest was analyzed by ICP atomic emission spectroscopy in accordance with EPA Reference SW-846 Method 6010 "Inductively Coupled Plasma Atomic-Emission Spectroscopy".

Sample Storage Considerations:

The solid samples were stored within a designated refrigerator at 4°C prior to preparation and analysis of total metals.

Total Metals Method Selection and Preparation Considerations:

The "total metals" digestion method was performed on a representative 10.0 ml aliquot from each TCLP extract of the samples in accordance with EPA Reference SW-846, Method 3010. The total metals digestion method was also performed on a 20.0 ml aliquot of X-TCLP Ext. #1, and made up to 20.0 ml final volume in accordance with EPA SW-846, Method 3010. The total metals digest for each sample was made up to 30.0 ml final volumes in respective 50 ml capacity calibrated polypropylene disposable screw-cap vessels.

EPA Method Exceptions:

The analytical methods utilized to chemically prepare representative aliquots of each sample follow the guidelines of the EPA Reference *SW-846* (Test Methods for Evaluating Solid Waste) Method 3010, "Acid Digestion of Aqueous Samples and Extracts for Analysis by Flame AA and ICP Spectroscopy" and Method 6010, "Inductively Coupled Plasma-Atomic Emission Spectroscopy" with the following deviations noted below:

Method 3010 Deviations:

1) Smaller aqueous starting sample aliquots of 10.0 ml, and final sample digest volumes of 30.0 ml are utilized to comply with waste minimization and criticality safety concerns. *2)* Reduced volume 50-ml centrifuge tubes are utilized in place of graduate cylinders for the final sample digest. A final dilution accuracy of ±0.5% has been demonstrated with these centrifuge tubes. *3)* The concentration of HCl in the final digest is approximately 25%. This has been done to allow for increased solubility of the silver (Ag)

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ICP ATOMIC EMISSION SPECTROSCOPY REPORT TOTAL METALS BY ICP
Date : (5/22/01)
Lab #'s : X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002

present in samples as $AgCl_2^-$, thus resulting in more quantitative recovery for this element. The larger excess of chloride ion in the final total metals digest also helps to maintain silver as the soluble species $AgCl_2^-$, thus preventing accidental conversion into the unwanted insoluble silver salt, AgCl. The alternative to utilization of only 5% HCl in the final digest is the use of EPA Method 7761, which requires an aliquot of the total metals digest to be complexed with cyanogen iodide, to solubilize silver, prior to separate analysis. Accidental formation of hydrogen cyanide is a possibility both inside and outside of glovebox containment with utilization of Method 7761 and is an extreme safety hazard since acids are routinely utilized in all of these areas. The accuracy of analyses for several different aqueous and solid reference standards has been demonstrated, not only for silver but also for all other elements covered in this procedure. Utilization of ratios of HCL:HNO_3 of greater than 10:1 is also documented in other references as a means of increasing the solubility of silver, as described above.

Method 6010 Deviations:

1) Reduced volume 50-ml centrifuge tubes are utilized in place of class A volumetric flasks for the final sample digest. A final dilution accuracy of $\pm$0.5% has been demonstrated with these centrifuge tubes. *2)* Calibrated macro-pipettes and micro-pipettes, in combination with trace metals grade polypropylene pipette tips, are utilized instead of Class A glass volumetric pipettes, to prepare ICP standards. *3)* See the above Method 3010 deviation step #3 - same for Method 6010.

The method deviations *1)* through *3)* have been done to comply with the current operational safety, industrial safety, criticality safety, waste minimization, and hazardous waste requirements at the Rocky Flats Plant.

Additional Information:

The samples were received in Building 559 on May 8, 2001 a Priority 3 (31-day turn around), TCLP extracted May 17, digested and analyzed on May 18. The "internal chain of custody" is maintained by the "sample-receiving group" (located in Building 559). No abnormalities were observed with this sample set.

QA/QC Sample Information:

Sample X01C0130-001 represents the QA/QC sample that received the pre-digestion and post-digestion spikes, the 5X serial dilution, and the lab duplicate (X01C0130-001D) for this sample set. Manganese and zinc were out of the control limits for duplicates (noted by an "*" on form 6) indicating the sample is heterogeneous. Antimony was above the absolute value for instrument detection limit on CCB2, selenium on CCB1 and CCB2, and thallium on prep blank. However, the values were less than 3X the IDL, which is acceptable per SW-846. No other quality control problems were observed with this sample set.

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

ICP ATOMIC EMISSION SPECTROSCOPY REPORT TOTAL METALS BY ICP
Date : (5/22/01)
Lab #'s : X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002

Data Reporting Information:

The ICP instrument raw analytical results are listed in Forms 5A, 5B, 6, and 7 for the purposes of equivalency of QA/QC data comparison. The final Form 1 analytical results are calculated by multiplying the respective raw analytical results in these Forms (5A, 5B, 6, and 7) by the Form 14 dilution factors. The supporting QA/QC data package (Forms 1-14) and the raw data, corresponding to the sample analyte results, are located in Analytical Service Division File X01C0130-001 (SD050801.RPT).

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

ICP ATOMIC EMISSION SPECTROSCOPY REPORT TOTAL METALS BY ICP
Date : (5/22/01)
Lab #'s : X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002

The September 1994 RCRA Standard Hazardous Waste Regulatory Limits for each of the TCLP Extract Elements are listed below, for reference.

Element	1994 RCRA TCLP Hazardous Waste Regulatory Limit (mg/L)
Aluminum	-------
Antimony	-------
Arsenic	5.000
Barium	100.000
Beryllium	-------
Cadmium	1.000
Calcium	-------
Chromium	5.000
Cobalt	-------
Copper	-------
Iron	-------
Lead	5.000
Magnesium	-------
Manganese	-------
Mercury	0.200
Molybdenum	-------
Nickel	-------
Phosphorus	-------
Selenium	1.000
Silver	5.000
Strontium	-------
Thallium	-------
Titanium	-------
Vanadium	-------
Zinc	-------

If there are any questions regarding these results, please feel free to contact Russ Keller at extension 2260 or pager 212-4434.

Chemist Approval : Russ Keller **Date:** 5/22/01

Reviewer Approval : [signature] **Date:** 5/24/01

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

ICP ATOMIC EMISSION SPECTROSCOPY REPORT TOTAL METALS BY ICP

Date : (5/22/01)

Lab #'s : X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002

The ICP reports can be expected to contain various combinations of these Forms, depending on the customer requirements for sample preparation and analysis. If the customer requires additional information, he or she should contact the responsible chemist for a review of the raw data.

Definitions of Data Qualifiers

Various data qualifiers may be utilized to provide an indication of the quality or deviation of standard or sample analyte results. Each of these data qualifiers and their definitions are listed below:

For a "C" (Concentration) Qualifier:

B - The absolute value of the reported analytical result is less than the Required Detection Limit (RDL), but greater than or equal to the Instrument Detection Limit (IDL).

U - The absolute value of the reported analytical result is less than the Instrument Detection Limit (IDL).

For a "Q" (Quality) Qualifier:

N - The pre-digestion (MRSP) spiked or standard addition analytical sample recoveries were not between the 75 and 125 % control limits for the analyte of interest.

NA - Not Applicable. Analyte not determined by ICP.

NC - The Relative Percent Difference (RPD) between duplicate analyte results are not calculated since the analytical results are below 10 times the instrument detection limit (IDL) for the analyte of interest.

NR - The standard addition is not performed or required for the analyte of interest.

E - The percent difference between the original sample result and its corresponding (1/5) dilution result did not agree within +/- 10 %, for elements present at levels greater than 10 times the IDL.

S - The reported result was determined by the Method of Standard Additions, and the correlation coefficient was 0.995 or greater.

+ - The reported result was determined by the Method of Standard Additions, and the correlation coefficient was less than 0.995 .

* - The percent relative difference between the sample and duplicate results did not agree within +/- 20 %, for elements present at levels greater than 10 times the IDL.

V - The post-digestion (ISA) spike recovery of the initial total metals first analytical standard addition or spike was outside 75 - 125%, for the analyte of interest.

Definitions of Analytical Method Qualifiers

For the "M" (Quality) Qualifier:

P - The analytical method utilized for the determination of the reported result was ICP.

A - The analytical method utilized for the determination of the reported result was Flame Absorption Spectroscopy.

F - The analytical method utilized for the determination of the reported result was Graphite Furnace Absorption Spectroscopy.

C - The analytical method utilized for the determination of the reported result was Cold Vapor Absorption Spectroscopy.

H - The analytical method utilized for the determination of the reported result was Hydride Generation Absorption Spectroscopy.

NR - The analyte was not required to be analyzed.

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

COLD VAPOR ATOMIC ABSORPTION SPECTROSCOPY REPORT TOTAL MERCURY BY CVAA
Date : 5/22/01
Lab No.s: X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002

Narrative for Solid Samples X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002 Collected from Building 776

TCLP extracts from Building 776 solid samples and an extraction fluid reagent blank (TCLP Ext. #1), were prepared for total mercury, outside of glovebox containment, in accordance with EPA Reference SW-846 "Test Methods for Evaluating Solid Waste", Method 7470. The final analysis of each of the total mercury sample digest solutions for trace mercury was performed by Cold Vapor Atomic Absorption Spectroscopy.

Sample Storage Considerations:

The solid samples were stored within a designated refrigerator at 4°C prior to preparation and analysis for total mercury.

Total Mercury Digestion Method Considerations:

Total Mercury Method Selection and Preparation Considerations and Exceptions:

The total mercury digestion method was performed on a representative 20.0 ml aliquot from each TCLP extract of the samples in accordance with EPA Reference SW-846, Method 7470. The total mercury digestion method was also performed on a 40.0 ml aliquot of TCLP Ext. #1, and made up to 40.0 ml final volume in accordance with EPA SW-846, Method 7470. The total mercury digests were made up to 40.0 ml final volumes in respective original 50 ml capacity calibrated nalgene disposable screw-cap digestion vessels utilized for digestion.

EPA Method Exceptions:

The analytical methods utilized to chemically prepare representative aliquots of each sample follows the guidelines of the EPA Reference *SW-846* (Test Methods for Evaluating Solid Waste) Method 7470, "Mercury in Liquid Waste" (Manual Cold-Vapor Technique) with the following deviations noted below:

Method 7470 Deviations:

1) For aqueous samples and extracts, smaller starting sample aliquots of 20.0 ml and final sample digest volumes of 40.0 ml are utilized to comply with waste minimization and criticality safety requirements. The addition of mercury digestion reagents is ratioed and scaled down to the smaller initial 20 ml starting volume of sample used. *2)* Reduced volume screw-cap 50-ml nalgene bottles are utilized in place of 300-ml glass BOD bottles for preparation of all mercury sample digests. This has been done to comply with Industrial Safety requirements to reduce the amount of breakable glassware that is handled both inside and outside of glovebox lines. It is also done to comply with "criticality" safety and waste minimization requirements. A final dilution accuracy of ±0.5% has been demonstrated with these screw-cap polyethylene bottles.

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

COLD VAPOR ATOMIC ABSORPTION SPECTROSCOPY REPORT TOTAL MERCURY BY CVAA
Date : 5/22/01
Lab No.s: X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002

Additional Information:

The samples were received on May 8, 2001 as a Priority 3 (31 day turnaround). The samples were TCLP extracted on May 17, digested and analyzed on May 21 (meeting the mercury hold time from collection dates April 20 - May 8). The "internal chain of custody" is maintained by the "sample-receiving group", located in Building 559. No other abnormalities were observed with this sample set.

QA/QC Sample Information:

Sample X01C0130-001 represents the QA/QC sample that received a pre-digestion spike, post-digestion spike, and the laboratory duplicate (X01C0130-001D) for this sample set. No quality control problems were noted for this sample set.

Data Reporting Considerations:

The Cold Vapor AA instrument raw analytical results are listed in Forms 5A, 5B, 6, and 7 for the purposes of equivalency of QA/QC data comparison. The final Form 1 analytical results for total mercury are calculated by multiplying the respective raw analytical results in these Forms (5A, 5B, 6, and 7) by the Form 14 dilution factors. The supporting QA/QC data package (Forms 1-14) and the raw data, corresponding to these sample analyte results, are located in Analytical Services Division File X01C0130-001 (SD050801.HGT).

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

COLD VAPOR ATOMIC ABSORPTION SPECTROSCOPY REPORT TOTAL MERCURY BY CVAA
Date : 5/22/01
Lab No.s: X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002

The September 1994 RCRA Standard Hazardous Waste Regulatory Limits for each of the TCLP Extract Elements are listed below, for reference.

Element	1994 RCRA TCLP Hazardous Waste Regulatory Limit (mg/L)
Aluminum	-------
Antimony	-------
Arsenic	5.000
Barium	100.000
Beryllium	-------
Cadmium	1.000
Calcium	-------
Chromium	5.000
Cobalt	-------
Copper	-------
Iron	-------
Lead	5.000
Magnesium	-------
Manganese	-------
Mercury	0.200
Molybdenum	-------
Nickel	-------
Phosphorus	-------
Selenium	1.000
Silver	5.000
Strontium	-------
Thallium	-------
Titanium	-------
Vanadium	-------
Zinc	-------

If there are any questions regarding these results, please feel free to contact Russ Keller at extension 2260 or pager 212-4434.

Chemist Approval : Russ Keller Date: 5/22/01
Russ Keller

Reviewer Approval : [signature] Date: 5/24/01

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Kaiser Hill Company
Rocky Flats Environmental Technology Site

COLD VAPOR ATOMIC ABSORPTION SPECTROSCOPY REPORT TOTAL MERCURY BY CVAA
Date : 5/22/01
Lab No.s: X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002

Definitions of Data Qualifiers

Various data qualifiers may be utilized to provide an indication of the quality or deviation of standard or sample analyte results. Each of these data qualifiers and their definitions are listed below:

For a "C" (Concentration) Qualifier:

B - The absolute value of the analyzed result obtained is less than the Required Detection Limit (RDL), but greater than or equal to the Instrument Detection Limit (IDL).

U - The absolute value of the reported analytical result is less than the Instrument Detection Limit (IDL).

For a "Q" (Quality) Qualifier:

N - The pre-digestion (MRSP) spiked or standard addition analytical sample recoveries were not within the 75 - 125 % control limits for the analyte of interest.
NA - Not Applicable. Analyte not determined by ICP.
NC - The Relative Percent Difference (RPD) between duplicate analyte results are not calculated since the analytical results are below 10 times the instrument detection limit (IDL) for the analyte of interest.
NR - The standard addition is not performed or required for the analyte of interest.
E - The percent difference between the original sample result and its corresponding (1/5) dilution result did not agree within +/- 10 %, for elements present at levels greater than 10 times the IDL.
S - The reported result was determined by the Method of Standard Additions, and the correlation coefficient was 0.995 or greater.
+ - The reported result was determined by the Method of Standard Additions, and the correlation coefficient was less than 0.995 .
* - The percent relative difference between the sample and duplicate results did not agree within +/- 20 %, for elements present at levels greater than 10 times the IDL.
V - The post-digestion (ISA) spike recovery of the initial total mercury first analytical standard addition or post-digestion spike was not within the 75 - 125 % control limits.

Definitions of Analytical Method Qualifiers

For the "M" (Quality) Qualifier:

P - The analytical method utilized for the determination of the reported result was ICP.
A - The analytical method utilized for the determination of the reported result was Flame Absorption Spectroscopy.
F - The analytical method utilized for the determination of the reported result was Graphite Furnace Absorption Spectroscopy.
C - The analytical method utilized for the determination of the reported result was Cold Vapor Absorption Spectroscopy.
H - The analytical method utilized for the determination of the reported result was Hydride Generation Absorption Spectroscopy.
NR - The analyte was not required to be analyzed.

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SAMPLE AND QC RESULT SUMMARIES

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INORGANIC ANALYSIS DATA PACKAGE

Cover Page

Lab Name: Rocky Flats

SDG No : MAY08

QC Report Number : SD050801

Lab Sample ID's beginning with "X" are TCLP Extracts.

No.	Lab Sample ID.	APO Sample ID.	Description	COC Customer No.
1	X01C0130-001	01C0130-001.002	Bldg. 776 Solid Sample	none
2	X01C0130-002	01C0130-002.002	Bldg. 776 Solid Sample	none
3	X01C0130-003	01C0130-003.002	Bldg. 776 Solid Sample	none
4	X01C0130-004	01C0130-004.002	Bldg. 776 Solid Sample	none
5	X01C0130-005	01C0130-005.002	Bldg. 776 Solid Sample	none
6	X01C0130-006	01C0130-006.002	Bldg. 776 Solid Sample	none
7	X01C0130-007	01C0130-007.002	Bldg. 776 Solid Sample	none
8	X01C0130-008	01C0130-008.002	Bldg. 776 Solid Sample	none
9	X01C0130-009	01C0130-009.002	Bldg. 776 Solid Sample	none
10	X01C0130-010	01C0130-010.002	Bldg. 776 Solid Sample	none
11	X01C0131-001	01C0131-001.002	Bldg. 776 Solid Sample	none
12	X01C0131-002	01C0131-002.002	Bldg. 776 Solid Sample	none

Were ICP interelement corrections applied? (y/n): YES

Were ICP background corrections applied? (Y/N): YES

Comments:

I have reviewed the following data for the Samples listed above.

Signature: RC. Kelly 5/22/01

Analytical Chemist **Date**

Signature: 5/22/01

Independent Technical Reviewer **Date**

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-001 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 04/20/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	0.78	B		05/18/2001 13:07	05/18/2001	P
Antimony	0.30	U		05/18/2001 13:07	05/18/2001	P
Arsenic	0.30	U		05/18/2001 13:07	05/18/2001	P
Barium	0.29	B		05/18/2001 13:07	05/18/2001	P
Beryllium	0.015	U		05/18/2001 13:07	05/18/2001	P
Cadmium	0.042	B		05/18/2001 13:07	05/18/2001	P
Calcium	70.			05/18/2001 13:07	05/18/2001	P
Chromium	3.5			05/18/2001 13:07	05/18/2001	P
Cobalt	0.15	U		05/18/2001 13:07	05/18/2001	P
Copper	23.			05/18/2001 13:07	05/18/2001	P
Iron	0.65			05/18/2001 13:07	05/18/2001	P
Lead	0.15	U		05/18/2001 13:07	05/18/2001	P
Magnesium	5.3	B		05/18/2001 13:07	05/18/2001	P
Manganese	0.57		*	05/18/2001 13:07	05/18/2001	P
Mercury	0.0020	U	~~H~~ RL	05/21/2001 13:18	05/21/2001	CV
Molybdenum	0.15	U	5/21/01	05/18/2001 13:07	05/18/2001	P
Nickel	0.12	U		05/18/2001 13:07	05/18/2001	P
Phosphorus	2.2	B		05/18/2001 13:07	05/18/2001	P
Selenium	0.30	U		05/18/2001 13:07	05/18/2001	P
Silver	0.090	U		05/18/2001 13:07	05/18/2001	P
Strontium	0.39	B		05/18/2001 13:07	05/18/2001	P
Thallium	0.30	U		05/18/2001 13:07	05/18/2001	P
Titanium	0.060	U		05/18/2001 13:07	05/18/2001	P
Vanadium	0.15	U		05/18/2001 13:07	05/18/2001	P
Zinc	1.7		•	05/18/2001 13:07	05/18/2001	P

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-002 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 04/20/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	6.1			05/18/2001 13:21	05/18/2001	P
Antimony	0.30	U		05/18/2001 13:21	05/18/2001	P
Arsenic	0.30	U		05/18/2001 13:21	05/18/2001	P
Barium	0.44	B		05/18/2001 13:21	05/18/2001	P
Beryllium	0.015	U		05/18/2001 13:21	05/18/2001	P
Cadmium	0.030	U		05/18/2001 13:21	05/18/2001	P
Calcium	200.			05/18/2001 13:21	05/18/2001	P
Chromium	0.15	U		05/18/2001 13:21	05/18/2001	P
Cobalt	0.15	U		05/18/2001 13:21	05/18/2001	P
Copper	3.9			05/18/2001 13:21	05/18/2001	P
Iron	3.6			05/18/2001 13:21	05/18/2001	P
Lead	0.15	U		05/18/2001 13:21	05/18/2001	P
Magnesium	47.			05/18/2001 13:21	05/18/2001	P
Manganese	3.0		*	05/18/2001 13:21	05/18/2001	P
Mercury	0.0020	U	~~H~~ RK 5/21/01	05/21/2001 13:25	05/21/2001	CV
Molybdenum	0.15	U		05/18/2001 13:21	05/18/2001	P
Nickel	0.12	U		05/18/2001 13:21	05/18/2001	P
Phosphorus	8.3			05/18/2001 13:21	05/18/2001	P
Selenium	0.30	U		05/18/2001 13:21	05/18/2001	P
Silver	0.090	U		05/18/2001 13:21	05/18/2001	P
Strontium	1.2			05/18/2001 13:21	05/18/2001	P
Thallium	0.32	B		05/18/2001 13:21	05/18/2001	P
Titanium	0.060	U		05/18/2001 13:21	05/18/2001	P
Vanadium	0.19	B		05/18/2001 13:21	05/18/2001	P
Zinc	1.9		•	05/18/2001 13:21	05/18/2001	P

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-003 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 05/01/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	3.6			05/18/2001 13:23	05/18/2001	P
Antimony	0.30	U		05/18/2001 13:23	05/18/2001	P
Arsenic	0.30	U		05/18/2001 13:23	05/18/2001	P
Barium	0.39	B		05/18/2001 13:23	05/18/2001	P
Beryllium	0.015	U		05/18/2001 13:23	05/18/2001	P
Cadmium	0.030	U		05/18/2001 13:23	05/18/2001	P
Calcium	110.			05/18/2001 13:23	05/18/2001	P
Chromium	0.15	U		05/18/2001 13:23	05/18/2001	P
Cobalt	0.15	U		05/18/2001 13:23	05/18/2001	P
Copper	2.3			05/18/2001 13:23	05/18/2001	P
Iron	2.2			05/18/2001 13:23	05/18/2001	P
Lead	0.15	U		05/18/2001 13:23	05/18/2001	P
Magnesium	15.	B		05/18/2001 13:23	05/18/2001	P
Manganese	1.4		*	05/18/2001 13:23	05/18/2001	P
Mercury	0.0020	U		05/21/2001 13:26	05/21/2001	CV
Molybdenum	0.15	U		05/18/2001 13:23	05/18/2001	P
Nickel	0.12	U		05/18/2001 13:23	05/18/2001	P
Phosphorus	4.2			05/18/2001 13:23	05/18/2001	P
Selenium	0.30	U		05/18/2001 13:23	05/18/2001	P
Silver	0.090	U		05/18/2001 13:23	05/18/2001	P
Strontium	0.62	B		05/18/2001 13:23	05/18/2001	P
Thallium	0.30	U		05/18/2001 13:23	05/18/2001	P
Titanium	0.060	U		05/18/2001 13:23	05/18/2001	P
Vanadium	0.15	U		05/18/2001 13:23	05/18/2001	P
Zinc	1.0		*	05/18/2001 13:23	05/18/2001	P

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-004 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 05/01/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	0.83	B		05/18/2001 13:25	05/18/2001	P
Antimony	0.30	U		05/18/2001 13:25	05/18/2001	P
Arsenic	0.30	U		05/18/2001 13:25	05/18/2001	P
Barium	0.17	B		05/18/2001 13:25	05/18/2001	P
Beryllium	0.015	U		05/18/2001 13:25	05/18/2001	P
Cadmium	0.030	U		05/18/2001 13:25	05/18/2001	P
Calcium	200.			05/18/2001 13:25	05/18/2001	P
Chromium	7.0			05/18/2001 13:25	05/18/2001	P
Cobalt	0.15	U		05/18/2001 13:25	05/18/2001	P
Copper	31.			05/18/2001 13:25	05/18/2001	P
Iron	0.41	B		05/18/2001 13:25	05/18/2001	P
Lead	0.15	U		05/18/2001 13:25	05/18/2001	P
Magnesium	30.	B		05/18/2001 13:25	05/18/2001	P
Manganese	0.80		*	05/18/2001 13:25	05/18/2001	P
Mercury	0.0020	U		05/21/2001 13:28	05/21/2001	CV
Molybdenum	0.15	U		05/18/2001 13:25	05/18/2001	P
Nickel	0.12	U		05/18/2001 13:25	05/18/2001	P
Phosphorus	2.6	B		05/18/2001 13:25	05/18/2001	P
Selenium	0.30	U		05/18/2001 13:25	05/18/2001	P
Silver	0.090	U		05/18/2001 13:25	05/18/2001	P
Strontium	1.1	B		05/18/2001 13:25	05/18/2001	P
Thallium	0.30	U		05/18/2001 13:25	05/18/2001	P
Titanium	0.060	U		05/18/2001 13:25	05/18/2001	P
Vanadium	0.15	U		05/18/2001 13:25	05/18/2001	P
Zinc	0.49		*	05/18/2001 13:25	05/18/2001	P

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-005 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 05/01/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	0.60	U		05/18/2001 13:26	05/18/2001	P
Antimony	0.30	U		05/18/2001 13:26	05/18/2001	P
Arsenic	0.30	U		05/18/2001 13:26	05/18/2001	P
Barium	0.27	B		05/18/2001 13:26	05/18/2001	P
Beryllium	0.015	U		05/18/2001 13:26	05/18/2001	P
Cadmium	0.030	U		05/18/2001 13:26	05/18/2001	P
Calcium	40.			05/18/2001 13:26	05/18/2001	P
Chromium	2.0			05/18/2001 13:26	05/18/2001	P
Cobalt	0.15	U		05/18/2001 13:26	05/18/2001	P
Copper	13.			05/18/2001 13:26	05/18/2001	P
Iron	0.30	U		05/18/2001 13:26	05/18/2001	P
Lead	0.15	U		05/18/2001 13:26	05/18/2001	P
Magnesium	4.0	B		05/18/2001 13:26	05/18/2001	P
Manganese	0.36		*	05/18/2001 13:26	05/18/2001	P
Mercury	0.0020	U		05/21/2001 13:33	05/21/2001	CV
Molybdenum	0.15	U		05/18/2001 13:26	05/18/2001	P
Nickel	0.12	U		05/18/2001 13:26	05/18/2001	P
Phosphorus	1.5	U		05/18/2001 13:26	05/18/2001	P
Selenium	0.30	U		05/18/2001 13:26	05/18/2001	P
Silver	0.090	U		05/18/2001 13:26	05/18/2001	P
Strontium	0.25	B		05/18/2001 13:26	05/18/2001	P
Thallium	0.30	U		05/18/2001 13:26	05/18/2001	P
Titanium	0.060	U		05/18/2001 13:26	05/18/2001	P
Vanadium	0.15	U		05/18/2001 13:26	05/18/2001	P
Zinc	0.83		*	05/18/2001 13:26	05/18/2001	P

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

505

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-006 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 04/20/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	0.71	B		05/18/2001 13:28	05/18/2001	P
Antimony	0.30	U		05/18/2001 13:28	05/18/2001	P
Arsenic	0.30	U		05/18/2001 13:28	05/18/2001	P
Barium	0.69			05/18/2001 13:28	05/18/2001	P
Beryllium	0.015	U		05/18/2001 13:28	05/18/2001	P
Cadmium	0.030	U		05/18/2001 13:28	05/18/2001	P
Calcium	270.			05/18/2001 13:28	05/18/2001	P
Chromium	0.15	U		05/18/2001 13:28	05/18/2001	P
Cobalt	0.15	U		05/18/2001 13:28	05/18/2001	P
Copper	0.42			05/18/2001 13:28	05/18/2001	P
Iron	0.65			05/18/2001 13:28	05/18/2001	P
Lead	0.15	U		05/18/2001 13:28	05/18/2001	P
Magnesium	26.	B		05/18/2001 13:28	05/18/2001	P
Manganese	0.67		*	05/18/2001 13:28	05/18/2001	P
Mercury	0.0020	U	~~H~~ RK	05/21/2001 13:35	05/21/2001	CV
Molybdenum	0.15	U	5/21/01	05/18/2001 13:28	05/18/2001	P
Nickel	0.12	U		05/18/2001 13:28	05/18/2001	P
Phosphorus	2.7	B		05/18/2001 13:28	05/18/2001	P
Selenium	0.30	U		05/18/2001 13:28	05/18/2001	P
Silver	0.090	U		05/18/2001 13:28	05/18/2001	P
Strontium	1.4			05/18/2001 13:28	05/18/2001	P
Thallium	0.30	U		05/18/2001 13:28	05/18/2001	P
Titanium	0.060	U		05/18/2001 13:28	05/18/2001	P
Vanadium	0.15	U		05/18/2001 13:28	05/18/2001	P
Zinc	0.79		*	05/18/2001 13:28	05/18/2001	P

Color Before: colorless **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-007 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 05/01/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	1.2	B		05/18/2001 13:30	05/18/2001	P
Antimony	0.30	U		05/18/2001 13:30	05/18/2001	P
Arsenic	0.30	U		05/18/2001 13:30	05/18/2001	P
Barium	0.54	B		05/18/2001 13:30	05/18/2001	P
Beryllium	0.015	U		05/18/2001 13:30	05/18/2001	P
Cadmium	0.030	U		05/18/2001 13:30	05/18/2001	P
Calcium	610.			05/18/2001 13:30	05/18/2001	P
Chromium	0.15	U		05/18/2001 13:30	05/18/2001	P
Cobalt	0.15	U		05/18/2001 13:30	05/18/2001	P
Copper	0.84			05/18/2001 13:30	05/18/2001	P
Iron	0.53	B		05/18/2001 13:30	05/18/2001	P
Lead	0.15	U		05/18/2001 13:30	05/18/2001	P
Magnesium	48.			05/18/2001 13:30	05/18/2001	P
Manganese	0.57		*	05/18/2001 13:30	05/18/2001	P
Mercury	0.0020	U		05/21/2001 13:36	05/21/2001	CV
Molybdenum	0.15	U		05/18/2001 13:30	05/18/2001	P
Nickel	0.12	U		05/18/2001 13:30	05/18/2001	P
Phosphorus	7.3			05/18/2001 13:30	05/18/2001	P
Selenium	0.30	U		05/18/2001 13:30	05/18/2001	P
Silver	0.090	U		05/18/2001 13:30	05/18/2001	P
Strontium	2.7			05/18/2001 13:30	05/18/2001	P
Thallium	0.30	U		05/18/2001 13:30	05/18/2001	P
Titanium	0.060	U		05/18/2001 13:30	05/18/2001	P
Vanadium	0.15	U		05/18/2001 13:30	05/18/2001	P
Zinc	1.5		*	05/18/2001 13:30	05/18/2001	P

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-008 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 05/01/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	0.61	B		05/18/2001 13:32	05/18/2001	P
Antimony	0.30	U		05/18/2001 13:32	05/18/2001	P
Arsenic	0.30	U		05/18/2001 13:32	05/18/2001	P
Barium	0.54	B		05/18/2001 13:32	05/18/2001	P
Beryllium	0.015	U		05/18/2001 13:32	05/18/2001	P
Cadmium	0.030	U		05/18/2001 13:32	05/18/2001	P
Calcium	310.			05/18/2001 13:32	05/18/2001	P
Chromium	0.15	U		05/18/2001 13:32	05/18/2001	P
Cobalt	0.15	U		05/18/2001 13:32	05/18/2001	P
Copper	0.31			05/18/2001 13:32	05/18/2001	P
Iron	0.42	B		05/18/2001 13:32	05/18/2001	P
Lead	0.15	U		05/18/2001 13:32	05/18/2001	P
Magnesium	18.	B		05/18/2001 13:32	05/18/2001	P
Manganese	0.26		*	05/18/2001 13:32	05/18/2001	P
Mercury	0.0020	U		05/21/2001 13:38	05/21/2001	CV
Molybdenum	0.15	U		05/18/2001 13:32	05/18/2001	P
Nickel	0.12	U		05/18/2001 13:32	05/18/2001	P
Phosphorus	2.1	B		05/18/2001 13:32	05/18/2001	P
Selenium	0.30	U		05/18/2001 13:32	05/18/2001	P
Silver	0.090	U		05/18/2001 13:32	05/18/2001	P
Strontium	1.3			05/18/2001 13:32	05/18/2001	P
Thallium	0.30	U		05/18/2001 13:32	05/18/2001	P
Titanium	0.060	U		05/18/2001 13:32	05/18/2001	P
Vanadium	0.15	U		05/18/2001 13:32	05/18/2001	P
Zinc	0.50		*	05/18/2001 13:32	05/18/2001	P

Color Before: colorless **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-009 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 05/08/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	0.78	B		05/18/2001 13:33	05/18/2001	P
Antimony	0.30	U		05/18/2001 13:33	05/18/2001	P
Arsenic	0.31	B		05/18/2001 13:33	05/18/2001	P
Barium	0.57	B		05/18/2001 13:33	05/18/2001	P
Beryllium	0.015	U		05/18/2001 13:33	05/18/2001	P
Cadmium	0.030	U		05/18/2001 13:33	05/18/2001	P
Calcium	540.			05/18/2001 13:33	05/18/2001	P
Chromium	0.15	U		05/18/2001 13:33	05/18/2001	P
Cobalt	0.15	U		05/18/2001 13:33	05/18/2001	P
Copper	0.34			05/18/2001 13:33	05/18/2001	P
Iron	0.41	B		05/18/2001 13:33	05/18/2001	P
Lead	0.15	U		05/18/2001 13:33	05/18/2001	P
Magnesium	63.			05/18/2001 13:33	05/18/2001	P
Manganese	0.23		*	05/18/2001 13:33	05/18/2001	P
Mercury	0.0020	U		05/21/2001 13:40	05/21/2001	CV
Molybdenum	0.15	U		05/18/2001 13:33	05/18/2001	P
Nickel	0.12	U		05/18/2001 13:33	05/18/2001	P
Phosphorus	3.7			05/18/2001 13:33	05/18/2001	P
Selenium	0.30	U		05/18/2001 13:33	05/18/2001	P
Silver	0.090	U		05/18/2001 13:33	05/18/2001	P
Strontium	2.7			05/18/2001 13:33	05/18/2001	P
Thallium	0.30	U		05/18/2001 13:33	05/18/2001	P
Titanium	0.060	U		05/18/2001 13:33	05/18/2001	P
Vanadium	0.20	B		05/18/2001 13:33	05/18/2001	P
Zinc	0.35		*	05/18/2001 13:33	05/18/2001	P

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

509

Form 1

INORGANIC ANALYSIS DATA SHEET

Lab Name: Rocky Flats

Lab Sample ID: X01C0130-010 (Bldg. 776 Solid Sample)

Matrix: TCLP EXTRACT **SDG No:** MAY08

Date Sampled: 05/08/2001 **QC Report No:** SD050801

Receipt Date: 05/08/2001

% Solids n/a

Elements Identified and Measured

Analyte	Concentration (mg/L)	C	Q	Date/Time Analyzed	Prep Date	M
Aluminum	0.75	B		05/18/2001 13:35	05/18/2001	P
Antimony	0.30	U		05/18/2001 13:35	05/18/2001	P
Arsenic	0.30	U		05/18/2001 13:35	05/18/2001	P
Barium	0.65			05/18/2001 13:35	05/18/2001	P
Beryllium	0.015	U		05/18/2001 13:35	05/18/2001	P
Cadmium	0.030	U		05/18/2001 13:35	05/18/2001	P
Calcium	510.			05/18/2001 13:35	05/18/2001	P
Chromium	0.15	U		05/18/2001 13:35	05/18/2001	P
Cobalt	0.26	B		05/18/2001 13:35	05/18/2001	P
Copper	0.30			05/18/2001 13:35	05/18/2001	P
Iron	0.53	B		05/18/2001 13:35	05/18/2001	P
Lead	0.15	U		05/18/2001 13:35	05/18/2001	P
Magnesium	36.			05/18/2001 13:35	05/18/2001	P
Manganese	0.27		*	05/18/2001 13:35	05/18/2001	P
Mercury	0.0020	U		05/21/2001 13:41	05/21/2001	CV
Molybdenum	0.15	U		05/18/2001 13:35	05/18/2001	P
Nickel	0.12	U		05/18/2001 13:35	05/18/2001	P
Phosphorus	3.6			05/18/2001 13:35	05/18/2001	P
Selenium	0.30	U		05/18/2001 13:35	05/18/2001	P
Silver	0.090	U		05/18/2001 13:35	05/18/2001	P
Strontium	2.1			05/18/2001 13:35	05/18/2001	P
Thallium	0.30	U		05/18/2001 13:35	05/18/2001	P
Titanium	0.060	U		05/18/2001 13:35	05/18/2001	P
Vanadium	0.15	U		05/18/2001 13:35	05/18/2001	P
Zinc	0.34		*	05/18/2001 13:35	05/18/2001	P

Color Before: yellow **Clarity Before:** clear

Color After: colorless **Clarity After:** clear

Texture: **Artifacts:**

Comments:

Form 2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

ICV Source: SPEX/EPA **CCV Source:** SPEX/EPA

Concentration Units: mg/L

	Initial Calibration				Continuing Calibration						(1)
Analyte	True	Found	%R	QC Criteria	True	Found	%R	Found	%R	QC Criteria	M
Aluminum	10.00	10.48	104.8	90-110	10.00	10.45	104.5	10.49	104.9	90-110	P
Antimony	10.00	9.940	99.40	90-110	10.00	9.926	99.26	10.02	100.2	90-110	P
Arsenic	10.00	9.294	92.94	90-110	10.00	9.325	93.25	9.309	93.09	90-110	P
Barium	5.000	4.843	96.85	90-110	5.000	4.880	97.61	4.868	97.36	90-110	P
Beryllium	2.000	1.927	96.36	90-110	2.000	1.931	96.53	1.929	96.46	90-110	P
Cadmium	2.000	1.945	97.25	90-110	2.000	1.951	97.57	1.944	97.21	90-110	P
Calcium	10.00	9.479	94.79	90-110	10.00	9.522	95.22	9.493	94.93	90-110	P
Chromium	5.000	5.000	100.0	90-110	5.000	5.012	100.2	4.994	99.89	90-110	P
Cobalt	5.000	4.994	99.88	90-110	5.000	5.038	100.8	5.024	100.5	90-110	P
Copper	5.000	4.856	97.12	90-110	5.000	4.921	98.43	4.900	98.00	90-110	P
Iron	10.00	9.876	98.76	90-110	10.00	10.00	100.0	9.947	99.47	90-110	P
Lead	10.00	9.778	97.78	90-110	10.00	9.781	97.81	9.736	97.36	90-110	P
Magnesium	10.00	9.474	94.74	90-110	10.00	9.500	95.00	9.460	94.60	90-110	P
Manganese	5.000	4.981	99.61	90-110	5.000	5.006	100.1	4.995	99.89	90-110	P
Mercury	0.0100	0.009	98.89	80-120	0.010	0.010	101.0	0.009	99.75	80-120	CV
Molybdenum	5.000	4.809	96.17	90-110	5.000	4.855	97.10	4.814	96.28	90-110	P
Nickel	5.000	5.017	100.3	90-110	5.000	5.037	100.7	5.022	100.4	90-110	P
Phosphorus	50.00	52.79	105.6	90-110	50.00	52.76	105.5	52.65	105.3	90-110	P
Selenium	10.00	9.948	99.48	90-110	10.00	9.958	99.58	9.801	98.01	90-110	P
Silver	2.000	1.966	98.30	90-110	2.000	1.999	99.97	1.993	99.66	90-110	P
Strontium	2.000	1.936	96.79	90-110	2.000	1.948	97.39	1.944	97.21	90-110	P
Thallium	10.00	9.521	95.21	90-110	10.00	10.05	100.5	10.14	101.4	90-110	P
Titanium	2.000	1.994	99.72	90-110	2.000	2.011	100.5	2.007	100.4	90-110	P
Vanadium	5.000	4.861	97.23	90-110	5.000	4.883	97.66	4.865	97.30	90-110	P
Zinc	5.000	4.965	99.31	90-110	5.000	4.972	99.44	4.956	99.12	90-110	P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

SLL

Form 2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

ICV Source: n/a **CCV Source:** SPEX/EPA

Concentration Units: mg/L

	Initial Calibration				Continuing Calibration						(1)
Analyte	True	Found	% R	QC Criteria	True	Found	% R	Found	% R	QC Criteria	M
Aluminum					10.00	10.53	105.3			90-110	P
Antimony					10.00	10.03	100.3			90-110	P
Arsenic					10.00	9.487	94.87			90-110	P
Barium					5.000	4.919	98.37			90-110	P
Beryllium					2.000	1.950	97.50			90-110	P
Cadmium					2.000	1.968	98.41			90-110	P
Calcium					10.00	9.576	95.76			90-110	P
Chromium					5.000	5.055	101.1			90-110	P
Cobalt					5.000	5.094	101.9			90-110	P
Copper					5.000	4.949	98.99			90-110	P
Iron					10.00	10.25	102.5			90-110	P
Lead					10.00	9.868	98.68			90-110	P
Magnesium					10.00	9.578	95.78			90-110	P
Manganese					5.000	5.061	101.2			90-110	P
Molybdenum					5.000	4.845	96.90			90-110	P
Nickel					5.000	5.076	101.5			90-110	P
Phosphorus					50.00	53.08	106.2			90-110	P
Selenium					10.00	10.04	100.4			90-110	P
Silver					2.000	2.001	100.1			90-110	P
Strontium					2.000	1.961	98.07			90-110	P
Thallium					10.00	10.02	100.2			90-110	P
Titanium					2.000	2.028	101.4			90-110	P
Vanadium					5.000	4.871	97.42			90-110	P
Zinc					5.000	5.013	100.3			90-110	P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

Form 2B

CRDL STANDARD FOR AA AND ICP

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

AA CRDL Source: SCP SCIENCE

ICP CRDL Source: SCP SCIENCE

	Concentration Units: mg/L					
		Initial		Final		
Analyte	True	Found	%R	Found	%R	M
Aluminum						P
Antimony	0.2000	0.1982	99.10	0.2488	124.4	P
Arsenic	0.2000	0.2005	100.2	0.1560	78.00	P
Barium						P
Beryllium	0.01000	0.006900	69.00	0.007000	70.00	P
Cadmium	0.02000	0.01390	69.50	0.01300	65.00	P
Calcium						P
Chromium	0.1000	0.06880	68.80	0.07050	70.50	P
Cobalt	0.1000	0.07380	73.80	0.08320	83.20	P
Copper	0.1000	0.08260	82.60	0.06280	62.80	P
Iron	0.2000	0.1543	77.15	0.1945	97.25	P
Lead	0.1000	0.08370	83.70	0.07860	78.60	P
Magnesium						P
Manganese	0.03000	0.02050	68.33	0.02100	70.00	P
Mercury	0.002000	0.001937	96.85	0.002091	104.6	CV
Molybdenum	0.4000	0.2805	70.12	0.2746	68.65	P
Nickel	0.08000	0.05920	74.00	0.05400	67.50	P
Phosphorus	1.000	0.8063	80.63	0.7688	76.88	P
Selenium	0.2000	0.2125	106.3	0.1967	98.35	P
Silver	0.06000	0.07950	132.5	0.06680	111.3	P
Strontium	0.4000	0.2836	70.90	0.2852	71.30	P
Thallium	0.2000	0.1827	91.35	0.1622	81.10	P
Titanium	0.04000	0.02780	69.50	0.02460	61.50	P
Vanadium	0.1000	0.07520	75.20	0.07440	74.40	P
Zinc	0.1000	0.06590	65.90	0.06620	66.20	P

Comments:

Form 3

BLANKS

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

Preparation Blank Matrix (soil/water): WATER

Analyte	Initial Calib. Blank (mg/L)	C	Continuing Calibration Blank Value(s) (mg/L) 1	C	2	C	3	C	Preparation Blank 1 (mg/L)	C	(1) M
Aluminum	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	P
Antimony	0.100	U	0.100	U	-0.113	B	0.100	U	0.100	U	P
Arsenic	0.100	U	0.100	U	0.100	U	0.100	U	0.100	U	P
Barium	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Beryllium	0.00500	U	0.00500	U	0.00500	U	0.00500	U	0.00500	U	P
Cadmium	0.0100	U	0.0100	U	0.0100	U	0.0100	U	0.0100	U	P
Calcium	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	P
Chromium	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Cobalt	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Copper	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Iron	0.100	U	0.100	U	0.100	U	0.100	U	0.100	U	P
Lead	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Magnesium	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	P
Manganese	0.0100	U	0.0100	U	0.0100	U	0.0100	U	0.0100	U	P
Mercury	0.00100	U	0.00100	U	0.00100	U			0.00100	U	CV
Molybdenum	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Nickel	0.0400	U	0.0400	U	0.0400	U	0.0400	U	0.0400	U	P
Phosphorus	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	P
Selenium	0.100	U	-0.112	B	0.100	U	-0.108	B	0.100	U	P
Silver	0.0300	U	0.0300	U	0.0300	U	0.0300	U	0.0300	U	P
Strontium	0.0100	U	0.0100	U	0.0100	U	0.0100	U	0.0100	U	P
Thallium	0.100	U	0.100	U	0.100	U	0.100	U	-0.121	B	P
Titanium	0.0200	U	0.0200	U	0.0200	U	0.0200	U	0.0200	U	P
Vanadium	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P
Zinc	0.0500	U	0.0500	U	0.0500	U	0.0500	U	0.0500	U	P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

Form 4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: Rocky Flats **SDG No:** MAY08

Check Sample Source: SPEX/EPA **QC Report No:** SD050801

Concentration Units

Analyte	True		Initial Found			Final Found		
	Sol. A	Sol. AB	Sol. A1	Sol. A1B1	%R [1]	Sol. A2	Sol. A2B2	%R [1]
Aluminum	500	500	486	501	100	479	488	97.7
Antimony		1.00	0.0357	1.03	103	-0.0172	0.984	98.4
Arsenic		1.00	-0.0858	0.959	95.9	-0.0731	0.998	99.8
Barium		0.500	0.00710	0.493	98.5	0.00610	0.483	96.6
Beryllium		0.500	0.000400	0.497	99.4	0.000300	0.490	98.1
Cadmium		1.00	-0.00960	0.920	92.0	-0.00900	0.907	90.7
Calcium	500	500	469	481	96.3	463	470	94.1
Chromium		0.500	-0.0259	0.464	92.7	-0.0178	0.463	92.5
Cobalt		0.500	0.0135	0.491	98.3	0.0134	0.488	97.6
Copper		0.500	-0.0136	0.472	94.4	-0.00110	0.470	93.9
Iron	200	200	184	188	93.9	182	186	92.9
Lead		1.00	-0.0495	0.875	87.5	-0.0128	0.887	88.7
Magnesium	500	500	490	495	99.1	488	492	98.4
Manganese		0.500	-0.00340	0.480	96.0	-0.00300	0.475	95.0
Molybdenum		1.00	-0.00880	0.956	95.6	0.0193	0.959	95.9
Nickel		1.00	-0.00980	0.920	92.0	-0.00580	0.908	90.8
Phosphorus			-0.123	0.0775		-0.149	0.161	
Selenium		1.00	-0.0740	0.895	89.5	-0.0470	0.968	96.8
Silver		1.00	0.0187	1.02	102	0.0109	0.990	99.0
Strontium		1.00	0.00250	1.01	101	0.00140	0.998	99.8
Thallium		1.00	0.0483	1.10	110	0.0507	1.10	110
Titanium			-0.00250	-0.00180		-0.00500	-0.00480	
Vanadium		0.500	0.0001000	0.495	99.0	0.0266	0.480	96.0
Zinc		1.00	0.00660	0.994	99.4	0.000900	0.974	97.4

(1) %R = Found/True x 100 , if True <> 0, the Control Limit = 80 - 120%

Comments:

Form 5a

Pre-Digest Matrix Spike Sample Recovery

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Lab Sample ID: X01C0130-001 **% Solids:** 0 **Matrix:** TCLP Extract

MS Sample ID: X01C0130-001M **% Solids:** 0 **Level (low/med):**

Concentration Units: mg/L

Analyte	Control Limit	Matrix Spike (SSR)	C	Sample (SR)	C	Spike Added (SA)	(2) %R	Q	(1) M
Aluminum	75 - 125	16.6272		0.777600	B	15.00	106.		P
Antimony	75 - 125	12.6492		0.3	U	12.00	105.		P
Arsenic	75 - 125	6.43680		0.3	U	6.000	107.		P
Barium	75 - 125	6.81420		0.290100	B	6.000	109.		P
Beryllium	75 - 125	6.32880		0.02	U	6.000	105.		P
Cadmium	75 - 125	6.40680		0.0420000	B	6.000	106.		P
Calcium		66.9987		70.4520		0.0			NR
Chromium	75 - 125	9.82320		3.47010		6.000	106.		P
Cobalt	75 - 125	3.33840		0.1	U	3.000	111.		P
Copper	75 - 125	37.7163		23.0439		15.00	97.8		P
Iron	75 - 125	16.6692		0.651600		15.00	107.		P
Lead	75 - 125	6.41730		0.1	U	6.000	107.		P
Magnesium		5.03670	B	5.30940	B	0.0			NR
Manganese	75 - 125	7.07640		0.569100		6.000	108.		P
Mercury	75 - 125	0.0511572		0.002	U	0.05000	102.		CV
Molybdenum	75 - 125	3.29790		0.1	U	3.000	110.		P
Nickel	75 - 125	6.60990		0.1	U	6.000	110.		P
Phosphorus		6.68880		2.20320	B	0.0			NR
Selenium	75 - 125	16.2369		0.3	U	15.00	108.		P
Silver	75 - 125	6.39120		0.09	U	6.000	107.		P
Strontium	75 - 125	3.57870		0.394500	B	3.000	106.		P
Thallium	75 - 125	12.7668		0.3	U	12.00	106.		P
Titanium	75 - 125	6.68340		0.06	U	6.000	111.		P
Vanadium	75 - 125	6.66720		0.1	U	6.000	111.		P
Zinc	75 - 125	18.1785		1.66740		15.00	110.		P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA (NR = spike not required)

(2) %R = 100 • (SSR - SR) / SA ; Note that %R is calculated before values for SSR, SR, and SA are rounded for reporting. Consequently, if %R is recalculated from the reported values, differences can occur due to the rounding .

Comments:

Form 5b

Post-Digest Matrix Spike Sample Recovery

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Lab Sample ID: X01C0130-001 **Matrix:** TCLP Extract

AS Sample ID: X01C0130-001I **Level (low/med):**

Concentration Units: mg/L

Analyte	Control Limit	Analytical Spike (SSR)	C	Sample (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75.0 - 125	5.48		0.259	B	5.00	104.		P
Antimony	75.0 - 125	4.09		0.1	U	4.00	102.		P
Arsenic	75.0 - 125	2.12		0.1	U	2.00	106.		P
Barium	75.0 - 125	2.25		0.0967	B	2.00	107.		P
Beryllium	75.0 - 125	2.08		0.005	U	2.00	104.		P
Cadmium	75.0 - 125	2.11		0.0140	B	2.00	105.		P
Calcium		23.0		23.5		0.0			P
Chromium	75.0 - 125	3.28		1.16		2.00	106.		P
Cobalt	75.0 - 125	1.10		0.05	U	1.00	110.		P
Copper	75.0 - 125	12.7		7.68		5.00	100.		P
Iron	75.0 - 125	5.58		0.217		5.00	107.		P
Lead	75.0 - 125	2.13		0.05	U	2.00	106.		P
Magnesium		1.72	B	1.77	B	0.0			P
Manganese	75.0 - 125	2.34		0.190		2.00	107.		P
Mercury	75.0 - 125	0.0250		0.001	U	0.0250	100.		CV
Molybdenum	75.0 - 125	1.07		0.05	U	1.00	107.		P
Nickel	75.0 - 125	2.17		0.04	U	2.00	109.		P
Phosphorus		2.29		0.734	B	0.0			P
Selenium	75.0 - 125	5.38		0.1	U	5.00	108.		P
Silver	75.0 - 125	2.10		0.03	U	2.00	105.		P
Strontium	75.0 - 125	1.18		0.132	B	1.00	105.		P
Thallium	75.0 - 125	4.73		0.1	U	4.00	118.		P
Titanium	75.0 - 125	2.21		0.02	U	2.00	110.		P
Vanadium	75.0 - 125	2.17		0.05	U	2.00	109.		P
Zinc	75.0 - 125	6.01		0.556		5.00	109.		P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA (NR = spike not required)

(2) %R = 100 * (SSR - SR) / SA

Comments:

5|7

Form 6

Sample and Sample Duplicate Result Comparison

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Dup Sample ID: X01C0130-001D **% Solids:** N/A **Level (low/med):**

Lab Sample ID: X01C0130-001 **% Solids:** N/A **Matrix:** TCLP Extract

Concentration Units: mg/L

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	(2) RPD	Q	(1) M
Aluminum	± 1.2 mg/L	0.778	B	0.6	U	200.		P
Antimony		0.3	U	0.3	U			P
Arsenic		0.3	U	0.3	U			P
Barium	± 0.60 mg/L	0.290	B	0.1	U	200.		P
Beryllium		0.02	U	0.02	U			P
Cadmium	± 0.060 mg/L	0.0420	B	0.0309	B	30.5		P
Calcium	± 30 mg/L	70.5		54.6		25.3		P
Chromium	± 20 %	3.47		3.13		10.3		P
Cobalt		0.1	U	0.1	U			P
Copper	± 20 %	23.0		19.7		15.8		P
Iron	± 0.60 mg/L	0.652		0.342	B	62.4		P
Lead		0.1	U	0.1	U			P
Magnesium	± 30 mg/L	5.31	B	5.10	B	4.10		P
Manganese	± 20 %	0.569		0.456		22.0	*	P
Mercury		0.002	U	0.002	U			CV
Molybdenum		0.1	U	0.1	U			P
Nickel		0.1	U	0.1	U			P
Phosphorus	± 3.0 mg/L	2.20	B	1.93	B	13.2		P
Selenium		0.3	U	0.3	U			P
Silver		0.09	U	0.09	U			P
Strontium	± 1.2 mg/L	0.395	B	0.327	B	18.8		P
Thallium		0.3	U	0.3	U			P
Titanium		0.06	U	0.06	U			P
Vanadium		0.1	U	0.1	U			P
Zinc	± 0.30 mg/L	1.67		1.33		22.8	*	P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

(2) RPD = 100 * | S - D | / ((S + D) / 2)

Comments:

Form 7

LABORATORY CONTROL SAMPLE

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Solid LCS Source: **Sample ID:** EPAQC21A1

Aqueous LCS Source: SPEX

Analyte	Aqueous (mg/L)				Control Limits (%)		(1)
	True	Found	C	%R	Lower Limit	Upper Limit	M
Aluminum	0.0	0.200	U				P
Antimony	4.000	4.27		107.	80.00	120.0	P
Arsenic	4.000	3.97		99.2	80.00	120.0	P
Barium	0.0	0.0500	U				P
Beryllium	4.000	4.04		101.	80.00	120.0	P
Cadmium	4.000	4.14		104.	80.00	120.0	P
Calcium	4.000	4.38	B	110.	80.00	120.0	P
Chromium	4.000	4.21		105.	80.00	120.0	P
Cobalt	4.000	4.24		106.	80.00	120.0	P
Copper	4.000	4.06		101.	80.00	120.0	P
Iron	4.000	4.23		106.	80.00	120.0	P
Lead	4.000	4.15		104.	80.00	120.0	P
Magnesium	4.000	4.06	B	102.	80.00	120.0	P
Manganese	4.000	4.20		105.	80.00	120.0	P
Molybdenum	4.000	4.19		105.	80.00	120.0	P
Nickel	4.000	4.21		105.	80.00	120.0	P
Phosphorus	0.0	1.30					P
Selenium	4.000	4.13		103.	80.00	120.0	P
Silver	0.0	0.0300	U				P
Strontium	4.000	4.10		102.	80.00	120.0	P
Thallium	4.000	4.32		108.	80.00	120.0	P
Titanium	4.000	4.26		106.	80.00	120.0	P
Vanadium	4.000	4.16		104.	80.00	120.0	P
Zinc	4.000	4.15		104.	80.00	120.0	P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

Form 7

LABORATORY CONTROL SAMPLE

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Solid LCS Source: **Sample ID:** EPAQC7A1

Aqueous LCS Source: SPEX

Analyte	Aqueous (mg/L)				Control Limits (%)		(1)
	True	Found	C	%R	Lower Limit	Upper Limit	M
Aluminum	4.000	4.16		104.	80.00	120.0	P
Antimony	0.0	0.100	U				P
Arsenic	0.0	0.100	U				P
Barium	4.000	4.13		103.	80.00	120.0	P
Beryllium	0.0	0.00500	U				P
Cadmium	0.0	0.0100	U				P
Calcium	0.0	0.367	B				P
Chromium	0.0	0.0500	U				P
Cobalt	0.0	0.0500	U				P
Copper	0.0	0.0500	U				P
Iron	0.0	0.115	B				P
Lead	0.0	0.0500	U				P
Magnesium	0.0	0.200	U				P
Manganese	0.0	0.0100	U				P
Molybdenum	0.0	0.0500	U				P
Nickel	0.0	0.0400	U				P
Phosphorus	0.0	0.500	U				P
Selenium	0.0	0.100	U				P
Silver	2.000	2.10		105.	80.00	120.0	P
Strontium	0.0	0.0100	U				P
Thallium	0.0	0.100	U				P
Titanium	0.0	0.0200	U				P
Vanadium	0.0	0.0500	U				P
Zinc	0.0	0.0500	U				P

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

Form 7

LABORATORY CONTROL SAMPLE

Lab Name: Rocky Flats

SDG No: MAY08

QC Report No: SD050801

Solid LCS Source:

Sample ID: XEGCO-10

Aqueous LCS Source: SPEX

Analyte	Aqueous (mg/L)				Control Limits (%)		(1)
	True	Found	C	%R	Lower Limit	Upper Limit	M
Mercury	0.02500	0.0245		97.9	80.00	120.0	CV

(1) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

Form 9

ICP SERIAL DILUTIONS

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Lab Sample ID: X01C0130-001SD

Matrix: TCLP EXTRACT

Concentration Units: mg/L

Analyte	Control Limit (1)	Sample (I)	C	Serial Dil. (S)	C	(2) %D	Q	(3) M
Aluminum	NC	0.259	B	1.	U	100.		P
Antimony	NC	0.1	U	0.5	U			P
Arsenic	NC	0.1	U	0.5	U			P
Barium	NC	0.0967	B	0.2	U	100.		P
Beryllium	NC	0.005	U	0.02	U			P
Cadmium	NC	0.0140	B	0.05	U	100.		P
Calcium	± 10 %	23.5		24.3	B	3.5		P
Chromium	NC	1.16		1.16		0.50		P
Cobalt	NC	0.05	U	0.2	U			P
Copper	± 10 %	7.68		7.78		1.2		P
Iron	NC	0.217		0.715	B	230.		P
Lead	NC	0.05	U	0.2	U			P
Magnesium	NC	1.77	B	1.80	B	1.6		P
Manganese	NC	0.190		0.184		2.7		P
Molybdenum	NC	0.05	U	0.2	U			P
Nickel	NC	0.04	U	0.2	U			P
Phosphorus	NC	0.734	B	2.	U	100.		P
Selenium	NC	0.1	U	0.5	U			P
Silver	NC	0.03	U	0.1	U			P
Strontium	NC	0.132	B	0.122	B	6.8		P
Thallium	NC	0.1	U	0.5	U			P
Titanium	NC	0.02	U	0.1	U			P
Vanadium	NC	0.05	U	0.2	U			P
Zinc	NC	0.556		0.527		5.3		P

(1) NC (no criteria) if I < 5 0* IDL (I is the analyzed concentration, S is the analyzed concentration * 5)

(2) %D = 100 * (I - S) / I

(3) Analytical Method: P - ICP A - Flame AA F - Furnace AA CV - Cold Vapor AA H - Hydride AA

Comments:

Form 10

INSTRUMENT DETECTION LIMITS

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

Instrument Name: JY48P ICP

Analyte	Wave-length (nm)	Background Correction(s)		IDL (mg/L)	RDL (mg/L)	IDL Date	M
		low (nm)	high (nm)				
Aluminum	308.215		308.305	0.20	0.40	04/10/01	P
Antimony	206.833		206.923	0.10	0.20	04/10/01	P
Arsenic	193.759		193.879	0.10	0.20	04/10/01	P
Barium	233.527		233.647	0.050	0.20	04/10/01	P
Beryllium	313.042	312.972		0.0050	0.010	04/10/01	P
Cadmium	226.502		226.552	0.010	0.020	04/10/01	P
Calcium	315.887		315.977	0.20	10	04/10/01	P
Chromium	267.716	267.596		0.050	0.10	04/10/01	P
Cobalt	228.616	228.616		0.050	0.10	04/10/01	P
Copper	324.75		324.800	0.050	0.10	04/10/01	P
Iron	238.204		238.294	0.10	0.20	04/10/01	P
Lead	220.353	220.313		0.050	0.10	04/10/01	P
Magnesium	279.553		279.643	0.20	10	04/10/01	P
Manganese	257.61		257.730	0.010	0.030	04/10/01	P
Molybdenum	202.03	201.99		0.050	0.40	04/10/01	P
Nickel	231.604		231.654	0.040	0.080	04/10/01	P
Phosphorus	214.914	214.874		0.50	1.0	04/10/01	P
Selenium	196.09		196.180	0.10	0.20	04/10/01	P
Silver	328.068		328.158	0.030	0.060	04/10/01	P
Strontium	407.771		407.891	0.010	0.40	04/10/01	P
Thallium	190.864	190.744		0.10	0.20	04/10/01	P
Titanium	334.941		335.061	0.020	0.040	04/10/01	P
Vanadium	292.402		292.522	0.050	0.10	04/10/01	P
Zinc	213.856	213.786		0.050	0.10	04/10/01	P

Comments:

Form 10

INSTRUMENT DETECTION LIMITS

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

Instrument Name: CVAA #400-1

Analyte	Wave-length (nm)	Background Correction(s)		IDL (mg/L)	RDL (mg/L)	IDL Date	M
		low (nm)	high (nm)				
Mercury	253.6			0.0010	0.0020	04/10/01	CV

Comments:

Form 11

ICP Interelement Correction Factors (Annual)

Lab Name: Rocky Flats

QC Report No: SD050801 SDG No: MAY08

ICP ID No: JY48P ICP Date: 1/10/01

Analyte	(nm)	Interelement Correction Factors (x .001)																	
		Al	Ba	Ca	Co	Cr	Cu	Fe	Mg	Mn	Mo	Ni	P	Pu	Se	Ti	U	V	Zn
Aluminum	308.21			0.55				-0.42	0.12	1.0	38			2.0			-3.1	7.2	
Antimony	206.83	0.090		-0.010	0.00	35		0.00	0.20			-0.66		0.26			-1.2	0.54	-1.9
Arsenic	193.76	4.8		0.010	0.46	2.5		0.030	0.00		1.3	-0.27		-0.65			0.93	6.2	
Barium	233.53			0.010				0.00			0.20	-0.28		0.00			0.030	0.74	
Beryllium	313.04													-0.010			-0.030	2.3	
Cadmium	226.50	0.030		0.00	0.040			0.030		-0.010		-0.020		0.050			-0.21		
Calcium	315.89							0.30	0.73					-0.64			-0.040		
Chromium	267.72	0.00							0.38	1.1				-0.26		0.15	0.58	-0.17	
Cobalt	228.62		0.30			0.28		0.040				0.18		0.11			-0.060		
Copper	324.75							0.050			0.31			3.1			-0.18	-0.44	
Lead	220.35	1.1		0.010	-0.60	-0.080		0.080	0.00			0.72		-0.29			0.060	0.010	0.30
Magnesium	279.55													0.050					
Manganese	257.61							0.010	0.050					0.16			-0.15		
Molybdenum	202.03							-0.040		0.95				0.35			-0.71		
Nickel	231.60	0.00						0.37			-1.8			0.28			0.090		
Phosphorus	214.91	0.76		-0.050	-1.6		13	0.15		-3.7	7.5	12		-1.4	-0.30		0.19	-91	1,300
Plutonium	299.64																76		

0057

SQA ID: INOR-01-A1 Report Template: c:\datarev\crreports\WippF11_r5.rpt

Form 11

ICP Interelement Correction Factors (Annual)

Lab Name: Rocky Flats

QC Report No: SD050801 SDG No: MAY08

Analyte	(nm)	Interelement Correction Factors (x .001)																
		Al	Ba	Ca	Co	Cr	Cu	Fe	Mg	Mn	Mo	Ni	P	Pu	Se	Ti	U	V	Zn
Selenium	196.09	0.15		-0.10		0.18		-0.69	0.00	1.2	-17	-0.030		1.2			-1.4	-0.43	
Silver	328.07			0.080			0.080				-1.0			-0.30			0.70	-0.22	
Strontium	407.77			0.040										0.020					
Thallium	190.86	0.00		0.010	3.3	-0.050		0.060		1.0	3.4	-1.9	0.00	-0.10			0.24	-1.9	0.33
Titanium	334.94			0.010		0.43								-0.090			0.15		
Uranium	367.01							7.2											
Vanadium	292.40							0.070			0.11			0.53		1.4	-3.0		
Zinc	213.86					-0.15	0.37	0.020	0.030			8.7		-0.32			-0.030	-0.28	

* If Analyte not listed, it has not IEC correction factors applied.

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Form 12

ICP LINEAR RANGES

(SEMIANNUAL)

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

ICP ID No: JY48P ICP **Date:** 04/10/01

Analyte	Integration (Sec.)	Concentration (mg/L)	M
Aluminum	10	5,000	P
Antimony	10	1,000	P
Arsenic	10	1,000	P
Barium	10	500	P
Beryllium	10	125	P
Cadmium	10	500	P
Calcium	10	2,500	P
Chromium	10	1,000	P
Cobalt	10	1,000	P
Copper	10	1,000	P
Iron	10	2,000	P
Lead	10	1,000	P
Magnesium	10	500	P
Manganese	10	500	P
Molybdenum	10	1,000	P
Nickel	10	1,000	P
Phosphorus	10	1,000	P
Selenium	10	1,000	P
Silver	10	100	P
Strontium	10	300	P
Thallium	10	1,000	P
Titanium	10	900	P
Vanadium	10	1,000	P
Zinc	10	750	P

Comments:

Form 13

SAMPLE PREPARATION LOG

Lab Name: Rocky Flats **SDG No:** MAY08

QC Report No: SD050801

Prep Batch: 051801 P

No.	Sample ID Number	Preparation Date	Initial Sample Size	Final Volume (mL)	Sample Preparation Factor
1	EPAQC21A1	05/18/2001	20.00 mL	20.00	1.000
2	EPAQC7A1	05/18/2001	20.00 mL	20.00	1.000
3	TCBLK1	05/18/2001	20.00 mL	20.00	1.000
4	X01C0130-001	05/18/2001	10.00 mL	30.00	3.000
5	X01C0130-001D	05/18/2001	10.00 mL	30.00	3.000
6	X01C0130-001M	05/18/2001	10.00 mL	30.00	3.000
7	X01C0130-002	05/18/2001	10.00 mL	30.00	3.000
8	X01C0130-003	05/18/2001	10.00 mL	30.00	3.000
9	X01C0130-004	05/18/2001	10.00 mL	30.00	3.000
10	X01C0130-005	05/18/2001	10.00 mL	30.00	3.000
11	X01C0130-006	05/18/2001	10.00 mL	30.00	3.000
12	X01C0130-007	05/18/2001	10.00 mL	30.00	3.000
13	X01C0130-008	05/18/2001	10.00 mL	30.00	3.000
14	X01C0130-009	05/18/2001	10.00 mL	30.00	3.000
15	X01C0130-010	05/18/2001	10.00 mL	30.00	3.000
16	X01C0131-001	05/18/2001	10.00 mL	30.00	3.000
17	X01C0131-002	05/18/2001	10.00 mL	30.00	3.000

Form 13

SAMPLE PREPARATION LOG

Lab Name: Rocky Flats

SDG No: MAY08

QC Report No: SD050801

Prep Batch: 052101 CV

No.	Sample ID Number	Preparation Date	Initial Sample Size	Final Volume (mL)	Sample Preparation Factor
18	TCBLK1	05/21/2001	40.00 mL	40.00	1.000
19	X01C0130-001	05/21/2001	20.00 mL	40.00	2.000
20	X01C0130-001D	05/21/2001	20.00 mL	40.00	2.000
21	X01C0130-001M	05/21/2001	20.00 mL	40.00	2.000
22	X01C0130-002	05/21/2001	20.00 mL	40.00	2.000
23	X01C0130-003	05/21/2001	20.00 mL	40.00	2.000
24	X01C0130-004	05/21/2001	20.00 mL	40.00	2.000
25	X01C0130-005	05/21/2001	20.00 mL	40.00	2.000
26	X01C0130-006	05/21/2001	20.00 mL	40.00	2.000
27	X01C0130-007	05/21/2001	20.00 mL	40.00	2.000
28	X01C0130-008	05/21/2001	20.00 mL	40.00	2.000
29	X01C0130-009	05/21/2001	20.00 mL	40.00	2.000
30	X01C0130-010	05/21/2001	20.00 mL	40.00	2.000
31	X01C0131-001	05/21/2001	20.00 mL	40.00	2.000
32	X01C0131-002	05/21/2001	20.00 mL	40.00	2.000
33	XEGCO-10	05/21/2001	40.00 mL	40.00	1.000

Form 14

ANALYSIS RUN LOG

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

Instrument ID No: JY48P ICP **Run No:** JY48P ICP:5/18/01 1:21:58 PM **Method:** P

Start Date: 05/18/2001 **End Date:** 05/18/2001

Time	Sample ID	Total DF*	Ag	Al	As	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	Mg	Mn	Mo	Ni	P	Pb	Sb	Se	Sr	Ti	Tl	V	Zn
12:40	ICV1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:46	ICB1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:55	CRDL1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:58	INTA1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12:59	INTAB1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:03	EPAQC21A1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:05	EPAQC7A1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:07	X01C0130-001	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:09	X01C0130-001M	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:10	X01C0130-001I	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:13	X01C0130-001SD	5.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	k	x	x	x	x	x	x	x	x	x
13:15	X01C0130-001D	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:17	CCV1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:20	CCB1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:21	TCBLK1	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:21	X01C0130-002	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:23	X01C0130-003	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

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Form 14

ANALYSIS RUN LOG

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

			Ag	Al	As	Ba	Be	Ca	Cd	Co	Cr	Cu	Fe	Mg	Mn	Mo	Ni	P	Pb	Sb	Se	Sr	Ti	Tl	V	Zn
13:25	X01C0130-004	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:26	X01C0130-005	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:28	X01C0130-006	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:30	X01C0130-007	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:32	X01C0130-008	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:33	X01C0130-009	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:35	X01C0130-010	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:37	CCV2	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:40	CCB2	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:42	X01C0131-001	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:43	X01C0131-002	3.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:45	CRDL2	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:49	INTA2	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:50	INTAB2	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:52	CCV3	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13:56	CCB3	1.000	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

* Prep Factor x Analytical Dilution Factor

0063

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Form 14

ANALYSIS RUN LOG

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

Instrument ID No: CVAA #400-1 **Run No:** CVAA#400-1_052101_1300 **Method:** CV

Start Date: 05/21/2001 **End Date:** 05/21/2001

Time	Sample ID	Total DF*	Hg
13:00	0 ppbstd	1.000	X
13:01	2.5 ppbstd	1.000	X
13:03	5 ppb std	1.000	X
13:05	10 ppb std	1.000	X
13:06	25 ppb std	1.000	X
13:08	50 ppb std	1.000	X
13:10	ICV1	1.000	X
13:11	ICB1	1.000	X
13:13	CRDL1	1.000	X
13:15	XEGCO-10	1.000	X
13:16	TCBLK1	1.000	X
13:18	X01C0130-001	2.000	X
13:20	X01C0130-001M	2.000	X
13:21	X01C0130-001I	1.000	X
13:23	X01C0130-001D	2.000	X
13:25	X01C0130-002	2.000	X
13:26	X01C0130-003	2.000	X

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Form 14

ANALYSIS RUN LOG

Lab Name: Rocky Flats

QC Report No: SD050801 **SDG No:** MAY08

			Hg
13:28	X01C0130-004	2.000	X
13:30	CCV1	1.000	X
13:31	CCB1	1.000	X
13:33	X01C0130-005	2.000	X
13:35	X01C0130-006	2.000	X
13:36	X01C0130-007	2.000	X
13:38	X01C0130-008	2.000	X
13:40	X01C0130-009	2.000	X
13:41	X01C0130-010	2.000	X
13:43	X01C0131-001	2.000	X
13:45	X01C0131-002	2.000	X
13:46	CRDL2	1.000	X
13:48	CCV2	1.000	X
13:50	CCB2	1.000	X

* Prep Factor x Analytical Dilution Factor

0065

533

PREPARATION RAW DATA

534

ICP INITIAL INSTRUMENT ANALYSIS FORM

Analysis Date: 5-18-01 Analyst: D. Sipp / Cliff Nolan

QC Data File: SD050801.XLS L-Procedure: L-4153/6010

QC Report No: SD050801.RPT Chemist Approval RC. Nolan

No.	Calibration Standard or Sample ID	Standard or Sample Result mg/l	Standard Addition #1 mg/l	% Recovery of Standard Addition #1	Sample Dilution Factor mg/l	Final Result as mg/l or mg/kg
1	ICV1					
2	ICB1					
3	CRDL1					
4	INTA1					
5	INTAB1					
6	EPAQC21A1					
7	EPAQC7A1					
8	X01C0130-001					
9	X01C0130-001M					
10	X01C0130-001I					
11	X01C0130-001SD					
12	X01C0130-001D					
13	CCV1					
14	CCB1					
15	TCBLK1					
16	X01C0130-002					
17	X01C0130-003					
18	X01C0130-004					
19	X01C0130-005					
20	X01C0130-006					
21	X01C0130-007					
22	X01C0130-008					
23	X01C0130-009					
24	X01C0130-010					
25	CCV2					
26	CCB2					
27	X01C0131-001					
28	X01C0131-002					
29	CRDL2					
30	INTA2					
31	INTAB2					
32	CCV3					
33	CCB3					
34						
35						
36						
37						
38						
39						
40						

Comments: XEGCO-8 STD (.100 ML/10.0 ML)

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (BUILDING 559 LAB)

535

TOTAL METALS SAMPLE PREPARATON FORM

PREP DATE : 5-18-01
QC DATA FILE : SD050801.XLS
QC REPORT NO. : SD050801.RPT
IS HEATING SOURCE 95 +/- 5 DEGREES C? (Y) OR NO
SAMPLE TYPE : Bldg. 776 solids (TCLP)

ANALYST : D. Sipp / Cliff Nolan
L-PROCEDURE USED: L-4150 (3016)
CHEMIST APPROVAL : R. Kelly

NO.	SAMPLE I. D.	INITIAL (gm) or (ml)	FINAL VOLUME (ml)	SAMPLE DILUTION FACTOR	COLOR BEFORE	CLARITY BEFORE	COLOR AFTER	CLARITY AFTER
1	R BLANK (EXT#1)	~~10.0~~ 20.0	~~30.0~~ 20.0	~~3.000~~ 1.0	COLORLESS	CLEAR	COLORLESS	CLEAR
2	EPAQC 21 STD	20.0	20.0	1.000	COLORLESS	CLEAR	COLORLESS	CLEAR
3	EPAQC 7A STD	20.0	20.0	1.000	COLORLESS	CLEAR	COLORLESS	CLEAR
4	X01C0130-001	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
5	X01C0130-001M	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
6	X01C0130-001D	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
7	X01C0130-002	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
8	X01C0130-003	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
9	X01C0130-004	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
10	X01C0130-005	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
11	X01C0130-006	10.0	30.0	3.000	COLORLESS	CLEAR	COLORLESS	CLEAR
12	X01C0130-007	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
13	X01C0130-008	10.0	30.0	3.000	COLORLESS	CLEAR	COLORLESS	CLEAR
14	X01C0130-009	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
15	X01C0130-010	10.0	30.0	3.000	YELLOW	CLEAR	COLORLESS	CLEAR
16	X01C0131-001	10.0	30.0	3.000	COLORLESS	CLEAR	COLORLESS	CLEAR
17	X01C0131-002	10.0	30.0	3.000	COLORLESS	CLEAR	COLORLESS	CLEAR
18								
19								
20								
21								
22								
23								
24								
25								

Comments: XEGCO-8 STD (.100 ML/10.0 ML)

8900

536

MERCURY COLD-VAPOR INITIAL INSTRUMENT ANALYSIS FORM

Analysis Date: 5-21-01	Analyst: D. Sipp / Cliff Nolan
QC Data File: SD050801.XLS	Element: Hg
QC Report No: SD050801.RPT	L-Procedure: L-4152
Hg Instrument ID: Buck Scientific 400-1	Chemist Approval R. Kelly
Sample Type: Bldg. 776 solids (TCLP)	
START TIME: 1300	

No.	Calibration Standard or Sample ID	Standard or Sample % Tran.	Std or Sample Absorb.	Std. or Sample Result (ng/ml)	Standard Addition #1 (ng/ml)	% Recover of Standard Addition #1	Sample Dilution Factor	Final Result as (ng/ml) or (ng/g)
1	0 ppb Hg	99.7						
2	2.5 ppb Hg	90.0						
3	5 ppb Hg	82.3						
4	10 ppb Hg	68.8						
5	25 ppb Hg	44.0						
6	50 ppb Hg	22.5						
7	ICV STD 10	70.0						
8	ICB STD 0	99.5						
9	CRDL STD 2	92.0						
10	XEGCO-10	44.2						
11	R BLANK (Ext. #1)	99.7						
12	X01C0130-001	99.6						
13	X01C0130-001M	42.8						
14	X01C0130-001I	43.5						
15	X01C0130-001D	99.5						
16	X01C0130-002	99.5						
17	X01C0130-003	99.5						
18	X01C0130-004	99.7						
19	CCV STD 10	69.5						
20	CCB STD 0	99.5						
21	X01C0130-005	99.6						
22	X01C0130-006	99.6						
23	X01C0130-007	99.5						
24	X01C0130-008	99.5						
25	X01C0130-009	99.7						
26	X01C0130-010	99.5						
27	X01C0131-001	99.4						
28	X01C0131-002	99.6						
29	CRDL STD 2	91.5						
30	CCV STD 10	69.8						
31	CCB STD 0	99.6						
32								
33	STOP: 1350							
34								
35								
36								
37								
38								
39								
40								

Comments: ISA = 0.25ml of 1.0ppm Hg in 10.0ml of sample

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (BUILDING 559 LAB)

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MERCURY DIGESTION PREPARATION FORM
(SOLIDS, LIQUIDS, AND TCLP EXTRACT SAMPLES)

Mercury Digestion Prep Date: 5-21-01	Analyst: D. Supp / Cliff Nolan
QC Data File: SD050801.XLS	Element: Mercury
QC Report No: SD050801.RPT	L-Procedure: L-4152
	Chemist Approval R Kelly
Sample Type: Bldg. 776 solids (TCLP)	

No.	Calibration Standard or Sample ID	Sample Aliquot Volume (ml)	Sample Weight (grams)	Hg Digest Final Volume (ml)	Sample Dilution Factor
1	0 ppb Hg	40.0		40.0	1.000
2	2.5 ppb Hg	40.0		40.0	1.000
3	5 ppb Hg	40.0		40.0	1.000
4	10 ppb Hg	40.0		40.0	1.000
5	25 ppb Hg	40.0		40.0	1.000
6	50 ppb Hg	40.0		40.0	1.000
7	10 ppb Hg ICV/CCV	40.0		40.0	1.000
8	0 ppb Hg ICB/CCB	40.0		40.0	1.000
9	2 ppb Hg CRDL	40.0		40.0	1.000
10	XEGCO-10	40.0		40.0	1.000
11	R BLANK (Ext. #1)	40.0		40.0	1.000
12	X01C0130-001	20.0		40.0	2.000
13	X01C0130-001M	20.0		40.0	2.000
14	X01C0130-001D	20.0		40.0	2.000
15	X01C0130-002	20.0		40.0	2.000
16	X01C0130-003	20.0		40.0	2.000
17	X01C0130-004	20.0		40.0	2.000
18	X01C0130-005	20.0		40.0	2.000
19	X01C0130-006	20.0		40.0	2.000
20	X01C0130-007	20.0		40.0	2.000
21	X01C0130-008	20.0		40.0	2.000
22	X01C0130-009	20.0		40.0	2.000
23	X01C0130-010	20.0		40.0	2.000
24	X01C0131-001	20.0		40.0	2.000
25	X01C0131-002	20.0		40.0	2.000
26					
27					
28					
29					
30					
31					
32					
33					

Comments: MRSP= 1.0ml of 1.0ppm Hg

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE (BUILDING 559 LAB)

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Calibration Data Summary

Run Name: CVAA #400-1_052101_1300

Analysis Date: 05/21/2001

Element	Standard Concentration	Units	Reading	Units
Hg	0.00	ug/L	0.0013	Abs
	2.50	ug/L	0.0458	Abs
	5.00	ug/L	0.0846	Abs
	10.00	ug/L	0.1624	Abs
	25.00	ug/L	0.3565	Abs
	50.00	ug/L	0.6478	Abs

Linear Regression Results
Y = mX + b

Correlation Coefficient (r)	Slope (m)	Y-int (b)
0.998	1.281E-002	1.889E-002

Quadratic Regression Results
Y = aX^2 +bX +c

Correlation Coefficient (r)	Coef. a	Coef. b	Coef. c
1.000	-5.533E-00	1.558E-002	6.243E-003

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Sample Data Summary

Run Name: CVAA #400-1_052101_1300

Analysis Date: 05/21/2001

Lab Sample ID	Client Sample ID	QC Type	Element	Concentration		Measurement		Cal Type
				Value	Units	Reading	Units	
ICV1	ICV	ICV	Hg	9.89	ug/L	0.155	Abs	Q
ICB1	ICB	ICB		-0.261	ug/L	0.00218	Abs	Q
CRDL1	CRDL1	CRDL		1.94	ug/L	0.0362	Abs	Q
XEGCO-10	N/A	LCS		24.5	ug/L	0.355	Abs	Q
TCBLK1	TCBLK1	MB		-0.317	ug/L	0.00130	Abs	Q
X01C0130-001	01C0130-001.002	SAM		-0.289	ug/L	0.00174	Abs	Q
X01C0130-001M	01C0130-001.002	MS		25.6	ug/L	0.369	Abs	Q
X01C0130-001I	01C0130-001.002	AS		25.0	ug/L	0.362	Abs	Q
X01C0130-001D	01C0130-001.002	DUP		-0.261	ug/L	0.00218	Abs	Q
X01C0130-002	01C0130-002.002	SAM		-0.261	ug/L	0.00218	Abs	Q
X01C0130-003	01C0130-003.002	SAM		-0.261	ug/L	0.00218	Abs	Q
X01C0130-004	01C0130-004.002	SAM		-0.317	ug/L	0.00130	Abs	Q
CCV1	CCV1	CCV		10.1	ug/L	0.158	Abs	Q
CCB1	CCB1	CCB		-0.261	ug/L	0.00218	Abs	Q
X01C0130-005	01C0130-005.002	SAM		-0.289	ug/L	0.00174	Abs	Q
X01C0130-006	01C0130-006.002	SAM		-0.289	ug/L	0.00174	Abs	Q
X01C0130-007	01C0130-007.002	SAM		-0.261	ug/L	0.00218	Abs	Q
X01C0130-008	01C0130-008.002	SAM		-0.261	ug/L	0.00218	Abs	Q
X01C0130-009	01C0130-009.002	SAM		-0.317	ug/L	0.00130	Abs	Q
X01C0130-010	01C0130-010.002	SAM		-0.261	ug/L	0.00218	Abs	Q
X01C0131-001	01C0131-001.002	SAM		-0.233	ug/L	0.00261	Abs	Q
X01C0131-002	01C0131-002.002	SAM		-0.289	ug/L	0.00174	Abs	Q
CRDL2	CRDL2	CRDL		2.09	ug/L	0.0386	Abs	Q
CCV2	CCV2	CCV		9.97	ug/L	0.156	Abs	Q
CCB2	CCB2	CCB		-0.289	ug/L	0.00174	Abs	Q

Linear Regression Results Y = mX + b			Quadratic Regression Results Y = aX^2 + bX +c			
Correlation Coefficient (r)	Slope (m)	Y-int (b)	Correlation Coefficient (r)	Coef. a	Coef. b	Coef. c
9.983E-001	1.281E-002	1.889E-00	9.999E-001	-5.533E-00	1.558E-002	6.243E-003

c:\datarev\crreports\SamResults_r0.rpt

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STANDARDS SUMMARY

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Building 559 Inorganic Section

(2000/2001 Certified Aqueous Standard Inventory and Traceability Information)

Certified Standard I. D. Information	Lot Numbers	Aqueous Matrix	Preparation Date	Receipt Date	Date Opened	Expiration Date	Vendor Identification	Traceability Information	
10000 mg/L Aluminum Std	SC0220161	4% HNO3	8/14/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Antimony Std	SC0188007	4% HNO3	7/12/00	10/25/00	10/30/00	10/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Arsenic Std	SC0164906	4% HNO3	6/19/00	10/25/00	10/30/00	9/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Barium Std	SC0161903	4% HNO3	6/19/00	10/25/00	10/30/00	9/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Beryllium Std	SC0158879	4% HNO3	6/16/00	10/25/00	10/30/00	9/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Cadmium Std	SC0188004	4% HNO3	7/12/00	10/25/00	10/30/00	10/31/01	SCP SCIENCE	NIST	RFP-10
10000 mg/L Calcium Std	SC0229214	4% HNO3	8/22/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Cerium Std	7-38CE	2% HNO3	4/1/01	5/1/01	5/1/01	4/30/02	SPEX Industries	NIST	RFP-10
1000 mg/L Chromium Std	SC0216137	4% HNO3	8/9/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Cobalt Std	SC0252292	4% HNO3	9/20/00	10/25/00	10/30/00	12/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Copper Std	SC0229211	4% HNO3	8/22/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
10000 mg/L Iron Std	SC0199064	6% HNO3	7/28/00	10/25/00	10/30/00	10/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Lead Std	SC0196060	4% HNO3	7/18/00	10/25/00	10/30/00	10/31/01	SCP SCIENCE	NIST	RFP-10
10000 mg/L Magnesium Std	SC0164908	7% HNO3	6/20/00	10/25/00	10/30/00	9/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Magnesium Std	7-62MG	HNO3	10/1/00	10/25/00	10/30/00	9/30/01	SPEX Industries	NIST	RFP-10
1000 mg/L Manganese Std	SC0214128	4% HNO3	8/3/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
10 mg/L Mercury Std	8/41HG-AX/AY	HNO3	4/1/01	4/26/01	4/26/01	4/30/02	SPEX Industries	NIST	RFP-10
1000 mg/L Mercury Std	SC0188005	10% HNO3	7/12/00	10/25/00	10/30/00	10/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Molybdenum Std	SC0188006	H2O	7/18/00	10/25/00	10/30/00	10/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Nickel Std	SC0228198	4% HNO3	8/21/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Phosphorus Std	SC0252297	H2O	9/18/00	10/25/00	10/30/00	12/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Selenium Std	SC0252298	4% HNO3	9/18/00	10/25/00	10/30/00	12/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Silver Std	SC0252290	4% HNO3	9/18/00	10/25/00	10/30/00	12/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Strontium Std	SC0241245	4% HNO3	9/5/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Thallium Std	SC0252294	4% HNO3	9/19/00	10/25/00	10/30/00	12/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Titanium Std	SC0235232	H2O	8/31/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10
10000 mg/L Uranium Std	N6-71U	HNO3	10/1/00	10/25/00	10/30/00	9/30/01	SPEX Industries	NIST	RFP-10
1000 mg/L Vanadium Std	SC0252295	4% HNO3	9/20/00	10/25/00	10/30/00	12/31/01	SCP SCIENCE	NIST	RFP-10
1000 mg/L Zinc Std	SC0241244	4% HNO3	9/5/00	10/25/00	10/30/00	11/30/01	SCP SCIENCE	NIST	RFP-10

Building 559 Inorganic Section

(2000/2001 Certified Aqueous Standard Inventory and Traceability Information)

Certified Standard I. D. Information	Lot Numbers	Aqueous Matrix	Preparation Date	Receipt Date	Date Opened	Expiration Date	Vendor Identification	Traceability Information	
INT-A1 Interferents Std 5000 mg/L Al,Ca,Mg 2000 mg/L Fe	20-142AS	HNO3/H2O	4/1/01	4/26/01	4/26/01	4/30/02	SPEX Industries	NIST/EPA	RFP-10
INT-A2 Interferents Std 1000 mg/L Cr,Cu,Mn,Ni,Ti,V	19-101AS	5% HNO3	10/1/00	10/25/00	10/30/00	10/15/01	SPEX Industries	NIST/EPA	RFP-10
INT-B1 Analytes Std 100 mg/L Ag,Cd,Ni,Pb,Zn 50 mg/L Ba,Be,Co,Cr,Cu,Mn,V	1-65GM	HNO3/H2O	4/1/01	4/26/01	4/26/01	4/30/02	SPEX Industries	NIST/EPA	RFP-10
INT-B2 Analytes Std 100 mg/L Al,As,B,Mo,Na,Sb,Se,Tl 10 mg/L Ca,Fe,Mg,Si	16-65AS	HNO3/H2O	9/1/00	10/25/00	10/30/00	9/30/01	SPEX Industries	NIST/EPA	RFP-10
QC-7A Laboratory Control Std 100 mg/L Al,Ba,B,Na 50 mg/L Ag	18-82AS	HNO3/H2O	9/1/00	10/25/00	10/30/00	9/30/01	SPEX Industries	NIST/EPA	RFP-10
QC-21 Laboratory Control Std 100 mg/L Sb,As,Be,Cd,Ca,Cr, 100 mg/L Co,Cu,Fe,Pb,Li,Mg, 100 mg/L Mn,Mo,Ni,Se,Sr,Tl, 100 mg/L Ti,V,Zn	18-137AS	5% HNO3	9/1/00	10/25/00	10/30/00	9/30/01	SPEX Industries	NIST/EPA	RFP-10

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Building 559 Inorganic Section

(2000/2001 Certified Solid Reference Standard Inventory and Traceability Information)

Certified Standard I. D. Information		Lot Numbers	Solid Matrix	Preparation Date	Receipt Date	Date Opened	Expiration Date	Vendor Identification	Traceability Information	
CRM021-100 Metals on Soil # 3		E021	Soil	7/1/00	7/18/00	7/18/00	7/31/01	Resource Technology Corporation	NIST/EPA	RFP-9
2725.2	mg/Kg Aluminum									
4954.8	mg/Kg Antimony									
24.8	mg/Kg Arsenic									
586.45	mg/Kg Barium									
1.2	mg/Kg Cadmium									
5426.5	mg/Kg Calcium									
10.7	mg/Kg Chromium									
(2.7)	mg/Kg Cobalt									
4792.4	mg/Kg Copper									
6481.4	mg/Kg Iron									
(144742)	mg/Kg Lead									
(2367.4)	mg/Kg Magnesium									
174.2	mg/Kg Manganese									
4.7	mg/Kg Mercury									
12.6	mg/Kg Nickel									
6.5	mg/Kg Silver									
(0.6)	mg/Kg Thallium									
(8.7)	mg/Kg Vanadium									
546.4	mg/Kg Zinc									
CLP Inorganic Soil		241	Soil	6/1/99	6/14/99	6/14/99	No Expiration Date	Environmental Resource Assoiates	NIST/EPA	RFP-8
ERA 540										
5250	mg/Kg Aluminum									
33.0	mg/Kg Antimony									
93.9	mg/Kg Arsenic									
330	mg/Kg Barium									
42.7	mg/Kg Beryllium									
71.8	mg/Kg Boron									
97.2	mg/Kg Cadmium									
1320	mg/Kg Calcium									
46.0	mg/Kg Chromium									
120	mg/Kg Cobalt									
147	mg/Kg Copper									
10200	mg/Kg Iron									
135	mg/Kg Lead									
2340	mg/Kg Magnesium									
166	mg/Kg Manganese									
2.17	mg/Kg Mercury									
40.4	mg/Kg Molybdenum									
138	mg/Kg Nickel									
1480	mg/Kg Potassium									
96.0	mg/Kg Selenium									
86.7	mg/Kg Silver									
845	mg/Kg Sodium									
102	mg/Kg Strontium									
45.7	mg/Kg Thallium									
140	mg/Kg Tin									
319	mg/Kg Titanium									
65.1	mg/Kg Vanadium									
75.0	mg/Kg Zinc									

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Building 559 Inorganic Section

(2000/2001 Certified Solid Reference Standard Inventory and Traceability Information)

Certified Standard I. D. Information	Lot Numbers	Solid Matrix	Preparation Date	Receipt Date	Date Opened	Expiration Date	Vendor Identification	Traceability Information	
XEGCO-8 MRSP/ISA Lab Spike Std 500 mg/L Al,Cu,Fe,Se,Zn 400 mg/L Sb,Tl 200 mg/L As,Ba,Be,Cd,Cr,Pb, 200 mg/L Mn,Ni,Ag,Ti,V 100 mg/L Co,Mo,Sr	1-51PD	5 % HNO3/ tr. HF/ tr.Tartaric Acid	6/1/00	6/21/00	6/21/00	6/30/01	SPEX Industries	NIST/EPA	RFP-9
XEGCO-9 CCV Verification Std 500 mg/L P 100 mg/L Al,Sb,As,Ca,Pb,Mg, 100 mg/L Tl,Se,Fe 50 mg/L Ba,Cr,Co,Cu,Mn,Mo, 50 mg/L Ni,V,Zn 20 mg/L Be,Cd,Ag,Sr,Ti	5-198PD	5 % HNO3/ tr. HF & Tartaric Acid	4/1/01	5/3/01	5/3/01	4/30/02	SPEX Industries	NIST/EPA	RFP-10
TCLP Metals in Soil ERA 544 0.245 mg/l Antimony 0.0592 mg/l Arsenic 3.07 mg/l Barium 0.134 mg/l Beryllium 0.477 mg/l Cadmium 0.894 mg/l Chromium 1.12 mg/l Lead 1.34 mg/l Mercury 0.424 mg/l Nickel 0.202 mg/l Selenium 0.438 mg/l Silver 1.53 mg/l Zinc	85007	Soil	4/1/00	4/5/00	4/5/00	4/30/01	Environmental Resource Associates	NIST/EPA	RFP-9
XEGCO-10 LCS Hg Verification Std 5 ug/mL Hg	1-34PD	5 % HNO3	6/1/00	6/15/00	6/16/00	6/30/01	SPEX Industries	NIST/EPA	RFP-9

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INSTRUMENT RAW DATA

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R.C. Kelly 5-18-01 Cliff Nolan 5-18-01 D. Sipp

12:27:59 05-18-2001
STANDARD SOLUTION 1

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET
2	FE	136	136	139	0	-4
3	U	3118	3111	3556	3032	-49
5	PU	2116	2114	2113	0	1
6	MG	78	77	76	0	1
8	CA	511	510	492	0	18
10	MN	294	292	297	0	-4
11	MO	947	936	0	938	3
12	V	827	845	845	0	-9
13	AL	1135	1135	1128	0	7
14	NI	730	728	722	0	7
16	BA	546	543	552	0	-8
17	SR	359	363	366	0	-5
18	CR	650	649	0	637	12
21	SE	1548	1547	1562	0	-15
22	TI	411	412	415	0	-4
23	CU	1265	1262	1259	0	5
26	CO	495	493	0	495	-1
28	AG	1800	1799	1796	0	3
30	AS	946	935	953	0	-13
31	BE	575	574	0	551	23
32	ZN	231	227	0	226	3
34	CD	356	355	357	0	-2
36	PB	2575	2565	0	2559	11
37	SB	1413	1407	1407	0	2
38	TL	824	840	0	836	-4
39	P	532	528	0	529	1

12:29:27 05-18-2001
STANDARD SOLUTION 2

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET
6	MG	3695	3757	80	0	3646
11	MO	9505	9713	0	981	8628
12	V	14562	14988	989	0	13785
16	BA	10543	10738	568	0	10072
17	SR	18599	18877	394	0	18343
18	CR	13913	14205	0	662	13396
32	ZN	9408	9628	0	239	9278
34	CD	9776	9978	375	0	9502
36	PB	38303	39036	0	2692	35977

12:30:30 05-18-2001
STANDARD SOLUTION 3

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET
2	FE	7119	7361	190	0	7049
6	MG	13528	13956	83	0	13658
8	CA	9874	10235	519	0	9535
10	MN	27426	28300	312	0	27550
13	AL	7453	7706	1155	0	6424
14	NI	12681	13104	759	0	12133
22	TI	13695	14054	432	0	13442
37	SB	3139	3182	1489	0	1671

12:31:41 05-18-2001
STANDARD SOLUTION 4

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET
21	SE	11543	11619	1594	0	9986
23	CU	9239	9261	1275	0	7975
26	CO	10219	10262	0	525	9715
28	AG	7489	7513	1800	0	5701
30	AS	12307	12419	958	0	11404

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31	BE	66730	67170	0	661	66288
38	TL	12400	12458	0	846	11582

12:32:58 05-18-2001
STANDARD SOLUTION 5

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET
3	U	5740	5707	3603	3166	2448
6	MG	333233	332533	323	0	332559

12:35:21 05-18-2001
STANDARD SOLUTION 6

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET
5	PU	5311	5327	2476	0	2843
39	P	3032	3062	0	570	2476

Standard Solution Set: TCP2
05-18-2001 12:35

Chan	Elem	Coef0	Coef1	Coef2	SD 0	SD 1	SD 2
2	FE	-3.	141.	None	.5	.5	None
3	U	-48.	24.7	None	16.	.29	None
5	PU	2.	28.4	None	7.	.20	None
6	MG	1.	1418.	-1.5E+0	1.6	20.	.5E-1
8	CA	19.	190.	None	1.8	.7	None
10	MN	-4.	1378.	None	1.0	5.	None
11	MO	4.	862.	None	3.	3.	None
12	V	-9.	690.	None	3.0	2.6	None
13	AL	7.	63.9	None	4.	.27	None
14	NI	7.	606.	None	2.6	2.3	None
16	BA	-8.	1007.	None	1.9	4.	None
17	SR	-5.	1835.	None	1.3	7.	None
18	CR	12.	669.	None	2.3	2.5	None
21	SE	-14.	200.	None	5.	.8	None
22	TI	-3.	672.	None	1.5	2.5	None
23	CU	5.	399.	None	4.	1.7	None
26	CO	-1.	486.	None	1.7	1.8	None
28	AG	4.	570.	None	6.	2.7	None
30	AS	-12.	228.	None	3.	.9	None
31	BE	24.	13253.	None	2.0	47.	None
32	ZN	3.	464.	None	.8	1.7	None
34	CD	-1.	950.	None	1.3	3.	None
36	PB	12.	719.	None	9.	2.7	None
37	SB	3.	162.	None	5.	1.2	None
38	TL	-4.	231.	None	2.9	.9	None
39	P	2.	49.6	None	1.9	.22	None

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ICV1/DS/CN 12:40:18 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	1553	1529	151	0	1389	9.87
3	U	3176	3186	3629	3094	-47	.07
5	PU	2175	2176	2187	0	-12	-.46
6	MG	13511	13264	84	0	13302	9.47
8	CA	2341	2320	507	0	1823	9.48
10	MN	7232	7105	310	0	6858	4.98
11	MO	5166	5094	0	976	4154	4.81
12	V	4262	4226	897	0	3346	4.86
13	AL	1848	1843	1155	0	690	10.70
14	NI	3829	3778	758	0	3045	5.01
16	BA	5481	5411	575	0	4871	4.84
17	SR	3966	3889	379	0	3547	1.93
18	CR	4046	3994	0	655	3364	5.00
21	SE	3619	3574	1638	0	1959	9.86
22	TI	1780	1747	425	0	1339	1.99
23	CU	3261	3220	1302	0	1938	4.85
26	CO	2969	2922	0	516	2429	5.00
28	AG	2970	2957	1842	0	1120	1.96
30	AS	3148	3107	995	0	2131	9.39
31	BE	26553	26083	0	606	25712	1.93
32	ZN	2579	2545	0	235	2327	5.00
34	CD	2232	2204	370	0	1847	1.94
36	PB	9775	9647	0	2654	7056	9.79
37	SB	3122	3099	1461	0	1649	10.15
38	TL	3103	3091	0	891	2205	9.56
39	P	3598	3565	0	561	3021	59.31

ICV1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	9.8764	MG/L		.0610	10
3	U	.0015	MG/L	D: Conc<DL	.6663	1
5	PU	-.4626	MG/L	D: Conc<DL	.2587	1
6	MG	9.4740	MG/L		.1444	10
8	CA	9.4785	MG/L		.0603	10
10	MN	4.9805	MG/L		.0306	10
11	MO	4.8086	MG/L		.0309	10
12	V	4.8612	MG/L		.0307	10
13	AL	10.4774	MG/L		.0944	10
14	NI	5.0167	MG/L		.0317	10
16	BA	4.8426	MG/L		.0302	10
17	SR	1.9357	MG/L		.0119	3
18	CR	5.0004	MG/L		.0314	10
21	SE	9.9477	MG/L		.0693	10
22	TI	1.9943	MG/L		.0125	3
23	CU	4.8557	MG/L		.0334	10
26	CO	4.9938	MG/L		.0314	10
28	AG	1.9659	MG/L		.0175	3
30	AS	9.2941	MG/L		.0607	10
31	BE	1.9272	MG/L		.0119	3
32	ZN	4.9654	MG/L		.0310	10
34	CD	1.9449	MG/L		.0121	3
36	PB	9.7781	MG/L		.0629	10
37	SB	9.9396	MG/L		.0952	10
38	TL	9.5214	MG/L		.0613	10
39	P	52.7944	MG/L		.3970	100

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

549

ICB1/DS/CN 12:46:06 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	135	135	137	0	-2	.010
3	U	3106	3103	3530	3024	-47	.094
5	PU	2102	2102	2121	0	-19	-.709
6	MG	78	78	76	0	1	.000
8	CA	509	509	487	0	22	.019
10	MN	291	293	296	0	-4	0.000
11	MO	936	932	0	943	-10	-.014
12	V	832	830	850	0	-19	-.013
13	AL	1131	1130	1118	0	11	.076
14	NI	726	725	728	0	-3	-.015
16	BA	543	543	549	0	-7	.001
17	SR	360	358	368	0	-9	-.002
18	CR	647	647	0	635	11	-.000
21	SE	1527	1529	1559	0	-32	-.082
22	TI	408	408	415	0	-7	-.004
23	CU	1259	1255	1257	0	0	-.013
26	CO	490	490	0	489	0	.002
28	AG	1787	1790	1780	0	8	.008
30	AS	945	939	953	0	-12	.003
31	BE	572	572	0	548	24	.000
32	ZN	224	225	0	228	-4	-.014
34	CD	353	353	356	0	-3	-.000
36	PB	2542	2555	0	2554	-6	-.023
37	SB	1397	1395	1405	0	-9	-.065
38	TL	826	829	0	837	-10	-.026
39	P	527	527	0	524	3	.024

ICB1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.0101	MG/L	D: Conc<DL	.0034	1
3	U	.0944	MG/L	D: Conc<DL	.6663	1
5	PU	-.7165	MG/L	D: Conc<DL	.2588	1
6	MG	.0004	MG/L		.0000	1
8	CA	.0189	MG/L	D: Conc<DL	.0095	1
10	MN	.0001	MG/L		.0000	1
11	MO	-.0144	MG/L	D: Conc<DL	.0038	1
12	V	-.0129	MG/L	D: Conc<DL	.0042	1
13	AL	.0787	MG/L	D: Conc<DL	.0628	1
14	NI	-.0152	MG/L	D: Conc<DL	.0042	1
16	BA	.0012	MG/L	D: Conc<DL	.0019	1
17	SR	-.0023	MG/L	D: Conc<DL	.0006	1
18	CR	-.0007	MG/L	D: Conc<DL	.0001	1
21	SE	-.0837	MG/L	D: Conc<DL	.0273	1
22	TI	-.0049	MG/L	D: Conc<DL	.0021	1
23	CU	-.0093	MG/L	D: Conc<DL	.0112	1
26	CO	.0028	MG/L	D: Conc<DL	.0036	1
28	AG	.0078	MG/L	D: Conc<DL	.0111	1
30	AS	.0022	MG/L		.0003	1
31	BE	.0000	MG/L		.0000	1
32	ZN	-.0145	MG/L	D: Conc<DL	.0017	1
34	CD	-.0005	MG/L	D: Conc<DL	.0000	1
36	PB	-.0241	MG/L	D: Conc<DL	.0126	1
37	SB	-.0689	MG/L	D: Conc<DL	.0307	1
38	TL	-.0261	MG/L	D: Conc<DL	.0127	1
39	P	.0418	MG/L	D: Conc<DL	.0368	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

CRDL1/DS/CN 12:55:01 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	156	157	138	0	18	.154
3	U	3133	3139	3582	3053	-49	-.023
5	PU	2131	2129	2130	0	0	-.063
6	MG	77	76	75	0	1	.000
8	CA	511	510	494	0	16	-.010
10	MN	324	323	299	0	24	.020
11	MO	1191	1193	0	946	245	.280
12	V	902	888	852	0	43	.075
13	AL	1144	1143	1130	0	13	.098
14	NI	771	768	727	0	42	.058
16	BA	550	549	557	0	-7	.000
17	SR	888	886	371	0	515	.283
18	CR	702	701	0	643	58	.068
21	SE	1611	1597	1577	0	27	.207
22	TI	433	433	418	0	15	.027
23	CU	1303	1301	1264	0	37	.087
26	CO	532	531	0	496	35	.071
28	AG	1850	1853	1802	0	48	.079
30	AS	1001	998	966	0	33	.201
31	BE	671	671	0	554	117	.001
32	ZN	260	262	0	227	33	.060
34	CD	370	370	358	0	11	.014
36	PB	2641	2640	0	2568	72	.083
37	SB	1464	1453	1423	0	35	.201
38	TL	886	878	0	843	38	.184
39	P	579	578	0	531	47	.897

CRDL1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1543	MG/L		.0035	1
3	U	-.0240	MG/L	D: Conc<DL	.0138	1
5	PU	-.0615	MG/L	D: Conc<DL	.2587	1
6	MG	.0001	MG/L		.0000	1
8	CA	-.0102	MG/L	D: Conc<DL	.0094	1
10	MN	.0204	MG/L		.0007	1
11	MO	.2805	MG/L		.0042	1
12	V	.0751	MG/L		.0043	1
13	AL	.0873	MG/L	D: Conc<DL	.0628	1
14	NI	.0592	MG/L		.0042	1
16	BA	.0005	MG/L		.0000	1
17	SR	.2835	MG/L		.0018	1
18	CR	.0688	MG/L		.0034	1
21	SE	.2125	MG/L		.0273	1
22	TI	.0277	MG/L		.0021	1
23	CU	.0826	MG/L		.0112	1
26	CO	.0738	MG/L		.0036	1
28	AG	.0794	MG/L		.0111	1
30	AS	.2005	MG/L		.0146	1
31	BE	.0068	MG/L		.0001	1
32	ZN	.0658	MG/L		.0018	1
34	CD	.0139	MG/L		.0013	1
36	PB	.0836	MG/L		.0126	1
37	SB	.1982	MG/L		.0307	1
38	TL	.1827	MG/L		.0127	1
39	P	.8062	MG/L		.0373	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

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INTA1/DS/CN 12:57:56 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	26353	26110	328	0	25902	183.665
3	U	3040	3039	3407	2925	-7	1.714
5	PU	2097	2099	2064	0	33	1.104
6	MG	327333	325766	315	0	326234	399.593
8	CA	90186	89786	704	0	89282	469.216
10	MN	322	321	300	0	21	.018
11	MO	1082	1087	0	1095	-11	-.016
12	V	833	843	839	0	-1	.012
13	AL	32253	32190	1165	0	31055	486.085
14	NI	761	760	718	0	42	.058
16	BA	558	556	552	0	4	.011
17	SR	390	392	360	0	31	.019
18	CR	731	732	0	636	96	.125
21	SE	1789	1791	1839	0	-49	-.171
22	TI	406	409	409	0	-2	.002
23	CU	1226	1226	1221	0	4	-.001
26	CO	491	493	0	483	9	.020
28	AG	1759	1765	1727	0	35	.055
30	AS	1757	1741	1265	0	483	2.172
31	BE	559	560	0	531	29	.000
32	ZN	261	261	0	247	13	.023
34	CD	386	385	377	0	8	.010
36	PB	3475	3478	0	3058	418	.565
37	SB	1621	1630	1620	0	6	.023
38	TL	953	960	0	979	-23	-.082
39	P	650	649	0	635	14	.254

INTA1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	183.6656	MG/L		1.1348	100
3	U	.3995	MG/L	D: Conc<DL	.6665	3
5	PU	1.0744	MG/L		.2589	1
6	MG	490.4904 ~~399.5937~~	MG/L		6.0922	100
8	CA	468.8726	MG/L		2.9305	100
10	MN	-.0034	MG/L	D: Conc<DL	.0007	1
11	MO	-.0087	MG/L	D: Conc<DL	.0038	1
12	V	.0001	MG/L	D: Conc<DL	.0042	1
13	AL	485.8570	MG/L		3.1824	100
14	NI	-.0098	MG/L	D: Conc<DL	.0042	1
16	BA	.0070	MG/L		.0019	1
17	SR	.0025	MG/L		.0007	1
18	CR	-.0258	MG/L	D: Conc<DL	.0035	1
21	SE	-.0740	MG/L	D: Conc<DL	.0274	1
22	TI	-.0024	MG/L	D: Conc<DL	.0021	1
23	CU	-.0135	MG/L	D: Conc<DL	.0000	1
26	CO	.0134	MG/L		.0036	1
28	AG	.0186	MG/L	D: Conc<DL	.0111	1
30	AS	-.0857	MG/L	D: Conc<DL	.0198	3
31	BE	.0004	MG/L	D: Conc<DL	.0001	1
32	ZN	.0065	MG/L		.0017	1
34	CD	-.0095	MG/L	D: Conc<DL	.0013	1
36	PB	-.0494	MG/L	D: Conc<DL	.0131	1
37	SB	.0356	MG/L	D: Conc<DL	.0307	1
38	TL	.0482	MG/L		.0127	1
39	P	-.1228	MG/L	D: Conc<DL	.0369	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

0084

INTAB1/DS/CN 12:59:42 05-18-2001

SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	27000	26633	328	0	26488	187.815
3	U	3037	3039	3396	2910	6	2.217
5	PU	2098	2097	2076	0	21	.671
6	MG	330966	328533	317	0	329432	416.503
8	CA	92760	91986	704	0	91668	481.759
10	MN	991	980	297	0	688	.502
11	MO	1943	1922	0	1111	822	.949
12	V	1179	1175	837	0	339	.505
13	AL	33320	33103	1171	0	32040	501.504
14	NI	1332	1321	721	0	605	.987
16	BA	1049	1041	551	0	493	.497
17	SR	2264	2231	361	0	1886	1.030
18	CR	1061	1057	0	630	428	.622
21	SE	2002	1996	1858	0	141	.779
22	TI	407	407	408	0	-1	.004
23	CU	1421	1414	1220	0	197	.483
26	CO	727	722	0	482	241	.498
28	AG	2337	2328	1726	0	606	1.058
30	AS	2010	1989	1260	0	739	3.295
31	BE	7217	7123	0	544	6626	.498
32	ZN	729	724	0	250	476	1.019
34	CD	1275	1264	377	0	893	.943
36	PB	4159	4160	0	3062	1097	1.509
37	SB	1785	1792	1617	0	171	1.038
38	TL	1193	1195	0	972	221	.973
39	P	731	725	0	637	90	1.749

INTAB1 / DS/CN REPLICATE 1

EXTERNAL STANDARD TCP2 (IECTCP2, BK)

REMARKS: Bldg 559 Inorganic Labs JY48P

Rocky Flats

WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	187.8150	MG/L		1.1604	100
3	U	.8729	MG/L	D: Conc<DL	.6667	3
5	PU	.6047	MG/L	D: Conc<DL	.2588	1
6	MG	~~416.5033~~ 495.2986	MG/L		6.3500	100
8	CA	481.4019	MG/L		3.0088	100
10	MN	.4801	MG/L		.0031	1
11	MO	.9563	MG/L		.0071	1
12	V	.4949	MG/L		.0053	1
13	AL	501.2294	MG/L		3.2833	100
14	NI	.9199	MG/L		.0075	1
16	BA	.4924	MG/L		.0036	1
17	SR	1.0131	MG/L		.0063	1
18	CR	.4636	MG/L		.0052	1
21	SE	.8951	MG/L		.0277	1
22	TI	-.0018	MG/L	D: Conc<DL	.0021	1
23	CU	.4719	MG/L		.0116	1
26	CO	.4915	MG/L		.0047	1
28	AG	1.0208	MG/L		.0133	1
30	AS	.9591	MG/L		.0252	3
31	BE	.4971	MG/L		.0030	1
32	ZN	.9943	MG/L		.0065	1
34	CD	.9205	MG/L		.0059	1
36	PB	.8750	MG/L		.0158	3
37	SB	1.0304	MG/L		.0320	1
38	TL	1.1034	MG/L		.0141	1
39	P	.0774	MG/L	D: Conc<DL	.0387	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

EPAQC21A1/DS/CN 13:03:06 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	733	742	144	0	593	4.230
3	U	3176	3171	3633	3095	-57	-.318
5	PU	2165	2164	2164	0	0	-.045
6	MG	5778	5855	80	0	5736	4.061
8	CA	1351	1365	505	0	853	4.387
10	MN	6050	6135	308	0	5784	4.201
11	MO	4565	4620	0	973	3619	4.193
12	V	3742	3780	898	0	2862	4.163
13	AL	1183	1180	1149	0	32	.390
14	NI	3291	3334	755	0	2557	4.208
16	BA	565	563	571	0	-7	.001
17	SR	7860	7937	384	0	7514	4.097
18	CR	3469	3514	0	656	2834	4.217
21	SE	2446	2429	1640	0	798	4.062
22	TI	3278	3298	428	0	2859	4.259
23	CU	2908	2921	1293	0	1621	4.055
26	CO	2566	2593	0	512	2067	4.256
28	AG	1842	1836	1830	0	9	.010
30	AS	1895	1893	991	0	903	4.013
31	BE	53903	54800	0	651	53700	4.050
32	ZN	2161	2197	0	235	1943	4.183
34	CD	4275	4339	370	0	3937	4.144
36	PB	5625	5655	0	2638	3002	4.157
37	SB	2155	2178	1440	0	726	4.464
38	TL	1854	1871	0	859	1003	4.355
39	P	890	900	0	551	344	6.721

EPAQC21A1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	4.2306	MG/L		.0262	3
3	U	-.3483	MG/L	D: Conc<DL	.6663	1
5	PU	-.0184	MG/L	D: Conc<DL	.2587	1
6	MG	4.0612	MG/L		.0619	3
8	CA	4.3830	MG/L		.0293	3
10	MN	4.2013	MG/L		.0258	3
11	MO	4.1890	MG/L		.0270	3
12	V	4.1560	MG/L		.0264	3
13	AL	.1931	MG/L		.0629	1
14	NI	4.2138	MG/L		.0267	3
16	BA	-.0014	MG/L	D: Conc<DL	.0019	1
17	SR	4.0976	MG/L		.0252	3
18	CR	4.2112	MG/L		.0265	3
21	SE	4.1313	MG/L		.0377	3
22	TI	4.2572	MG/L		.0264	3
23	CU	4.0596	MG/L		.0286	3
26	CO	4.2444	MG/L		.0267	3
28	AG	.0148	MG/L	D: Conc<DL	.0111	1
30	AS	3.9681	MG/L		.0290	3
31	BE	4.0410	MG/L		.0248	3
32	ZN	4.1462	MG/L		.0259	3
34	CD	4.1431	MG/L		.0257	3
36	PB	4.1548	MG/L		.0290	3
37	SB	4.2726	MG/L		.0501	3
38	TL	4.3172	MG/L		.0301	3
39	P	1.2993	MG/L		.0581	10

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

554

EPAQC7A1/DS/CN 13:05:08 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	152	152	139	0	13	.114
3	U	3135	3145	3585	3059	-51	-.07
5	PU	2136	2132	2140	0	-7	-.28
6	MG	129	128	78	0	51	.03
8	CA	586	585	497	0	88	.36
10	MN	298	300	300	0	-2	.00
11	MO	978	969	0	947	26	.02
12	V	860	839	868	0	-19	-.01
13	AL	1411	1407	1137	0	272	4.15
14	NI	740	738	733	0	5	-.00
16	BA	4743	4690	562	0	4154	4.13
17	SR	373	368	372	0	-2	.00
18	CR	660	656	0	644	14	.00
21	SE	1570	1560	1604	0	-39	-.12
22	TI	418	416	421	0	-4	-.00
23	CU	1280	1281	1271	0	9	.01
26	CO	502	502	0	498	4	.00
28	AG	3019	3001	1809	0	1201	2.10
30	AS	964	966	967	0	-3	.04
31	BE	586	588	0	556	31	.00
32	ZN	229	235	0	227	4	.00
34	CD	359	358	359	0	-1	.00
36	PB	2608	2608	0	2603	5	-.00
37	SB	1431	1424	1424	0	3	.00
38	TL	853	863	0	845	13	.07
39	P	535	539	0	534	2	.01

EPAQC7A1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1146	MG/L		.0034	1
3	U	-.0778	MG/L	D: Conc<DL	.6663	1
5	PU	-.2824	MG/L	D: Conc<DL	.2587	1
6	MG	.0351	MG/L		.0012	1
8	CA	.3668	MG/L		.0098	1
10	MN	.0017	MG/L	D: Conc<DL	.0007	1
11	MO	.0271	MG/L		.0038	1
12	V	-.0144	MG/L	D: Conc<DL	.0042	1
13	AL	4.1551	MG/L		.0686	3
14	NI	-.0022	MG/L	D: Conc<DL	.0042	1
16	BA	4.1340	MG/L		.0258	3
17	SR	.0019	MG/L	D: Conc<DL	.0006	1
18	CR	.0025	MG/L	D: Conc<DL	.0034	1
21	SE	-.1227	MG/L	D: Conc<DL	.0273	1
22	TI	-.0005	MG/L	D: Conc<DL	.0000	1
23	CU	.0113	MG/L	D: Conc<DL	.0112	1
26	CO	.0085	MG/L	D: Conc<DL	.0036	1
28	AG	2.1018	MG/L		.0183	3
30	AS	.0246	MG/L	D: Conc<DL	.0145	1
31	BE	.0006	MG/L		.0001	1
32	ZN	.0036	MG/L	D: Conc<DL	.0017	1
34	CD	.0005	MG/L		.0000	1
36	PB	-.0140	MG/L	D: Conc<DL	.0126	1
37	SB	.0062	MG/L		.0001	1
38	TL	.0732	MG/L		.0127	1
39	P	.0045	MG/L		.0002	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

555

X01C0130-001/DS/CN 13:07:01 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	168	169	141	0	27	.217
3	U	3182	3176	3636	3083	-42	.264
5	PU	2156	2159	2167	0	-10	-.399
6	MG	2607	2563	79	0	2506	1.769
8	CA	5025	4972	512	0	4486	23.485
10	MN	560	559	302	0	257	.189
11	MO	962	970	0	968	-3	-.006
12	V	848	877	872	0	-10	-.000
13	AL	1172	1171	1147	0	24	.270
14	NI	753	754	742	0	11	.006
16	BA	659	660	569	0	90	.097
17	SR	615	610	375	0	238	.132
18	CR	1443	1437	0	653	787	1.157
21	SE	1577	1586	1611	0	-30	-.074
22	TI	423	424	424	0	-1	.004
23	CU	4390	4326	1292	0	3065	7.680
26	CO	502	505	0	501	2	.006
28	AG	1835	1845	1827	0	13	.017
30	AS	976	975	982	0	-7	.024
31	BE	586	588	0	559	28	.000
32	ZN	491	491	0	229	262	.558
34	CD	375	375	363	0	11	.013
36	PB	2620	2630	0	2618	7	-.006
37	SB	1453	1456	1449	0	5	.015
38	TL	843	848	0	859	-14	-.043
39	P	673	668	0	545	125	2.428

X01C0130-001 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.2171	MG/L		.0036	1
3	U	.2631	MG/L	D: Conc<DL	.6663	1
5	PU	-.4191	MG/L	D: Conc<DL	.2587	1
6	MG	1.7697	MG/L		.0270	3
8	CA	23.4839	MG/L		.1473	30
10	MN	.1897	MG/L		.0013	1
11	MO	-.0065	MG/L	D: Conc<DL	.0038	1
12	V	.0001	MG/L	D: Conc<DL	.0000	1
13	AL	.2592	MG/L		.0628	1
14	NI	.0066	MG/L	D: Conc<DL	.0042	1
16	BA	.0967	MG/L		.0019	1
17	SR	.1314	MG/L		.0010	1
18	CR	1.1566	MG/L		.0080	1
21	SE	-.0719	MG/L	D: Conc<DL	.0273	1
22	TI	.0035	MG/L	D: Conc<DL	.0021	1
23	CU	7.6813	MG/L		.0511	10
26	CO	.0057	MG/L	D: Conc<DL	.0036	1
28	AG	.0143	MG/L	D: Conc<DL	.0111	1
30	AS	.0200	MG/L	D: Conc<DL	.0145	1
31	BE	.0003	MG/L	D: Conc<DL	.0001	1
32	ZN	.5557	MG/L		.0038	1
34	CD	.0139	MG/L		.0013	1
36	PB	-.0067	MG/L	D: Conc<DL	.0126	1
37	SB	-.0239	MG/L	D: Conc<DL	.0307	1
38	TL	-.0420	MG/L	D: Conc<DL	.0127	1
39	P	.7343	MG/L		.0403	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

5560

X01C0130-001M/DS/CN 13:08:53 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	926	927	146	0	780	5.556
3	U	3151	3145	3600	3068	-53	-.181
5	PU	2143	2139	2150	0	-9	-.358
6	MG	2455	2456	78	0	2377	1.678
8	CA	4760	4792	508	0	4267	22.336
10	MN	3549	3550	304	0	3245	2.358
11	MO	1910	1910	0	957	953	1.101
12	V	2387	2373	853	0	1526	2.226
13	AL	1505	1504	1139	0	365	5.613
14	NI	2083	2084	741	0	1342	2.203
16	BA	2844	2850	566	0	2280	2.273
17	SR	2559	2557	372	0	2185	1.193
18	CR	2844	2856	0	644	2205	3.277
21	SE	2686	2688	1623	0	1063	5.393
22	TI	1923	1915	424	0	1495	2.229
23	CU	6315	6297	1291	0	5014	12.568
26	CO	1047	1046	0	503	543	1.120
28	AG	3033	3027	1812	0	1217	2.133
30	AS	1466	1464	976	0	488	2.194
31	BE	28646	28653	0	602	28047	2.114
32	ZN	3054	3062	0	233	2825	6.083
34	CD	2393	2395	365	0	2028	2.136
36	PB	4171	4167	0	2612	1557	2.148
37	SB	2150	2149	1443	0	706	4.337
38	TL	1847	1849	0	865	982	4.269
39	P	1129	1123	0	548	577	11.310

X01C0130-001M / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	5.5564	MG/L		.0344	10
3	U	-.2214	MG/L	D: Conc<DL	.6663	1
5	PU	-.3418	MG/L	D: Conc<DL	.2587	1
6	MG	1.6788	MG/L		.0256	3
8	CA	22.3328	MG/L		.1401	30
10	MN	2.3588	MG/L		.0145	3
11	MO	1.0992	MG/L		.0080	1
12	V	2.2223	MG/L		.0145	3
13	AL	5.5424	MG/L		.0730	10
14	NI	2.2032	MG/L		.0144	3
16	BA	2.2714	MG/L		.0142	3
17	SR	1.1928	MG/L		.0073	1
18	CR	3.2744	MG/L		.0207	3
21	SE	5.4123	MG/L		.0441	10
22	TI	2.2278	MG/L		.0139	3
23	CU	12.5720	MG/L		.0824	10
26	CO	1.1127	MG/L		.0078	1
28	AG	2.1304	MG/L		.0185	3
30	AS	2.1455	MG/L		.0199	3
31	BE	2.1095	MG/L		.0130	3
32	ZN	6.0595	MG/L		.0376	10
34	CD	2.1355	MG/L		.0133	3
36	PB	2.1391	MG/L		.0185	3
37	SB	4.2163	MG/L		.0492	3
38	TL	4.2556	MG/L		.0296	3
39	P	2.2296	MG/L		.0840	10

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

957

X01C0130-001I/DS/CN 13:10:45 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	930	930	146	0	784	5.584
3	U	3167	3166	3620	3094	-59	-.428
5	PU	2159	2153	2162	0	-6	-.250
6	MG	2519	2512	78	0	2438	1.721
8	CA	4903	4923	512	0	4401	23.037
10	MN	3526	3517	306	0	3215	2.336
11	MO	1905	1896	0	970	930	1.075
12	V	2373	2357	871	0	1493	2.178
13	AL	1507	1510	1147	0	361	5.551
14	NI	2071	2074	749	0	1323	2.171
16	BA	2826	2826	571	0	2255	2.247
17	SR	2551	2538	376	0	2168	1.184
18	CR	2859	2858	0	650	2208	3.281
21	SE	2688	2674	1623	0	1058	5.362
22	TI	1913	1900	425	0	1481	2.208
23	CU	6382	6341	1297	0	5064	12.695
26	CO	1043	1044	0	505	539	1.110
28	AG	3031	3029	1832	0	1198	2.096
30	AS	1467	1464	983	0	482	2.160
31	BE	28300	28230	0	606	27658	2.085
32	ZN	3031	3041	0	236	2800	6.027
34	CD	2371	2371	366	0	2004	2.110
36	PB	4156	4165	0	2612	1547	2.135
37	SB	2128	2137	1447	0	685	4.207
38	TL	1967	1932	0	856	1093	4.747
39	P	1134	1133	0	555	578	11.329

X01C0130-001I / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	5.5845	MG/L		.0345	10
3	U	-.4688	MG/L	D: Conc<DL	.6663	1
5	PU	-.2145	MG/L	D: Conc<DL	.2587	1
6	MG	1.7213	MG/L		.0262	3
8	CA	23.0344	MG/L		.1445	30
10	MN	2.3367	MG/L		.0143	3
11	MO	1.0730	MG/L		.0078	1
12	V	2.1739	MG/L		.0142	3
13	AL	5.4803	MG/L		.0727	10
14	NI	2.1712	MG/L		.0142	3
16	BA	2.2464	MG/L		.0141	3
17	SR	1.1835	MG/L		.0073	1
18	CR	3.2784	MG/L		.0208	3
21	SE	5.3824	MG/L		.0440	10
22	TI	2.2071	MG/L		.0138	3
23	CU	12.6985	MG/L		.0832	10
26	CO	1.1033	MG/L		.0078	1
28	AG	2.0954	MG/L		.0183	3
30	AS	2.1183	MG/L		.0198	3
31	BE	2.0803	MG/L		.0128	3
32	ZN	6.0054	MG/L		.0373	10
34	CD	2.1101	MG/L		.0131	3
36	PB	2.1263	MG/L		.0184	3
37	SB	4.0864	MG/L		.0483	3
38	TL	4.7345	MG/L		.0323	10
39	P	2.2908	MG/L		.0841	10

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

559

X01C0130-001SD/DS/CN 13:13:12 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	156	157	139	0	17	.14
3	U	3162	3166	3620	3079	-50	-.04
5	PU	2150	2148	2159	0	-11	-.42
6	MG	588	587	76	0	511	.35
8	CA	1442	1448	502	0	943	4.86
10	MN	352	350	304	0	46	.03
11	MO	956	966	0	954	6	.00
12	V	863	852	891	0	-34	-.03
13	AL	1158	1159	1144	0	14	.11
14	NI	743	743	739	0	3	-.00
16	BA	578	577	567	0	10	.01
17	SR	413	415	373	0	40	.02
18	CR	815	816	0	648	168	.23
21	SE	1576	1577	1615	0	-39	-.12
22	TI	417	418	422	0	-5	-.00
23	CU	1908	1910	1285	0	624	1.55
26	CO	503	500	0	499	2	.00
28	AG	1830	1835	1825	0	7	.00
30	AS	968	970	984	0	-15	-.01
31	BE	585	585	0	557	28	.00
32	ZN	283	280	0	229	52	.10
34	CD	363	364	362	0	2	.00
36	PB	2616	2613	0	2617	-3	-.01
37	SB	1439	1434	1440	0	-4	-.03
38	TL	853	858	0	882	-27	-.10
39	P	568	565	0	538	28	.51

X01C0130-001SD / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1429	MG/L		.0035	1
3	U	-.0476	MG/L	D: Conc<DL	.6663	1
5	PU	-.4242	MG/L	D: Conc<DL	.2587	1
6	MG	.3597	MG/L		.0055	1
8	CA	4.8611	MG/L		.0321	10
10	MN	.0369	MG/L		.0007	1
11	MO	.0037	MG/L	D: Conc<DL	.0038	1
12	V	-.0358	MG/L	D: Conc<DL	.0042	1
13	AL	.1147	MG/L	D: Conc<DL	.0628	1
14	NI	-.0058	MG/L	D: Conc<DL	.0042	1
16	BA	.0172	MG/L		.0019	1
17	SR	.0244	MG/L		.0007	1
18	CR	.2324	MG/L		.0037	1
21	SE	-.1219	MG/L	D: Conc<DL	.0273	1
22	TI	-.0023	MG/L	D: Conc<DL	.0021	1
23	CU	1.5550	MG/L		.0151	1
26	CO	.0069	MG/L	D: Conc<DL	.0036	1
28	AG	.0056	MG/L	D: Conc<DL	.0111	1
30	AS	-.0131	MG/L	D: Conc<DL	.0145	1
31	BE	.0004	MG/L	D: Conc<DL	.0001	1
32	ZN	.1052	MG/L		.0018	1
34	CD	.0039	MG/L	D: Conc<DL	.0013	1
36	PB	-.0201	MG/L	D: Conc<DL	.0126	1
37	SB	-.0464	MG/L	D: Conc<DL	.0307	1
38	TL	-.1013	MG/L	D: Conc<DL	.0127	1
39	P	.1809	MG/L		.0370	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

559

X01C0130-001D/DS/CN 13:15:04 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	153	152	139	0	12	.11
3	U	3153	3147	3594	3063	-47	.08
5	PU	2134	2140	2139	0	-2	-.11
6	MG	2513	2455	78	0	2406	1.69
8	CA	4016	3959	506	0	3481	18.20
10	MN	510	501	300	0	205	.15
11	MO	961	949	0	953	1	-.00
12	V	854	874	873	0	-10	-.00
13	AL	1161	1159	1141	0	19	.19
14	NI	740	740	736	0	4	-.00
16	BA	606	597	565	0	36	.04
17	SR	567	567	370	0	196	.10
18	CR	1364	1351	0	646	710	1.04
21	SE	1565	1561	1603	0	-41	-.12
22	TI	417	418	419	0	-2	.00
23	CU	3935	3860	1279	0	2618	6.55
26	CO	502	501	0	497	4	.01
28	AG	1824	1822	1813	0	9	.01
30	AS	962	967	980	0	-15	-.01
31	BE	583	581	0	554	27	.00
32	ZN	444	432	0	229	209	.44
34	CD	370	369	361	0	8	.01
36	PB	2612	2595	0	2590	13	.00
37	SB	1424	1437	1428	0	2	-.00
38	TL	867	841	0	859	-6	-.00
39	P	650	641	0	539	106	2.04

X01C0130-001D / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1139	MG/L		.0034	1
3	U	.0869	MG/L	D: Conc<DL	.6663	1
5	PU	-.1231	MG/L	D: Conc<DL	.2587	1
6	MG	1.6986	MG/L		.0259	3
8	CA	18.2009	MG/L		.1144	30
10	MN	.1521	MG/L		.0011	1
11	MO	-.0022	MG/L	D: Conc<DL	.0038	1
12	V	.0001	MG/L	D: Conc<DL	.0000	1
13	AL	.1801	MG/L	D: Conc<DL	.0628	1
14	NI	-.0048	MG/L	D: Conc<DL	.0042	1
16	BA	.0432	MG/L		.0019	1
17	SR	.1089	MG/L		.0009	1
18	CR	1.0429	MG/L		.0074	1
21	SE	-.1261	MG/L	D: Conc<DL	.0273	1
22	TI	.0024	MG/L	D: Conc<DL	.0021	1
23	CU	6.5571	MG/L		.0440	10
26	CO	.0106	MG/L	D: Conc<DL	.0036	1
28	AG	.0085	MG/L	D: Conc<DL	.0111	1
30	AS	-.0159	MG/L	D: Conc<DL	.0145	1
31	BE	.0002	MG/L	D: Conc<DL	.0001	1
32	ZN	.4421	MG/L		.0032	1
34	CD	.0103	MG/L		.0013	1
36	PB	.0022	MG/L	D: Conc<DL	.0126	1
37	SB	-.0367	MG/L	D: Conc<DL	.0001	1
38	TL	-.0083	MG/L	D: Conc<DL	.0127	1
39	P	.6436	MG/L		.0393	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

CCV1/DS/CN 13:16:52 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	1562	1555	151	0	1407	10.00(
3	U	3154	3152	3599	3057	-40	.36(
5	PU	2157	2147	2149	0	3	.04:
6	MG	13459	13388	85	0	13339	9.50(
8	CA	2336	2337	504	0	1831	9.53:
10	MN	7224	7181	309	0	6893	5.00(
11	MO	5158	5137	0	953	4194	4.85:
12	V	4285	4235	899	0	3360	4.88(
13	AL	1837	1837	1148	0	689	10.67:
14	NI	3817	3804	753	0	3057	5.03:
16	BA	5492	5473	574	0	4908	4.88:
17	SR	3960	3931	376	0	3569	1.94:
18	CR	4026	4014	0	647	3372	5.02(
21	SE	3580	3567	1613	0	1960	9.87:
22	TI	1781	1763	422	0	1350	2.01:
23	CU	3261	3236	1283	0	1965	4.91:
26	CO	2970	2946	0	507	2451	5.04(
28	AG	2972	2957	1824	0	1140	1.99:
30	AS	3132	3109	982	0	2138	9.42:
31	BE	26423	26290	0	601	25755	1.94:
32	ZN	2569	2562	0	235	2330	5.01:
34	CD	2224	2216	366	0	1853	1.95:
36	PB	9724	9670	0	2639	7058	9.79:
37	SB	3102	3098	1453	0	1647	10.13:
38	TL	3177	3198	0	859	2328	10.09:
39	P	3580	3572	0	556	3019	59.28:

CCV1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S:
2	FE	10.0002	MG/L		.0617	10:
3	U	.2890	MG/L	D: Conc<DL	.6663	1:
5	PU	.0218	MG/L	D: Conc<DL	.2587	1:
6	MG	9.5004	MG/L		.1448	10:
8	CA	9.5221	MG/L		.0606	10:
10	MN	5.0062	MG/L		.0307	10:
11	MO	4.8550	MG/L		.0312	10:
12	V	4.8831	MG/L		.0309	10
13	AL	10.4486	MG/L		.0942	10
14	NI	5.0372	MG/L		.0318	10
16	BA	4.8802	MG/L		.0305	10
17	SR	1.9476	MG/L		.0120	3
18	CR	5.0121	MG/L		.0315	10
21	SE	9.9582	MG/L		.0693	10
22	TI	2.0107	MG/L		.0126	3
23	CU	4.9213	MG/L		.0338	10
26	CO	5.0380	MG/L		.0316	10
28	AG	1.9994	MG/L		.0177	3
30	AS	9.3253	MG/L		.0609	10
31	BE	1.9306	MG/L		.0119	3
32	ZN	4.9721	MG/L		.0310	10
34	CD	1.9513	MG/L		.0121	3
36	PB	9.7811	MG/L		.0629	10
37	SB	9.9255	MG/L		.0951	10
38	TL	10.0538	MG/L		.0646	10
39	P	52.7570	MG/L		.3969	100

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

561

CCB1/DS/CN 13:20:03 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	144	144	138	0	6	.066
3	U	3126	3123	3574	3043	-51	-.091
5	PU	2121	2126	2128	0	-5	-.234
6	MG	79	79	76	0	2	.000
8	CA	516	516	493	0	23	.026
10	MN	296	295	299	0	-4	.000
11	MO	952	952	0	941	10	.008
12	V	850	845	861	0	-14	-.006
13	AL	1141	1141	1133	0	7	.008
14	NI	733	731	728	0	4	-.005
16	BA	551	551	558	0	-7	.000
17	SR	364	364	369	0	-6	-.000
18	CR	655	652	0	642	11	-.003
21	SE	1564	1541	1589	0	-37	-.113
22	TI	413	412	417	0	-5	-.003
23	CU	1270	1269	1270	0	-1	-.013
26	CO	496	497	0	495	2	.005
28	AG	1809	1809	1806	0	2	-.003
30	AS	953	953	964	0	-11	.007
31	BE	578	579	0	551	27	.000
32	ZN	227	228	0	228	0	-.000
34	CD	356	357	357	0	-1	.003
36	PB	2587	2584	0	2583	2	-.013
37	SB	1420	1422	1425	0	-5	-.041
38	TL	848	860	0	837	16	.087
39	P	531	533	0	531	0	-.023

CCB1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.0661	MG/L		.0034	1
3	U	-.0923	MG/L	D: Conc<DL	.6663	1
5	PU	-.2271	MG/L	D: Conc<DL	.2587	1
6	MG	.0009	MG/L	D: Conc<DL	.0011	1
8	CA	.0266	MG/L	D: Conc<DL	.0095	1
10	MN	.0002	MG/L		.0000	1
11	MO	.0084	MG/L	D: Conc<DL	.0038	1
12	V	-.0063	MG/L	D: Conc<DL	.0042	1
13	AL	.0086	MG/L		.0007	1
14	NI	-.0052	MG/L	D: Conc<DL	.0042	1
16	BA	.0008	MG/L		.0000	1
17	SR	-.0003	MG/L	D: Conc<DL	.0000	1
18	CR	-.0016	MG/L	D: Conc<DL	.0034	1
21	SE	-.1118	MG/L	D: Conc<DL	.0273	1
22	TI	-.0010	MG/L	D: Conc<DL	.0000	1
23	CU	-.0123	MG/L	D: Conc<DL	.0112	1
26	CO	.0057	MG/L	D: Conc<DL	.0036	1
28	AG	-.0012	MG/L	D: Conc<DL	.0000	1
30	AS	.0069	MG/L	D: Conc<DL	.0145	1
31	BE	.0002	MG/L	D: Conc<DL	.0001	1
32	ZN	-.0062	MG/L	D: Conc<DL	.0017	1
34	CD	.0009	MG/L		.0000	1
36	PB	-.0132	MG/L	D: Conc<DL	.0126	1
37	SB	-.0414	MG/L	D: Conc<DL	.0307	1
38	TL	.0870	MG/L		.0127	1
39	P	-.0130	MG/L	D: Conc<DL	.0368	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

5b2

TCBLK1/DS/CN 13:20:59 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	134	134	131	0	2	.041
3	U	2868	2861	3259	2797	-48	.035
5	PU	1944	1939	1939	0	3	.043
6	MG	81	82	75	0	6	.003
8	CA	482	480	451	0	29	.058
10	MN	262	262	270	0	-8	-.002
11	MO	855	862	0	858	1	-.002
12	V	776	770	786	0	-14	-.006
13	AL	1047	1047	1033	0	13	.108
14	NI	663	662	663	0	-1	-.013
16	BA	492	492	500	0	-9	-.000
17	SR	338	334	345	0	-10	-.002
18	CR	580	580	0	568	11	-.003
21	SE	1405	1400	1411	0	-9	.032
22	TI	380	378	384	0	-5	-.003
23	CU	1163	1161	1154	0	8	.008
26	CO	449	450	0	448	1	.004
28	AG	1640	1640	1634	0	5	.003
30	AS	856	856	869	0	-13	-.003
31	BE	532	531	0	504	26	.000
32	ZN	219	218	0	210	8	.012
34	CD	325	325	327	0	-3	-.003
36	PB	2334	2335	0	2324	10	-.003
37	SB	1274	1279	1278	0	-2	-.024
38	TL	729	731	0	761	-32	-.123
39	P	490	488	0	484	5	.063

TCBLK1 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.0411	MG/L		.0034	1
3	U	.0354	MG/L	D: Conc<DL	.0138	1
5	PU	.0411	MG/L	D: Conc<DL	.2587	1
6	MG	.0038	MG/L		.0011	1
8	CA	.0580	MG/L		.0095	1
10	MN	-.0029	MG/L	D: Conc<DL	.0007	1
11	MO	-.0025	MG/L	D: Conc<DL	.0038	1
12	V	-.0063	MG/L	D: Conc<DL	.0042	1
13	AL	.1087	MG/L	D: Conc<DL	.0628	1
14	NI	-.0133	MG/L	D: Conc<DL	.0042	1
16	BA	-.0006	MG/L	D: Conc<DL	.0000	1
17	SR	-.0024	MG/L	D: Conc<DL	.0006	1
18	CR	-.0014	MG/L	D: Conc<DL	.0001	1
21	SE	.0319	MG/L	D: Conc<DL	.0273	1
22	TI	-.0018	MG/L	D: Conc<DL	.0021	1
23	CU	.0084	MG/L	D: Conc<DL	.0112	1
26	CO	.0049	MG/L	D: Conc<DL	.0036	1
28	AG	.0030	MG/L	D: Conc<DL	.0111	1
30	AS	-.0038	MG/L	D: Conc<DL	.0003	1
31	BE	.0002	MG/L	D: Conc<DL	.0001	1
32	ZN	.0121	MG/L		.0017	1
34	CD	-.0013	MG/L	D: Conc<DL	.0013	1
36	PB	-.0020	MG/L	D: Conc<DL	.0126	1
37	SB	-.0247	MG/L	D: Conc<DL	.0307	1
38	TL	-.1213	MG/L	D: Conc<DL	.0127	1
39	P	.0466	MG/L	D: Conc<DL	.0368	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

563

X01C0130-002/DS/CN 13:21:38 05-18-2001

SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	303	303	137	0	165	1.193
3	U	3083	3088	3525	2993	-41	.332
5	PU	2097	2097	2104	0	-7	-.291
6	MG	22003	21973	85	0	21902	15.704
8	CA	13192	13271	521	0	12710	66.714
10	MN	1668	1666	298	0	1368	.996
11	MO	941	938	0	931	8	.005
12	V	877	871	841	0	33	.061
13	AL	1259	1258	1118	0	140	2.082
14	NI	732	736	721	0	13	.010
16	BA	694	693	553	0	140	.147
17	SR	1120	1122	365	0	756	.414
18	CR	676	678	0	633	43	.047
21	SE	1522	1534	1573	0	-46	-.155
22	TI	409	412	413	0	-4	.000
23	CU	1774	1770	1254	0	518	1.288
26	CO	491	494	0	487	6	.013
28	AG	1791	1795	1787	0	5	.003
30	AS	952	946	958	0	-9	.015
31	BE	600	599	0	544	55	.002
32	ZN	526	522	0	223	300	.643
34	CD	361	358	355	0	4	.006
36	PB	2556	2565	0	2533	27	.023
37	SB	1401	1402	1398	0	3	.002
38	TL	844	847	0	824	21	.109
39	P	719	719	0	527	191	3.731

X01C0130-002 / DS/CN REPLICATE 1

EXTERNAL STANDARD TCP2 (IECTCP2, BK)

REMARKS: Bldg 559 Inorganic Labs JY48P

Rocky Flats

WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.	Std.S
2	FE	1.1938	MG/L		.0080	1	
3	U	.3237	MG/L	D: Conc<DL	.6663	1	
5	PU	-.3164	MG/L	D: Conc<DL	.2587	1	
6	MG	15.7049	MG/L		.2394	30	
8	CA	66.7020	MG/L		.4171	100	
10	MN	.9958	MG/L		.0061	1	
11	MO	.0052	MG/L	D: Conc<DL	.0038	1	
12	V	.0621	MG/L		.0043	1	
13	AL	2.0443	MG/L		.0643	3	
14	NI	.0098	MG/L	D: Conc<DL	.0042	1	
16	BA	.1466	MG/L		.0021	1	
17	SR	.4122	MG/L		.0026	1	
18	CR	.0397	MG/L		.0034	1	
21	SE	-.1490	MG/L	D: Conc<DL	.0273	1	
22	TI	-.0003	MG/L	D: Conc<DL	.0000	1	
23	CU	1.2891	MG/L		.0140	1	
26	CO	.0136	MG/L		.0036	1	
28	AG	-.0016	MG/L	D: Conc<DL	.0111	1	
30	AS	.0048	MG/L	D: Conc<DL	.0145	1	
31	BE	.0022	MG/L		.0001	1	
32	ZN	.6401	MG/L		.0043	1	
34	CD	.0060	MG/L		.0013	1	
36	PB	.0180	MG/L	D: Conc<DL	.0126	1	
37	SB	.0011	MG/L		.0001	1	
38	TL	.1072	MG/L		.0127	1	
39	P	2.7701	MG/L		.0445	3	

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

564

X01C0130-003/DS/CN 13:23:27 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	242	241	140	0	101	.742
3	U	3116	3119	3565	3039	-53	-.183
5	PU	2119	2117	2122	0	-4	-.199
6	MG	7308	7246	81	0	7196	5.100
8	CA	7357	7353	511	0	6843	35.874
10	MN	940	938	299	0	639	.467
11	MO	947	951	0	954	-5	-.009
12	V	871	845	859	0	-1	.013
13	AL	1218	1213	1130	0	84	1.219
14	NI	740	734	730	0	6	-.003
16	BA	678	678	556	0	122	.129
17	SR	751	743	371	0	376	.207
18	CR	661	661	0	637	24	.017
21	SE	1547	1551	1579	0	-30	-.075
22	TI	414	413	417	0	-4	-.000
23	CU	1572	1571	1264	0	307	.760
26	CO	498	498	0	496	2	.000
28	AG	1808	1808	1799	0	9	.009
30	AS	953	962	966	0	-9	.010
31	BE	577	578	0	553	24	.000
32	ZN	393	391	0	229	162	.344
34	CD	359	359	357	0	2	.004
36	PB	2577	2591	0	2552	32	.028
37	SB	1417	1415	1428	0	-12	-.088
38	TL	837	833	0	844	-10	-.023
39	P	637	632	0	534	100	1.933

X01C0130-003 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.7422	MG/L		.0056	1
3	U	-.1890	MG/L	D: Conc<DL	.6663	1
5	PU	-.1851	MG/L	D: Conc<DL	.2587	1
6	MG	5.1009	MG/L		.0777	10
8	CA	35.8708	MG/L		.2246	30
10	MN	.4670	MG/L		.0029	1
11	MO	-.0101	MG/L	D: Conc<DL	.0038	1
12	V	.0114	MG/L	D: Conc<DL	.0042	1
13	AL	1.1984	MG/L		.0633	1
14	NI	-.0017	MG/L	D: Conc<DL	.0000	1
16	BA	.1285	MG/L		.0020	1
17	SR	.2061	MG/L		.0014	1
18	CR	.0154	MG/L		.0034	1
21	SE	-.0722	MG/L	D: Conc<DL	.0273	1
22	TI	-.0011	MG/L	D: Conc<DL	.0000	1
23	CU	.7604	MG/L		.0122	1
26	CO	.0064	MG/L	D: Conc<DL	.0036	1
28	AG	.0070	MG/L	D: Conc<DL	.0111	1
30	AS	.0106	MG/L	D: Conc<DL	.0145	1
31	BE	.0000	MG/L	D: Conc<DL	.0001	1
32	ZN	.3438	MG/L		.0027	1
34	CD	.0041	MG/L		.0013	1
36	PB	.0262	MG/L	D: Conc<DL	.0126	1
37	SB	-.0885	MG/L	D: Conc<DL	.0307	1
38	TL	-.0261	MG/L	D: Conc<DL	.0127	1
39	P	1.4045	MG/L		.0391	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

565

X01C0130-004/DS/CN 13:24:51 05-18-2001

SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	154	153	137	0	16	.13
3	U	3111	3100	3537	3027	-50	-.02
5	PU	2116	2101	2117	0	-9	-.35
6	MG	13980	14202	83	0	14007	9.98
8	CA	13221	13509	523	0	12842	67.40
10	MN	659	666	299	0	363	.26
11	MO	941	937	0	943	-4	-.00
12	V	865	849	855	0	2	.01
13	AL	1151	1145	1121	0	27	.31
14	NI	733	729	725	0	5	-.00
16	BA	610	602	554	0	51	.05
17	SR	1007	1013	368	0	642	.35
18	CR	2200	2234	0	638	1578	2.34
21	SE	1558	1553	1588	0	-33	-.09
22	TI	415	412	415	0	-2	.00
23	CU	5303	5353	1267	0	4061	10.17
26	CO	496	494	0	492	3	.00
28	AG	1808	1797	1788	0	14	.01
30	AS	951	953	963	0	-11	.00
31	BE	577	572	0	549	25	.00
32	ZN	310	307	0	228	80	.16
34	CD	356	355	357	0	-2	0.00
36	PB	2574	2569	0	2554	17	.00
37	SB	1435	1420	1416	0	11	.05
38	TL	833	836	0	823	12	.06
39	P	664	658	0	538	122	2.37

X01C0130-004 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1358	MG/L		.0034	1
3	U	-.0286	MG/L	D: Conc<DL	.0138	1
5	PU	-.3553	MG/L	D: Conc<DL	.2587	1
6	MG	9.9816	MG/L		.1521	10
8	CA	67.3992	MG/L		.4214	100
10	MN	.2658	MG/L		.0017	1
11	MO	-.0088	MG/L	D: Conc<DL	.0038	1
12	V	.0160	MG/L		.0042	1
13	AL	.2777	MG/L		.0628	1
14	NI	-.0027	MG/L	D: Conc<DL	.0042	1
16	BA	.0582	MG/L		.0019	1
17	SR	.3503	MG/L		.0022	1
18	CR	2.3364	MG/L		.0150	3
21	SE	-.0869	MG/L	D: Conc<DL	.0273	1
22	TI	.0010	MG/L	D: Conc<DL	.0021	1
23	CU	10.1787	MG/L		.0670	10
26	CO	.0073	MG/L	D: Conc<DL	.0036	1
28	AG	.0135	MG/L	D: Conc<DL	.0111	1
30	AS	-.0019	MG/L	D: Conc<DL	.0145	1
31	BE	.0000	MG/L	D: Conc<DL	.0001	1
32	ZN	.1631	MG/L		.0020	1
34	CD	-.0000	MG/L	D: Conc<DL	.0000	1
36	PB	.0068	MG/L	D: Conc<DL	.0126	1
37	SB	-.0262	MG/L	D: Conc<DL	.0307	1
38	TL	.0668	MG/L		.0127	1
39	P	.8549	MG/L		.0401	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

5616

X01C0130-005/DS/CN 13:26:26 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	150	149	140	0	10	.09
3	U	3131	3131	3589	3061	-62	-.53
5	PU	2125	2126	2134	0	-9	-.34
6	MG	1959	1945	78	0	1874	1.32
8	CA	3044	3042	503	0	2539	13.25
10	MN	461	459	300	0	159	.11
11	MO	960	945	0	958	-6	-.01
12	V	821	854	875	0	-38	-.04
13	AL	1155	1155	1137	0	18	.17
14	NI	736	739	729	0	8	.00
16	BA	646	642	561	0	83	.09
17	SR	519	521	372	0	147	.08
18	CR	1100	1100	0	642	457	.66
21	SE	1557	1555	1591	0	-35	-.10
22	TI	415	416	419	0	-4	-.00
23	CU	2974	2950	1275	0	1687	4.22
26	CO	519	519	0	496	23	.04
28	AG	1813	1812	1810	0	1	-.00
30	AS	953	960	983	0	-28	-.06
31	BE	578	576	0	550	26	.00
32	ZN	361	357	0	227	132	.27
34	CD	359	359	361	0	-2	0.00
36	PB	2596	2594	0	2597	-3	-.01
37	SB	1427	1424	1433	0	-9	-.06
38	TL	834	843	0	846	-8	-.01
39	P	613	608	0	540	70	1.35

X01C0130-005 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.0954	MG/L		.0034	1
3	U	-.5376	MG/L	D: Conc<DL	.6664	1
5	PU	-.3050	MG/L	D: Conc<DL	.2587	1
6	MG	1.3227	MG/L		.0201	1
8	CA	13.2517	MG/L		.0836	10
10	MN	.1185	MG/L		.0010	1
11	MO	-.0105	MG/L	D: Conc<DL	.0038	1
12	V	-.0433	MG/L	D: Conc<DL	.0042	1
13	AL	.1673	MG/L	D: Conc<DL	.0628	1
14	NI	.0026	MG/L	D: Conc<DL	.0042	1
16	BA	.0899	MG/L		.0019	1
17	SR	.0825	MG/L		.0008	1
18	CR	.6650	MG/L		.0054	1
21	SE	-.1021	MG/L	D: Conc<DL	.0273	1
22	TI	-.0011	MG/L	D: Conc<DL	.0000	1
23	CU	4.2213	MG/L		.0296	3
26	CO	.0487	MG/L		.0036	1
28	AG	-.0045	MG/L	D: Conc<DL	.0111	1
30	AS	-.0672	MG/L	D: Conc<DL	.0145	1
31	BE	.0002	MG/L	D: Conc<DL	.0001	1
32	ZN	.2774	MG/L		.0024	1
34	CD	-.0001	MG/L	D: Conc<DL	.0000	1
36	PB	-.0199	MG/L	D: Conc<DL	.0126	1
37	SB	-.0895	MG/L	D: Conc<DL	.0307	1
38	TL	-.0158	MG/L	D: Conc<DL	.0127	1
39	P	.4557	MG/L		.0379	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

5b1

X01C0130-006/DS/CN 13:28:18 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	164	163	136	0	27	.217
3	U	3107	3109	3554	3026	-50	-.061
5	PU	2113	2111	2114	0	-3	-.148
6	MG	12337	12457	82	0	12315	8.764
8	CA	17430	17722	535	0	17040	89.478
10	MN	599	602	297	0	303	.222
11	MO	945	943	0	945	-1	-.004
12	V	848	844	867	0	-21	-.017
13	AL	1149	1150	1124	0	25	.287
14	NI	732	733	727	0	6	-.001
16	BA	782	784	557	0	225	.233
17	SR	1221	1228	371	0	852	.467
18	CR	659	658	0	639	19	.013
21	SE	1557	1551	1588	0	-35	-.103
22	TI	411	412	417	0	-5	-.003
23	CU	1322	1320	1260	0	61	.140
26	CO	493	494	0	487	6	.014
28	AG	1801	1804	1791	0	11	.013
30	AS	955	954	972	0	-18	-.023
31	BE	574	574	0	549	25	.000
32	ZN	350	350	0	224	125	.264
34	CD	356	355	355	0	0	.002
36	PB	2567	2569	0	2556	12	.000
37	SB	1413	1412	1414	0	-3	-.028
38	TL	830	828	0	841	-12	-.034
39	P	595	595	0	531	64	1.231

X01C0130-006 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.2178	MG/L		.0036	1
3	U	-.0630	MG/L	D: Conc<DL	.6663	1
5	PU	-.1439	MG/L	D: Conc<DL	.2587	1
6	MG	8.7643	MG/L		.1336	10
8	CA	89.4718	MG/L		.5592	100
10	MN	.2223	MG/L		.0015	1
11	MO	-.0051	MG/L	D: Conc<DL	.0038	1
12	V	-.0171	MG/L	D: Conc<DL	.0042	1
13	AL	.2372	MG/L		.0628	1
14	NI	-.0018	MG/L	D: Conc<DL	.0042	1
16	BA	.2307	MG/L		.0023	1
17	SR	.4640	MG/L		.0029	1
18	CR	.0076	MG/L	D: Conc<DL	.0034	1
21	SE	-.0934	MG/L	D: Conc<DL	.0273	1
22	TI	-.0029	MG/L	D: Conc<DL	.0021	1
23	CU	.1409	MG/L		.0112	1
26	CO	.0142	MG/L		.0036	1
28	AG	.0069	MG/L	D: Conc<DL	.0111	1
30	AS	-.0251	MG/L	D: Conc<DL	.0145	1
31	BE	.0001	MG/L	D: Conc<DL	.0001	1
32	ZN	.2636	MG/L		.0024	1
34	CD	.0020	MG/L	D: Conc<DL	.0013	1
36	PB	-.0012	MG/L	D: Conc<DL	.0001	1
37	SB	-.0290	MG/L	D: Conc<DL	.0307	1
38	TL	-.0356	MG/L	D: Conc<DL	.0127	1
39	P	.8838	MG/L		.0378	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

568

X01C0130-007/DS/CN 13:30:01 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	159	159	138	0	21	.176
3	U	3102	3098	3553	3018	-53	-.149
5	PU	2099	2105	2108	0	-6	-.271
6	MG	22203	22396	86	0	22213	15.932
8	CA	38740	39370	590	0	38464	202.090
10	MN	556	559	299	0	258	.190
11	MO	944	944	0	947	-4	-.007
12	V	879	872	863	0	12	.031
13	AL	1157	1159	1119	0	39	.501
14	NI	730	732	722	0	9	.003
16	BA	734	733	556	0	176	.182
17	SR	2048	2065	369	0	1687	.922
18	CR	663	668	0	633	32	.030
21	SE	1548	1551	1587	0	-38	-.113
22	TI	414	416	416	0	-1	.003
23	CU	1372	1373	1257	0	115	.277
26	CO	493	494	0	488	5	.013
28	AG	1801	1801	1781	0	19	.028
30	AS	967	966	959	0	7	.086
31	BE	575	574	0	545	28	.000
32	ZN	462	457	0	226	232	.495
34	CD	354	354	355	0	-1	.000
36	PB	2575	2567	0	2553	18	.009
37	SB	1417	1423	1418	0	1	-.007
38	TL	855	829	0	850	-9	-.022
39	P	688	686	0	528	158	3.079

X01C0130-007 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1765	MG/L		.0035	1
3	U	-.1505	MG/L	D: Conc<DL	.6663	1
5	PU	-.2595	MG/L	D: Conc<DL	.2587	1
6	MG	15.9320	MG/L		.2429	30
8	CA	202.0782	MG/L		1.2624	100
10	MN	.1897	MG/L		.0013	1
11	MO	-.0080	MG/L	D: Conc<DL	.0038	1
12	V	.0311	MG/L		.0042	1
13	AL	.3877	MG/L		.0629	1
14	NI	.0030	MG/L	D: Conc<DL	.0042	1
16	BA	.1810	MG/L		.0022	1
17	SR	.9147	MG/L		.0057	1
18	CR	.0246	MG/L		.0034	1
21	SE	-.0945	MG/L	D: Conc<DL	.0273	1
22	TI	.0013	MG/L	D: Conc<DL	.0021	1
23	CU	.2785	MG/L		.0113	1
26	CO	.0116	MG/L		.0036	1
28	AG	.0130	MG/L	D: Conc<DL	.0111	1
30	AS	.0836	MG/L		.0145	1
31	BE	.0003	MG/L	D: Conc<DL	.0001	1
32	ZN	.4946	MG/L		.0035	1
34	CD	.0009	MG/L		.0000	1
36	PB	.0054	MG/L	D: Conc<DL	.0126	1
37	SB	-.0076	MG/L	D: Conc<DL	.0307	1
38	TL	-.0251	MG/L	D: Conc<DL	.0127	1
39	P	2.4329	MG/L		.0422	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

569

X01C0130-008/DS/CN 13:31:53 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	154	154	137	0	16	.140
3	U	3090	3090	3532	3024	-61	-.483
5	PU	2102	2099	2105	0	-5	-.236
6	MG	8515	8294	80	0	8324	5.905
8	CA	20590	20200	542	0	19852	104.258
10	MN	416	411	295	0	118	.088
11	MO	943	937	0	938	2	-.001
12	V	853	862	845	0	12	.030
13	AL	1143	1142	1119	0	23	.263
14	NI	731	727	723	0	5	-.003
16	BA	728	726	553	0	173	.179
17	SR	1200	1174	366	0	821	.450
18	CR	654	653	0	629	24	.018
21	SE	1546	1549	1577	0	-30	-.076
22	TI	411	411	415	0	-5	-.001
23	CU	1304	1303	1258	0	45	.101
26	CO	492	491	0	491	0	.002
28	AG	1795	1795	1785	0	10	.011
30	AS	952	950	957	0	-6	.027
31	BE	573	574	0	548	25	.000
32	ZN	308	306	0	227	79	.165
34	CD	361	362	354	0	7	.009
36	PB	2554	2554	0	2539	15	.004
37	SB	1412	1403	1414	0	-8	-.063
38	TL	834	829	0	841	-10	-.024
39	P	580	581	0	532	48	.920

X01C0130-008 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1403	MG/L		.0035	1
3	U	-.4845	MG/L	D: Conc<DL	.6664	1
5	PU	-.1995	MG/L	D: Conc<DL	.2587	1
6	MG	5.9057	MG/L		.0900	10
8	CA	104.2544	MG/L		.6515	100
10	MN	.0882	MG/L		.0009	1
11	MO	-.0016	MG/L	D: Conc<DL	.0038	1
12	V	.0295	MG/L		.0042	1
13	AL	.2038	MG/L		.0628	1
14	NI	-.0029	MG/L	D: Conc<DL	.0042	1
16	BA	.1787	MG/L		.0022	1
17	SR	.4463	MG/L		.0028	1
18	CR	.0161	MG/L		.0034	1
21	SE	-.0672	MG/L	D: Conc<DL	.0273	1
22	TI	-.0021	MG/L	D: Conc<DL	.0000	1
23	CU	.1024	MG/L		.0112	1
26	CO	.0021	MG/L	D: Conc<DL	.0036	1
28	AG	.0041	MG/L	D: Conc<DL	.0111	1
30	AS	.0258	MG/L	D: Conc<DL	.0145	1
31	BE	.0000	MG/L	D: Conc<DL	.0001	1
32	ZN	.1653	MG/L		.0020	1
34	CD	.0091	MG/L		.0013	1
36	PB	.0030	MG/L	D: Conc<DL	.0126	1
37	SB	-.0622	MG/L	D: Conc<DL	.0307	1
38	TL	-.0260	MG/L	D: Conc<DL	.0127	1
39	P	.7068	MG/L		.0374	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

570

X01C0130-009/DS/CN 13:33:28 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	155	154	138	0	15	.135
3	U	3105	3108	3541	3033	-54	-.193
5	PU	2111	2109	2113	0	-4	-.179
6	MG	29026	28976	90	0	28911	20.846
8	CA	34536	34710	577	0	34045	178.864
10	MN	399	397	296	0	101	.076
11	MO	952	946	0	944	5	.001
12	V	908	916	874	0	37	.067
13	AL	1150	1152	1121	0	30	.363
14	NI	732	733	725	0	7	.000
16	BA	743	740	555	0	186	.192
17	SR	2050	2042	369	0	1676	.916
18	CR	667	666	0	638	28	.024
21	SE	1566	1549	1578	0	-21	-.029
22	TI	413	414	417	0	-4	.000
23	CU	1310	1307	1259	0	49	.112
26	CO	492	495	0	490	3	.007
28	AG	1805	1808	1787	0	20	.028
30	AS	982	972	965	0	11	.104
31	BE	578	579	0	549	29	.000
32	ZN	286	281	0	226	57	.117
34	CD	355	356	357	0	-2	.000
36	PB	2571	2565	0	2563	5	-.009
37	SB	1413	1414	1411	0	2	-.003
38	TL	847	837	0	871	-29	-.109
39	P	603	604	0	532	71	1.375

X01C0130-009 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1356	MG/L		.0034	1
3	U	-.1941	MG/L	D: Conc<DL	.6663	1
5	PU	-.1651	MG/L	D: Conc<DL	.2587	1
6	MG	20.8465	MG/L		.3178	30
8	CA	178.8490	MG/L		1.1174	100
10	MN	.0755	MG/L		.0008	1
11	MO	.0015	MG/L	D: Conc<DL	.0038	1
12	V	.0670	MG/L		.0043	1
13	AL	.2609	MG/L		.0628	1
14	NI	.0002	MG/L	D: Conc<DL	.0000	1
16	BA	.1907	MG/L		.0022	1
17	SR	.9097	MG/L		.0056	1
18	CR	.0166	MG/L		.0034	1
21	SE	-.0123	MG/L	D: Conc<DL	.0273	1
22	TI	-.0018	MG/L	D: Conc<DL	.0000	1
23	CU	.1127	MG/L		.0112	1
26	CO	.0075	MG/L	D: Conc<DL	.0036	1
28	AG	.0152	MG/L	D: Conc<DL	.0111	1
30	AS	.1027	MG/L		.0145	1
31	BE	.0002	MG/L	D: Conc<DL	.0001	1
32	ZN	.1171	MG/L		.0019	1
34	CD	.0003	MG/L		.0000	1
36	PB	-.0122	MG/L	D: Conc<DL	.0126	1
37	SB	-.0042	MG/L	D: Conc<DL	.0001	1
38	TL	-.1122	MG/L	D: Conc<DL	.0127	1
39	P	1.2277	MG/L		.0380	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

571

X01C0130-010/DS/CN 13:35:01 05-18-2001

SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	159	157	136	0	21	.175
3	U	3108	3096	3538	3005	-37	.477
5	PU	2109	2100	2107	0	-3	-.144
6	MG	16941	17069	85	0	16920	12.084
8	CA	32623	33126	575	0	32299	169.683
10	MN	418	415	297	0	119	.089
11	MO	949	938	0	954	-11	-.015
12	V	875	851	849	0	14	.033
13	AL	1153	1150	1122	0	29	.343
14	NI	730	728	723	0	6	-.001
16	BA	768	767	556	0	211	.217
17	SR	1658	1664	369	0	1291	.706
18	CR	664	662	0	633	29	.026
21	SE	1570	1549	1592	0	-32	-.086
22	TI	415	415	416	0	-2	.002
23	CU	1299	1294	1251	0	44	.099
26	CO	532	528	0	488	41	.087
28	AG	1809	1802	1791	0	14	.020
30	AS	964	960	963	0	-1	.048
31	BE	577	572	0	549	25	.000
32	ZN	289	282	0	229	56	.114
34	CD	355	354	357	0	-3	-.000
36	PB	2567	2564	0	2537	28	.021
37	SB	1409	1407	1420	0	-12	-.087
38	TL	830	841	0	842	-7	-.014
39	P	601	599	0	529	70	1.348

X01C0130-010 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1753	MG/L		.0035	1
3	U	.4762	MG/L	D: Conc<DL	.6663	1
5	PU	-.1804	MG/L	D: Conc<DL	.2587	1
6	MG	12.0849	MG/L		.1842	10
8	CA	169.6743	MG/L		1.0600	100
10	MN	.0892	MG/L		.0009	1
11	MO	-.0154	MG/L	D: Conc<DL	.0038	1
12	V	.0348	MG/L		.0042	1
13	AL	.2507	MG/L		.0628	1
14	NI	-.0019	MG/L	D: Conc<DL	.0042	1
16	BA	.2160	MG/L		.0023	1
17	SR	.7004	MG/L		.0044	1
18	CR	.0211	MG/L		.0034	1
21	SE	-.0697	MG/L	D: Conc<DL	.0273	1
22	TI	.0007	MG/L	D: Conc<DL	.0021	1
23	CU	.1000	MG/L		.0112	1
26	CO	.0871	MG/L		.0036	1
28	AG	.0065	MG/L	D: Conc<DL	.0111	1
30	AS	.0464	MG/L		.0145	1
31	BE	.0000	MG/L	D: Conc<DL	.0001	1
32	ZN	.1143	MG/L		.0018	1
34	CD	-.0007	MG/L	D: Conc<DL	.0000	1
36	PB	.0203	MG/L	D: Conc<DL	.0126	1
37	SB	-.0873	MG/L	D: Conc<DL	.0307	1
38	TL	-.0175	MG/L	D: Conc<DL	.0127	1
39	P	1.2034	MG/L		.0379	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

5/8

CCV2/DS/CN 13:37:01 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	1541	1557	149	0	1399	9.947
3	U	3110	3117	3552	3033	-50	-.050
5	PU	2127	2126	2117	0	10	.289
6	MG	13294	13435	82	0	13282	9.459
8	CA	2307	2342	498	0	1826	9.502
10	MN	7148	7219	306	0	6877	4.995
11	MO	5098	5138	0	958	4159	4.818
12	V	4202	4281	892	0	3349	4.869
13	AL	1815	1830	1131	0	691	10.714
14	NI	3765	3811	740	0	3048	5.017
16	BA	5431	5497	567	0	4896	4.871
17	SR	3921	3950	372	0	3563	1.944
18	CR	3980	4029	0	644	3360	5.002
21	SE	3519	3561	1611	0	1929	9.718
22	TI	1761	1768	417	0	1347	2.009
23	CU	3216	3236	1268	0	1957	4.899
26	CO	2932	2960	0	501	2444	5.032
28	AG	2932	2944	1802	0	1136	1.988
30	AS	3088	3118	968	0	2134	9.407
31	BE	26150	26513	0	596	25735	1.940
32	ZN	2537	2572	0	232	2322	4.999
34	CD	2198	2220	362	0	1847	1.945
36	PB	9588	9669	0	2602	7026	9.753
37	SB	3073	3104	1426	0	1662	10.233
38	TL	3206	3197	0	852	2349	10.182
39	P	3530	3593	0	548	3013	59.157

CCV2 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.Si
2	FE	9.9472	MG/L		.0614	10(
3	U	-.1218	MG/L	D: Conc<DL	.6663	1(
5	PU	.2987	MG/L	D: Conc<DL	.2587	1(
6	MG	9.4597	MG/L		.1442	10(
8	CA	9.4930	MG/L		.0604	10(
10	MN	4.9946	MG/L		.0307	10(
11	MO	4.8140	MG/L		.0309	10(
12	V	4.8651	MG/L		.0308	10(
13	AL	10.4857	MG/L		.0944	10(
14	NI	5.0222	MG/L		.0317	10(
16	BA	4.8682	MG/L		.0304	10(
17	SR	1.9441	MG/L		.0120	3
18	CR	4.9943	MG/L		.0314	10
21	SE	9.8005	MG/L		.0684	10
22	TI	2.0074	MG/L		.0126	3
23	CU	4.9002	MG/L		.0337	10
26	CO	5.0237	MG/L		.0315	10
28	AG	1.9933	MG/L		.0177	3
30	AS	9.3085	MG/L		.0608	10
31	BE	1.9291	MG/L		.0119	3
32	ZN	4.9558	MG/L		.0309	10
34	CD	1.9441	MG/L		.0121	3
36	PB	9.7364	MG/L		.0626	10
37	SB	10.0193	MG/L		.0958	10
38	TL	10.1425	MG/L		.0651	10
39	P	52.6491	MG/L		.3960	100

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

573

CCB2/DS/CN 13:40:13 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	140	139	137	0	3	.043
3	U	3113	3118	3571	3034	-53	-.182
5	PU	2112	2118	2122	0	-8	-.309
6	MG	79	79	76	0	2	.001
8	CA	515	516	493	0	23	.024
10	MN	295	296	301	0	-5	-.000
11	MO	943	941	0	948	-6	-.010
12	V	843	841	859	0	-18	-.012
13	AL	1139	1138	1130	0	8	.028
14	NI	731	732	729	0	3	-.006
16	BA	551	551	558	0	-8	-.000
17	SR	363	362	370	0	-8	-.001
18	CR	650	651	0	638	12	.000
21	SE	1552	1539	1572	0	-27	-.059
22	TI	412	411	416	0	-5	-.001
23	CU	1266	1267	1264	0	2	-.006
26	CO	495	497	0	493	3	.007
28	AG	1803	1808	1801	0	4	.001
30	AS	950	947	967	0	-19	-.028
31	BE	576	578	0	550	26	.000
32	ZN	228	230	0	227	1	-.002
34	CD	357	356	358	0	-2	-.000
36	PB	2570	2577	0	2567	6	-.007
37	SB	1414	1411	1428	0	-16	-.112
38	TL	836	854	0	855	-10	-.027
39	P	532	534	0	532	1	-.015

CCB2 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.0437	MG/L		.0034	1
3	U	-.1826	MG/L	D: Conc<DL	.6663	1
5	PU	-.2951	MG/L	D: Conc<DL	.2587	1
6	MG	.0009	MG/L	D: Conc<DL	.0011	1
8	CA	.0244	MG/L	D: Conc<DL	.0095	1
10	MN	-.0006	MG/L	D: Conc<DL	.0000	1
11	MO	-.0106	MG/L	D: Conc<DL	.0038	1
12	V	-.0124	MG/L	D: Conc<DL	.0042	1
13	AL	.0290	MG/L	D: Conc<DL	.0628	1
14	NI	-.0064	MG/L	D: Conc<DL	.0042	1
16	BA	-.0001	MG/L	D: Conc<DL	.0000	1
17	SR	-.0016	MG/L	D: Conc<DL	.0006	1
18	CR	.0003	MG/L		.0001	1
21	SE	-.0601	MG/L	D: Conc<DL	.0273	1
22	TI	-.0018	MG/L	D: Conc<DL	.0021	1
23	CU	-.0058	MG/L	D: Conc<DL	.0112	1
26	CO	.0077	MG/L	D: Conc<DL	.0036	1
28	AG	.0010	MG/L		.0000	1
30	AS	-.0287	MG/L	D: Conc<DL	.0145	1
31	BE	.0002	MG/L	D: Conc<DL	.0001	1
32	ZN	-.0024	MG/L	D: Conc<DL	.0017	1
34	CD	-.0003	MG/L	D: Conc<DL	.0000	1
36	PB	-.0072	MG/L	D: Conc<DL	.0126	1
37	SB	-.1127	MG/L	D: Conc<DL	.0307	1
38	TL	-.0269	MG/L	D: Conc<DL	.0127	1
39	P	-.0126	MG/L	D: Conc<DL	.0002	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

5/14

X01C0131-001/DS/CN 13:41:55 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	185	185	137	0	47	.360
3	U	3078	3066	3506	2986	-44	.186
5	PU	2090	2082	2083	0	2	.024
6	MG	10403	10524	82	0	10381	7.377
8	CA	22236	22656	543	0	21902	115.035
10	MN	2610	2638	296	0	2327	1.692
11	MO	938	934	0	919	17	.015
12	V	843	843	837	0	5	.021
13	AL	1137	1132	1111	0	23	.264
14	NI	738	731	716	0	18	.018
16	BA	669	673	550	0	121	.128
17	SR	1500	1512	367	0	1138	.623
18	CR	673	670	0	625	46	.050
21	SE	1547	1532	1549	0	-10	.027
22	TI	410	409	414	0	-5	-.003
23	CU	1330	1327	1243	0	84	.200
26	CO	494	494	0	485	8	.019
28	AG	1788	1783	1767	0	18	.025
30	AS	938	936	959	0	-22	-.040
31	BE	570	568	0	542	26	.000
32	ZN	1090	1100	0	223	872	1.873
34	CD	362	362	352	0	9	.011
36	PB	2539	2526	0	2538	-6	-.023
37	SB	1405	1394	1391	0	8	.030
38	TL	820	820	0	836	-17	-.054
39	P	684	685	0	522	162	3.159

X01C0131-001 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.3608	MG/L		.0040	1
3	U	.1838	MG/L	D: Conc<DL	.6663	1
5	PU	.0102	MG/L		.0004	1
6	MG	7.3772	MG/L		.1124	10
8	CA	115.0303	MG/L		.7188	100
10	MN	1.6919	MG/L		.0104	3
11	MO	.0142	MG/L		.0038	1
12	V	.0216	MG/L		.0042	1
13	AL	.1984	MG/L		.0628	1
14	NI	.0180	MG/L		.0042	1
16	BA	.1268	MG/L		.0020	1
17	SR	.6188	MG/L		.0038	1
18	CR	.0461	MG/L		.0034	1
21	SE	.0321	MG/L	D: Conc<DL	.0273	1
22	TI	-.0023	MG/L	D: Conc<DL	.0000	1
23	CU	.2004	MG/L		.0112	1
26	CO	.0190	MG/L		.0036	1
28	AG	.0164	MG/L	D: Conc<DL	.0111	1
30	AS	-.0418	MG/L	D: Conc<DL	.0145	1
31	BE	.0001	MG/L	D: Conc<DL	.0001	1
32	ZN	1.8727	MG/L		.0117	3
34	CD	.0116	MG/L		.0013	1
36	PB	-.0255	MG/L	D: Conc<DL	.0126	1
37	SB	.0385	MG/L	D: Conc<DL	.0307	1
38	TL	-.0586	MG/L	D: Conc<DL	.0127	1
39	P	.7816	MG/L		.0425	3

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

575

X01C0131-002/DS/CN 13:43:42 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	560	558	140	0	419	2.995
3	U	3081	3080	3519	2995	-46	.124
5	PU	2091	2088	2097	0	-8	-.322
6	MG	10535	10507	81	0	10439	7.418
8	CA	27693	27800	559	0	27187	142.815
10	MN	1938	1934	297	0	1638	1.192
11	MO	951	940	0	937	8	.005
12	V	904	879	848	0	43	.076
13	AL	1141	1136	1114	0	24	.277
14	NI	732	726	720	0	9	.003
16	BA	713	713	551	0	161	.167
17	SR	1565	1557	367	0	1193	.652
18	CR	650	648	0	628	21	.013
21	SE	1535	1539	1568	0	-31	-.079
22	TI	413	409	413	0	-2	.002
23	CU	1256	1255	1248	0	7	.005
26	CO	492	491	0	488	3	.008
28	AG	1798	1789	1774	0	19	.028
30	AS	958	948	959	0	-7	.025
31	BE	575	572	0	545	28	.000
32	ZN	315	319	0	225	91	.191
34	CD	353	352	353	0	-1	.000
36	PB	2554	2541	0	2539	8	-.004
37	SB	1396	1399	1405	0	-8	-.062
38	TL	833	833	0	853	-20	-.068
39	P	553	554	0	530	23	.430

X01C0131-002 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	2.9953	MG/L		.0187	3
3	U	.1028	MG/L	D: Conc<DL	.6663	1
5	PU	-.3307	MG/L	D: Conc<DL	.2587	1
6	MG	7.4189	MG/L		.1131	10
8	CA	142.8086	MG/L		.8922	100
10	MN	1.1920	MG/L		.0073	1
11	MO	.0045	MG/L	D: Conc<DL	.0038	1
12	V	.0766	MG/L		.0043	1
13	AL	.1974	MG/L		.0628	1
14	NI	.0024	MG/L	D: Conc<DL	.0042	1
16	BA	.1661	MG/L		.0021	1
17	SR	.6480	MG/L		.0040	1
18	CR	.0089	MG/L	D: Conc<DL	.0034	1
21	SE	-.0652	MG/L	D: Conc<DL	.0273	1
22	TI	.0010	MG/L	D: Conc<DL	.0021	1
23	CU	.0063	MG/L	D: Conc<DL	.0112	1
26	CO	.0084	MG/L	D: Conc<DL	.0036	1
28	AG	.0170	MG/L	D: Conc<DL	.0111	1
30	AS	.0236	MG/L	D: Conc<DL	.0145	1
31	BE	.0001	MG/L	D: Conc<DL	.0001	1
32	ZN	.1907	MG/L		.0021	1
34	CD	.0008	MG/L		.0000	1
36	PB	-.0070	MG/L	D: Conc<DL	.0126	1
37	SB	-.0619	MG/L	D: Conc<DL	.0307	1
38	TL	-.0727	MG/L	D: Conc<DL	.0127	1
39	P	.2063	MG/L		.0369	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

576

CRDL2/DS/CN 13:45:24 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	162	162	138	0	24	.194
3	U	3148	3148	3613	3064	-53	-.183
5	PU	2142	2138	2149	0	-10	-.395
6	MG	81	80	77	0	3	.001
8	CA	518	517	498	0	19	.006
10	MN	327	327	302	0	25	.021
11	MO	1202	1199	0	960	240	.274
12	V	912	910	869	0	42	.074
13	AL	1154	1150	1141	0	11	.069
14	NI	778	774	736	0	39	.053
16	BA	558	555	566	0	-10	-.003
17	SR	895	891	374	0	518	.285
18	CR	708	707	0	648	59	.070
21	SE	1612	1614	1589	0	23	.192
22	TI	436	434	422	0	13	.024
23	CU	1312	1310	1282	0	29	.063
26	CO	537	537	0	497	39	.083
28	AG	1860	1861	1819	0	41	.060
30	AS	1010	1007	985	0	23	.157
31	BE	675	675	0	556	119	.007
32	ZN	264	264	0	230	34	.060
34	CD	374	373	363	0	10	.013
36	PB	2662	2665	0	2595	68	.078
37	SB	1489	1470	1436	0	43	.253
38	TL	889	889	0	855	34	.163
39	P	582	582	0	537	45	.856

CRDL2 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.1944	MG/L		.0035	1
3	U	-.1844	MG/L	D: Conc<DL	.6663	1
5	PU	-.3815	MG/L	D: Conc<DL	.2587	1
6	MG	.0013	MG/L	D: Conc<DL	.0010	1
8	CA	.0061	MG/L	D: Conc<DL	.0095	1
10	MN	.0209	MG/L		.0007	1
11	MO	.2745	MG/L		.0042	1
12	V	.0744	MG/L		.0043	1
13	AL	.0588	MG/L	D: Conc<DL	.0628	1
14	NI	.0540	MG/L		.0042	1
16	BA	-.0020	MG/L	D: Conc<DL	.0019	1
17	SR	.2852	MG/L		.0018	1
18	CR	.0704	MG/L		.0034	1
21	SE	.1967	MG/L		.0273	1
22	TI	.0245	MG/L		.0021	1
23	CU	.0627	MG/L		.0112	1
26	CO	.0831	MG/L		.0036	1
28	AG	.0667	MG/L		.0111	1
30	AS	.1560	MG/L		.0145	1
31	BE	.0070	MG/L		.0001	1
32	ZN	.0661	MG/L		.0018	1
34	CD	.0130	MG/L		.0013	1
36	PB	.0785	MG/L		.0126	1
37	SB	.2487	MG/L		.0308	1
38	TL	.1621	MG/L		.0127	1
39	P	.7688	MG/L		.0373	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

00108

INTA2/DS/CN 13:48:57 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	25963	26153	321	0	25737	182.49
3	U	3035	3032	3412	2916	-6	1.72
5	PU	2094	2087	2056	0	35	1.154
6	MG	324566	325100	310	0	324522	392.02
8	CA	88246	89480	699	0	88164	463.34
10	MN	323	321	301	0	21	.018
11	MO	1091	1088	0	1075	14	.012
12	V	839	854	829	0	17	.038
13	AL	31553	32030	1166	0	30624	479.33
14	NI	760	760	715	0	44	.06
16	BA	560	559	556	0	3	.01
17	SR	389	388	360	0	28	.018
18	CR	731	731	0	631	99	.13
21	SE	1783	1792	1831	0	-44	-.14
22	TI	407	405	409	0	-4	.00
23	CU	1225	1222	1214	0	9	.01
26	CO	491	490	0	481	9	.01
28	AG	1762	1760	1730	0	30	.04
30	AS	1738	1745	1262	0	479	2.15
31	BE	562	560	0	532	28	.00
32	ZN	263	260	0	251	11	.01
34	CD	384	384	375	0	9	.01
36	PB	3462	3458	0	3021	438	.59
37	SB	1613	1624	1621	0	-3	-.03
38	TL	949	936	0	964	-22	-.07
39	P	646	646	0	633	12	.21

INTA2 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	182.4920	MG/L		1.1276	100
3	U	.4147	MG/L	D: Conc<DL	.6665	3
5	PU	1.1229	MG/L		.2589	1
6	MG	392.0210	MG/L		5.9767	100
8	CA	463.0017	MG/L		2.8938	100
10	MN	-.0030	MG/L	D: Conc<DL	.0007	1
11	MO	.0192	MG/L		.0038	1
12	V	.0265	MG/L		.0042	1
13	AL	479.1107	MG/L		3.1383	100
14	NI	-.0058	MG/L	D: Conc<DL	.0042	1
16	BA	.0060	MG/L		.0019	1
17	SR	.0013	MG/L	D: Conc<DL	.0007	1
18	CR	-.0178	MG/L	D: Conc<DL	.0035	1
21	SE	-.0470	MG/L	D: Conc<DL	.0273	1
22	TI	-.0050	MG/L	D: Conc<DL	.0000	1
23	CU	-.0011	MG/L	D: Conc<DL	.0112	1
26	CO	.0133	MG/L		.0036	1
28	AG	.0109	MG/L	D: Conc<DL	.0111	1
30	AS	-.0730	MG/L	D: Conc<DL	.0197	3
31	BE	.0003	MG/L	D: Conc<DL	.0001	1
32	ZN	.0009	MG/L	D: Conc<DL	.0017	1
34	CD	-.0089	MG/L	D: Conc<DL	.0013	1
36	PB	-.0127	MG/L	D: Conc<DL	.0131	1
37	SB	-.0171	MG/L	D: Conc<DL	.0307	1
38	TL	.0507	MG/L		.0127	1
39	P	-.1487	MG/L	D: Conc<DL	.0369	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

5-18-01 487.9164

00110

00109

INTAB2/DS/CN 13:50:41 05-18-2001

SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	26413	26630	319	0	26202	185.78
3	U	3029	3026	3401	2910	-6	1.75
5	PU	2094	2091	2059	0	33	1.11
6	MG	327133	327966	309	0	327240	404.44
8	CA	89703	90806	698	0	89556	470.65
10	MN	977	982	299	0	681	.49
11	MO	1916	1910	0	1089	824	.95
12	V	1175	1170	842	0	330	.49
13	AL	32183	32610	1171	0	31225	488.73
14	NI	1316	1320	720	0	598	.97
16	BA	1039	1039	555	0	483	.48
17	SR	2217	2221	362	0	1857	1.01
18	CR	1053	1053	0	628	424	.61
21	SE	1983	1989	1830	0	156	.85
22	TI	406	406	409	0	-3	.00
23	CU	1412	1414	1215	0	197	.48
26	CO	722	721	0	482	239	.49
28	AG	2324	2323	1736	0	587	1.02
30	AS	1982	1992	1252	0	735	3.27
31	BE	7056	7098	0	541	6535	.49
32	ZN	713	719	0	250	466	.99
34	CD	1250	1261	375	0	880	.92
36	PB	4135	4144	0	3045	1094	1.50
37	SB	1781	1792	1622	0	163	.99
38	TL	1184	1183	0	963	221	.97
39	P	725	723	0	631	93	1.79

INTAB2 / DS/CN REPLICATE 1

EXTERNAL STANDARD TCP2 (IECTCP2, BK)

REMARKS: Bldg 559 Inorganic Labs JY48P

Rocky Flats

WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	185.7868	MG/L		1.1479	100
3	U	.4208	MG/L	D: Conc<DL	.6665	3
5	PU	1.0786	MG/L		.2589	1
6	MG	492.0029 ~~404.4481~~	MG/L		6.1662	100
8	CA	470.3091	MG/L		2.9394	100
10	MN	.4752	MG/L		.0031	1
11	MO	.9588	MG/L		.0072	1
12	V	.4802	MG/L		.0052	1
13	AL	488.4674	MG/L		3.1998	100
14	NI	.9077	MG/L		.0074	1
16	BA	.4832	MG/L		.0035	1
17	SR	.9976	MG/L		.0062	1
18	CR	.4626	MG/L		.0052	1
21	SE	.9678	MG/L		.0278	1
22	TI	-.0048	MG/L	D: Conc<DL	.0000	1
23	CU	.4695	MG/L		.0116	1
26	CO	.4877	MG/L		.0047	1
28	AG	.9898	MG/L		.0132	1
30	AS	.9985	MG/L		.0250	3
31	BE	.4902	MG/L		.0030	1
32	ZN	.9735	MG/L		.0064	1
34	CD	.9074	MG/L		.0059	1
36	PB	.8865	MG/L		.0158	3
37	SB	.9842	MG/L		.0319	1
38	TL	1.0983	MG/L		.0141	1
39	P	.1613	MG/L		.0388	3

5-18-01

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

00111

519

00110

CCV3/DS/CN 13:52:50 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	1590	1598	152	0	1442	10.24
3	U	3151	3151	3600	3069	-51	-.10
5	PU	2155	2152	2151	0	2	.02
6	MG	13485	13578	85	0	13446	9.57
8	CA	2333	2361	505	0	1842	9.58
10	MN	7260	7301	311	0	6969	5.06
11	MO	5151	5185	0	982	4186	4.84
12	V	4256	4308	928	0	3353	4.87
13	AL	1840	1851	1151	0	694	10.76
14	NI	3819	3855	756	0	3081	5.07
16	BA	5501	5548	577	0	4947	4.92
17	SR	3964	3982	378	0	3594	1.96
18	CR	4037	4069	0	652	3401	5.06
21	SE	3576	3611	1616	0	1977	9.95
22	TI	1786	1787	425	0	1361	2.02
23	CU	3264	3273	1292	0	1976	4.94
26	CO	2979	2991	0	507	2478	5.10
28	AG	2973	2974	1832	0	1140	1.99
30	AS	3134	3173	978	0	2175	9.58
31	BE	26483	26743	0	601	26011	1.96
32	ZN	2571	2598	0	235	2349	5.05
34	CD	2229	2247	368	0	1870	1.96
36	PB	9730	9812	0	2650	7120	9.88
37	SB	3108	3142	1461	0	1664	10.24
38	TL	3157	3208	0	862	2320	10.05
39	P	3572	3617	0	556	3039	59.66

CCV3 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	10.2488	MG/L		.0633	10
3	U	-.1801	MG/L	D: Conc<DL	.6663	1
5	PU	.0367	MG/L		.0004	1
6	MG	9.5781	MG/L		.1460	10
8	CA	9.5759	MG/L		.0609	10
10	MN	5.0610	MG/L		.0311	10
11	MO	4.8451	MG/L		.0311	10
12	V	4.8707	MG/L		.0308	10
13	AL	10.5311	MG/L		.0946	10
14	NI	5.0756	MG/L		.0320	10
16	BA	4.9187	MG/L		.0307	10
17	SR	1.9613	MG/L		.0121	3
18	CR	5.0548	MG/L		.0318	10
21	SE	10.0396	MG/L		.0698	10
22	TI	2.0275	MG/L		.0127	3
23	CU	4.9493	MG/L		.0340	10
26	CO	5.0935	MG/L		.0320	10
28	AG	2.0012	MG/L		.0177	3
30	AS	9.4871	MG/L		.0619	10
31	BE	1.9500	MG/L		.0120	3
32	ZN	5.0127	MG/L		.0313	10
34	CD	1.9683	MG/L		.0122	3
36	PB	9.8677	MG/L		.0634	10
37	SB	10.0282	MG/L		.0959	10
38	TL	10.0165	MG/L		.0643	10
39	P	53.0794	MG/L		.3994	100

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

580

CCB3/DS/CN 13:56:06 05-18-2001
SAMPLE

Chan	Elem	PK1	PK2	BK-LO	BK-HI	NET	SolnConc
2	FE	148	147	139	0	8	.080
3	U	3127	3129	3573	3043	-47	.058
5	PU	2123	2129	2124	0	2	.012
6	MG	82	82	76	0	5	.003
8	CA	518	519	493	0	24	.033
10	MN	297	297	301	0	-5	-.000
11	MO	946	950	0	953	-6	-.010
12	V	820	843	863	0	-32	-.033
13	AL	1144	1146	1134	0	10	.060
14	NI	734	738	725	0	11	.006
16	BA	554	553	561	0	-8	0.000
17	SR	362	365	369	0	-6	-.000
18	CR	653	657	0	641	13	.002
21	SE	1555	1560	1593	0	-37	-.108
22	TI	413	413	421	0	-8	-.006
23	CU	1268	1274	1270	0	1	-.010
26	CO	498	498	0	495	3	.008
28	AG	1809	1818	1807	0	7	.006
30	AS	953	953	968	0	-15	-.010
31	BE	578	580	0	551	27	.000
32	ZN	229	227	0	230	-3	-.012
34	CD	358	358	362	0	-4	-.003
36	PB	2586	2589	0	2589	-2	-.018
37	SB	1421	1424	1424	0	-2	-.025
38	TL	844	836	0	843	-4	.001
39	P	536	536	0	534	2	.012

CCB3 / DS/CN REPLICATE 1
EXTERNAL STANDARD TCP2 (IECTCP2, BK)
REMARKS: Bldg 559 Inorganic Labs JY48P
Rocky Flats
WEIGHT = 1 INITIAL VOL. = 1 DILUTION FACTOR = 1

Chan	Elem	Conc.	Units	Warning	Pred.SD	Vol.Std.S
2	FE	.0808	MG/L		.0034	1
3	U	.0575	MG/L	D: Conc<DL	.6663	1
5	PU	.0083	MG/L		.0004	1
6	MG	.0030	MG/L	D: Conc<DL	.0010	1
8	CA	.0334	MG/L		.0095	1
10	MN	-.0002	MG/L	D: Conc<DL	.0000	1
11	MO	-.0100	MG/L	D: Conc<DL	.0038	1
12	V	-.0327	MG/L	D: Conc<DL	.0042	1
13	AL	.0608	MG/L	D: Conc<DL	.0628	1
14	NI	.0061	MG/L	D: Conc<DL	.0042	1
16	BA	-.0000	MG/L	D: Conc<DL	.0000	1
17	SR	-.0003	MG/L	D: Conc<DL	.0000	1
18	CR	.0020	MG/L	D: Conc<DL	.0034	1
21	SE	-.1082	MG/L	D: Conc<DL	.0273	1
22	TI	-.0059	MG/L	D: Conc<DL	.0021	1
23	CU	-.0100	MG/L	D: Conc<DL	.0112	1
26	CO	.0083	MG/L	D: Conc<DL	.0036	1
28	AG	.0059	MG/L	D: Conc<DL	.0111	1
30	AS	-.0103	MG/L	D: Conc<DL	.0145	1
31	BE	.0003	MG/L	D: Conc<DL	.0001	1
32	ZN	-.0121	MG/L	D: Conc<DL	.0017	1
34	CD	-.0019	MG/L	D: Conc<DL	.0013	1
36	PB	-.0182	MG/L	D: Conc<DL	.0126	1
37	SB	-.0255	MG/L	D: Conc<DL	.0307	1
38	TL	.0015	MG/L		.0001	1
39	P	.0253	MG/L		.0002	1

D: Concentration is less than predicted detection limit (<3*Pred.Std.Dev.)

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Kaiser Hill Company
Rocky Flats Environmental Technology Site
Inorganic Metals Lab - Building 559

TOXICITY CHARACTERISTIC LEACHING PROCEDURE EXTRACTION FOR INORGANIC METALS
DATE: (5/21/01)
Lab #'s: X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002

The Samples included in this TCLP report

X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002

Method Summary

The TCLP is designed to determine the mobility of both organic and inorganic contaminants present in liquid, solid, and multiphasic wastes. However, if a total analysis of the waste demonstrates that individual contaminates are not present in the waste, or they are present at such low concentrations that the appropriate regulatory thresholds could not possibly be exceeded, the TCLP need not be run.

The TCLP consist of three basic steps: separation, agitation and filtration. Which of these steps are performed depends upon whether the waste is a liquid, multiphasic or a solid and whether inorganic metals, semi-volatile or volatile organics are of interest. When volatile organics are not a concern a bottle extractor is used and when volatile organics are a concern a special extraction vessel Zero Headspace Extractor (ZHE) that precludes headspace is used.

Prior to TCLP extractions preliminary TCLP evaluations are performed on a representative amount of sample of waste that will not actually undergo TCLP extraction. These evaluations include: (1) determination of the percent solids (wet weight) of the waste; (2) determination of percent solids (dry weight) for waste that may contain insignificant solids (< 0.5), and is then defined as the TCLP extract after filtration through a 0.6 to 0.8 micron glass fiber filter; (3) determination of whether the solid portion of the wastes requires particle size reduction; and (4) determination of which of the two extraction fluids, based on the sample alkalinity, are to be used for the non-volatile TCLP extraction of the waste.

For wastes comprised of solids or for wastes containing significant amounts of solid material, the particle size of the waste is reduced (if necessary), the liquid phase, if any, is separated from the solid phase and stored for later analysis. The solid phase is extracted with an amount of extraction fluid equal to 20 times the weight of the solid phase. Following the extraction, the liquid extract is separated from the solid phase using a 0.6 to 0.8 micron glass fiber filter. If the separate phases are compatible, the initial liquid phase (sample filtrate) of the waste is added to the TCLP extract, and these liquids are analyzed together. If the separate phases are incompatible, the liquids are analyzed separately and the results are mathematically combined.

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~~003~~ 5-23

Kaiser Hill Company
Rocky Flats Environmental Technology Site
Inorganic Metals Lab - Building 559

TOXICITY CHARACTERISTIC LEACHING PROCEDURE EXTRACTION FOR INORGANIC METALS
DATE: (5/21/01)
Lab #'s: X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002

This report discusses test results for generation of the TCLP Extract. Reports for the analysis of the TCLP Extract are reported by those areas performing the analyses. The referenced base method, EPA Reference SW-846 Method 1311, is followed with the following deviations:

A smaller amount of approximately 5 grams for each sample was utilized to allow for a reduced volume final TCLP extract. This is done to comply with waste minimization and criticality safety concerns. Also, the mesh sizes of solids utilized to prepare the TCLP solids extract for these samples were determined to be greater than 9.5 mm mesh size reduction and less than the 3.1 cm2/gm surface area requirements. Therefore, particle size reduction was required by use of scissors. The pH measurements of the TCLP extracts, prepared outside of glovebox containment, were performed by the use of pH meter.

The samples were received in the metals area on 5/8/01 and the TCLP extractions were started on 5/17/01. All of the samples were determined to be 100% solids.

X01C0130-001
The final extract pH was 4.99

X01C0130-002
The final extract pH was 4.96

X01C0130-003
The final extract pH was 4.98

X01C0130-004
The final extract pH was 4.99

X01C0130-005
The final extract pH was 4.98

X01C0130-006
The final extract pH was 5.29

X01C0130-007
The final extract pH was 5.96

X01C0130-008
The final extract pH was 5.47

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~~004~~ 5-23

Kaiser Hill Company
Rocky Flats Environmental Technology Site
Inorganic Metals Lab - Building 559

TOXICITY CHARACTERISTIC LEACHING PROCEDURE EXTRACTION FOR INORGANIC METALS
DATE: (5/21/01)
Lab #'s: X01C0130-001.002, X01C0130-002.002, X01C0130-003.002, X01C0130-004.002, X01C0130-005.002, X01C0130-006.002, X01C0130-007.002, X01C0130-008.002, X01C0130-009.002, and X01C0130-010.002

X01C0130-009
The final extract pH was 5.67

X01C0130-010
The final extract pH was 6.08

Additional Information:

The customer requested that TCLP SW-846 Method 1311 be utilized for the samples.

Quality Control Results

Sample X01C0130-001 represents the QA/QC sample that received a pre-digestion spike and a lab duplicate (X01C0130-001D) for this sample set. TCLP Extraction Fluid #1 represents the QA/QC sample that was run as a reagent blank for this sample set.

Chemist Approval RC. Kelly Date 5/21/01

Second Reviewer [illegible] Date 5/24/01

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005 MS 5-23

TCLP BATCH SHEET

Analyst: Bruce R Jordan Date: 5-17-01

Sample ID Number	Bottle Number	Extraction End Date	Filtrate Vol. (ml)	TCLP Solids Extract Vol. (ml)	$HN0_3$ Added (ml)	MR Spike Added (X)
X01C0130-001	0130-001	5-18-01	n/a	100	1.0	X
001D	0130-001D					
002	0130-002					
003	0130-003					
004	0130-004					
005	0130-005					
006	0130-006					
007	0130-007				1.5	
008	0130-008					
009	0130-009					
010	0130-010					
X01C0131-001	0131-001		11.0	169.2	1.5	
002	0131-002		11.0	159.3		
X TCLP Ext. #1	Ext. #1		74.0	n/a	1.0	

Comments:

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Analyst: Bruce A Jordan

Date: 5-17-01

Preliminary Percent Solids by Wet Weight Determination

Sample I.D. Number	Free Liq?	Solids/ Liquids Sample Preliminary Data					pH + H2O	pH + HCL	Final % Solids
		NWST(gm)	GFW (gm)	FCW (gm)	NFW (gm)	FSW (gm)			
X01C0130-001	N	5.0002					4.15	—	100
001D		5.0004					4.86	—	
002		5.0001					4.86	—	
003		5.0010					4.85	—	
004		5.0001		RK			5.22	1.77	
005		5.0002					6.19	1.77	
006		5.0005		5/18/01			6.11	1.67	
007		5.0000					6.70	1.86	
008		5.0013					6.89	1.83	
009		5.0002					7.14	1.75	

NWST = Net Weight of Original Sample Transferred
GFW = Gross Filtrate + Container Weight
FCW = Filtrate Container Tare Weight
NFW = Net Filtrate Weight
FSW = Filtered Solids Weight

005

Preliminary Size Reduction for Solid Phase of Waste Sample

Sample I. D. Number	Is Particle Size Reduction Required?	
	Yes	No
X01C0130-001	Y	N/A
001D		
002		
003		
004		
005		
006		
007		
008		
009		

007

Analyst: Bruce K Jordan Date: 5-17-01

Preliminary Percent Solids by Wet Weight Determination

Sample I.D. Number	Free Liq?	Solids/ Liquids Sample Preliminary Data					pH + H2O	pH + HCL	Final % Solids
		NWST(gm)	GFW (gm)	FCW (gm)	NFW (gm)	FSW (gm)			
X01C0130-010	N	5.0004	—	—	—	—	7.28	1.80	100
X01C0131-001	Y	19.4614	21.9601	10.9603	10.9998	8.4616	6.23	2.12	43.4788
X01C0131-002	Y	18.9597	22.0496	11.0556	10.9940	7.9657	7.50	3.06	42.0138
X TCLP Ext. #1	Y	74.1542	88.1468	14.0111	74.1357	0.0185	—	—	.0249
				RK					
				5/18/01					

NWST = Net Weight of Original Sample Transferred
GFW = Gross Filtrate + Container Weight
FCW = Filtrate Container Tare Weight
NFW = Net Filtrate Weight
FSW = Filtered Solids Weight

Preliminary Size Reduction for Solid Phase of Waste Sample

Sample I. D. Number	Is Particle Size Reduction Required?	
	Yes	No
X01C0130-010	Y	N/A
X01C0131-001	N/A	N
X01C0131-002	N/A	N
X TCLP Ext. #1	N/A	N

Rocky Flats Environmental Technology Site (Building 559 Laboratories)

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-001

Sample I. D.: X01C-0130-001

Sample (COC) Collection Date: 4-20-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 4.15 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes N/A pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0002	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0002	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-001 Extraction Bottle Number: 0130-001

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.99 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22 °C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : 100.0 ml
TCLP Final Solids Extract pH, (Solids Samples) : 4.99 pH Units

TCLP Final Extract Volume , (Liquid Samples) : N/A ml
TCLP Final Liquid Extract pH, (Liquid Samples) : _____ pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : _____ ml

TCLP Final Combined Extract pH : _____ pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Initial Liquid Phase pH : _____ pH Units

TCLP Final Solids Phase Extract pH : _____ pH Units

Comments: _____

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-001D

Sample I. D.: X01C-0130-001 D

Sample (COC) Collection Date: 4-20-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 4.86 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl)
Heat to 50EC, maintain for 10 minutes N/A pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0004	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0004	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-001D Extraction Bottle Number: 0130-001D

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples)	100.0	ml
TCLP Final Solids Extract pH, (Solids Samples)	4.98	pH Units
TCLP Final Extract Volume , (Liquid Samples)	N/A	ml
TCLP Final Liquid Extract pH, (Liquid Samples)		pH Units
(Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase)		ml
TCLP Final Combined Extract pH		pH Units
(Non-Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Initial Liquid Phase pH		pH Units
TCLP Final Solids Phase Extract pH		pH Units

Comments: _____

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-002

Sample I. D.: X01C0130-002

Sample (COC) Collection Date: 4-20-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 4.86 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl)
Heat to 50EC, maintain for 10 minutes N/A pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0001	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0001	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-002 Extraction Bottle Number: 0130-002

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.99 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : 100.0 ml
TCLP Final Solids Extract pH, (Solids Samples) : 4.96 pH Units

TCLP Final Extract Volume , (Liquid Samples) : N/A ml
TCLP Final Liquid Extract pH, (Liquid Samples) : _____ pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : _____ ml

TCLP Final Combined Extract pH : _____ pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Initial Liquid Phase pH : _____ pH Units

TCLP Final Solids Phase Extract pH : _____ pH Units

Comments: _____

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-003

Sample I. D.: X01C-0130-003

Sample (COC) Collection Date: 5-1-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 4.85 pH Units
pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes N/A pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0010	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0010	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-003 Extraction Bottle Number: 0130-003

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22 °C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples)	100.0	ml
TCLP Final Solids Extract pH, (Solids Samples)	4.98	pH Units
TCLP Final Extract Volume , (Liquid Samples)	N/A	ml
TCLP Final Liquid Extract pH, (Liquid Samples)		pH Units
(Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase)		ml
TCLP Final Combined Extract pH		pH Units
(Non-Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Initial Liquid Phase pH		pH Units
TCLP Final Solids Phase Extract pH		pH Units

Comments:

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce A Jordan Extraction Bottle Number: 6130-004

Sample I. D.: X01C-0130-004

Sample (COC) Collection Date: 5-1-01 TCLP Sample Prep Date: 5.17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 5.22 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes 1.77 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0001	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0001	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

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TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-004 Extraction Bottle Number: 0130-004

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22 °C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples)	100.0	ml
TCLP Final Solids Extract pH, (Solids Samples)	4.99	pH Units
TCLP Final Extract Volume , (Liquid Samples)	N/A	ml
TCLP Final Liquid Extract pH, (Liquid Samples)		pH Units
(Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase)		ml
TCLP Final Combined Extract pH		pH Units
(Non-Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Initial Liquid Phase pH		pH Units
TCLP Final Solids Phase Extract pH		pH Units

Comments:

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-005

Sample I. D.: X01C0130-005

Sample (COC) Collection Date: 5-1-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 6.19 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes 1.77 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0002	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0002	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

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TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: ~~0160130-000~~ X0160130-005 5-17-01 Extraction Bottle Number: 0130-005

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples)	100.0	ml
TCLP Final Solids Extract pH, (Solids Samples)	4.98	pH Units
TCLP Final Extract Volume , (Liquid Samples)	N/A	ml
TCLP Final Liquid Extract pH, (Liquid Samples)		pH Units
(Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase)		ml
TCLP Final Combined Extract pH		pH Units
(Non-Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Initial Liquid Phase pH		pH Units
TCLP Final Solids Phase Extract pH		pH Units

Comments:

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-006

Sample I. D.: X01C0130-006

Sample (COC) Collection Date: 4-20-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic (Compatible) ___ , Multi-Phasic (Non-Compatible) ___

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 6.11 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes 1.67 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0005	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0005	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: XOIC0130-006 Extraction Bottle Number: 0130-006

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : 100.0 ml
TCLP Final Solids Extract pH, (Solids Samples) : 5.29 pH Units

TCLP Final Extract Volume , (Liquid Samples) : N/A ml
TCLP Final Liquid Extract pH, (Liquid Samples) : _____ pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : _____ ml

TCLP Final Combined Extract pH : _____ pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Initial Liquid Phase pH : _____ pH Units

TCLP Final Solids Phase Extract pH : _____ pH Units

Comments: _____

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-007

Sample I. D.: X01C-0130-007

Sample (COC) Collection Date: 5-1-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 6.70 pH Units
pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes 1.86 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0000	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0000	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-007 Extraction Bottle Number: 0130-007

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen, (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22 °C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : 100.0 ml
TCLP Final Solids Extract pH, (Solids Samples) : 5.96 pH Units

TCLP Final Extract Volume , (Liquid Samples) : N/A ml
TCLP Final Liquid Extract pH, (Liquid Samples) : _____ pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : _____ ml

TCLP Final Combined Extract pH : _____ pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Initial Liquid Phase pH : _____ pH Units

TCLP Final Solids Phase Extract pH : _____ pH Units

Comments: _____

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-008

Sample I. D.: X01C0130-008

Sample (COC) Collection Date: 5-1-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 6.89 pH Units
pH of Sample Water Test Solution + (1.4 ml of 1 N HCl)
Heat to 50EC, maintain for 10 minutes 1.83 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0013	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0013	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-088 Extraction Bottle Number: 0130-088

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples)	100.0	ml
TCLP Final Solids Extract pH, (Solids Samples)	5.47	pH Units
TCLP Final Extract Volume , (Liquid Samples)	N/A	ml
TCLP Final Liquid Extract pH, (Liquid Samples)		pH Units
(Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase)		ml
TCLP Final Combined Extract pH		pH Units
(Non-Compatible Multi-phasic Samples) TCLP Final Solids Phase Extract Volume		ml
TCLP Initial Liquid Phase Volume		ml
TCLP Initial Liquid Phase pH		pH Units
TCLP Final Solids Phase Extract pH		pH Units

Comments:

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce K Jordan Extraction Bottle Number: 0130-009

Sample I. D.: X01C-0130-009

Sample (COC) Collection Date: 5-8-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 7.14 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes 1.75 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0002	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0002	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-009 Extraction Bottle Number: 0130-009

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22 °C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : 100.0 ml
TCLP Final Solids Extract pH, (Solids Samples) : 5.67 pH Units

TCLP Final Extract Volume , (Liquid Samples) : N/A ml
TCLP Final Liquid Extract pH, (Liquid Samples) : _____ pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : _____ ml

TCLP Final Combined Extract pH : _____ pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Initial Liquid Phase pH : _____ pH Units

TCLP Final Solids Phase Extract pH : _____ pH Units

Comments: _____

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Bruce A. Jordan Extraction Bottle Number: 0130-010

Sample I. D.: X01C-0130-D10

Sample (COC) Collection Date: 5-8-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid X , Liquid ___ , Multi-Phasic ___ (Compatible) , Multi-Phasic ___ (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes X No ___

Describe Means of Particle-Size Reduction Applied ? Scissors

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 7.28 pH Units
pH of Sample Water Test Solution + (1.4 ml of 1 N HCl)
Heat to 50EC, maintain for 10 minutes 1.80 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	5.0004	grams
Tare Weight of Container Weight	(DCW) =	0.0000	grams
Net Weight of Sample Transferred	(NWST) =	5.0004	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	N/A	grams
Tare Weight of the Filtrate Container	(FCW) =		grams
Net Weight of the Collected Sample Filtrate,	(NFW) =		grams
Net Volume of the Collected Sample Filtrate,	(NFV) =		ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =		grams

Percent Solids: 100%

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0130-010 Extraction Bottle Number: 0130-010

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 100.0 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : 100.0 ml
TCLP Final Solids Extract pH, (Solids Samples) : 6.08 pH Units

TCLP Final Extract Volume , (Liquid Samples) : N/A ml
TCLP Final Liquid Extract pH, (Liquid Samples) : _____ pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : _____ ml

TCLP Final Combined Extract pH : _____ pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : _____ ml

TCLP Initial Liquid Phase Volume : _____ ml

TCLP Initial Liquid Phase pH : _____ pH Units

TCLP Final Solids Phase Extract pH : _____ pH Units

Comments: _____

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: Brad K. Jordan Extraction Bottle Number: 0131-001

Sample I. D.: X01C0131-001

Sample (COC) Collection Date: 4-20-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid___ , Liquid___ , Multi-Phasic (Compatible) X , Multi-Phasic (Non-Compatible)___

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes___ No X

Describe Means of Particle-Size Reduction Applied ? None

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 6.23 pH Units

pH of Sample Water Test Solution + (1.4 ml of 1 N HCl) Heat to 50EC, maintain for 10 minutes 2.12 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ____

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	39.4471	grams
Tare Weight of Container Weight	(DCW) =	~~19.4614~~ 19.9857 RL 5/18/01	grams
Net Weight of Sample Transferred	(NWST) =	19.4614	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	21.9601	grams
Tare Weight of the Filtrate Container	(FCW) =	10.9603	grams
Net Weight of the Collected Sample Filtrate,	(NFW) =	10.9998	grams
Net Volume of the Collected Sample Filtrate,	(NFV) =	11.0	ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =	8.4616	grams

Percent Solids: 43.4788%

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: X01C0131-001 Extraction Bottle Number: 0131-001

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)\,(\%\ \text{Solids})\,(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 169.2 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22 °C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples)	N/A	ml
TCLP Final Solids Extract pH, (Solids Samples)		pH Units
TCLP Final Extract Volume , (Liquid Samples)	↓	ml
TCLP Final Liquid Extract pH, (Liquid Samples)	N/A	pH Units
(Compatible Multi-phasic Samples)		
TCLP Final Solids Phase Extract Volume	169.2	ml
TCLP Initial Liquid Phase Volume	11.0	ml
TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase)	180.2	ml
TCLP Final Combined Extract pH	5.67	pH Units
(Non-Compatible Multi-phasic Samples)		
TCLP Final Solids Phase Extract Volume	N/A	ml
TCLP Initial Liquid Phase Volume	↓	ml
TCLP Initial Liquid Phase pH	↓	pH Units
TCLP Final Solids Phase Extract pH	N/A	pH Units

Comments:

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: KK Jordan Extraction Bottle Number: 0131-002

Sample I. D.: X01C 0131-002

Sample (COC) Collection Date: 4-20-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid ___ , Liquid ___ , Multi-Phasic (Compatible) X , Multi-Phasic (Non-Compatible) ___

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes ___ No X

Describe Means of Particle-Size Reduction Applied ? - None

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) 7.50 pH Units
pH of Sample Water Test Solution + (1.4 ml of 1 N HCl)
Heat to 50EC, maintain for 10 minutes 3.06 pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen X

Final Test pH > 5.0 = Extraction Fluid # 2 chosen ___

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	39.2761	grams
Tare Weight of Container Weight	(DCW) =	20.3164	grams
Net Weight of Sample Transferred	(NWST) =	18.9597	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	22.0496	grams
Tare Weight of the Filtrate Container	(FCW) =	11.0556	grams
Net Weight of the Collected Sample Filtrate,	(NFW) =	10.9940	grams
Net Volume of the Collected Sample Filtrate,	(NFV) = 5-17-01 ~~10.9~~	11.0	ml
Net Weight of Sample Solids Left on Filter ,	(FSW) = ~~7.6~~	7.9657	grams

5-17-01

Percent Solids: 42.0138 %

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: XOIC0131-002 Extraction Bottle Number: 0131-002

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = 159.3 ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 50

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : N/A ml
TCLP Final Solids Extract pH, (Solids Samples) : | pH Units

TCLP Final Extract Volume , (Liquid Samples) : ↓ ml
TCLP Final Liquid Extract pH, (Liquid Samples) : N/A pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : 158.3 ml

TCLP Initial Liquid Phase Volume : 11.0 ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : 170.3 ml

TCLP Final Combined Extract pH : 6.03 pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : N/A ml

TCLP Initial Liquid Phase Volume : | ml

TCLP Initial Liquid Phase pH : ↓ pH Units

TCLP Final Solids Phase Extract pH : N/A pH Units

Comments: _____

TCLP INORGANIC EXTRACTION LOG SHEET

Analyst: BK Jordan Extraction Bottle Number: Ext #1

Sample I. D.: XTCLP Ext #1

Sample (COC) Collection Date: 5-17-01 TCLP Sample Prep Date: 5-17-01

Sample Type : Solid___ , Liquid X , Multi-Phasic___ , Multi-Phasic___
(Compatible) (Non-Compatible)

(Solid), (Liquid), and (Multi-Phasic) Sample Calculations:

Is Particle-Size Reduction Required for Solid Phase ? Yes___ No X

Describe Means of Particle-Size Reduction Applied ? - None.

Determination of TCLP Extraction Fluid for Solid Phase of (Solids) Samples or Solid Phase of (Multi-phasic) Samples

pH of Sample Water Test Solution (2.0 gm + 38.6 ml H_2O) N/A pH Units
pH of Sample Water Test Solution + (1.4 ml of 1 N HCl)
Heat to 50EC, maintain for 10 minutes ___ pH Units

Final Test pH < 5.0 = Extraction Fluid # 1 chosen ✓

Final Test pH > 5.0 = Extraction Fluid # 2 chosen N/A

Sample Solids Results for (Solids) and (Multi-Phasic) Samples:

Gross Sample + Container Weight	(GSW) =	87.5321	grams
Tare Weight of Container Weight	(DCW) =	13.3779	grams
Net Weight of Sample Transferred	(NWST) =	74.1542	grams

Sample Liquids Results for (Multi-Phasic) Samples:

Gross Sample Liquid + Filtrate Container	(GFW) =	88.1468	grams
Tare Weight of the Filtrate Container	(FCW) =	14.0111	grams
Net Weight of the Collected Sample Filtrate,	(NFW) =	74.1357	grams
Net Volume of the Collected Sample Filtrate,	(NFV) =	74.0	ml
Net Weight of Sample Solids Left on Filter ,	(FSW) =	.0185	grams

Percent Solids: .0249 %

TCLP INORGANIC EXTRACTION LOG SHEET

Sample I. D.: XTCLP Ext # 1 Extraction Bottle Number: Ext # 1

TCLP Extraction Fluid Calculation for Solid Phase of (Solids) or Solid Phase of (Multi-phasic) Samples

$$\frac{(20)(\%\ \text{Solids})(\text{Grams of Sample Transferred})}{100} = \text{Volume of Extraction Fluid Required for Solids Extraction}$$

Volume of Extraction Fluid Required = N/A ml.

TCLP Extraction Parameters for Solid Phase of (Solids) and (Multi-phasic) Samples

TCLP Extraction Fluid Number Chosen. (# 1 or # 2) : 1
TCLP Initial Extraction Fluid pH for Solids Extract : 4.95 pH Units

Extraction Date / Time : Start 5-17-01 / 15:30 Stop 5-18-01 / 09:30

Room Temperature / RPM : Start 22 °C / 30 Stop 22°C / 30

TCLP Final Extract pH and Final Volume Data for (Solids), (Liquid), and (Multi-Phasic) Samples:

TCLP Final Extract Volume , (Solids Samples) : N/A ml
TCLP Final Solids Extract pH, (Solids Samples) : N/A pH Units

TCLP Final Extract Volume , (Liquid Samples) : 74.0 ml
TCLP Final Liquid Extract pH, (Liquid Samples) : 4.96 pH Units

(Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : N/A ml

TCLP Initial Liquid Phase Volume : ____ ml

TCLP Final Extract Combined Volume, (Solids Extract + Initial Liquid Phase) : ____ ml

TCLP Final Combined Extract pH : ____ pH Units

(Non-Compatible Multi-phasic Samples)
TCLP Final Solids Phase Extract Volume : ____ ml

TCLP Initial Liquid Phase Volume : ____ ml

TCLP Initial Liquid Phase pH : ____ pH Units

TCLP Final Solids Phase Extract pH : N/A pH Units

Comments: _____

ATTACHMENT C

Radiological Data Summaries and Survey Maps

6/16

RADIOLOGICAL DATA SUMMARY

In accordance with the Pre-Demolition Survey Package (PDSP) titled "Radiological and Non-Radiological Characterization Package for Building 776/777's Satellite Buildings", total surface activity (TSA) and removable surface activity (RSA) surveys, and scan surveys were performed in each survey unit. The number/frequency of surveys/samples collected in each area was based on guidance provided in the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) and PRO-475-RSP-16.01, Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure. All of the affected survey units meet the unrestricted release criteria in DOE Order 5400.5. Refer to the radiological data summaries in Attachment C for results.

Survey Unit Descriptions

The 776/777 satellite buildings were divided into five survey units based on similar contamination potential. A brief description and survey status of each of the five survey units is described below:

Survey Unit	Description	Status
776001	Bldg 701	Not surveyed (Not part of this PDSP)
776002	Bldgs. 702/710/712A	Surveyed – All results < than applicable DCGLs
776003	712 (Cooling Tower)	Unsafe to perform MARSSIM survey (Survey will be performed after demolition)
776004	713 (Cooling Tower)	Unsafe to perform MARSSIM survey (Survey will be performed after demolition)
776005	Bldgs. 703/713A/781	Surveyed – All results < than applicable DCGLs

Survey Units

776001

As stated in the table above, building 701 is not part of this PDSR and will be surveyed at a later date.

776002

Fifteen (15) TSA measurements, Fifteen (15) RSA measurements and 10% scan surveys were performed on these structures. For convenience and because of similar contamination potential, this survey unit included Bldg. 710. This building is not part of this PDSR. A future PDSR will address Bldg 710's survey status prior to D&D. One TSA measurement location required investigation because of elevated readings. Fifteen additional TSA measurements were obtained at survey measurement location #9 on the galvanized steel roof of Bldg. 703. The data were evaluated in accordance with a technical basis document (TBD 00156, Rev. 0), to distinguish between background (Po-210) and DOE-added material. The elevated reading at survey measurement location #9 for Bldg. 702 was attributed to Po-210. In addition to the TBD measurements, as requested by the CDPHE, a coupon sample was obtained at location #9 on the roof of B702. The data was analyzed by alpha spec., and the activity was confirmed to be Po-210, and not transuranic activity, and no further investigation is required.

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776003 & 776004

As stated in the table above, because of the dilapidated condition of the cooling towers, it was considered unsafe to perform MARSSIM surveys. Surveys will be performed on each of the cooling towers after demolition, and prior to the release of material off-site.

776005

Fifteen (15) TSA measurements, fifteen (15) RSA measurements and 10% scan surveys were performed on these structures. For convenience and because of similar contamination potential, this survey unit included Bldg. 781. This building is not part of this PDSR. A future PDSR will address Bldg 781's survey status prior to D&D. Two TSA measurement locations required investigation because of elevated readings. As stated under 776002, an investigation was performed at survey measurement location #9 in this survey unit. Fifteen additional TSA activity measurements were obtained at survey measurement location #9 on the galvanized steel roof of Bldg. 703. The data was evaluated in accordance with a technical basis document (TBD-00156, Rev. 0), to distinguish between background (Po-210) and DOE-added material. The elevated reading on the galvanized steel roof at measurement location #9 was attributed to Po-210. In addition to the TBD measurements, as requested by the CDPHE, a coupon sample was obtained at location #9 on the roof of B703. The data was analyzed by alpha spec., and the activity was confirmed to be Po-210, and not transuranic activity and no additional investigations are required. Eight additional total surface activity measurements were obtained at survey location 10 on the concrete surface of the north wall of Bldg. 713A. The average TSA value for one m^2 surrounding this survey location exceeded 100 dpm/100 cm^2. Therefore, a media sample was obtained at this location. The media sample result was 22.5 dpm/100 cm^2 total transuranic alpha, and 458.9 dpm/100 cm^2 total uranium. Based on the fact that the total transuranic alpha result was < 100 dpm/100 cm^2 (the DCGLw for transuranic alpha) , and the total uranium alpha result was < 5000 dpm/100 cm^2 (the DCGLw for uranium alpha) no further investigation was required.

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SURVEY UNIT 776002 DATA

6/9

Survey Unit 776002 Buildings 702/710/712A Data Summary

Total Surface Activity Measurements

	15	15	
	Number Required	Number Obtained	
MIN	-10.5		dpm/100 cm^2
MAX	74.1		dpm/100 cm^2
MEAN	18.6		dpm/100 cm^2
STD DEV	25.4		dpm/100 cm^2
TRANSURANIC DCGL$_w$	100		dpm/100 cm^2

Removable Activity Measurements

	15	15	
	Number Required	Number Obtained	
MIN	-1.5		dpm/100 cm^2
MAX	13.6		dpm/100 cm^2
MEAN	2.3		dpm/100 cm^2
STD DEV	4.4		dpm/100 cm^2
TRANSURANIC DCGL$_w$	20		dpm/100 cm^2

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Survey Unit 776002 Buildings 702/710/712A Total Surface Contamination Results

Total Surface Activity Survey					Quality Control Survey			
Meter Model:	NE Electra w/ DP6 Probe			Local Area Bkgd (cpm)	NE Electra w/ DP6 Probe			Local Area Bkgd (cpm)
Instrument #:	4066	1264	2400	4.5	4060	N/A	N/A	3.7
Cal. Due Date:	10/24/01	12/4/01	9/15/01		11/17/01	N/A	N/A	
Efficiency (c/d):	0.227	0.224	0.221		0.220	N/A	N/A	

	Total Surface Activity Measurements					Quality Control Measurements				
Sample Location Number	Instrument #	Date	(cpm)	MDA (dpm/100 cm^2)	(dpm/100 cm^2)	Instrument #	Date	(cpm)	MDA (dpm/100 cm^2)	(dpm/100 cm^2)
1	4066	06/07/01	3.3	43	-5.2					
2	4066	06/07/01	8.0	43	15.5					
3	4066	06/07/01	4.7	43	0.9					
4	4066	06/07/01	2.1	43	-10.5					
5	4066	06/07/01	3.3	43	-5.2					
6	4066	06/07/01	10.7	43	27.4					
7	4066	06/07/01	9.3	43	21.2					
8	4066	06/07/01	6.0	43	6.7					
9	2400	06/12/01	Note 1	43	Note 1					
10	1264	06/10/01	6.7	43	9.8					
11	2400	06/12/01	15.0	43	46.3					
12	1264	06/10/01	2.7	43	-7.9					
13	1264	06/10/01	14.7	43	45.0	4060	06/12/01	13.3	41	43.6
14	1264	06/10/01	14.0	43	41.9					
15	1264	06/10/01	21.3	43	74.1	4060	06/12/01	17.3	41	61.8
				MIN	-10.5					
				MAX	74.1					
				MEAN	18.6					
				SD	25.4					
				Transuranic DCGL$_W$	100					

Note 1 - An investigation was performed, and fifteen additional readings were obtained. The data was plotted in accordance with TBD-00156 and the elevated activity was verified to be attributable to Po-210. An elevated reading of 57.3 cpm was present at this survey measurement location. In addition to the TBD-00156 evaluation, a coupon sample was obtained. The activity was verified by alpha spec. analysis to be Po-210 vs. transuranic activity.

Survey Unit 776002 Buildings 702/710/712A Smear Results

Smear Location Number	Smear Results				
	Serial Number	Date Counted	Gross (cpm)	(dpm/100 cm^2)	MDA
1	956	6/7/01	0.0	**-1.5**	7.6
2	956	6/7/01	3.0	**7.6**	7.6
3	956	6/7/01	0.0	**-1.5**	7.6
4	956	6/7/01	1.0	**1.5**	7.6
5	956	6/7/01	1.0	**1.5**	7.6
6	956	6/7/01	1.0	**1.5**	7.6
7	956	6/7/01	0.0	**-1.5**	7.6
8	956	6/7/01	0.0	**-1.5**	7.6
9	766	6/12/01	5.0	**13.6**	8.3
10	766	6/10/01	0.0	**-1.5**	9.6
11	766	6/12/01	1.0	**1.5**	8.3
12	766	6/10/01	2.0	**4.5**	9.6
13	766	6/10/01	1.0	**1.5**	9.6
14	766	6/10/01	3.0	**7.6**	9.6
15	766	6/10/01	1.0	**1.5**	9.6
[redacted]	[redacted]	[redacted]	MIN	-1.5	[redacted]
			MAX	**13.6**	
			MEAN	**2.3**	
			SD	4.4	
	[redacted]	[redacted]	Transuranic $DCGL_W$	**20**	[redacted]

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SURVEY UNIT 776005 DATA

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Survey Unit 776005 Data Summary

Total Surface Activity Measurements

	15	15	
	Number Required	Number Obtained	
MIN	-12.4		dpm/100 cm^2
MAX	86.7		dpm/100 cm^2
MEAN	22.1		dpm/100 cm^2
STD DEV	22.5		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	15	15	
	Number Required	Number Obtained	
MIN	-1.5		dpm/100 cm^2
MAX	11.5		dpm/100 cm^2
MEAN	3.1		dpm/100 cm^2
STD DEV	4.0		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

Media Sample Activity

Media Samples	1 (Note)	1 (Note)
	Number Required	Number Obtained

Total Uranium Results

MIN	458.9	dpm/100 cm^2
MAX	458.9	dpm/100 cm^2
MEAN	458.9	dpm/100 cm^2
DCGL$_W$	5000	dpm/100 cm^2

Total Transuranic Results

MIN	21.5	dpm/100 cm^2
MAX	21.5	dpm/100 cm^2
MEAN	21.5	dpm/100 cm^2
DCGL$_W$	100	dpm/100 cm^2

gate an elevated reading on the north wall on the exterior of B713A

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Survey Unit 776005 Buildings 703/713A/781 Total Surface Contamination Results

Total Surface Activity Survey						Quality Control Survey				
Meter Model:	NE Electra w/ DP6 Probe				Local Area Bkgd (cpm)	NE Electra w/ DP6 Probe			Local Area Bkgd (cpm)	
Instrument #:	1418	4064	3172	1264	7.3	4060	N/A	N/A	3.7	
Cal. Due Date:	11/15/01	9/13/01	7/26/01	12/4/01		11/17/01	N/A	N/A		
Efficiency (c/d):	0.208	0.221	0.213	0.224		0.220	N/A	N/A		

Total Surface Activity Measurements						Quality Control Measurements				
Sample Location Number	Instrument #	Date	(cpm)	MDA (dpm/100 cm²)	(dpm/100 cm²)	Instrument #	Date	(cpm)	MDA (dpm/100 cm²)	(dpm/100 cm²)
1	1418	06/05/01	10.7	58	16.5					
2	1418	06/05/01	10.7	58	16.5					
3	1418	06/05/01	8.7	58	16.5					
4	1418	06/05/01	9.3	58	6.9					
5	1418	06/05/01	11.3	58	9.7					
6	1418	06/05/01	10.7	58	19.4					
7	1264	06/10/01	4.7	58	16.5					
8	1264	06/10/01	3.3	58	-12.4					
9	4060	06/13/01	Note 1	Note 1	Note 1					
10	4064	06/06/01	29.5 Note 2	Note 2	Note 2					
11	1418	06/05/01	25.3	58	86.7	4060	06/12/01	13.3	41	43.9
12	1418	06/05/01	12.3	58	24.2					
13	3172	06/06/01	12.7	58	26.1	4060	06/12/01	9.2	41	25.2
14	1418	06/05/01	14.0	58	32.3					
15	4060	06/13/01	13.3	58	29.0					
				MIN	-12.4					
				MAX	86.7					
				MEAN	22.1					
				SD	22.5					
				Transuranic $DCGL_W$	100					

Note 1 - An elevated reading of 60.1 cpm was present at this survey measurement location. An investigation was performed, and a coupon sample was obtained. The activity was verified by alpha spec. analysis to be Po-210 vs. transuranic activity.

Note 2 - An investigation was performed, and eight additional readings were obtained to verify the 1m² average was less than 100 dpm/100 cm². The average value of the nine measurements was 29.5 cpm and 106.9 dpm/100 cm². A media sample was obtained at this location and an isotopic analysis was performed. The total transuranic alpha activity was 21.5 dpm/100 cm² and the total uranium activity was 458.9 dpm/100 cm².

Survey Unit 776005 Buildings 703/713A/781 Removable Contamination Results

Smear Location Number	Smear Results				
	Serial Number	Date Counted	Gross (cpm)	(dpm/100 cm^2)	MDA
1	992	6/5/01	3.0	**8.5**	7.6
2	816	6/5/01	1.0	**3.0**	4.1
3	1352	6/5/01	1.0	**1.5**	9.6
4	839	6/5/01	1.0	**2.4**	4.1
5	992	6/5/01	0.0	**-0.6**	7.6
6	816	6/5/01	2.0	**6.1**	7.6
7	766	6/10/01	1.0	**1.5**	7.6
8	766	6/10/01	0.0	**-1.5**	7.6
9	766	6/12/01	4.0	**11.5**	9.6
10	766	6/7/01	3.0	**8.5**	10.1
11	1352	6/5/01	1.0	**2.4**	9.6
12	839	6/5/01	0.0	**-0.6**	7.6
13	766	6/5/01	0.0	**-0.6**	10.1
14	992	6/5/01	0.0	**-0.6**	7.6
15	766	6/12/01	2.0	**5.5**	8.3
[redacted]	[redacted]	[redacted]	MIN	-1.5	[redacted]
			MAX	**11.5**	
			MEAN	**3.1**	
			SD	4.0	
	[redacted]	[redacted]	Transuranic $DCGL_W$	**20**	[redacted]

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Survey Unit 776005 Buildings 703/713A/781 Surface Media Sample Contamination Results

LOCATION DESCRIPTION	SAMPLE LOCATION NUMBER	SITE SAMPLE ID	NUCLIDE	pCi/g	MDA (pCi/g)	WEIGHT (g)	SURFACE AREA (in^2)	INDIVIDUAL NUCLIDE ($dpm/100cm^2$)	ESTIMATED MDA ($dpm/100cm^2$)	URANIUM TOTAL ($dpm/100cm^2$) $DCGL_W$=5000	TRANSURANIC TOTAL ($dpm/100cm^2$) $DCGL_W$=100
North wall, Bldg 713A	10	002.001	U-233/234	2.000	0.119	51.00	15.19	231.1	13.7	[redacted]	[redacted]
			U-235	0.122	0.083			14.1	9.6	[redacted]	[redacted]
			U-238	1.850	0.067			213.7	7.7	458.9	[redacted]
			Pu-238	0.014	0.113			1.6	13.1	[redacted]	[redacted]
			Pu-239/240	0.047	0.064			5.4	7.4	[redacted]	[redacted]
			Am-241	0.125	0.085			14.4	9.8	[redacted]	21.5

MIN	458.9	21.5
MAX	458.9	21.5
MEAN	458.9	21.5
$DCGL_W$ =	5000	100

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ATTACHMENT C

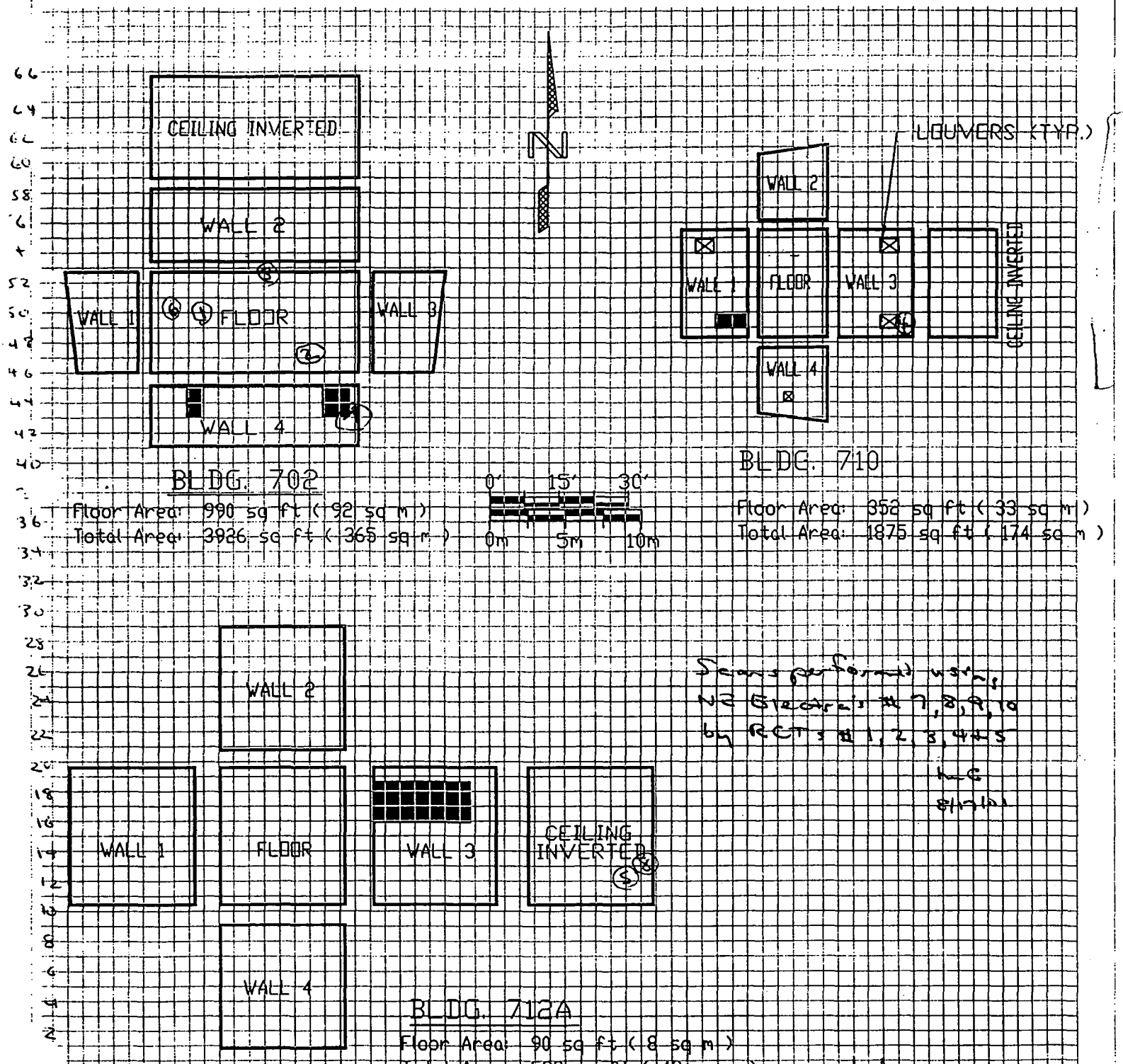
Survey Maps

Continued

RADIOLOGICAL C JSEOUT SURVEY FOR T E 776 CLUSTER

Survey Area: A Survey Unit: 776002 Classification: 2
Building: 702, 710 & 712A INTERIOR
Survey Unit Description: B702, 710 & 712A Interior Grid Size: na
Total Floor Area: 1432 sq ft (133 sq m) Total Area: 6323 sq ft (587 sq m)

SURVEY UNIT 776002 - MAP 1 OF 2



Scans performed using NZ Electra's #7, 8, 9, 10 by RCT's #1, 2, 3, 4 & 5
[illegible]
8/17/01

AREA SCANNED

Date: 6/12/01
Page: 14 of 17

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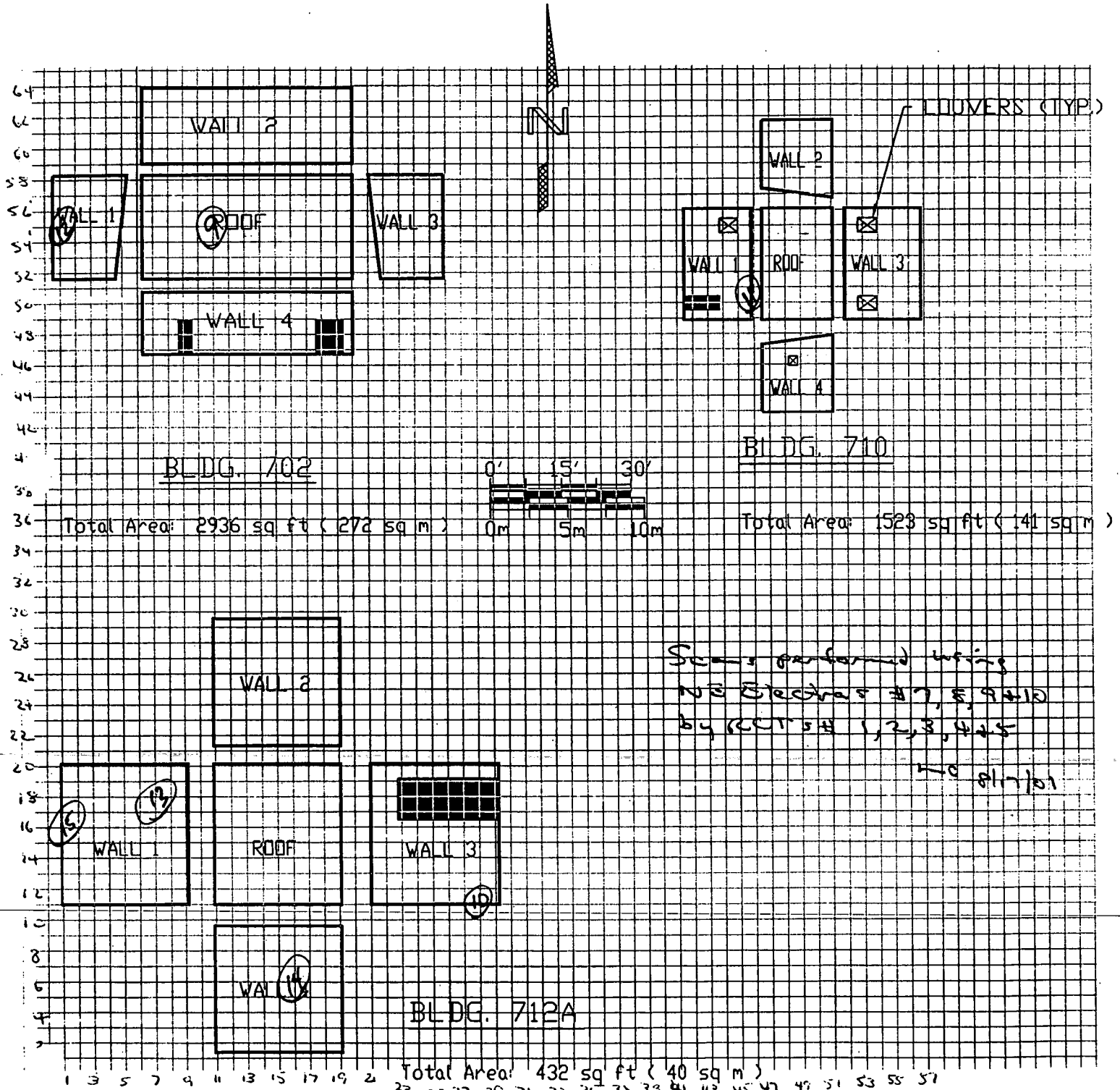
Page 1 of 4

RADIOLOGICAL C JSEOUT SURVEY FOR T : 776 CLUSTER

Survey Area: A Survey Unit: 776002 Classification: 2
Building: 702, 710 & 712A EXTERIOR
Survey Unit Description: B702, 710 & 712A Exterior Grid Size: na
Total Area: 4891sq ft (454 sq m)

SURVEY UNIT 776002 - MAP 2 OF 2



Scans performed using NE Electras #7, 8, 9 & 10 by RCTs # 1, 2, 3, 4 & 5
8/17/01

AREA SCANNED

Page 2 of 4

Date: 6/12/01
Page: 15 of 17

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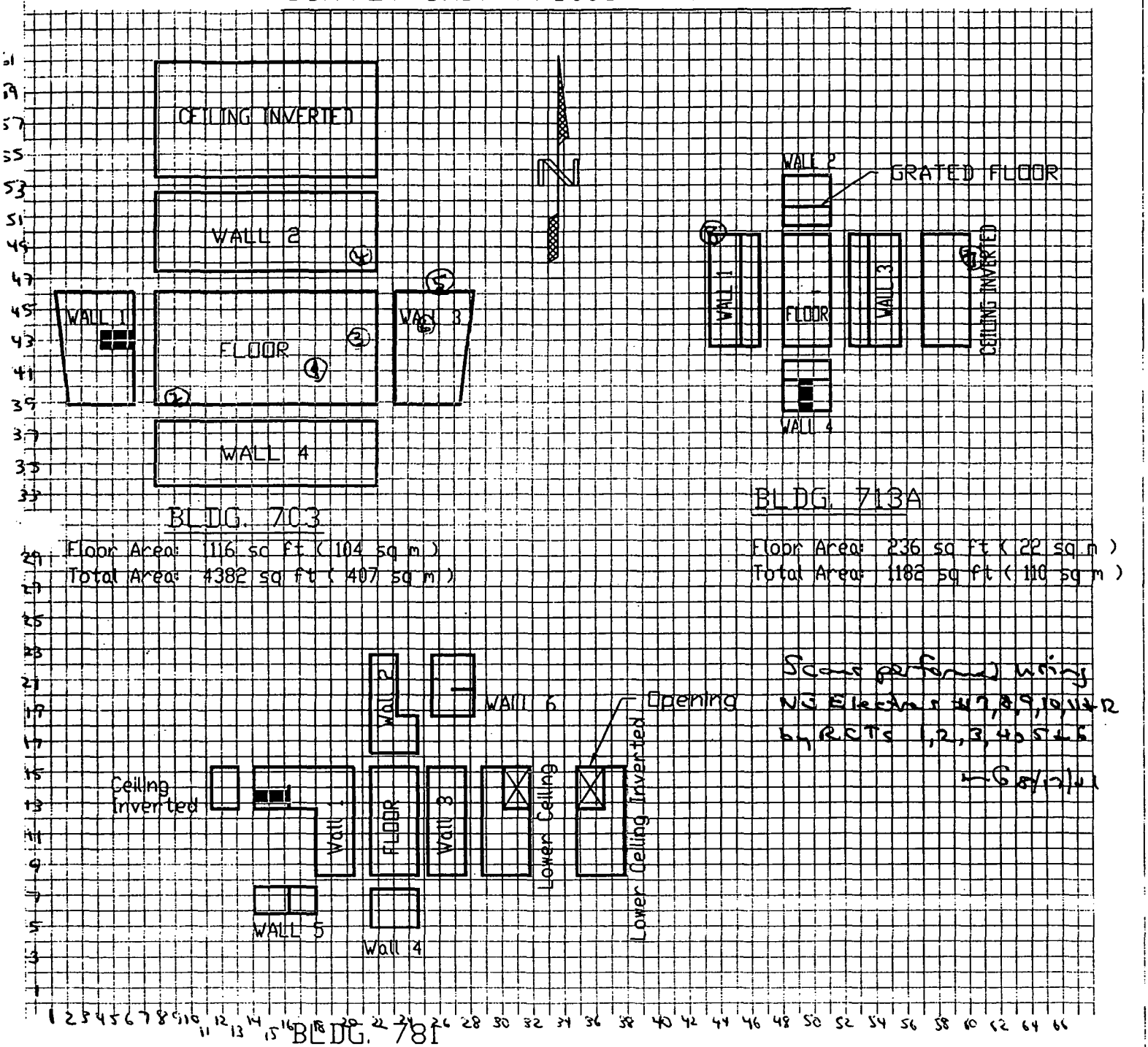
RADIOLOGICAL C JSEOUT SURVEY FOR T : 776 CLUSTER

Survey Area: A Survey Unit: 776005 Classification: 2
Building: 703, 713A & 781 INTERIOR
Survey Unit Description: B703, 713A & 781 Interior Grid Size: na
Total Floor Area: 1582 sq ft (147 sq m) Total Area: 7107 sq ft (660 sq m)

SURVEY UNIT 776005 - MAP 1 OF 2



Scans performed using NE Electrons #7,8,9,10,11 & 12 by RCTs 1,2,3,4,5 & 6
6/8/01

AREA SCANNED ☐

0' 15' 30'
0m 5m 10m

Page 3 of 4

Date: 6/10/01
Page: 25 of 28

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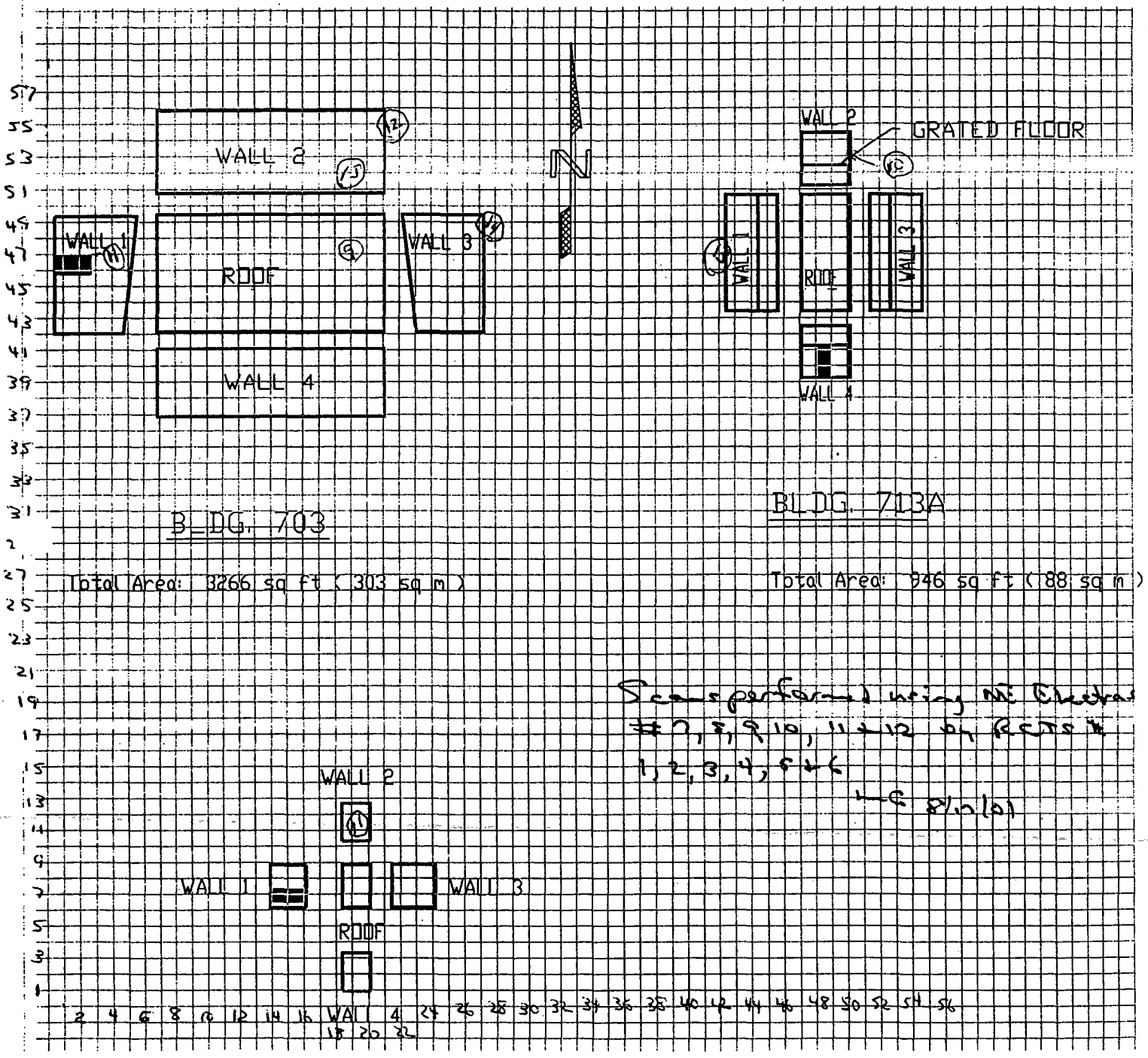
RADIOLOGICAL CLOSEOUT SURVEY FOR E 776 CLUSTER

Survey Area: A Survey Unit: 776005 Classification: 2
Building: 703, 713A & 781 EXTERIOR
Survey Unit Description: B703, 713A & 781 Exterior Grid Size: na
Total Area: 4478 sq ft (416 sq m)

SURVEY UNIT 776005 - MAP 2 OF 2



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ATTACHMENT D

Chemical Data Summary

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Chemical Data Summary	
Beryllium smears	
01C0134-001	Non detect with detection limit less than DOE's current actionable criteria
01C0134-002	Non detect with detection limit less than DOE's current actionable criteria
01C0134-003	Non detect with detection limit less than DOE's current actionable criteria
01C0134-004	Non detect with detection limit less than DOE's current actionable criteria
01C0134-005	Non detect with detection limit less than DOE's current actionable criteria
01C0134-006	Non detect with detection limit less than DOE's current actionable criteria
01C0134-008	Non detect with detection limit less than DOE's current actionable criteria
01C0134-009	Non detect with detection limit less than DOE's current actionable criteria
01C0134-010	Non detect with detection limit less than DOE's current actionable criteria
01C0134-011	Non detect with detection limit less than DOE's current actionable criteria
01C0134-012	Non detect with detection limit less than DOE's current actionable criteria
01C0134-013	Non detect with detection limit less than DOE's current actionable criteria
01C0134-014	Non detect with detection limit less than DOE's current actionable criteria
01C0134-015	Non detect with detection limit less than DOE's current actionable criteria
01C0134-016	Non detect with detection limit less than DOE's current actionable criteria
01C0134-017	Non detect with detection limit less than DOE's current actionable criteria
01C0134-018	Non detect with detection limit less than DOE's current actionable criteria
01C0134-019	Non detect with detection limit less than DOE's current actionable criteria
01C0134-020	Non detect with detection limit less than DOE's current actionable criteria
01C0134-021	Non detect with detection limit less than DOE's current actionable criteria
01C0134-022	Non detect with detection limit less than DOE's current actionable criteria

Chemical Data Summary	
Solid waste vs hazardous waste classification for cooling tower timbers	
01C0130-001–005 (composite)	Non hazardous per 40 CFR 262
01C0130-006-010 (composite)	Non hazardous per 40 CFR 262
Solid waste vs hazardous waste classification for cooling tower sediments	
01C0131-001	Non hazardous per 40 CFR 262
01C0131-002	Non hazardous per 40 CFR 262
Characterization of cooling tower waters	
01D0696-001	Non hazardous per 40 CFR 262
01D0696-002	Non hazardous per 40 CFR 262
01D0696-003	Non hazardous per 40 CFR 262

ATTACHMENT E

Data Quality Assessment (DQA) Details

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DATA QUALITY ASSESSMENT (DQA) – 702, 703, 712, 712A, 713, 713A PDSR

INTRODUCTION

Data used in making management decisions for decommissioning and waste management must be of adequate quality to support the decisions. Adequate data quality for decisionmaking is required by the Kaiser-Hill Team Quality Assurance Program (K-H, 1997, §7.1.4 and 7.2.2), as well as by the customer (DOE, RFFO; Order O 414.1, Quality Assurance, §4.b.(2)(b)). Regulators and the public also expect decisions and data that are technically and legally defensible. Verification and validation (V&V) of the data ensure that data used in decisions resulting from the Pre-Demolition Survey (PDS) are usable and defensible.

V&V of this PDSR are the primary components of the DQA. V&V constitutes the cornerstone of the DQA, because statistical tests and material background determinations relative to decision-making for radiological survey units were not implemented nor required. Instead, measurement results were compared on a one-to-one basis with release criteria given in DOE Order 5400.5. The PDS results could be used to conduct Sign Tests for decisions but, because all individual measurements were less than the $DCGL_W$, the survey units meet release criteria without further data reduction. This DQA supports conclusions in the report through implementation of the guidelines taken from the following MARSSIM sections:

- §4.9, Quality Control
- §8.2, Data Quality Assessment
- §9.0, Quality Assurance & Quality Control
- Appendix E, Assessment Phase of the Data Life Cycle
- Appendix N, Data Validation using Data Descriptors

DQA was performed on measurement and sample results obtained from the Survey Units listed Table E-1. These Survey Units are traceable to specific building locations.

Verification of Results

Verification ensures that data produced and used by the project are documented and traceable, per quality requirements. Verification consisted of reviewing the project's data relative to the following subsets, for each unique Survey Unit:

- Radiological
  - scans (total surface contamination)
  - surveys (TSA and removable)
- Chemical
  - TCLP for metals
  - beryllium

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Table E-1. Sampling & Survey Completeness Summary

ANALYTE	# Samples Required (incl. Media; Real & QC Samples)	# Taken (Real & QC Samples)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
TCLP leachable metals	12 media (ten woods, two sediments), biased	12 media (ten woods, two sediments), biased	No heavy metals detected above regulatory thresholds	RIN, V&V checklists, and qualifications attached.
Beryllium • Swipes • Total Be in cooling tower waters	20 (total, biased, reals) as swipes, two (total, grab) on cooling tower waters	20 (total, biased, reals) as swipes, two (total, grab) on cooling tower waters	No Be contamination detected above reporting limit at any location	No results above action level ($0.2\mu g/100cm^2$) or investigative level ($0.1\ \mu g/100cm^2$).
Radioisotopics and gross alpha / beta	Two (total, grab) on sediments and waters	Two (total, grab) on sediments and waters	Free releasable without restriction, gross alpha and gross beta within incidental surface water discharge criteria, except for gross beta on cooling tower 712 sediments and waters	RIN 01C0159 (1 sample)
Radiological Surveys	10% scan surveys, on accessible surfaces 15 TSA and 15 RA surveys per Survey Unit	same same	No radioactive contamination present above unrestricted release criteria	
Stormwater parameters	Two (total, grab) on cooling tower waters	Two (total, grab) on cooling tower waters	Cooling tower 712 exceeded incidental surface water discharge criteria, Cooling Tower 713 was within incidental surface water discharge criteria	

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Consistent with similar PDS reports at the RFETS, verification confirms the following:

- Chain-of-Custody was intact from initial sampling though transport and final analysis;
- Preservation and hold-times were within tolerance; and
- Format and content of the data were clearly presented relative to goals of the project (i.e., to determine, with at least 95% confidence, that the survey units of interest are adequate for unrestricted radiological release, and no chemical hazards or contamination exist).

Verification of the PDS data also addresses quality records representing implementation of the following quality controls:

- Instrument calibrations, for accuracy;
- Laboratory control samples, for accuracy;
- Blanks, for accuracy;
- Duplicate measurements (surveys), for precision;
- Minimum Detectable Activity (MDA), Minimum Detection Limits (MDLs);
- Sample Analysis and Preparation methods.
- Count times, for sensitivity; and
- Sample preparations, for accuracy and representativeness.

All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units. Each Survey Package is systematically reviewed by the responsible Radiological Engineer, a peer reviewer, and finally, Radiological Engineering Management. Chemical data are organized by sample number and corresponding sample location.

All relevant Quality records are managed in the Project File, and will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of the approval of this PDSR by the regulators.

Validation of Results

Validation consists of a technical review of all data that directly support the PDS decisions, so that any limitations of the data relative to project goals are delineated, and the associated data are qualified accordingly. Data were validated relative to the following:

- The DQOs as defined in the *Pre-Demolition Survey Plan for D&D Facilities* (K-H, 2/4/2001; i.e., did the final data achieve the initial DQOs of the project, particularly with respect to decisions), and
- Quality Assurance criteria (consistent with the various applicable sections in the MARSSIM, expressed in terms of the PARCCS parameters given in the subsections below).

MARSSIM criteria for the broad topic of "data quality assessment" used in final status surveys generally falls within the generic categories of quality assurance, quality control, data validation, and data assessment (including V&V). All of the significant MARSSIM criteria are summarily addressed within the "PARCCS Parameters" -- Precision, Accuracy, Representativeness,

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Comparability, Completeness, and Sensitivity -- discussion presented below. PARCCS parameters are congruent with "data descriptors" in the MARSSIM parlance and address characteristics of the data that must be defined for scientific integrity and defensibility. The discussion of PARCCS parameters also includes bias, another data descriptor emphasized in MARSSIM.

DQO DECISIONS

DQO decisions are summarized in Table E-1.

PARCCS PARAMETERS

Precision

Radiological Surveys

Duplicate measurements were acquired at the required frequency (≥5% frequency of real surveys) on the MARSSIM survey grids. All duplicate measurements were within tolerance based on repeatability of results below the $DCGL_W$.

Chemical Results

Repeatability of beryllium results was not evaluated through field duplicates because of the removable nature of the sampling process; this is consistent with radiological survey methodology, where repeatability is only evaluated relative to TSA measurements (fixed activity), and not removable activity. Overall repeatability within the sample set was evident based on all 20 sample results less than the detection limit ($0.1\mu g/100cm^2$).

Similarly, repeatability of TCLP leachable metals from cooling tower woods was not evaluated through field duplicates, based on the heterogeneous nature of the wood infrastructure subject to sampling. Overall repeatability within the sample set was evident based on all sample results less than the regulatory thresholds.

In addition, repeatability of TCLP leachable metals from cooling tower sediments was not evaluated through field duplicates, given the paucity of samples needed to complete the tower's characterization. Overall repeatability within the sample set was evident based on all sample results less than the regulatory thresholds.

Accuracy (and Bias)

Radiological Results (Surveys)

Accuracy of radiological surveys is satisfactory based on RFETS-programmatic annual calibrations that establish instrument efficiencies and sensitivities for all instrumentation used on this project. Daily source checks also provided periodic checks to ensure that all sensors are within tolerance during daily operations. Calibration and calibration check results were within the RFETS and industry-standard requirement of ±20% of the applicable reference standard values. Full-scale multi-point calibrations provide accuracies of ± 10% prior to implementation of survey instruments in the field, consistent with guidelines put forth in ANSI-N323.d

No biases were noted in the instrumentation, based on daily performance checks.

Chemical Results

Accuracy of beryllium results was adequate based on acceptable percent recoveries of LCS performed on a laboratory batching basis.

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Accuracy of TCLP leachable metal results was adequate based on acceptable percent recoveries of LCS performed on a laboratory batching basis.

Representativeness

Samples and surveys are representative based on the following criteria:

- Familiarity with facilities -- multiple walk-downs and collaborations by management and technical staff;
- Implementation of industry-standard Chain-of-Custody protocols;
- Compliance with sample preservation and hold times; and
- Documented and (site-) approved methods, particularly RSPs for scans/surveys, and SOPs for asbestos sampling and beryllium swiping.
- *Chemical Characterization Package, Security Building Cluster Closure Project*, Revision 1, Feb. 20, 2001
- Radiological Survey Packages associated with the following Survey Units:

776002
776005

Surveys were also representative of the facilities based on a combination of random and biased measurement locations. Random survey measurements, 15 per Survey Unit, provided statistical confidence in radiological decisions, while biased locations provided additional confidence, as the locations were biased toward those areas with the greatest potential for radiological contamination (dust accumulation areas relative to airborne particulates, and high foot-traffic areas). Where possible, chemical sample locations were biased (for the woods, the most discolored or altered areas of accessible slats (2"x4"s) or structural posts were sampled) toward materials or locations with the highest potential for contamination. Beryllium swipes were taken from horizontal, extremely dusty surfaces as well as vertical non-porous walls adjacent to the work areas. Sediment samples in the cooling towers were obtained from the nearest convenient access.

Consistent with EPA's G-4 DQO process, the radiological survey design was optimized by checking actual measurement results (acquired during final status survey) against model output with original estimates. Use of actual sample/survey (result) variances in MARSSIM's DQO model confirms that an adequate number of samples/surveys were acquired

Completeness

Radiological Results

All Survey Packages were peer reviewed and approved by radiological engineering management. All radiological results are complete, valid without qualification, and form data sets with adequate quantities and quality of data for release decisions.

Comparability

All results presented are comparable with radiological survey and analytical data on a site- and DOE-complex wide basis. This comparability is based on:

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- Use of standardized engineering units in the reporting of measurement results;
- Consistent sensitivities of measurements at $\leq$ 50% $DCGL_W$ ($\leq$ 50% $DCGL_{EMC}$ for scans);
- Use of site-approved procedures (RSPs, TBDs, and SOPs);
- Systematic quality controls; and
- Thorough documentation of the planning, sampling/analysis process, and data reduction into formats designed for making decisions posed from the project's original data quality objectives.

Sensitivity

Adequate sensitivities, in units of dpm/100^2 cm, were attained for all surveys implemented based on MDAs at 50% of the transuranic $DCGL_W$ ($\leq$ 50% $DCGL_{EMC}$ for scans). Derivations of MDAs, for all instruments used, are given in each respective Radiological Survey Package. Nominal MDAs for each survey method are summarized as follows:

- Surveys (Eberline SAC-4) - removable contamination: 10 dpm/100cm^2
- Surveys (NE Electra) - total surface contamination (TSA): 50 dpm/100cm^2
- Surveys (NE Electra) – scans: <126 dpm/100 cm^2

Sensitivities were adequate for all chemical analyses. Detection limits for beryllium were less than 0.1 µg/100cm^2; detection limits for other analytes were less than actionable criteria.

Summary

In summary, the data presented in this report have been verified and validated relative to the project decisions as stated in the original DQOs. All media surveyed and sampled yielded results less than their associated action levels. Therefore, the Survey Units and buildings in question meet the unrestricted-release criteria with the confidences stated in this section and throughout this report.

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