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Data Validation Report for CH2M Hill
Plateau Remediation Company

VSR11-045
Project WMA C

Chemical & Radiochemical Validation - Level C

Validation Performed By: Carl Schlosser **Date:** 5-23-2011

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Date: 23 May 2011
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: WMA C
Subject: Volatile Organics - Sample Data Group (SDG) 20100520

INTRODUCTION

This memorandum presents the results of data validation for SDG 20100520 prepared by 222-S Laboratory. The samples validated along with the analytical method are provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B26JL2	7/07/2010	Soil	C	8260B
B26C71	7/08/2010	Soil	C	8260B

Data validation was conducted in accordance with the CHPRC validation statement of work and the Field Sampling and Analysis Plan for Waste Management Area C, RPP-PLAN-40564, Rev. 2 (SAP). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested By Client

DATA QUALITY OBJECTIVES

- **Holding Times and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The holding time requirements for volatile organics are analysis within 14 days of sample collection. Sample preservation for soil samples requires freezing.

The samples were analyzed within the prescribed holding time and properly preserved.

- **Blanks**

The blank data results are reviewed to assess the extent of contamination introduced through sampling, sample preparation, and analysis.

Laboratory Blanks

All laboratory blank results were acceptable.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

No equipment blanks were submitted for validation.

- **Accuracy**

Accuracy is evaluated by reviewing surrogate results, matrix spike sample results, and laboratory control sample results. According to the SAP, the matrix spike and laboratory control sample accuracy limits are 70% to 130%.

Surrogates

All surrogate recoveries were acceptable.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

All MS/MSD recoveries were acceptable with the following exceptions.

For both batches, only nine 8260B MS/MSD analytes were reported. Reported analytes not represented in the MS/MSD were trans-1,3-dichloropropene and carbon disulfide. The sample results for these two analytes were non-detects and should be qualified as estimates and flagged "UJ."

For batch 20645, the 4-methyl-2-pentanone (a.k.a. hexone) MS recovery was above the upper acceptance limit. The hexone result for sample B26C71was a non-detect and should not be qualified.

For batch 21742, the 4-methyl-2-pentanone (a.k.a. hexone), 1-butanol, acetone and 2-butanone MSD recoveries were above the upper acceptance limit. All associated results for sample B26JL2 were non-detects and should not be qualified.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable with the following exceptions.

For both batches, only nine 8260B LCS analytes were reported. Reported analytes not represented in the LCS were trans-1,3-dichloropropene and carbon disulfide. The sample results for these two analytes were non-detects and should be qualified as estimates and flagged "UJ."

For batch 20645, the 1-butanol LCS recovery was above the upper acceptance limit. The 1-butanol result for sample B26C71 was a non-detect and should not be qualified.

For batch 21742, the 4-methyl-2-pentanone (a.k.a. hexone) LCS recovery was above the upper acceptance limit. The hexone result for sample B26JL2 was a non-detect and should not be qualified.

- **Precision**

Precision is evaluated by reviewing MS/MSD results, field duplicate sample results, and field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are ±30%. When duplicate RPDs exceed the limits and have associated results <5X the SAP required detection limits with differences <2X the required detection limits no precision infraction occurred.

MS/MSD Samples

All MS/MSD relative percent difference values were acceptable.

Field Duplicate Samples

Sample B26JL3 is the field duplicate to sample B26JL2 but was not chosen for validation.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

Reported MDLs are compared against the required detection limits (RDLs) to ensure that laboratory detection limits meet the required criteria.

All reported sample MDLs were below the RDLs.

- **Completeness**

SDG 20100520 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Minor deficiencies leading to qualification of sample results as estimates were due to non-represented QC data. See the table in Appendix 2 for a listing of all affected sample results.

REFERENCES

GRP-GD-003, Rev. 0, Change 0, *Data Validation for Chemical Analyses*, August 2010

RPP-PLAN-40564, Rev. 2, *Field Sampling and Analysis Plan for Waste Management Area C*, December 2009

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers that may be applied by data validators in compliance with the CHPRC statement of work are as follows:

- **U** — The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.

- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.

- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **N** — The analysis indicates the presence of an analyte that has been tentatively identified.

- **NJ** — The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

- **NJ+** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.

- **NJ-** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.

- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

- **R** — Indicates the constituent was analyzed for and detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

Appendix 2

Summary of Data Qualification

Volatile Organics Data Qualification Summary			
SDG: 20100520	Reviewer: AQA	Project: WMA C	Page 1 of 1
Analyte(s)	**DV Flag**	**Samples Affected**	**Reason**
trans-1,3-Dichloropropene Carbon disulfide	UJ	B26JL2, B26C71	Non-represented MS/MSD and LCS data

Comments: None

Appendix 3

Annotated Laboratory Reports

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26JL2
Sample Depth: Surface

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001222			71-55-6	1,1,1-Trichloroethane	ug/kg	n/a	<0.0920	<0.0920	n/a	n/a	n/a	n/a	0.0920	n/a	U
S10V001222			79-00-5	1,1,2-Trichloroethane	ug/kg	n/a	<0.166	<0.166	n/a	n/a	n/a	n/a	0.166	n/a	U
S10V001222			79-34-5	1,1,2,2-Tetrachloroethane	ug/kg	n/a	<0.212	<0.212	n/a	n/a	n/a	n/a	0.212	n/a	U
S10V001222			75-35-4	1,1-Dichloroethene	ug/kg	104	<0.423	<0.423	n/a	n/a	n/a	n/a	0.423	n/a	U
S10V001222			107-06-2	1,2-Dichloroethane	ug/kg	n/a	<0.0538	<0.0538	n/a	n/a	n/a	n/a	0.0538	n/a	U
S10V001222			71-36-3	1-Butanol	ug/kg	125	<10.3	<10.3	n/a	n/a	n/a	n/a	10.3	n/a	U
S10V001222			108-10-1	Hexone	ug/kg	133	<1.71	<1.71	n/a	n/a	n/a	n/a	1.71	n/a	U
S10V001222			67-64-1	Acetone	ug/kg	116	<2.20	<2.20	n/a	n/a	n/a	n/a	2.20	n/a	U
S10V001222			71-43-2	Benzene	ug/kg	100	<0.147	<0.147	n/a	n/a	n/a	n/a	0.147	n/a	U
S10V001222			75-15-0	Carbon disulfide UJ	ug/kg	n/a	<0.161	<0.161	n/a	n/a	n/a	n/a	0.161	n/a	U
S10V001222			56-23-5	Carbon tetrachloride	ug/kg	n/a	<0.0934	<0.0934	n/a	n/a	n/a	n/a	0.0934	n/a	U
S10V001222			67-66-3	Chloroform	ug/kg	n/a	<0.131	<0.131	n/a	n/a	n/a	n/a	0.131	n/a	U
S10V001222			108-90-7	Chlorobenzene	ug/kg	105	<0.0864	<0.0864	n/a	n/a	n/a	n/a	0.0864	n/a	U
S10V001222			100-41-4	Ethylbenzene	ug/kg	n/a	<0.107	<0.107	n/a	n/a	n/a	n/a	0.107	n/a	U
S10V001222			1330-20-7	Xylenes (total)	ug/kg	n/a	<0.203	<0.203	n/a	n/a	n/a	n/a	0.203	n/a	U
S10V001222			78-93-3	2-Butanone	ug/kg	115	<1.96	<1.96	n/a	n/a	n/a	n/a	1.96	n/a	U
S10V001222			75-09-2	Methylenechloride	ug/kg	n/a	<0.0640	<0.0640	n/a	n/a	n/a	n/a	0.0640	n/a	U
S10V001222			127-18-4	Tetrachloroethene	ug/kg	n/a	<0.110	<0.110	n/a	n/a	n/a	n/a	0.110	n/a	U
S10V001222			108-88-3	Toluene	ug/kg	106	<0.0802	0.232	n/a	n/a	n/a	n/a	0.0802	n/a	J
S10V001222			10061-02-6	trans-1,3-Dichloropropene UJ	ug/kg	n/a	<0.271	<0.271	n/a	n/a	n/a	n/a	0.271	n/a	U
S10V001222			79-01-6	Trichloroethene	ug/kg	98.2	<0.121	<0.121	n/a	n/a	n/a	n/a	0.121	n/a	U
S10V001222			75-01-4	Vinyl chloride	ug/kg	n/a	<0.173	<0.173	n/a	n/a	n/a	n/a	0.173	n/a	U
S10V001222			156-59-2	cis-Dichloroethylene	ug/kg	n/a	<0.182	<0.182	n/a	n/a	n/a	n/a	0.182	n/a	U
S10V001222			156-60-5	trans-Dichloroethylene	ug/kg	n/a	<0.303	<0.303	n/a	n/a	n/a	n/a	0.303	n/a	U
S10V001222			76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	n/a	<0.116	<0.116	n/a	n/a	n/a	n/a	0.116	n/a	U
S10V001222			79-46-9	2-Nitropropane	ug/kg	n/a	<0.588	<0.588	n/a	n/a	n/a	n/a	0.588	n/a	U
S10V001222			141-78-6	Ethyl acetate	ug/kg	n/a	<0.587	<0.587	n/a	n/a	n/a	n/a	0.587	n/a	U
S10V001222			60-29-7	Diethyl ether	ug/kg	n/a	<0.256	<0.256	n/a	n/a	n/a	n/a	0.256	n/a	U

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26JL2
Sample Depth: Surface

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001222			75-69-4	Trichlorofluoromethane	ug/kg	n/a	<0.0940	<0.0940	n/a	n/a	n/a	n/a	0.0940	n/a	U
S10V001222			95-47-6	o-Xylene	ug/kg	n/a	<0.0920	<0.0920	n/a	n/a	n/a	n/a	0.0920	n/a	U
S10V001222			179601-23-1	m,p-Xylene	ug/kg	n/a	<0.167	<0.167	n/a	n/a	n/a	n/a	0.167	n/a	U

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C71
Sample Depth: 10-12

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001296			71-55-6	1,1,1-Trichloroethane	ug/kg	n/a	<0.0920	<0.0950	n/a	n/a	n/a	n/a	0.0950	n/a	U
S10V001296			79-00-5	1,1,2-Trichloroethane	ug/kg	n/a	<0.166	<0.171	n/a	n/a	n/a	n/a	0.171	n/a	U
S10V001296			79-34-5	1,1,2,2-Tetrachloroethane	ug/kg	n/a	<0.212	<0.219	n/a	n/a	n/a	n/a	0.219	n/a	U
S10V001296			75-35-4	1,1-Dichloroethene	ug/kg	114	<0.423	<0.437	n/a	n/a	n/a	n/a	0.437	n/a	U
S10V001296			107-06-2	1,2-Dichloroethane	ug/kg	n/a	<0.0538	<0.0556	n/a	n/a	n/a	n/a	0.0556	n/a	U
S10V001296			71-36-3	1-Butanol	ug/kg	136	<10.3	<10.6	n/a	n/a	n/a	n/a	10.6	n/a	U
S10V001296			108-10-1	Hexone	ug/kg	127	<1.71	<1.76	n/a	n/a	n/a	n/a	1.76	n/a	U
S10V001296			67-64-1	Acetone	ug/kg	123	<2.20	6.63	n/a	n/a	n/a	n/a	2.27	n/a	J
S10V001296			71-43-2	Benzene	ug/kg	107	<0.147	<0.152	n/a	n/a	n/a	n/a	0.152	n/a	U
S10V001296			75-15-0	Carbon disulfide UJ	ug/kg	n/a	<0.161	<0.166	n/a	n/a	n/a	n/a	0.166	n/a	U
S10V001296			56-23-5	Carbon tetrachloride	ug/kg	n/a	<0.0934	<0.0965	n/a	n/a	n/a	n/a	0.0965	n/a	U
S10V001296			67-66-3	Chloroform	ug/kg	n/a	<0.131	<0.135	n/a	n/a	n/a	n/a	0.135	n/a	U
S10V001296			108-90-7	Chlorobenzene	ug/kg	102	<0.0864	<0.0893	n/a	n/a	n/a	n/a	0.0893	n/a	U
S10V001296			100-41-4	Ethylbenzene	ug/kg	n/a	<0.107	<0.111	n/a	n/a	n/a	n/a	0.111	n/a	U
S10V001296			1330-20-7	Xylenes (total)	ug/kg	n/a	<0.203	<0.210	n/a	n/a	n/a	n/a	0.210	n/a	U
S10V001296			78-93-3	2-Butanone	ug/kg	124	<1.96	<2.03	n/a	n/a	n/a	n/a	2.03	n/a	U
S10V001296			75-09-2	Methylenechloride	ug/kg	n/a	<0.0640	<0.0661	n/a	n/a	n/a	n/a	0.0661	n/a	U
S10V001296			127-18-4	Tetrachloroethene	ug/kg	n/a	<0.110	<0.113	n/a	n/a	n/a	n/a	0.113	n/a	U
S10V001296			108-88-3	Toluene	ug/kg	102	<0.0802	0.337	n/a	n/a	n/a	n/a	0.0829	n/a	J
S10V001296			10061-02-6	trans-1,3-Dichloropropene UJ	ug/kg	n/a	<0.271	<0.280	n/a	n/a	n/a	n/a	0.280	n/a	U
S10V001296			79-01-6	Trichloroethene	ug/kg	102	<0.121	<0.125	n/a	n/a	n/a	n/a	0.125	n/a	U
S10V001296			75-01-4	Vinyl chloride	ug/kg	n/a	<0.173	<0.179	n/a	n/a	n/a	n/a	0.179	n/a	U
S10V001296			156-59-2	cis-Dichloroethylene	ug/kg	n/a	<0.182	<0.188	n/a	n/a	n/a	n/a	0.188	n/a	U
S10V001296			156-60-5	trans-Dichloroethylene	ug/kg	n/a	<0.303	<0.313	n/a	n/a	n/a	n/a	0.313	n/a	U
S10V001296			76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ug/kg	n/a	<0.116	<0.120	n/a	n/a	n/a	n/a	0.120	n/a	U
S10V001296			79-46-9	2-Nitropropane	ug/kg	n/a	<0.588	<0.607	n/a	n/a	n/a	n/a	0.607	n/a	U
S10V001296			141-78-6	Ethyl acetate	ug/kg	n/a	<0.587	<0.607	n/a	n/a	n/a	n/a	0.607	n/a	U
S10V001296			60-29-7	Diethyl ether	ug/kg	n/a	<0.256	<0.265	n/a	n/a	n/a	n/a	0.265	n/a	U

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C71
Sample Depth: 10-12

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001296			75-69-4	Trichlorofluoromethane	ug/kg	n/a	<0.0940	<0.0971	n/a	n/a	n/a	n/a	0.0971	n/a	U
S10V001296			95-47-6	o-Xylene	ug/kg	n/a	<0.0920	<0.0950	n/a	n/a	n/a	n/a	0.0950	n/a	U
S10V001296			179601-23-1	m,p-Xylene	ug/kg	n/a	<0.167	<0.173	n/a	n/a	n/a	n/a	0.173	n/a	U

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

222-S LABORATORY

FINAL ANALYTICAL REPORT FOR SAMPLES FROM WASTE MANAGEMENT AREA C FOR CORE HOLE C7672 IN SUPPORT OF RCRA SOIL CHARACTERIZATION

1.0 INTRODUCTION

This final report presents the results for the samples taken from Waste Management Area C between July 7, 2010 and July 16, 2010. The samples were analyzed in accordance with RPP-PLAN-40564, *Field Sampling and Analysis Plan for Sites P and L at Waste Management Area C* (FSAP); RPP-PLAN-38777, *Sampling and Analysis Plan for Phase 2 Characterization of Vadose Zone Soil in Waste Management Area C* (SAP); ATL-MP-1011, *ATL Quality Assurance Project Plan for 222-S Laboratory* (QAPP); SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*; and the additional guidance given by the client's point of contact.

Because the 222-S Laboratory facility was designed to analyze hazardous and complex tank waste samples, most SW-846 test methods performed at the 222-S Laboratory contain deviations that are listed in an appendix in the analytical procedures. All other known deviations or variances from SW-846 are documented in this narrative. The following attachments are included in this report.

Attachment 1	Data Summary Report
Attachment 2	Sample Breakdown Diagrams
Attachment 3	Holding Time Report
Attachment 4	Additional Organic Analyses QC Results
Attachment 5	Tentatively Identified Compounds (TIC) for Organic Analyses
Attachment 6	Geological Report
Attachment 7	Characterization Change Notices (CCN) and Correspondence
Attachment 8	Receipt Paperwork

2.0 SAMPLE RECEIPT AND BREAKDOWN

2.1 SAMPLE RECEIPT

A total of seven core intervals and two surface grab samples from core hole C7672 along with six field blanks, six trip blanks, and one equipment blank were received by the 222-S Laboratory between July 7, 2010 and July 16, 2010. The samples were delivered in a cooler with ice or, in the case of the volatile organic soil samples, in a freezer. The temperatures of the temperature blanks were measured and recorded on the sample receipt check list and/or the chain of custody form.

The chain of custody requested that conductivity be analyzed on the soil samples. Since this analysis was not listed in the SAP or FSAP it was not performed. The client has indicated that

this analysis may be performed later after a CCN is issued to cover the change to the FSAP (see Attachment 7).

2.2 SAMPLE BREAKDOWN

The laboratory received each core interval as a set of volatile organic analysis (VOA) samples and three liner samples when complete core recovery was obtained. The VOA samples were made from the shoe section of each core interval following SW-846 5035. The liner samples from each core interval were extruded, described, and composited by the Washington River Protection Solutions, Inc. (WRPS) geologist. The geologist's report is included in Attachment 6. Provided sufficient samples existed, the composite for each core interval was analyzed as described in the SAP and FSAP. One core interval, I001, had less than full recovery (see Attachment 2 and Attachment 8). There was no I003 for core hole C7672. All intervals were extruded and composited in the normal manner. The surface samples were received as a single grab in a 500-mL jar and a set of VOA samples.

WRPS shipped subsamples of the composites to Test America Laboratories, Inc. (TAL) in St Louis, Missouri and Knoxville, Tennessee to be analyzed for dibutyl and monobutyl phosphate, total petroleum hydrocarbons (diesel and gasoline range), ethylene glycol, chlorinated pesticides, and polychlorinated biphenyls (Aroclors and congeners). TAL subsequently subcontracted the monobutyl and dibutyl phosphate analyses to Southwest Research Institute. The results of these analyses will be released in the final WRPS report.

3.0 ANALYTICAL RESULTS SUMMARY

The Data Summary Report (Attachment 1) presents the final analytical results for those analytes requested in the SAP and FSAP. Secondary analytes are only reported if detected. The TIC from gas chromatography-mass spectrometry (GC/MS) analysis of semivolatile organic compounds (SVOC) is presented in Attachment 5. In addition to the required isotopes, all isotopes with positive gamma energy analysis (GEA) results were reported.

The "Det Limit" column in Attachment 1 contains the method detection limit (MDL) for non-radionuclide analyses, or the minimum detectable activity for radionuclides.

In Attachment 1, the column labeled "A#" indicates the aliquot class or the method used for sample preparation before analysis. For solid samples, the aliquot classes are defined as follows:

"A" indicates samples that were prepared by SW-846 3050B.

"E" indicates samples that were prepared by a strong acid digest.

"O" indicates samples that were extracted for organic analysis.

"S" indicates samples that were prepared by a distillation.

"W" indicates samples that were prepared by a standard water digest.

"WV" indicates samples that were prepared by a Vadose water digest.

Samples without a letter identifier in the "A#" column were analyzed directly with no separate preparation or with sample preparation performed as a part of the procedure steps.

The "Qual Flags" column in Attachment 1 contains data qualifier flags that are defined as follows:

> "B" is used to indicate that the analyte was detected in the method or preparation blank and in the sample, and the result for the blank was greater than 5% of the reported sample result.
>
> "J" indicates that the reported result should be considered an estimate because it is below the quantitation limit. The "J" flag is applied to sample concentrations that are greater than the MDL but less than the quantitation limit or sample activity with a counting uncertainty greater than 30%.
>
> "N" indicates a TIC which has been named.
>
> "T" indicates a TIC.
>
> "U" indicates that the reported result is less than the calculated detection limit.
>
> "b" indicates that the matrix spike (MS) recovery was outside of the specified range in the QAPP or SAP.
>
> "c" indicates that the relative percent difference (RPD) between the sample and the duplicate is greater than 30%.

Manual calculations using rounded results from the Data Summary Report (Attachment 1) or result calculation forms may differ slightly from the actual results derived from the raw data.

3.1 SAMPLE DIGESTIONS

3.1.1 Radiochemistry Strong Acid Digestion

Strong acid digestions with a hot plate for the heat source were performed using a mixture of concentrated nitric and hydrochloric acids. For each digest, approximately 1 to 10 g of sample was digested depending on the analysis being performed. The digestate was then filtered and diluted to a final volume. This digestion was used for all radiochemical analyses except ^{3}H, ^{14}C, and ^{129}I. This digestion is a leach of the acid soluble species only.

3.1.2 SW-846 3050B - Acid Digestion-Heating Block

This acid digestion follows SW-846 3050B using a heating block and nitric and hydrochloric acids. An aliquot of approximately 5 g of sample was digested. All heating-block digestions were filtered and diluted to a final volume of 50 mL. In soil, this digestion is a leach of the acid soluble species only. This digestion was used for all inductively coupled plasma/mass spectrometry (ICP/MS) and inductively coupled plasma/atomic emission spectroscopy (ICP/AES) analyses except for ^{99}Tc and isotopic tin (^{117}Sn and ^{126}Sn) analyses. The digestion is modified for the ^{99}Tc analysis by using only nitric acid. This is done to eliminate the possibility of the formation a zinc-chlorine ion pair of mass 99. The laboratory believes this ion, when

present, is responsible for low level false positives. A separate digestion for antimony was prepared using additional hydrochloric acid, as recommended in SW-846.

3.1.3 Water Digestion

A water digestion or leach was prepared for the anions by ion chromatography, ^{14}C, and ^{3}H analyses using approximately 0.25 to 4 g of sample diluted to 25 mL. Sonification was used, and the leachate was then filtered. In soil, this digestion is a leach of the water soluble species only.

3.1.4 Vadose Water Digestion

A 70-g sample of soil was leached using a ratio of one part water to one part soil. To maintain a one-to-one ratio, the amount of water added to the sample was adjusted based on the percent moisture of the soil. The slurries were placed on a shaker table for about 1 hour. They were then transferred to a centrifuge tube and centrifuged at 4,000 rpm for 30 minutes. An unfiltered aliquot was set aside for alkalinity analysis. The remainder was filtered using a disposable vacuum filtration system. The filtrates were transferred to a clean bottle and then analyzed for anions using IC nitrate analysis (intervals I005 to I010) and ^{99}Tc by ICP/MS analysis.

3.2 INORGANIC ANALYSES

3.2.1 Cyanide

The cyanide analysis by distillation and spectrophotometry was performed on the grab samples, liner composite samples, and the equipment blank. All analyses met the SW-846 holding time of 14 days. There was no required reporting limit in the SAP for cyanide. The target detection limit was 0.5 µg/g, which is lower than what the current laboratory method (lachet micro-distillation) can reach. There were no notable quality control (QC) issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.2 Sulfide

Sulfide analysis by distillation and ion selective electrode was performed on the grab samples, liner composite samples, and the equipment blank. All analyses met the SW-846 holding time of 7 days. There was no required reporting limit in the SAP for sulfide. The target detection limit was 5 µg/g. All sample results had adjusted MDLs of approximately 7 µg/g. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.3 pH Analysis

The pH analysis was performed on the grab samples, liner composite samples, and equipment blank. These analyses met all QC requirements in the FSAP, SAP, and QAPP. The FSAP lists a pH holding time requirement of “as soon as possible.” All pH measurements were taken after the water leach was performed. The sampling to analysis time varied from 6 to 15 days (see Attachment 3). There is no correlation between pH results and days to analysis, and the results

fall within an expected range for alkaline soils. This indicates that the variation in time has no apparent effect on the results.

3.2.4 Mercury

Analysis for Hg by cold-vapor graphic furnace/atomic absorption was performed on the grab samples, liner composite samples, and the equipment bank. All results met the QC requirements in the FSAP, SAP, and QAPP. All analyses met the holding time of 28 days. This analysis met the required and target detection limits.

3.2.5 Ion Chromatography – Ammonium

Analysis for ammonium was performed using a distillation preparation of the grab samples, the liner composite samples, and the equipment blank. There is no regulatory holding time limit promulgated for ammonium in soil. The SAP lists an administrative holding time of 7 days. The laboratory believes that after distillation and preservation, the holding time is 28 days based on U.S. Environmental Protection Agency drinking water and waste water holding times for preserved samples. All samples met these holding times. These analyses met the target detection limit listed in the SAP. There was no required reporting limit in the SAP or FSAP for ammonium.

Batch 20647: The RPD between the duplicate and the sample exceeded the required 30%. Since the result for this analyte was below the quantitation limit, the criterion does not apply and reanalysis is not required. Ammonium was detected in the preparation blanks at a level below the quantitation limit and above the MDL. Ammonium was also detected in the samples at a similar level; these results have been flagged with a “B”. Since all results were below the quantitation limit, reanalysis was not required.

Batch 20662: Ammonium was detected in the preparation blanks at a level below the quantitation limit and above the MDL. Since ammonium was not detected in the sample reanalysis was not required.

Batch 20716: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20930: The RPD between the sample and duplicate exceeded the required 30%. Since the result for this analyte was below the quantitation limit, the criterion does not apply and reanalysis is not required.

3.2.6 Ion Chromatography – Anions and Small Organic Acids

Ion chromatography analysis was performed on all grab samples, liner composite samples, and the equipment blank. The laboratory met all of the required and target detection limits. All analyses were within the applicable SW-846 holding times. The sample spikes used for the standard water digestions are predigestion spikes.

Batch 20596: The result for nitrate in the preparation blank was slightly below the quantitation limit. Since the sample was non-detect for nitrate, the blank is acceptable.

Batch 21046: The RPD between the sample and duplicate for fluoride exceeded the required 30% at 40%. The laboratory believes this was due to sample inhomogeneity, which is indicated by high RPDs for the other anions in this sample. All fluoride results in this batch have been flagged with a "c". The RPD for nitrite was above the required 30%, however the result was below the quantitation limit, and the criterion does not apply. The low level standard (LLS) for chloride exceeded the ±50% requirement in SW-846 at 153%. This could indicate a high bias for results near the LLS level. Since all chloride results were below the continuous calibration verification sample (CCV) level, a "J" was applied, even to the results above the laboratory's quantitation limit (the LLS level).

Batch 21073: The low level standard (LLS) for chloride exceeded the ±50% requirement in SW-846 at 153%. This could indicate a high bias for results near the LLS level. Since the result was below quantitation level, the data quality was not affected.

3.2.7 Inductively Coupled Plasma/Atomic Emission Spectroscopy

The ICP/AES analysis was performed on an acid-digest (SW-846 3050B) of all grab samples, liner composite samples, and the equipment blank. The ICP/AES analysis was unable to obtain the required detection limit for antimony, arsenic, cadmium, lead, selenium, silver, and thallium for the soil sample. These elements have been reported from separate ICP/MS analyses. Total uranium has not been reported by the ICP/AES analysis since it cannot meet the required detection limits in the SAP. The isotopic uranium analysis by ICP/MS met the required detection limit for ^{238}U, which is essentially total uranium. The overall data usability was not affected. For all other metals reported by ICP/AES, all target and required detection limits were met. SW-846 lists the holding time for ICP/AES metals as 6 months. All analyses met the holding times.

Batch 21204: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21230: The interference check standard-AB (ICSAB) had a result above the quantitation limits for neodymium. This indicates that spectral interference was occurring. Neodymium results were not reported due to the high probability that they were the result of this interference. Results slightly above the MDL for cadmium, chromium, manganese, and silver in the ICSAB indicate a possible high bias for these elements. However, the recovery of these elements in the ICSAB was within the ±20% requirement; this indicates no significant bias was present. Low levels of iron and calcium were detected in the preparation blank, but reanalysis was not required since these levels were less than 5% of the lowest sample result.

The MS recoveries for aluminum, calcium, iron, magnesium, manganese, potassium, phosphorous, sodium, and titanium exceeded the ±25% requirement in the FSAP and SAP. Since the sample results for these elements exceeded the MS level by more than four times, this criterion does not apply.

The MS recovery for silicon exceeded the ±25% requirement in the SAP and FSAP. The laboratory believes this was due to matrix interference. Reanalysis was not required since this is secondary element. It should be noted that silicon is not listed with other elements in SW-846 3050B, section 1.1, under "Scope and Application" for the method and does not perform consistently when using this digest.

The RPD between the sample and the duplicate exceeded the ±30% requirement in the SAP for manganese. The laboratory believes this was due to sample inhomogeneity and, with the client's permission, the result has been reported (see Attachment 7).

3.2.8 Inductively Coupled Plasma/Mass Spectroscopy

The ICP/MS actinide and trace metal analyses were performed on the standard SW-846 3050 acid digestion of all grab samples and liner composite samples. The ICP/MS actinide analysis was also performed on the equipment blank. The ICP/MS ^{126}Sn and ^{99}Tc analysis was performed on the sample digest without the addition of hydrochloric acid. Hydrochloric acid is not used for ^{99}Tc analysis because of the potential formation of a ZnCl ion pair with mass 99. ICP/MS trace metal analysis for antimony was perform on the SW-846 3050 digest with additional hydrochloric acid, which is required to keep antimony in the solution. In addition to these acid digests, ICP/MS ^{99}Tc analysis was performed on a vadose water digest of all solid samples.

Direct is the most accurate type of calibration; however, standard material is not commercially available for all of the isotopes of interest. Concentrations of those isotopes without available standards are estimated based on the instrument's mass-response curve, which is generated by using the intensity/concentration relationship for the available isotope standards. Results estimated in this manner are designated "semi-quantitative."

Table 1. Inductively Coupled Plasma-Mass Spectroscopy Standards and Spikes

Standard Type	Analytes Analyzed
Initial calibration verification (nondigested)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Acid digest standard (laboratory control standard)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Predigest spike (MS)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Post-digest spike	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
No standard or spike of either type	^{126}Sn, ^{230}Th, ^{233}U, ^{234}U, ^{236}U

3.2.8.1 Technetium-99 and Tin-126

The required detection limit listed in the SAP for ^{99}Tc was met. The target detection limit for ^{99}Tc was not met. There were no required or target detection limits for ^{126}Sn listed in the SAP. The SAP lists the holding time for isotopic analytes as 6 months. All samples were analyzed within the holding time.

Because there is no available source for ^{126}Sn, ^{117}Sn is used to monitor the chemical recovery for this analysis. Though not specifically requested in the SAP, ^{117}Sn is reported for the laboratory control sample (LCS) and MS in order to demonstrate method accuracy and presence of possible matrix interference.

All sample results were above the MDL and below the quantitation limit with one exception. Based on this, the laboratory suspects that a low level isobaric interference is present in these samples at mass 126. The laboratory believes the most likely suspect is ^{126}Te, but there are other possible candidates. One sample result was above the quantitation level for ^{126}Sn. Users of this data should be aware that all positive ^{126}Sn results in the report may be due to isobaric interference. The laboratory is currently evaluating how to quantify the possible isobaric interferences for ^{126}Sn.

Batch 22899: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21705: The MS for ^{117}Sn was recovered below the ±25% requirement. Similar results have been observed in other batches; this appears to be a matrix interference issue. This batch was not reanalyzed, but others have been with no improvement. Tin results should be considered biased low at these levels. All samples in the batch have been flagged with a "b". The laboratory is investigating change the acid mixture used to perform low level ^{126}Sn analysis in hopes of improving spike recoveries.

3.2.8.2 Technetium-99 (Vadose Water Digest)

The required and target detection limits listed in the SAP for ^{99}Tc were met. The SAP lists a holding time of 6 months for isotopic analytes. All analyses met this holding time.

Batch 23804: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.8.3 Actinides

The required and target detection limits were met for all isotopes and in all samples. The SAP lists the holding time for isotopic analytes as 6 months. All samples were analyzed within the holding time.

Batch 21671: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 23850: The results for ^{232}Th and ^{236}U in the preparation blank were slightly above the MDL. The sample in this batch demonstrated a similar result for ^{236}U and has been flagged with a "B". The sample result for ^{232}Th was below the MDL. Since all results were below the quantitation limit, the blank was acceptable and reanalysis was not required.

3.2.8.4 Trace Metals

Antimony, arsenic, cadmium, lead, selenium, silver, and thallium were analyzed by ICP/MS to obtain the required detection limits in the SAP. Except for the required detection limit for selenium, all required detection limits were met or the sample results were above the quantitation limit and the sample detection limit criteria do not apply. All target detection limits were met. The required detection limit for selenium was approximately an order of magnitude below the detection limit obtained by ICP/MS. The laboratory does not anticipate reaching this detection

limit for future projects. The adjusted MDL for selenium was approximately 0.12 µg/g. SW-846 lists the holding time for metals as 6 months. All samples were analyzed within the holding time.

Batch 21982: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21350: The MS recovery exceeded the required ±25% for antimony at 63%. Reanalysis was not performed due to a facility room outage. The client was informed of the outage (see Attachment 7) and these results were reported. A "b" was added to all sample results in the batch. Since an antimony-specific digestion was used, the laboratory believes the failure was due to matrix interference.

3.3 RADIOCHEMICAL ANALYSIS

The holding time listed in the SAP for radioactive isotopes is 6 months. The FSAP list the holding time as "none". SW-846 does not address holding times for radiochemical analytes. All radiochemical analyses met the 6-month holding time listed in the SAP. Holding time tables for these analytes have not been included in Attachment 3. With the exception of the ^{14}C and ^{3}H analyses, tracers and spikes are added prior to the digestion.

3.3.1 Gamma Energy Analysis

Gamma energy analysis was performed directly on the grab samples, liner composite samples, and the equipment blank. The SAP requires the reporting of all isotopes with positive results above the minimum detectable activity (MDA); therefore, isotopes additional to those required in the SAP were reported when detected. The GEA analysis met all of the required detection limits in the SAP. The laboratory was unable to meet any of the target detection limits.

Batch 21109: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21198: The RPD for ^{214}Pb was above the 30% requirement in the FSAP. Since the counting error was > 15%, this criterion does not apply.

3.3.2 Strontium-89/90

Strontium-89/90 analysis was performed on the grab samples, liner composite samples, and the equipment blank. All of the sample analyses met the required and target detection limits. The FSAP and SAP requested ^{90}Sr, not $^{89/90}Sr$, be reported. The 222-S Laboratory only performs the latter analysis. Since the half-life for ^{89}Sr is approximately 51 days and ^{89}Sr has not been produced at Hanford for years, $^{89/90}Sr$ is essentially ^{90}Sr. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.3.3 Tritium

The ^{3}H analysis by liquid scintillation counting (LSC) was performed on the equipment blank and a water leach of all grab samples and liner composite samples. This method only measured

the ^{3}H in the samples that could be dissolved in water. This analysis achieved the required and target detection limits in the FSAP.

Batches 21194 and 24544: There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21310: The laboratory failed to include an MS with this batch and did not analyze an MS for C7672 as required. This was discussed with the client (see Attachment 7), and a single sample was reanalyzed in a batch containing an MS in order to meet this requirement.

3.3.4 Selenium-79

The ^{79}Se analysis by LSC was performed on the grab samples, liner composite samples, and the equipment blank. The analysis achieved the target detection limit in the FSAP. No required detection limit was listed. No standard is currently available for ^{79}Se, and a cold carrier is used to monitor recovery and is measured gravimetrically. The ^{14}C LSC curve is used to determine the ^{79}Se results since their energies are similar. Since both ^{63}Ni and ^{79}Se use a single digestion batch that is equally split prior to the separation step, the maximum tracer/carrier recovery is 50%.

Batches 21328 and 23959: The preparation blanks demonstrated a positive result below the quantitation limit, as did the five samples in these batches. All results had very large counting uncertainties and were below the target detection limit. Because of these factors, reanalysis was not required. The associated positive results have been flagged with a “B”.

3.3.5 Carbon-14

The ^{14}C analysis by LSC was performed on a water leach of the grab samples and liner composite samples and directly on the equipment blank. The analysis achieved the required detection limit in the FSAP but exceeded the target detection limit. This analysis will only detect water soluble forms of ^{14}C.

Batch 23609: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 2130: Carbon-14 was detected in the method blank below the quantitation limit. Since ^{14}C was not detected in the sample, reanalysis was not required.

3.3.6 Nickel-63

The ^{63}Ni analysis by LSC was performed on the grab samples, liner composite samples, and equipment blank. The analysis achieved the required and target detection limits in the FSAP. Since both ^{63}Ni and ^{79}Se use a single digestion batch that is equally split prior to the separation step, the maximum trace/carrier recovery is 50%.

Batch 24148: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21112: The preparation blanks demonstrated a positive result below the quantitation limit, as did the sample. All results had very large counting uncertainties and were below the target detection limit. Because of these factors, reanalysis was not required. The associated positive results have been flagged with a “B”.

Batch 22827: This duplicate for this batch was reanalyzed in batch 24148 along with the other sample that had a positive result for ^{63}Ni. All sample results were below the MDA in the reanalysis.

3.3.7 Iodine-129

Analysis for ^{129}I by low energy GEA was performed on an iodine-specific fusion digest of all grab samples, liner composite samples, and the equipment blank. The required and target detection limits in the SAP were met. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.3.8 Americium-241, Curium-243/244, and Curium-242

Analysis for ^{241}Am, $^{243/244}$Cm, and ^{242}Cm by alpha energy analysis (AEA) was performed on the grab samples, liner composite samples, and the equipment blank. For this analysis, there were no notable issues with any batches and all QC requirements in the FSAP, SAP, and QAPP were met. The required and target detection limits in the SAP were met. The SAP and FSAP requested ^{243}Cm and ^{244}Cm be reported separately. Since it is not possible to resolve these individual isotopes when using AEA, these isotopes have been reported as $^{243/244}$Cm.

3.3.9 Plutonium-238 and Plutonium-239/240

Plutonium isotopic (^{238}Pu and $^{239/240}$Pu) analysis by AEA was performed on the grab samples, liner composite samples, and the equipment blank. For this analysis, there were no notable issues with any batches and all QC requirements in the FSAP, SAP, and QAPP were met. The required and target detection limits in the SAP were met.

3.4 ORGANIC ANALYSES

3.4.1 Volatile Organic Analysis

The VOA by GC/MS was performed on field samples by purge and trap. Field sampling methods, sample containers, and preservation methods followed SW-846 5035.The soil samples were delivered in a freezer in pre-weighed VOA vials with magnetic stir bars and approximately 5 g of sample. After receipt, the VOA samples were stored in a freezer. For each sample interval, an additional high level sample preserved in methanol was also received. These were not used because none of the results for the frozen samples were above the calibration range. The exact weight of the sample and the tare weight of the VOA vials were recorded by sampling personnel and delivered with the samples. One equipment blank, six field blanks, and six trip blanks were also received and analyzed. The samples were preserved with either HCl or H_2SO_4 to a pH < 2.The holding time for all samples is 14 days. All samples met the required holding time.

The VOA met the target and required detection limits in the SAP. The SAP and FSAP requested m-xylene and p-xylene be reported separately. Since it is not possible to resolve these individual compounds when performing VOA by SW-846 8260C, these compounds have been reported as m+p xylene. The SAP and FSAP request that methanol be reported with this analysis; however, this compound is too polar to be purged and cannot be reported (see Attachment 7). Isobutanol, another poor purger, was reported as a semivolatile organic compound.

All of the field blanks, trip blanks, and the equipment blank contained chloroform above the quantification level. Since chloroform is a common chlorination byproduct, the laboratory believes the source of chloroform was the water used by sampling personnel to make the various blanks.

The LCS, MS, and matrix spike duplicate (MSD) recoveries were compared against the laboratory's statistical process control (SPC) limits, as required by SW-846. The use of SPC limits is allowed in the FSAP, SAP, and QAPP.

Batches 20645 and 21741: There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20614: The method blank results for acetone and methylene chloride were above the MDL but below the quantitation limit. The sample results were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required.

Batch 20618: The method blank result for 2-hexanone was above the MDL and below the quantitation limit. The sample result is similar to the blank and has been flagged with "B". Since all results were below the quantitation limit and 2-hexanone is not a primary analyte, reanalysis was not required.

Batch 20731: The method blank results for toluene and 2-butanone were above the MDL but below the quantitation limit. Since the sample results were non-detect for these compounds, reanalysis was not required.

Batch 20910: The method blank result for toluene was above the MDL but below the quantitation limit. Since the sample result was non-detect for this compound, reanalysis was not required. The MS and MSD experienced low recoveries for the internal standards. Since the sample internal standard (IS) recoveries were within the required range and the MS/MSD IS recoveries were sufficient to produce MS and MSD results that met acceptance criteria, the data for this batch was considered acceptable and reported.

Batch 20912: The method blank result for toluene was above the MDL but below the quantitation limit. The sample result is similar to the blank and has been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required.

Batch 21742: The MSD experienced low recoveries for the internal standards. Since the sample and MS IS recoveries were within the required range and the MSD IS recoveries were sufficient to produce MSD results that met acceptance criteria (RPD), the data for this batch was considered acceptable and reported.

Batch 21745: The method blank results for acetone, toluene, and styrene were above the MDL but below the quantitation limit. The sample results for toluene and styrene were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit and styrene is not a primary analyte, reanalysis was not required. The internal standards were recovered low (approximately -45%) in the sample but were sufficient to produce surrogate results within acceptance criteria. Since this was the second analysis of the sample and the holding time was expiring, the results have been reported. The original analysis had similar IS recoveries. The cause for low IS recoveries in the vadose sample has typically been associated with a leaking vial cap. However, the TIC analysis indicated the presence of hydrocarbons, which could also affect IS recoveries.

Batch 23601: The method blank results for 2-butanone and toluene were above the MDL but below the quantitation limit. The sample results for 2-butanone and toluene were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required. The MS recoveries for 1-butanol, hexone, acetone, and 2-butanone were all above their upper acceptance limit. This would indicate a high bias in the sample results for these compounds. Since 2-butanone was detected below the quantitation limit and other results were below the MDL, this data was acceptable. These results have been flagged with a "b". The results were from the second analysis of the sample. A third analysis was performed past the holding time but not reported. All results were similar. The MSD failed twice with extremely low IS recoveries. Since only one MS/MSD pair is required for each core hole (see Attachment 7) and there are three MS/MSD pairs for core C7672, project quality control requirements have been met.

3.4.2 Semivolatile Organic Analysis

The semivolatile organic analysis (SVOA) by GC/MS was performed on methylene chloride extractions of all grab samples and liner composite samples. All holding times were met.

The SVOA analysis met the required and target detection limits with two exceptions:

- The adjusted MDLs for cyclohexanone were above the 0.5-mg/kg target detection limit for most samples. This compound obtained detection limits between 0.5 mg/kg and 0.6 mg/kg.
- The adjusted MDLs for di-n-butyl-phthalate were above the target detection limit of 0.33 mg/kg. The analysis achieved a detection limit of between 0.5 mg/kg and 0.6 mg/kg for this compound.

LCS, MS, and MSD recoveries were compared against the laboratory's SPC limits, as required by SW-846. The use of SPC limits is permitted in the FSAP, SAP, and QAPP.

The SAP and FSAP requested m-cresol and p-cresol be reported separately. Since it is not possible to resolve these individual compounds when performing SVOA by SW-846 8270C, these compounds have been reported as m+p cresol.

Batch 20887: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20883: Butylbenzylphthalate was detected in the method blank and samples at slightly above the MDL and below the quantitation limit. Therefore, the blank is acceptable and reanalysis was unnecessary. Sample results have been flagged with a "B".

Batch 20921: Butylbenzylphthalate, bis(2-ethylhexyl) phthalate, and di-n-octylphthalate were detected in the method blank above the MDL and below the quantitation limit. Therefore, the blank is acceptable and reanalysis was unnecessary. Only Butylbenzylphthalate was detected in the samples, and these results have been flagged with a "B".

3.4.3 Tentatively Identified Compounds

Unassigned peaks or TICs were treated as follows. Standards were obtained and analyzed for each secondary analyte identified in the SAP. This data was accumulated in the Hanford library. Following analysis, the largest TICs with instrument responses greater than 10% of the response of the nearest internal standard were evaluated and compared to the Hanford library. The estimated concentration of these TICs was calculated using measured response factors from the Hanford library compound list.

After comparison to the Hanford library, remaining unknowns were compared to the National Institute of Standards and Technology's NIST 02, *HP Mass Spectral Libraries*. The estimated concentration of compounds identified in the NIST library was calculated based on an arbitrary response factor of 1.0. If the compounds were not identified as a result of this comparison, they were reported as "unknown." Summaries of the SVOA and VOA TICs from the field samples and method blanks are provided in Attachment 5. TICs that were found in the field samples and were present in the associated batch method blank have been flagged with "B".

4.0 PROCEDURES

Table 2 lists the analytical procedures used for analysis of the Area C samples.

Table 2. Analytical Procedures

Analysis	Preparation Method	Analysis Procedure
Inorganic Analyses		
Cyanide	LA-695-103, Rev. J-0 (SW-846 9010C)	LA-695-103, Rev. J-0 (SW-846 9014)
Sulfide	LA-361-101, Rev. D-0 (SW-846 9030B)	LA-361-101, Rev. D-0 (SW-846 9215)
pH (solid)	LA-212-105, Rev. G-0 (SW-846 9045D)	LA-212-105, Rev. G-0 (SW-846 9045D)
pH (liquid)		LA-212-106, Rev. H-0-A (SW-846 9040C)
Mercury – Cold Vapor Atomic Absorption	LA-325-110, Rev. A-0 (SW-846 7470A, 7471A)	LA-325-110, Rev. A-0 (SW-846 7470A, 7471A)
Ammonia – IC	LA-544-112, Rev. E-0	LA-533-101, Rev. Q-0

Analysis	Preparation Method	Analysis Procedure
Anions & Organic Acids – IC	LA-504-101, Rev. M-0	LA-533-115, Rev. J-0
Metals – ICP /AES	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-505-161, Rev. J-0-A (SW-846 6010C)
^{99}Tc, ^{126}Sn – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1
^{99}Tc – ICP/MS	08-ATL-078 Vadose Water Digest	LA-506-102, Rev. F-1
Metals – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1 (SW-846 6020A)
Actinides – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1
Radiochemical Analyses		
GEA	Direct	LA-548-121, Rev. I-0
^{90}Sr – Separation/Beta counting (Solid)	LA-544-101, Rev. F-0	LA-220-101, Rev. J-0, I-0
^{3}H – LSC	LA-504-101, Rev. M-0	LA-218-111, Rev. G-0
^{14}C – LSC	LA-504-101, Rev. M-0	LA-348-104, Rev. H-0, I-0
^{79}Se – Separation/LSC	LA-544-101, Rev. F-0	LA-365-132, Rev. I-0
^{63}Ni – Separation/LSC	LA-544-101, Rev. F-0	LA-285-102, Rev. E-0
^{129}I – Separation/GEA	LA-378-105, Rev. C-0, D-0	LA-378-105, Rev. C-0, D-0
^{241}Am, $^{243/244,\ 242}$Cm – Separation/AEA	LA-544-101, Rev. F-0	LA-953-104, Rev. H-1
$^{239/240,\ 238}$Pu – Separation/AEA	LA-544-101, Rev. F-0	LA-953-104, Rev. H-1
Organic Analyses		
VOC – GC/MS	Direct	LA-523-118, Rev. G-O-A (SW-846 8260B)
SVOC – GC/MS	LA-523-138, Rev. G-0 (SW-846 3540C) LA-523-115, Rev. H (SW-846 3520C)	LA-523-135, Rev. D-0 (SW-846 8270C)

5.0 REFERENCES

ATL-MP-1011, 2010, *ATL Quality Assurance Project Plan for 222-S Laboratory*, Rev. 9, Advanced Technologies and Laboratories International, Inc., Richland, Washington.

NIST 02, 2002, *HP Mass Spectral Libraries*, July 2002 Release, Hewlett-Packard Company, Palo Alto, California.

SW-846, 1986, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods,* Third Edition, as amended, U.S. Environmental Protection Agency, Washington, D.C.

RPP-PLAN-40564, 2009, *Field Sampling and Analysis Plan for Sites P and L at Waste Management Area C,* Rev. 2, Washington River Protection Solutions, Inc.

RPP-PLAN-38777, 2009, *Sampling and Analysis Plan for Phase 2 Characterization of Vadose Zone Soil in Waste Management Area C*, Rev. 1, Washington River Protection Solutions, Inc.

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	V10-003-244	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8P	DATA TURNAROUND
Ekstrom / Campbell	TEMPLETON, AM	373-5589	BERLIN, PC	AIR QUALITY ☐	75 Days / 75 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
C7672 Surface	WMA C Sampling for CMS		V10-003		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**ACTUAL SAMPLE DEPTH**	**COA**	**METHOD OF SHIPMENT**	
TFVS-09-003	TFVZ-09-000001	Surface	N/A	Govt. Vehicle	
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
222-S Lab Operations	N/A		N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool <-7C and >-20C	MEOH/Cool~ 4C
HOLDING TIME	14 Days	14 Days
TYPE OF CONTAINER	Gs*	Gs*
NO. OF CONTAINER(S)	5	3
VOLUME	40mL	40mL
SAMPLE ANALYSIS	VOA - 5035/8260 (LOW LEVEL) (TF);	VOA - 5035/8260 (HIGH LEVEL) (TF);

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B26JL2	SOIL	7/2/10	1030	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
BE Ekstrom BE Ekstrom	7/2/10 1215	RKTeele RKTeele	7.2.10 12.15
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

** All VOA samples will be collected using EPA Method 5035A.
** VOA sample bottle sets will include 3 bottles for high level analysis, and 5 bottles for low level analysis
** The laboratory is to use one of the low level VOA bottles for moisture content determination.
** VOA bottles will be labeled with a suffix of K, L, M, N, or P for low level and W, X, or Y for high level. These suffixes are for the purpose of providing bottle weights to the laboratories. These suffixes should not be included as part of the sample ID reported in the final data packages.

GRP# 20100520
Sam# S10V001222
" 1223

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V10-003-183	PAGE 1 OF 1
COLLECTOR Campbell / Harris	**COMPANY CONTACT** TEMPLETON, AM	**TELEPHONE NO.** 373-5589	**PROJECT COORDINATOR** BERLIN, PC	**PRICE CODE** 8P	**DATA TURNAROUND**
SAMPLING LOCATION C7672 I002	**PROJECT DESIGNATION** WMA C Sampling for CMS		**SAF NO.** V10-003	**AIR QUALITY** ☐	75 Days / 75 Days
ICE CHEST NO. TFV2-09-003	**FIELD LOGBOOK NO.** TFV2-09-000001	**ACTUAL SAMPLE DEPTH** 10-12	**COA** n/a	**METHOD OF SHIPMENT** Govt. Vehicle	
SHIPPED TO 222-S Lab Operations	**OFFSITE PROPERTY NO.** n/a		**BILL OF LADING/AIR BILL NO.** n/a		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool <-7C and >-20C	MEOH/Cool~ 4C
HOLDING TIME	14 Days	14 Days
TYPE OF CONTAINER	Gs*	Gs*
NO. OF CONTAINER(S)	5	3
VOLUME	40mL	40mL
SAMPLE ANALYSIS	VOA - 5035/8260 (LOW LEVEL) (TF);	VOA - 5035/8260 (HIGH LEVEL) (TF);

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B26C71	SOIL	7-8-10	1055	✓	✓

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Campbell C-phell	7-8-10 1220	R.K. Steele RKSteele	7-8-10 1220

SPECIAL INSTRUCTIONS

** All VOA samples will be collected using EPA Method 5035A.
** VOA sample bottle sets will include 3 bottles for high level analysis, 5 bottles for low level analysis.
** The laboratory is to use one of the low level VOA bottles for moisture content determination.
** VOA bottles will be labeled with a suffix of K, L, M, N, or P for low level and W, X, or Y for high level. These suffixes are for the purpose of providing bottle weights to the laboratories. These suffixes should not be included as part of the sample ID reported in the final data packages.

0°C
0°C
13

GRP# 20100520
Sam# 510V00 1296
Y 1297

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

Appendix 5

Data Validation Supporting Documentation

Appendix A - Chemical Data Validation Checklist

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: WMA C			DATA PACKAGE: VSR11-045		
VALIDATOR: Carl Schloesslin		LAB: 222-S Lab		DATE: 5-23-2011	
			SDG: 20100520		
ANALYSES PERFORMED					
SW-846 8260 X		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX Soil samples B26JL2 and B26C71					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present?..... Yes (No) N/A

Comments: None

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A

Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

None

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A

Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A

Surrogates traceable? (Levels D, E) ..... Yes No N/A

Surrogates expired? (Levels D, E) ..... Yes No N/A

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments:

Trans-1,3-dichloropropene and carbon disulfide not represented in the LCSs and MS/MSDs.

Batch 20645: 1-butanol LCS %R = 137%, 4-methyl-2-pentanone MS %R = 133%

Batch 21742: 1-butanol MSD %R = 141%, 4-methyl-2-pentanone LCS %R = 133%, MSD %R = 134%
acetone MSD %R = 133%, 2-butanone MSD %R = 134%

5. PRECISION (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD RPD values acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

None

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A

Internal standard areas acceptable? ..... Yes No N/A

Internal standard retention times acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

None

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A

Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A

Results reported for all requested analyses?..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E)..... Yes No N/A

Laboratory properly identified and coded all TIC? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL?..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: None

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed? ..... Yes No N/A

GPC check performed?..... Yes No N/A

GPC check recoveries acceptable?..... Yes No N/A

GPC calibration performed?..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

Check/calibration materials traceable? ..... Yes No N/A

Check/calibration materials Expired?..... Yes No N/A

Analytical batch QC given similar cleanup?..... Yes No N/A

Transcription/Calculation Errors?..... Yes No N/A

Comments:

Comments (attach additional sheets as necessary):

None

Appendix 6

Additional Documentation Requested By Client

Holding Time Report: GC/MS VOA

Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Analysis Date	Missed Holding Time
20100520	S10V001222	SOLID	SW846-8260C	SW-846 5035A	07/07/10 10:30	07/07/10 12:15	07/14/10 18:02	N
20100520	S10V001239	SOLID	SW846-8260C	SW-846 5035A	07/07/10 10:30	07/07/10 12:15	07/13/10 16:20	N
20100520	S10V001276	SOLID	SW846-8260C	SW-846 5035A	07/08/10 09:40	07/08/10 12:20	07/13/10 18:19	N
20100520	S10V001296	SOLID	SW846-8260C	SW-846 5035A	07/08/10 10:55	07/08/10 12:20	07/13/10 18:48	N
20100520	S10V001336	SOLID	SW846-8260C	SW-846 5035A	07/13/10 09:15	07/13/10 13:00	07/14/10 18:32	N
20100520	S10V001356	SOLID	SW846-8260C	SW-846 5035A	07/13/10 11:30	07/13/10 13:00	07/14/10 20:01	N
20100520	S10V001376	SOLID	SW846-8260C	SW-846 5035A	07/14/10 10:30	07/14/10 13:30	07/16/10 19:19	N
20100520	S10V001396	SOLID	SW846-8260C	SW-846 5035A	07/15/10 09:25	07/15/10 10:30	07/28/10 15:50	N
20100520	S10V001416	SOLID	SW846-8260C	SW-846 5035A	07/16/10 10:45	07/16/10 11:40	07/20/10 16:13	N
20100522	S10V001266	LIQUID	SW846-8260C	SW846-5030C	07/07/10 10:25	07/07/10 12:15	07/13/10 15:51	N
20100522	S10V001256	LIQUID	SW846-8260C	SW846-5030C	07/07/10 10:30	07/07/10 12:15	07/12/10 14:37	N
20100522	S10V001267	LIQUID	SW846-8260C	SW846-5030C	07/08/10 08:25	07/08/10 12:20	07/14/10 15:04	N
20100522	S10V001257	LIQUID	SW846-8260C	SW846-5030C	07/08/10 08:40	07/08/10 12:20	07/13/10 14:22	N
20100522	S10V001268	LIQUID	SW846-8260C	SW846-5030C	07/12/10 09:00	07/13/10 13:00	07/14/10 16:33	N
20100522	S10V001258	LIQUID	SW846-8260C	SW846-5030C	07/13/10 09:25	07/13/10 13:00	07/14/10 17:32	N
20100522	S10V001269	LIQUID	SW846-8260C	SW846-5030C	07/14/10 09:30	07/14/10 13:30	07/16/10 18:20	N
20100522	S10V001259	LIQUID	SW846-8260C	SW846-5030C	07/14/10 10:50	07/14/10 13:30	07/16/10 16:21	N
20100522	S10V001270	LIQUID	SW846-8260C	SW846-5030C	07/15/10 08:40	07/15/10 10:30	07/16/10 18:49	N
20100522	S10V001260	LIQUID	SW846-8260C	SW846-5030C	07/15/10 09:00	07/15/10 10:30	07/16/10 17:50	N
20100522	S10V001261	LIQUID	SW846-8260C	SW846-5030C	07/16/10 08:50	07/16/10 11:40	07/20/10 14:15	N
20100522	S10V001271	LIQUID	SW846-8260C	SW846-5030C	07/16/10 08:50	07/16/10 11:40	07/20/10 15:43	N
20100529	S10V001436	LIQUID	SW846-8260C	SW846-5030C	07/12/10 10:20	07/12/10 13:45	07/14/10 17:03	N

LABCORE Completed Batch Report for Batch# 00020645

Analyst: Getz, Andrew

Book#:

Instrument: GCMSD3 (OHURA) for VOA

Method: VOA 222S #2, LA-523-118 Rev/Mod G-0-A

Specification: C Farm WMC 2010-2

Prep Batch:

Batch Comment:

C Farm WMC, VOA, Solid Group 20100

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	BLNK	S1007140089		0 0			1,1,1-Trichloroethane	SOLID		<9.2000E-02			0.092	ug/Kg			U
1	BLNK	S1007140089		0 0			1,1,2-Trichloroethane	SOLID		<1.6580E-01			0.1658	ug/Kg			U
1	BLNK	S1007140089		0 0			1,1,2,2-Tetrachloroetha ne	SOLID		<2.1160E-01			0.2116	ug/Kg			U
1	BLNK	S1007140089		0 0			1,1-Dichloroethene	SOLID		<4.2320E-01			0.4232	ug/Kg			U
1	BLNK	S1007140089		0 0			1,2-Dichloroethane	SOLID		<5.3799E-02			0.053799	ug/Kg			U
1	BLNK	S1007140089		0 0			1-Butanol	SOLID		<1.0292E+01			10.292	ug/Kg			U
1	BLNK	S1007140089		0 0			4-Methyl-2-pentanone	SOLID		<1.7080E+00			1.708	ug/Kg			U
1	BLNK	S1007140089		0 0			Acetone	SOLID		<2.1996E+00			2.1996	ug/Kg			U
1	BLNK	S1007140089		0 0			Benzene	SOLID		<1.4740E-01			0.1474	ug/Kg			U
1	BLNK	S1007140089		0 0			Carbon Disulfide	SOLID		<1.6080E-01			0.1608	ug/Kg			U
1	BLNK	S1007140089		0 0			Carbon Tetrachloride	SOLID		<9.3400E-02			0.0934	ug/Kg			U
1	BLNK	S1007140089		0 0			Chloroform	SOLID		<1.3080E-01			0.1308	ug/Kg			U
1	BLNK	S1007140089		0 0			Chlorobenzene	SOLID		<8.6400E-02			0.0864	ug/Kg			U
1	BLNK	S1007140089		0 0			Ethylbenzene	SOLID		<1.0720E-01			0.1072	ug/Kg			U
1	BLNK	S1007140089		0 0			Xylenes (total)	SOLID		<2.0320E-01			0.2032	ug/Kg			U
1	BLNK	S1007140089		0 0			2-Butanone	SOLID		<1.9644E+00			1.9644	ug/Kg			U
1	BLNK	S1007140089		0 0			Methylene Chloride	SOLID		<6.3999E-02			0.063999	ug/Kg			U
1	BLNK	S1007140089		0 0			Tetrachloroethene	SOLID		<1.0980E-01			0.1098	ug/Kg			U
1	BLNK	S1007140089		0 0			Toluene	SOLID		<8.0199E-02			0.080199	ug/Kg			U
1	BLNK	S1007140089		0 0			trans-1,3-Dichloroprope ne	SOLID		<2.7100E-01			0.271	ug/Kg			U
1	BLNK	S1007140089		0 0			Trichloroethene	SOLID		<1.2100E-01			0.121	ug/Kg			U
1	BLNK	S1007140089		0 0			Vinyl Chloride	SOLID		<1.7340E-01			0.1734	ug/Kg			U
1	BLNK	S1007140089		0 0			cis-Dichloroethylene	SOLID		<1.8160E-01			0.1816	ug/Kg			U
1	BLNK	S1007140089		0 0			trans-Dichloroethylene	SOLID		<3.0300E-01			0.303	ug/Kg			U
1	BLNK	S1007140089		0 0			112Trichloro-122Triflu oroethan	SOLID		<1.1620E-01			0.1162	ug/Kg			U
1	BLNK	S1007140089		0 0			2-Nitropropane	SOLID		<5.8800E-01			0.588	ug/Kg			U
1	BLNK	S1007140089		0 0			Ethyl acetate	SOLID		<5.8720E-01			0.5872	ug/Kg			U
1	BLNK	S1007140089		0 0			Diethyl ether	SOLID		<2.5620E-01			0.2562	ug/Kg			U
1	BLNK	S1007140089		0 0			Trichlorofluoromethane	SOLID		<9.3999E-02			0.093999	ug/Kg			U

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020645

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
1	BLNK	S1007140089		0 0			o-Xylene	SOLID		<9.2000E-02			0.092	ug/Kg			U
1	BLNK	S1007140089		0 0			m,p-Xylene	SOLID		<1.6740E-01			0.1674	ug/Kg			U
Sample Sequence 2																	
2	LCS	S1007140090		0 0			1,1-Dichloroethene	SOLID	20	2.2849E+01			0.4232	ug/Kg	114.24	% Recovery	
2	LCS	S1007140090		0 0			1-Butanol	SOLID	200	2.7236E+02			10.292	ug/Kg	136.18	% Recovery	
2	LCS	S1007140090		0 0			4-Methyl-2-pentanone	SOLID	100	1.2713E+02			1.708	ug/Kg	127.13	% Recovery	
2	LCS	S1007140090		0 0			Acetone	SOLID	100	1.2345E+02			2.1996	ug/Kg	123.45	% Recovery	
2	LCS	S1007140090		0 0			Benzene	SOLID	20	2.1345E+01			0.1474	ug/Kg	106.72	% Recovery	
2	LCS	S1007140090		0 0			Chlorobenzene	SOLID	20	2.0303E+01			0.0864	ug/Kg	101.52	% Recovery	
2	LCS	S1007140090		0 0			2-Butanone	SOLID	100	1.2444E+02			1.9644	ug/Kg	124.44	% Recovery	
2	LCS	S1007140090		0 0			Toluene	SOLID	20	2.0302E+01			0.080199	ug/Kg	101.51	% Recovery	
2	LCS	S1007140090		0 0			Trichloroethene	SOLID	20	2.0319E+01			0.121	ug/Kg	101.6	% Recovery	
Sample Sequence 3																	
3	SAMPLE	S10V001239		0 0			1,1,1-Trichloroethane	SOLID	N/A	<7.1317E-02			0.071317	ug/Kg			U
3	SAMPLE	S10V001239		0 0			1,1,2-Trichloroethane	SOLID	N/A	<1.2853E-01			0.12853	ug/Kg			U
3	SAMPLE	S10V001239		0 0			1,1,2,2-Tetrachloroetha ne	SOLID	N/A	<1.6403E-01			0.16403	ug/Kg			U
3	SAMPLE	S10V001239		0 0			1,1-Dichloroethene	SOLID	N/A	<3.2806E-01			0.32806	ug/Kg			U
3	SAMPLE	S10V001239		0 0			1,2-Dichloroethane	SOLID	N/A	<4.1705E-02			0.041705	ug/Kg			U
3	SAMPLE	S10V001239		0 0			1-Butanol	SOLID	N/A	<7.9783E+00			7.9783	ug/Kg			U
3	SAMPLE	S10V001239		0 0			4-Methyl-2-pentanone	SOLID	N/A	<1.3240E+00			1.324	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Acetone	SOLID	N/A	<1.7051E+00			1.7051	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Benzene	SOLID	N/A	<1.1426E-01			0.11426	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Carbon Disulfide	SOLID	N/A	<1.2465E-01			0.12465	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Carbon Tetrachloride	SOLID	N/A	<7.2403E-02			0.072403	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Chloroform	SOLID	N/A	<1.0140E-01			0.1014	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Chlorobenzene	SOLID	N/A	<6.6976E-02			0.066976	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Ethylbenzene	SOLID	N/A	<8.3100E-02			0.0831	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Xylenes (total)	SOLID	N/A	<1.5752E-01			0.15752	ug/Kg			U
3	SAMPLE	S10V001239		0 0			2-Butanone	SOLID	N/A	<1.5228E+00			1.5228	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Methylene Chloride	SOLID	N/A	<4.9612E-02			0.049612	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Tetrachloroethene	SOLID	N/A	<8.5116E-02			0.085116	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Toluene	SOLID	N/A	2.1060E-01			0.06217	ug/Kg			J
3	SAMPLE	S10V001239		0 0			trans-1,3-Dichloroprope ne	SOLID	N/A	<2.1008E-01			0.21008	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Trichloroethene	SOLID	N/A	<9.3798E-02			0.093798	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Vinyl Chloride	SOLID	N/A	<1.3442E-01			0.13442	ug/Kg			U
3	SAMPLE	S10V001239		0 0			cis-Dichloroethylene	SOLID	N/A	<1.4078E-01			0.14078	ug/Kg			U
3	SAMPLE	S10V001239		0 0			trans-Dichloroethylene	SOLID	N/A	<2.3488E-01			0.23488	ug/Kg			U
3	SAMPLE	S10V001239		0 0			112Trichloro-122Triflu oroethan	SOLID	N/A	<9.0077E-02			0.090077	ug/Kg			U
3	SAMPLE	S10V001239		0 0			2-Nitropropane	SOLID	N/A	<4.5581E-01			0.45581	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Ethyl acetate	SOLID	N/A	<4.5519E-01			0.45519	ug/Kg			U

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LABCORE Completed Batch Report for Batch# 00020645

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
3	SAMPLE	S10V001239		0 0			Diethyl ether	SOLID	N/A	<1.9860E-01			0.1986	ug/Kg			U
3	SAMPLE	S10V001239		0 0			Trichlorofluoromethane	SOLID	N/A	<7.2868E-02			0.072868	ug/Kg			U
3	SAMPLE	S10V001239		0 0			o-Xylene	SOLID	N/A	<7.1317E-02			0.071317	ug/Kg			U
3	SAMPLE	S10V001239		0 0			m,p-Xylene	SOLID	N/A	<1.2977E-01			0.12977	ug/Kg			U
3	SAMPLE	S10V001239		0 0			4-Bromofluorobenzene	SOLID	15.50387	1.5778E+01			0.10294	ug/Kg	101.77	% Recovery	
3	SAMPLE	S10V001239		0 0			Dibromofluoromethane	SOLID	15.50387	1.5211E+01			0.14016	ug/Kg	98.111	% Recovery	
3	SAMPLE	S10V001239		0 0			1,2-Dichloroethane-d4	SOLID	15.50387	1.6088E+01			0.14853	ug/Kg	103.77	% Recovery	
3	SAMPLE	S10V001239		0 0			Toluene-d8	SOLID	15.50387	1.6349E+01			0.13287	ug/Kg	105.45	% Recovery	
3	SAMPLE	S10V001239		0 0			Unknown-1	SOLID		0.7888497				ug/Kg			JT
3	SAMPLE	S10V001239		0 0			Unknown-2	SOLID		0.8661254				ug/Kg			JT
3	SAMPLE	S10V001239		0 0			Unknown-3	SOLID		1.9674566				ug/Kg			JT
Sample Sequence 4																	
4	MS	S1007140092	S10V001239	0 0			1,1-Dichloroethene	SOLID	17.0068	1.5896E+01			0.35986	ug/Kg	93.468	% Recovery	
4	MS	S1007140092	S10V001239	0 0			1-Butanol	SOLID	170.068	2.0139E+02			8.7517	ug/Kg	118.42	% Recovery	
4	MS	S1007140092	S10V001239	0 0			4-Methyl-2-pentanone	SOLID	85.03401	1.1282E+02			1.4524	ug/Kg	132.68	% Recovery	
4	MS	S1007140092	S10V001239	0 0			Acetone	SOLID	85.03401	9.5194E+01			1.8704	ug/Kg	111.95	% Recovery	
4	MS	S1007140092	S10V001239	0 0			Benzene	SOLID	17.0068	1.5733E+01			0.12534	ug/Kg	92.51	% Recovery	
4	MS	S1007140092	S10V001239	0 0			Chlorobenzene	SOLID	17.0068	1.6882E+01			0.073469	ug/Kg	99.266	% Recovery	
4	MS	S1007140092	S10V001239	0 0			2-Butanone	SOLID	85.03401	9.9028E+01			1.6704	ug/Kg	116.46	% Recovery	
4	MS	S1007140092	S10V001239	0 0			Toluene	SOLID	17.0068	1.7008E+01			0.068197	ug/Kg	98.769	% Recovery	
4	MS	S1007140092	S10V001239	0 0			Trichloroethene	SOLID	17.0068	1.4900E+01			0.10289	ug/Kg	87.612	% Recovery	
Sample Sequence 5																	
5	MSD	S1007140093	S10V001239	0 0			1,1-Dichloroethene	SOLID	13.47708	1.3402E+01			0.28518	ug/Kg	99.443	% Recovery	
															6.1946	% RPD	
5	MSD	S1007140093	S10V001239	0 0			1-Butanol	SOLID	134.7708	1.5064E+02			6.9353	ug/Kg	111.77	% Recovery	
															5.7778	% RPD	
5	MSD	S1007140093	S10V001239	0 0			4-Methyl-2-pentanone	SOLID	67.38544	8.4667E+01			1.1509	ug/Kg	125.65	% Recovery	
															5.4427	% RPD	
5	MSD	S1007140093	S10V001239	0 0			Acetone	SOLID	67.38544	7.7392E+01			1.4822	ug/Kg	114.85	% Recovery	
															2.5573	% RPD	
5	MSD	S1007140093	S10V001239	0 0			Benzene	SOLID	13.47708	1.3048E+01			0.099326	ug/Kg	96.816	% Recovery	
															4.5488	% RPD	
5	MSD	S1007140093	S10V001239	0 0			Chlorobenzene	SOLID	13.47708	1.3603E+01			0.058221	ug/Kg	100.93	% Recovery	
															1.6624	% RPD	
5	MSD	S1007140093	S10V001239	0 0			2-Butanone	SOLID	67.38544	7.6702E+01			1.3237	ug/Kg	113.83	% Recovery	
															2.2841	% RPD	
5	MSD	S1007140093	S10V001239	0 0			Toluene	SOLID	13.47708	1.3596E+01			0.054043	ug/Kg	99.32	% Recovery	
															0.55632	% RPD	
5	MSD	S1007140093	S10V001239	0 0			Trichloroethene	SOLID	13.47708	1.2597E+01			0.081536	ug/Kg	93.47	% Recovery	
															6.4700	% RPD	
Sample Sequence 6																	
6	SAMPLE	S10V001276		0 0			1,1,1-Trichloroethane	SOLID	N/A	<9.0019E-02			0.090019	ug/Kg			U

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LABCORE Completed Batch Report for Batch# 00020645

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
6	SAMPLE	S10V001276		0 0			1,1,2-Trichloroethane	SOLID	N/A	<1.6223E-01			0.16223	ug/Kg			U
6	SAMPLE	S10V001276		0 0			1,1,2,2-Tetrachloroethane	SOLID	N/A	<2.0704E-01			0.20704	ug/Kg			U
6	SAMPLE	S10V001276		0 0			1,1-Dichloroethene	SOLID	N/A	<4.1409E-01			0.41409	ug/Kg			U
6	SAMPLE	S10V001276		0 0			1,2-Dichloroethane	SOLID	N/A	<5.2641E-02			0.052641	ug/Kg			U
6	SAMPLE	S10V001276		0 0			1-Butanol	SOLID	N/A	<1.0070E+01			10.07	ug/Kg			U
6	SAMPLE	S10V001276		0 0			4-Methyl-2-pentanone	SOLID	N/A	<1.6712E+00			1.6712	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Acetone	SOLID	N/A	4.1350E+00			2.1522	ug/Kg			J
6	SAMPLE	S10V001276		0 0			Benzene	SOLID	N/A	<1.4423E-01			0.14423	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Carbon Disulfide	SOLID	N/A	<1.5734E-01			0.15734	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Carbon Tetrachloride	SOLID	N/A	<9.1389E-02			0.091389	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Chloroform	SOLID	N/A	<1.2798E-01			0.12798	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Chlorobenzene	SOLID	N/A	<8.4540E-02			0.08454	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Ethylbenzene	SOLID	N/A	<1.0489E-01			0.10489	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Xylenes (total)	SOLID	N/A	<1.9882E-01			0.19882	ug/Kg			U
6	SAMPLE	S10V001276		0 0			2-Butanone	SOLID	N/A	<1.9221E+00			1.9221	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Methylene Chloride	SOLID	N/A	<6.2622E-02			0.062622	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Tetrachloroethene	SOLID	N/A	<1.0744E-01			0.10744	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Toluene	SOLID	N/A	2.3590E-01			0.078473	ug/Kg			J
6	SAMPLE	S10V001276		0 0			trans-1,3-Dichloropropene	SOLID	N/A	<2.6517E-01			0.26517	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Trichloroethene	SOLID	N/A	<1.1840E-01			0.1184	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Vinyl Chloride	SOLID	N/A	<1.6967E-01			0.16967	ug/Kg			U
6	SAMPLE	S10V001276		0 0			cis-Dichloroethylene	SOLID	N/A	<1.7769E-01			0.17769	ug/Kg			U
6	SAMPLE	S10V001276		0 0			trans-Dichloroethylene	SOLID	N/A	<2.9648E-01			0.29648	ug/Kg			U
6	SAMPLE	S10V001276		0 0			112Trichloro-122Trifluoroethan	SOLID	N/A	<1.1370E-01			0.1137	ug/Kg			U
6	SAMPLE	S10V001276		0 0			2-Nitropropane	SOLID	N/A	<5.7534E-01			0.57534	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Ethyl acetate	SOLID	N/A	<5.7456E-01			0.57456	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Diethyl ether	SOLID	N/A	<2.5068E-01			0.25068	ug/Kg			U
6	SAMPLE	S10V001276		0 0			Trichlorofluoromethane	SOLID	N/A	<9.1976E-02			0.091976	ug/Kg			U
6	SAMPLE	S10V001276		0 0			o-Xylene	SOLID	N/A	<9.0019E-02			0.090019	ug/Kg			U
6	SAMPLE	S10V001276		0 0			m,p-Xylene	SOLID	N/A	<1.6380E-01			0.1638	ug/Kg			U
6	SAMPLE	S10V001276		0 0			4-Bromofluorobenzene	SOLID	19.56947	1.9895E+01			0.12994	ug/Kg	101.66	% Recovery	
6	SAMPLE	S10V001276		0 0			Dibromofluoromethane	SOLID	19.56947	1.9518E+01			0.17691	ug/Kg	99.737	% Recovery	
6	SAMPLE	S10V001276		0 0			1,2-Dichloroethane-d4	SOLID	19.56947	2.1755E+01			0.18748	ug/Kg	111.17	% Recovery	
6	SAMPLE	S10V001276		0 0			Toluene-d8	SOLID	19.56947	1.9358E+01			0.16771	ug/Kg	98.919	% Recovery	
Sample Sequence 7																	
7	SAMPLE	S10V001296		0 0			1,1,1-Trichloroethane	SOLID	N/A	<9.5041E-02			0.095041	ug/Kg			U
7	SAMPLE	S10V001296		0 0			1,1,2-Trichloroethane	SOLID	N/A	<1.7128E-01			0.17128	ug/Kg			U
7	SAMPLE	S10V001296		0 0			1,1,2,2-Tetrachloroethane	SOLID	N/A	<2.1860E-01			0.2186	ug/Kg			U
7	SAMPLE	S10V001296		0 0			1,1-Dichloroethene	SOLID	N/A	<4.3719E-01			0.43719	ug/Kg			U

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Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
7	SAMPLE	S10V001296		0 0			1,2-Dichloroethane	SOLID	N/A	<5.5578E-02			0.055578	ug/Kg			U
7	SAMPLE	S10V001296		0 0			1-Butanol	SOLID	N/A	<1.0632E+01			10.632	ug/Kg			U
7	SAMPLE	S10V001296		0 0			4-Methyl-2-pentanone	SOLID	N/A	<1.7645E+00			1.7645	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Acetone	SOLID	N/A	6.6300E+00			2.2723	ug/Kg			J
7	SAMPLE	S10V001296		0 0			Benzene	SOLID	N/A	<1.5227E-01			0.15227	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Carbon Disulfide	SOLID	N/A	<1.6612E-01			0.16612	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Carbon Tetrachloride	SOLID	N/A	<9.6487E-02			0.096487	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Chloroform	SOLID	N/A	<1.3512E-01			0.13512	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Chlorobenzene	SOLID	N/A	<8.9256E-02			0.089256	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Ethylbenzene	SOLID	N/A	<1.1074E-01			0.11074	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Xylenes (total)	SOLID	N/A	<2.0992E-01			0.20992	ug/Kg			U
7	SAMPLE	S10V001296		0 0			2-Butanone	SOLID	N/A	<2.0293E+00			2.0293	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Methylene Chloride	SOLID	N/A	<6.6115E-02			0.066115	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Tetrachloroethene	SOLID	N/A	<1.1343E-01			0.11343	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Toluene	SOLID	N/A	3.3710E-01			0.082851	ug/Kg			J
7	SAMPLE	S10V001296		0 0			trans-1,3-Dichloropropene	SOLID	N/A	<2.7996E-01			0.27996	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Trichloroethene	SOLID	N/A	<1.2500E-01			0.125	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Vinyl Chloride	SOLID	N/A	<1.7913E-01			0.17913	ug/Kg			U
7	SAMPLE	S10V001296		0 0			cis-Dichloroethylene	SOLID	N/A	<1.8760E-01			0.1876	ug/Kg			U
7	SAMPLE	S10V001296		0 0			trans-Dichloroethylene	SOLID	N/A	<3.1302E-01			0.31302	ug/Kg			U
7	SAMPLE	S10V001296		0 0			112Trichloro-122Trifluoroethan	SOLID	N/A	<1.2004E-01			0.12004	ug/Kg			U
7	SAMPLE	S10V001296		0 0			2-Nitropropane	SOLID	N/A	<6.0744E-01			0.60744	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Ethyl acetate	SOLID	N/A	<6.0661E-01			0.60661	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Diethyl ether	SOLID	N/A	<2.6467E-01			0.26467	ug/Kg			U
7	SAMPLE	S10V001296		0 0			Trichlorofluoromethane	SOLID	N/A	<9.7107E-02			0.097107	ug/Kg			U
7	SAMPLE	S10V001296		0 0			o-Xylene	SOLID	N/A	<9.5041E-02			0.095041	ug/Kg			U
7	SAMPLE	S10V001296		0 0			m,p-Xylene	SOLID	N/A	<1.7293E-01			0.17293	ug/Kg			U
7	SAMPLE	S10V001296		0 0			4-Bromofluorobenzene	SOLID	20.66115	2.1489E+01			0.13719	ug/Kg	104.01	% Recovery	
7	SAMPLE	S10V001296		0 0			Dibromofluoromethane	SOLID	20.66115	2.1178E+01			0.18678	ug/Kg	102.5	% Recovery	
7	SAMPLE	S10V001296		0 0			1,2-Dichloroethane-d4	SOLID	20.66115	2.3184E+01			0.19793	ug/Kg	112.21	% Recovery	
7	SAMPLE	S10V001296		0 0			Toluene-d8	SOLID	20.66115	2.1150E+01			0.17707	ug/Kg	102.37	% Recovery	
7	SAMPLE	S10V001296		0 0			Unknown-1	SOLID		3.1314728				ug/Kg			JT
7	SAMPLE	S10V001296		0 0			Unknown-2	SOLID		2.4609771				ug/Kg			JT

Comments Section:

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020645

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00020645

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

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LABCORE Completed Batch Report for Batch# 00020645

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1007140089	BLNK				
2	S1007140090	LCS				
3	S10V001239	SAMPLE		20100520	B26JL3	C Farm WMC 2010-2
4	S1007140092	MS	S10V001239			
5	S1007140093	MSD	S10V001239			
6	S10V001276	SAMPLE		20100520	B26C69	C Farm WMC 2010-2
7	S10V001296	SAMPLE		20100520	B26C71	C Farm WMC 2010-2

Units shown for QC (BLK/BKG) may not reflect the actual units.

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20645

FORM 2
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: 100713_CFARMS

Level: (low/med) LOW

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (DCE) #	SMC3 (TOL) #	OTHER (BFB) #	TOT OUT
01	CCB	110	115	108	105	0
02	LCS	108	111	106	109	0
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
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23						
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28						
29						
30						

		QC LIMITS
SMC1	= Dibromofluoromethane	(77-129)
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(73-140)
SMC3 (TOL)	= Toluene-d8	(70-126)
OTHER (BFB)	= Bromofluorobenzene	(79-125)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 2
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: 100713_CFARMS

Level:(low/med) LOW

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (DCE) #	SMC3 (TOL) #	OTHER (BFB) #	TOT OUT
01	S10V001239	98	104	105	102	0
02	S10V001239MS	100	103	100	102	0
03	S10V001239MS	100	107	104	106	0
04	S10V001276	100	111	99	102	0
05	S10V001296	102	112	102	104	0
06						
07						
08						
09						
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27						
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29						
30						

		QC LIMITS
SMC1	= Dibromofluoromethane	(74-126)
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(78-133)
SMC3 (TOL)	= Toluene-d8	(74-128)
OTHER(BFB)	= Bromofluorobenzene	(64-144)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

Data File: 10071307LCSS.D
Report Date: 05-Sep-2010 15:16

WSCF/222S

RECOVERY REPORT

Client Name:
Sample Matrix: SOLID
Lab Smp Id: LCS
Level: LOW
Data Type: MS DATA
SpikeList File: 2009LCS_SOL.spk
Sublist File: 2009QC.sub
Method File: \\Apwscf02\slab\chem\Ohura.i\data\V100713CFRMSOL.b\8260S100629.m
Misc Info: VOA

Client SDG: 100713_CFarmS
Fraction: VOA
Client Smp ID: LCS
Operator: awg
SampleType: LCS
Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
14 1,1-Dichloroethene	20.000	22.849	114.24	66-141
19 Acetone	100.00	123.45	123.45	58-135
38 2-Butanone	100.00	124.44	124.45	50-149
41 Benzene	20.000	21.345	106.72	70-126
47 Trichloroethene	20.000	20.319	101.60	71-127
49 n-Butanol	200.00	272.36	136.18	53-148
59 Toluene	20.000	20.302	101.51	71-125
60 Methyl Isobutyl Ke	100.00	127.13	127.13	61-145
68 2-Hexanone	100.00	133.37	133.37	59-148
72 Chlorobenzene	20.000	20.303	101.51	81-120

SURROGATE COMPOUND	CONC ADDED ug/Kg	CONC RECOVERED ug/Kg	% RECOVERED	LIMITS
$ 35 Dibromofluorometha	20.000	21.677	108.39	77-129
$ 43 1,2-Dichloroethane	20.000	22.287	111.43	73-140
$ 57 Toluene-d8	20.000	21.221	106.11	70-126
$ 79 Bromofluorobenzene	20.000	21.766	108.83	79-125

LABCORE Completed Batch Report for Batch# 00021742

Analyst: Getz, Andrew

Book#:

Instrument: GCMSD3 (OHURA) for VOA

Method: VOA 222S #2, LA-523-118 Rev/Mod G-0-A

Specification: C Farm WMC 2010-2

Prep Batch:

Batch Comment:

C Farm WMC 2010-2, VOA, Solid, Group 20100520

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	BLNK	S1008300132		0 0			1,1,1-Trichloroethane	SOLID		<9.2000E-02			0.092	ug/Kg			U
1	BLNK	S1008300132		0 0			1,1,2-Trichloroethane	SOLID		<1.6580E-01			0.1658	ug/Kg			U
1	BLNK	S1008300132		0 0			1,1,2,2-Tetrachloroetha ne	SOLID		<2.1160E-01			0.2116	ug/Kg			U
1	BLNK	S1008300132		0 0			1,1-Dichloroethene	SOLID		<4.2320E-01			0.4232	ug/Kg			U
1	BLNK	S1008300132		0 0			1,2-Dichloroethane	SOLID		<5.3799E-02			0.053799	ug/Kg			U
1	BLNK	S1008300132		0 0			1-Butanol	SOLID		<1.0292E+01			10.292	ug/Kg			U
1	BLNK	S1008300132		0 0			4-Methyl-2-pentanone	SOLID		<1.7080E+00			1.708	ug/Kg			U
1	BLNK	S1008300132		0 0			Acetone	SOLID		<2.1996E+00			2.1996	ug/Kg			U
1	BLNK	S1008300132		0 0			Benzene	SOLID		<1.4740E-01			0.1474	ug/Kg			U
1	BLNK	S1008300132		0 0			Carbon Disulfide	SOLID		<1.6080E-01			0.1608	ug/Kg			U
1	BLNK	S1008300132		0 0			Carbon Tetrachloride	SOLID		<9.3400E-02			0.0934	ug/Kg			U
1	BLNK	S1008300132		0 0			Chloroform	SOLID		<1.3080E-01			0.1308	ug/Kg			U
1	BLNK	S1008300132		0 0			Chlorobenzene	SOLID		<8.6400E-02			0.0864	ug/Kg			U
1	BLNK	S1008300132		0 0			Ethylbenzene	SOLID		<1.0720E-01			0.1072	ug/Kg			U
1	BLNK	S1008300132		0 0			Xylenes (total)	SOLID		<2.0320E-01			0.2032	ug/Kg			U
1	BLNK	S1008300132		0 0			2-Butanone	SOLID		<1.9644E+00			1.9644	ug/Kg			U
1	BLNK	S1008300132		0 0			Methylene Chloride	SOLID		<6.3999E-02			0.063999	ug/Kg			U
1	BLNK	S1008300132		0 0			Tetrachloroethene	SOLID		<1.0980E-01			0.1098	ug/Kg			U
1	BLNK	S1008300132		0 0			Toluene	SOLID		<8.0199E-02			0.080199	ug/Kg			U
1	BLNK	S1008300132		0 0			trans-1,3-Dichloroprope ne	SOLID		<2.7100E-01			0.271	ug/Kg			U
1	BLNK	S1008300132		0 0			Trichloroethene	SOLID		<1.2100E-01			0.121	ug/Kg			U
1	BLNK	S1008300132		0 0			Vinyl Chloride	SOLID		<1.7340E-01			0.1734	ug/Kg			U
1	BLNK	S1008300132		0 0			cis-Dichloroethylene	SOLID		<1.8160E-01			0.1816	ug/Kg			U
1	BLNK	S1008300132		0 0			trans-Dichloroethylene	SOLID		<3.0300E-01			0.303	ug/Kg			U
1	BLNK	S1008300132		0 0			112Trichloro-122Triflu oroethan	SOLID		<1.1620E-01			0.1162	ug/Kg			U
1	BLNK	S1008300132		0 0			2-Nitropropane	SOLID		<5.8800E-01			0.588	ug/Kg			U
1	BLNK	S1008300132		0 0			Ethyl acetate	SOLID		<5.8720E-01			0.5872	ug/Kg			U
1	BLNK	S1008300132		0 0			Diethyl ether	SOLID		<2.5620E-01			0.2562	ug/Kg			U
1	BLNK	S1008300132		0 0			Trichlorofluoromethane	SOLID		<9.3999E-02			0.093999	ug/Kg			U

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021742

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
1	BLNK	S1008300132		0 0			o-Xylene	SOLID		<9.2000E-02			0.092	ug/Kg			U
1	BLNK	S1008300132		0 0			m,p-Xylene	SOLID		<1.6740E-01			0.1674	ug/Kg			U
Sample Sequence 2																	
2	LCS	S1008300133		0 0			1,1-Dichloroethene	SOLID	20	2.0860E+01			0.4232	ug/Kg	104.3	% Recovery	
2	LCS	S1008300133		0 0			1-Butanol	SOLID	200	2.4969E+02			10.292	ug/Kg	124.84	% Recovery	
2	LCS	S1008300133		0 0			4-Methyl-2-pentanone	SOLID	100	1.3318E+02			1.708	ug/Kg	133.18	% Recovery	
2	LCS	S1008300133		0 0			Acetone	SOLID	100	1.1618E+02			2.1996	ug/Kg	116.18	% Recovery	
2	LCS	S1008300133		0 0			Benzene	SOLID	20	2.0037E+01			0.1474	ug/Kg	100.18	% Recovery	
2	LCS	S1008300133		0 0			Chlorobenzene	SOLID	20	2.1029E+01			0.0864	ug/Kg	105.14	% Recovery	
2	LCS	S1008300133		0 0			2-Butanone	SOLID	100	1.1477E+02			1.9644	ug/Kg	114.77	% Recovery	
2	LCS	S1008300133		0 0			Toluene	SOLID	20	2.1187E+01			0.080199	ug/Kg	105.94	% Recovery	
2	LCS	S1008300133		0 0			Trichloroethene	SOLID	20	1.9645E+01			0.121	ug/Kg	98.225	% Recovery	
Sample Sequence 3																	
3	SAMPLE	S10V001222		0 0			1,1,1-Trichloroethane	SOLID	N/A	<9.2000E-02			0.092	ug/Kg			U
3	SAMPLE	S10V001222		0 0			1,1,2-Trichloroethane	SOLID	N/A	<1.6580E-01			0.1658	ug/Kg			U
3	SAMPLE	S10V001222		0 0			1,1,2,2-Tetrachloroetha ne	SOLID	N/A	<2.1160E-01			0.2116	ug/Kg			U
3	SAMPLE	S10V001222		0 0			1,1-Dichloroethene	SOLID	N/A	<4.2320E-01			0.4232	ug/Kg			U
3	SAMPLE	S10V001222		0 0			1,2-Dichloroethane	SOLID	N/A	<5.3799E-02			0.053799	ug/Kg			U
3	SAMPLE	S10V001222		0 0			1-Butanol	SOLID	N/A	<1.0292E+01			10.292	ug/Kg			U
3	SAMPLE	S10V001222		0 0			4-Methyl-2-pentanone	SOLID	N/A	<1.7080E+00			1.708	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Acetone	SOLID	N/A	<2.1996E+00			2.1996	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Benzene	SOLID	N/A	<1.4740E-01			0.1474	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Carbon Disulfide	SOLID	N/A	<1.6080E-01			0.1608	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Carbon Tetrachloride	SOLID	N/A	<9.3400E-02			0.0934	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Chloroform	SOLID	N/A	<1.3080E-01			0.1308	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Chlorobenzene	SOLID	N/A	<8.6400E-02			0.0864	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Ethylbenzene	SOLID	N/A	<1.0720E-01			0.1072	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Xylenes (total)	SOLID	N/A	<2.0320E-01			0.2032	ug/Kg			U
3	SAMPLE	S10V001222		0 0			2-Butanone	SOLID	N/A	<1.9644E+00			1.9644	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Methylene Chloride	SOLID	N/A	<6.3999E-02			0.063999	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Tetrachloroethene	SOLID	N/A	<1.0980E-01			0.1098	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Toluene	SOLID	N/A	2.3220E-01			0.080199	ug/Kg			J
3	SAMPLE	S10V001222		0 0			trans-1,3-Dichloroprope ne	SOLID	N/A	<2.7100E-01			0.271	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Trichloroethene	SOLID	N/A	<1.2100E-01			0.121	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Vinyl Chloride	SOLID	N/A	<1.7340E-01			0.1734	ug/Kg			U
3	SAMPLE	S10V001222		0 0			cis-Dichloroethylene	SOLID	N/A	<1.8160E-01			0.1816	ug/Kg			U
3	SAMPLE	S10V001222		0 0			trans-Dichloroethylene	SOLID	N/A	<3.0300E-01			0.303	ug/Kg			U
3	SAMPLE	S10V001222		0 0			112Trichloro-122Triflu oroethan	SOLID	N/A	<1.1620E-01			0.1162	ug/Kg			U
3	SAMPLE	S10V001222		0 0			2-Nitropropane	SOLID	N/A	<5.8800E-01			0.588	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Ethyl acetate	SOLID	N/A	<5.8720E-01			0.5872	ug/Kg			U

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021742

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
3	SAMPLE	S10V001222		0 0			Diethyl ether	SOLID	N/A	<2.5620E-01			0.2562	ug/Kg			U
3	SAMPLE	S10V001222		0 0			Trichlorofluoromethane	SOLID	N/A	<9.3999E-02			0.093999	ug/Kg			U
3	SAMPLE	S10V001222		0 0			o-Xylene	SOLID	N/A	<9.2000E-02			0.092	ug/Kg			U
3	SAMPLE	S10V001222		0 0			m,p-Xylene	SOLID	N/A	<1.6740E-01			0.1674	ug/Kg			U
3	SAMPLE	S10V001222		0 0			4-Bromofluorobenzene	SOLID	20	2.1591E+01			0.1328	ug/Kg	107.96	% Recovery	
3	SAMPLE	S10V001222		0 0			Dibromofluoromethane	SOLID	20	2.0322E+01			0.1808	ug/Kg	101.61	% Recovery	
3	SAMPLE	S10V001222		0 0			1,2-Dichloroethane-d4	SOLID	20	2.1645E+01			0.1916	ug/Kg	108.22	% Recovery	
3	SAMPLE	S10V001222		0 0			Toluene-d8	SOLID	20	2.0897E+01			0.1714	ug/Kg	104.48	% Recovery	
3	SAMPLE	S10V001222		0 0			Unknown-1	SOLID		2.0473842				ug/Kg			JT
Sample Sequence 4																	
4	SAMPLE	S10V001336		0 0			1,1,1-Trichloroethane	SOLID	N/A	<9.2000E-02			0.092	ug/Kg			U
4	SAMPLE	S10V001336		0 0			1,1,2-Trichloroethane	SOLID	N/A	<1.6580E-01			0.1658	ug/Kg			U
4	SAMPLE	S10V001336		0 0			1,1,2,2-Tetrachloroethane	SOLID	N/A	<2.1160E-01			0.2116	ug/Kg			U
4	SAMPLE	S10V001336		0 0			1,1-Dichloroethene	SOLID	N/A	<4.2320E-01			0.4232	ug/Kg			U
4	SAMPLE	S10V001336		0 0			1,2-Dichloroethane	SOLID	N/A	<5.3799E-02			0.053799	ug/Kg			U
4	SAMPLE	S10V001336		0 0			1-Butanol	SOLID	N/A	<1.0292E+01			10.292	ug/Kg			U
4	SAMPLE	S10V001336		0 0			4-Methyl-2-pentanone	SOLID	N/A	<1.7080E+00			1.708	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Acetone	SOLID	N/A	4.8290E+00			2.1996	ug/Kg			J
4	SAMPLE	S10V001336		0 0			Benzene	SOLID	N/A	<1.4740E-01			0.1474	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Carbon Disulfide	SOLID	N/A	<1.6080E-01			0.1608	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Carbon Tetrachloride	SOLID	N/A	<9.3400E-02			0.0934	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Chloroform	SOLID	N/A	<1.3080E-01			0.1308	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Chlorobenzene	SOLID	N/A	<8.6400E-02			0.0864	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Ethylbenzene	SOLID	N/A	<1.0720E-01			0.1072	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Xylenes (total)	SOLID	N/A	<2.0320E-01			0.2032	ug/Kg			U
4	SAMPLE	S10V001336		0 0			2-Butanone	SOLID	N/A	<1.9644E+00			1.9644	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Methylene Chloride	SOLID	N/A	<6.3999E-02			0.063999	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Tetrachloroethene	SOLID	N/A	<1.0980E-01			0.1098	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Toluene	SOLID	N/A	2.8430E-01			0.080199	ug/Kg			J
4	SAMPLE	S10V001336		0 0			trans-1,3-Dichloropropene	SOLID	N/A	<2.7100E-01			0.271	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Trichloroethene	SOLID	N/A	<1.2100E-01			0.121	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Vinyl Chloride	SOLID	N/A	<1.7340E-01			0.1734	ug/Kg			U
4	SAMPLE	S10V001336		0 0			cis-Dichloroethylene	SOLID	N/A	<1.8160E-01			0.1816	ug/Kg			U
4	SAMPLE	S10V001336		0 0			trans-Dichloroethylene	SOLID	N/A	<3.0300E-01			0.303	ug/Kg			U
4	SAMPLE	S10V001336		0 0			112Trichloro-122Trifluoroethan	SOLID	N/A	<1.1620E-01			0.1162	ug/Kg			U
4	SAMPLE	S10V001336		0 0			2-Nitropropane	SOLID	N/A	<5.8800E-01			0.588	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Ethyl acetate	SOLID	N/A	<5.8720E-01			0.5872	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Diethyl ether	SOLID	N/A	<2.5620E-01			0.2562	ug/Kg			U
4	SAMPLE	S10V001336		0 0			Trichlorofluoromethane	SOLID	N/A	<9.3999E-02			0.093999	ug/Kg			U
4	SAMPLE	S10V001336		0 0			o-Xylene	SOLID	N/A	<9.2000E-02			0.092	ug/Kg			U

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021742

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
4	SAMPLE	S10V001336		0 0			m,p-Xylene	SOLID	N/A	<1.6740E-01			0.1674	ug/Kg			U
4	SAMPLE	S10V001336		0 0			4-Bromofluorobenzene	SOLID	20	2.1140E+01			0.1328	ug/Kg	105.7	% Recovery	
4	SAMPLE	S10V001336		0 0			Dibromofluoromethane	SOLID	20	2.0009E+01			0.1808	ug/Kg	100.04	% Recovery	
4	SAMPLE	S10V001336		0 0			1,2-Dichloroethane-d4	SOLID	20	2.1658E+01			0.1916	ug/Kg	108.29	% Recovery	
4	SAMPLE	S10V001336		0 0			Toluene-d8	SOLID	20	2.0704E+01			0.1714	ug/Kg	103.52	% Recovery	
4	SAMPLE	S10V001336		0 0			Unknown-1	SOLID		2.5898653				ug/Kg			JT
Sample Sequence 5																	
5	MS	S1008300135	S10V001336	0 0			1,1-Dichloroethene	SOLID	20	1.7545E+01			0.4232	ug/Kg	87.725	% Recovery	
5	MS	S1008300135	S10V001336	0 0			1-Butanol	SOLID	200	2.1928E+02			10.292	ug/Kg	109.64	% Recovery	
5	MS	S1008300135	S10V001336	0 0			4-Methyl-2-pentanone	SOLID	100	1.2609E+02			1.708	ug/Kg	126.09	% Recovery	
5	MS	S1008300135	S10V001336	0 0			Acetone	SOLID	100	1.1298E+02			2.1996	ug/Kg	108.15	% Recovery	
5	MS	S1008300135	S10V001336	0 0			Benzene	SOLID	20	1.9012E+01			0.1474	ug/Kg	95.06	% Recovery	
5	MS	S1008300135	S10V001336	0 0			Chlorobenzene	SOLID	20	1.9332E+01			0.0864	ug/Kg	96.66	% Recovery	
5	MS	S1008300135	S10V001336	0 0			2-Butanone	SOLID	100	1.1271E+02			1.9644	ug/Kg	112.71	% Recovery	
5	MS	S1008300135	S10V001336	0 0			Toluene	SOLID	20	1.9401E+01			0.080199	ug/Kg	95.584	% Recovery	
5	MS	S1008300135	S10V001336	0 0			Trichloroethene	SOLID	20	1.8488E+01			0.121	ug/Kg	92.44	% Recovery	
Sample Sequence 6																	
6	MSD	S1008300136	S10V001336	0 0			1,1-Dichloroethene	SOLID	20	1.9844E+01			0.4232	ug/Kg	99.22	% Recovery	
															12.298	% RPD	
6	MSD	S1008300136	S10V001336	0 0			1-Butanol	SOLID	200	2.8231E+02			10.292	ug/Kg	141.16	% Recovery	
															25.136	% RPD	
6	MSD	S1008300136	S10V001336	0 0			4-Methyl-2-pentanone	SOLID	100	1.3399E+02			1.708	ug/Kg	133.99	% Recovery	
															6.0751	% RPD	
6	MSD	S1008300136	S10V001336	0 0			Acetone	SOLID	100	1.3767E+02			2.1996	ug/Kg	132.84	% Recovery	
															20.490	% RPD	
6	MSD	S1008300136	S10V001336	0 0			Benzene	SOLID	20	2.0010E+01			0.1474	ug/Kg	100.05	% Recovery	
															5.1151	% RPD	
6	MSD	S1008300136	S10V001336	0 0			Chlorobenzene	SOLID	20	1.9696E+01			0.0864	ug/Kg	98.48	% Recovery	
															1.8653	% RPD	
6	MSD	S1008300136	S10V001336	0 0			2-Butanone	SOLID	100	1.3426E+02			1.9644	ug/Kg	134.26	% Recovery	
															17.452	% RPD	
6	MSD	S1008300136	S10V001336	0 0			Toluene	SOLID	20	1.9586E+01			0.080199	ug/Kg	96.508	% Recovery	
															0.96204	% RPD	
6	MSD	S1008300136	S10V001336	0 0			Trichloroethene	SOLID	20	1.8857E+01			0.121	ug/Kg	94.285	% Recovery	
															1.9762	% RPD	
Sample Sequence 7																	
7	SAMPLE	S10V001356		0 0			1,1,1-Trichloroethane	SOLID	N/A	<9.2000E-02			0.092	ug/Kg			U
7	SAMPLE	S10V001356		0 0			1,1,2-Trichloroethane	SOLID	N/A	<1.6580E-01			0.1658	ug/Kg			U
7	SAMPLE	S10V001356		0 0			1,1,2,2-Tetrachloroethane	SOLID	N/A	<2.1160E-01			0.2116	ug/Kg			U
7	SAMPLE	S10V001356		0 0			1,1-Dichloroethene	SOLID	N/A	<4.2320E-01			0.4232	ug/Kg			U
7	SAMPLE	S10V001356		0 0			1,2-Dichloroethane	SOLID	N/A	<5.3799E-02			0.053799	ug/Kg			U

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021742

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
7	SAMPLE	S10V001356		0 0			1-Butanol	SOLID	N/A	<1.0292E+01			10.292	ug/Kg			U
7	SAMPLE	S10V001356		0 0			4-Methyl-2-pentanone	SOLID	N/A	<1.7080E+00			1.708	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Acetone	SOLID	N/A	<2.1996E+00			2.1996	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Benzene	SOLID	N/A	<1.4740E-01			0.1474	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Carbon Disulfide	SOLID	N/A	<1.6080E-01			0.1608	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Carbon Tetrachloride	SOLID	N/A	<9.3400E-02			0.0934	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Chloroform	SOLID	N/A	<1.3080E-01			0.1308	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Chlorobenzene	SOLID	N/A	<8.6400E-02			0.0864	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Ethylbenzene	SOLID	N/A	<1.0720E-01			0.1072	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Xylenes (total)	SOLID	N/A	<2.0320E-01			0.2032	ug/Kg			U
7	SAMPLE	S10V001356		0 0			2-Butanone	SOLID	N/A	<1.9644E+00			1.9644	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Methylene Chloride	SOLID	N/A	<6.3999E-02			0.063999	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Tetrachloroethene	SOLID	N/A	<1.0980E-01			0.1098	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Toluene	SOLID	N/A	<8.0199E-02			0.080199	ug/Kg			U
7	SAMPLE	S10V001356		0 0			trans-1,3-Dichloropropene	SOLID	N/A	<2.7100E-01			0.271	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Trichloroethene	SOLID	N/A	<1.2100E-01			0.121	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Vinyl Chloride	SOLID	N/A	<1.7340E-01			0.1734	ug/Kg			U
7	SAMPLE	S10V001356		0 0			cis-Dichloroethylene	SOLID	N/A	<1.8160E-01			0.1816	ug/Kg			U
7	SAMPLE	S10V001356		0 0			trans-Dichloroethylene	SOLID	N/A	<3.0300E-01			0.303	ug/Kg			U
7	SAMPLE	S10V001356		0 0			112Trichloro-122Trifluoroethan	SOLID	N/A	<1.1620E-01			0.1162	ug/Kg			U
7	SAMPLE	S10V001356		0 0			2-Nitropropane	SOLID	N/A	<5.8800E-01			0.588	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Ethyl acetate	SOLID	N/A	<5.8720E-01			0.5872	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Diethyl ether	SOLID	N/A	<2.5620E-01			0.2562	ug/Kg			U
7	SAMPLE	S10V001356		0 0			Trichlorofluoromethane	SOLID	N/A	<9.3999E-02			0.093999	ug/Kg			U
7	SAMPLE	S10V001356		0 0			o-Xylene	SOLID	N/A	<9.2000E-02			0.092	ug/Kg			U
7	SAMPLE	S10V001356		0 0			m,p-Xylene	SOLID	N/A	<1.6740E-01			0.1674	ug/Kg			U
7	SAMPLE	S10V001356		0 0			4-Bromofluorobenzene	SOLID	20	2.1096E+01			0.1328	ug/Kg	105.48	% Recovery	
7	SAMPLE	S10V001356		0 0			Dibromofluoromethane	SOLID	20	1.9584E+01			0.1808	ug/Kg	97.92	% Recovery	
7	SAMPLE	S10V001356		0 0			1,2-Dichloroethane-d4	SOLID	20	2.0981E+01			0.1916	ug/Kg	104.9	% Recovery	
7	SAMPLE	S10V001356		0 0			Toluene-d8	SOLID	20	2.0777E+01			0.1714	ug/Kg	103.88	% Recovery	
7	SAMPLE	S10V001356		0 0			Propene	SOLID		3.3525312				ug/Kg			JNT
7	SAMPLE	S10V001356		0 0			Unknown-1	SOLID		2.0293056				ug/Kg			JT

Comments Section:

Data Flagger Status:
Flagging Completed

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021742

Final Page for Batch# 00021742

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021742

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1008300132	BLNK				
2	S1008300133	LCS				
3	S10V001222	SAMPLE		20100520	B26JL2	C Farm WMC 2010-2
4	S10V001336	SAMPLE		20100520	B26C75	C Farm WMC 2010-2
5	S1008300135	MS	S10V001336			
6	S1008300136	MSD	S10V001336			
7	S10V001356	SAMPLE		20100520	B26C77	C Farm WMC 2010-2

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

21742

2B

SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: 20100520_SOL

Level: (low/med) LOW

	EPA SAMPLE NO.	SMC1 #	SMC2 (DCE) #	SMC3 (TOL) #	OTHER (BFB) #	TOT OUT
01	CCB	106	120	116	115	
02	LCS	103	107	107	108	
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
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19						
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22						
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27						
28						
29						
30						

		QC LIMITS
SMC1	= Dibromofluoromethane	(77-129)
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(73-140)
SMC3 (TOL)	= Toluene-d8	(70-126)
OTHER (BFB)	= Bromofluorobenzene	(79-125)

Column to be used to flag recovery values

* Values outside of contract required QC limits

2B
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: 20100520_SOL

Level: (low/med) LOW

	EPA SAMPLE NO.	SMC1 #	SMC2 (DCE) #	SMC3 (TOL) #	OTHER (BFB) #	TOT OUT
01	S10V001222	102	108	104	108	
02	S10V001336	100	108	104	106	
03	S10V001336MS	96	109	98	101	
04	S10V001336MSD	103	114	102	102	
05	S10V001356	98	105	104	105	
06						
07						
08						
09						
10						
11						
12						
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30						

		QC LIMITS
SMC1	= Dibromofluoromethane	(74-126)
SMC2 (DCE)	= 1,2-Dichloroethane-d4	(78-133)
SMC3 (TOL)	= Toluene-d8	(74-128)
OTHER (BFB)	= Bromofluorobenzene	(64-144)

Column to be used to flag recovery values

* Values outside of contract required QC limits

FORM 3
SOIL VOLATILE LAB CONTROL SAMPLE

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: 20100520_SOL

Matrix Spike - Sample No.: LCS Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
1,1-Dichloroethene	20.000		20.860	104	66-141
Acetone	100.00		116.18	116	58-135
2-Butanone	100.00		114.77	115	50-149
n-Butanol	200.00		249.69	125	53-148
Benzene	20.000		20.037	100	70-126
Trichloroethene	20.000		19.645	98	71-127
Methyl Isobutyl Ketone	100.00		133.18	133	61-145
Toluene	20.000		21.187	106	71-125
2-Hexanone	100.00		135.38	135	59-148
Chlorobenzene	20.000		21.029	105	81-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS:

Date: 23 May 2011
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: WMA C
Subject: Semivolatile Organics - Sample Data Group (SDG) 20100520

INTRODUCTION

This memorandum presents the results of data validation for SDG 20100520 prepared by 222-S Laboratory. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B26JK3	7/07/2010	Soil	C	8270C
B26C70	7/08/2010	Soil	C	8270C

Data validation was conducted in accordance with the CHPRC validation statement of work and the Field Sampling and Analysis Plan for Waste Management Area C, RPP-PLAN-40564, Rev. 2 (SAP). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested By Client

DATA QUALITY OBJECTIVES

- **Holding Times and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The holding time requirements for semivolatile organics in soil are extraction within 14 days of sample collection and analysis within 40 days of sample extraction. Sample preservation requires chilling to 4 degrees Celsius.

The samples were extracted and analyzed within the prescribed holding times and properly preserved.

- **Blanks**

The blank data results are reviewed to assess the extent of contamination introduced through sampling, sample preparation, and analysis.

Laboratory Blanks

All laboratory blank results were acceptable with the following exception. The butylbenzylphthalate laboratory blank result was > the method detection limit (MDL). The butylbenzylphthalate results for samples B26JK3 and B26C70 were detects <5X the laboratory blank result and would be qualified as non-detects at the sample concentrations (126 ug/kg and 118 ug/kg, respectively) and flagged "U," but were further flagged "UJ" due to non-represented MS/MSD and LCS data.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

No equipment blanks were submitted for validation.

- **Accuracy**

Accuracy is evaluated by reviewing surrogate results, matrix spike sample results, and laboratory control sample results. According to the SAP, the matrix spike and laboratory control sample accuracy limits are 70% to 130%.

Surrogates

All surrogate recoveries were acceptable.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

All MS/MSD recoveries were acceptable with the following exceptions.

Only seven 8270C MS/MSD analytes were reported. Reported analytes not represented in the MS/MSDs were cyclohexanone, n-nitrosomorpholine, pyridine, tributyl phosphate, 2-ethoxyethanol, 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, di-n-butylphthalate, di-n-octylphthalate, 2-methylphenol, 3&4-methylphenol, total methylphenols, 2-nitrophenol, hexachlorobutadiene, hexachloroethane and 1,2-dichlorobenzene. All associated sample results for these analytes for both samples were non-detects (or qualified as non-detects) and should be qualified as estimates and flagged "UJ."

The MS and/or MSD recoveries for 1,2,4-trichlorobenzene, 2-chlorophenol and n-nitroso-di-n-dipropylamine were below the lower acceptance limits. The 1,2,4-trichlorobenzene, 2-

chlorophenol and n-nitroso-di-n-dipropylamine results for samples B26JK3 and B26C70 were non-detects and should be qualified as estimates and flagged "UJ."

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable with the following exceptions.

Only seven 8270C LCS analytes were reported. Reported analytes not represented in the LCSs were cyclohexanone, n-nitrosomorpholine, pyridine, tributyl phosphate, 2-ethoxyethanol, 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, di-n-butylphthalate, di-n-octylphthalate, 2-methylphenol, 3&4-methylphenol, total methylphenols, 2-nitrophenol, hexachlorobutadiene, hexachloroethane and 1,2-dichlorobenzene. All associated sample results for these analytes for both samples were non-detects (or qualified as non-detects) and should be qualified as estimates and flagged "UJ."

The LCS recoveries for 1,2,4-trichlorobenzene, 2-chlorophenol and n-nitroso-di-n-dipropylamine were below the lower acceptance limits. The 1,2,4-trichlorobenzene, 2-chlorophenol and n-nitroso-di-n-dipropylamine results for samples B26JK3 and B26C70 were non-detects and should be qualified as estimates and flagged "UJ."

- **Precision**

Precision is evaluated by reviewing MS/MSD results, field duplicate sample results, and field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are ±30%. When duplicate RPDs exceed the limits and have associated results <5X the SAP required detection limits with differences <2X the required detection limits no precision infraction occurred.

MS/MSD Samples

All MS/MSD relative percent difference values were acceptable.

Field Duplicate Samples

Sample B26JK2 is the field duplicate to sample B26JK3 but was not chosen for validation.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

Reported MDLs are compared against the required detection limits (RDLs) to ensure that laboratory detection limits meet the required criteria.

All reported sample MDLs were below the RDLs.

- **Completeness**

SDG 20100520 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Multiple minor deficiencies leading to qualification of sample results as estimates occurred. See the table in Appendix 2 for a listing of all affected sample results.

REFERENCES

GRP-GD-003, Rev. 0, Change 0, *Data Validation for Chemical Analyses*, August 2010

RPP-PLAN-40564, Rev. 2, *Field Sampling and Analysis Plan for Waste Management Area C*, December 2009

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers that may be applied by data validators in compliance with the CHPRC statement of work are as follows:

- **U** — The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.

- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.

- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **N** — The analysis indicates the presence of an analyte that has been tentatively identified.

- **NJ** — The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

- **NJ+** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.

- **NJ-** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.

- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

- **R** — Indicates the constituent was analyzed for and detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

Appendix 2

Summary of Data Qualification

Semivolatile Organics Data Qualification Summary			
SDG: 20100520	Reviewer: AQA	Project: WMA C	Page 1 of 1
Analyte(s)	**DV Flag**	**Samples Affected**	**Reason**
cyclohexanone n-nitrosomorpholine pyridine tributyl phosphate 2-ethoxyethanol 2,4,5-trichlorophenol 2,4,6-trichlorophenol bis(2-ethylhexyl)phthalate di-n-butylphthalate di-n-octylphthalate 2-methylphenol 3&4-methylphenol total methylphenols 2-nitrophenol hexachlorobutadiene hexachloroethane 1,2-dichlorobenzene	UJ	B26JK3, B26C70	Non-represented MS/MSD and LCS data
butylbenzylphthalate	126UJ	B26JK3	Lab blank contamination and non-represented MS/MSD and LCS data
butylbenzylphthalate	118UJ	B26C70	Lab blank contamination and non-represented MS/MSD and LCS data
1,2,4-trichlorobenzene 2-chlorophenol n-nitroso-di-n-dipropylamine	UJ	B26JK3, B26C70	Low LCS and MS and/or MSD recoveries

Comments: None

Appendix 3

Annotated Laboratory Reports

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26JK3
Sample Depth: Surface Dup

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte		Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
~~S10V001242~~			~~%WATERA~~	~~%WATER-APD~~		~~%~~	~~n/a~~	~~n/a~~	~~4.240~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~0.01000~~	~~n/a~~	
S10V001242			57-12-5	Cyanide		ug/g	94.1	<0.0370	<2.71	n/a	n/a	n/a	n/a	2.71	n/a	U
S10V001242			7439-97-6	Mercury		ug/g	97.4	<1.00E-04	0.0232	n/a	n/a	n/a	n/a	8.98E-03	n/a	J
S10V001242			PH	pH		unitless	n/a	n/a	8.92	n/a	n/a	n/a	n/a	0.0100	n/a	
S10V001242			18496-25-8	Sulfide		ug/g	99.2	<0.180	30.1	n/a	n/a	n/a	n/a	7.08	n/a	J
S10V001243			13966-00-2	Potassium-40		uCi/g	n/a	n/a	9.26E-06	n/a	n/a	n/a	n/a	5.83E-06	40.98	J
S10V001243			10198-40-0	Cobalt-60		uCi/g	101	<3.07E-07	<3.08E-07	n/a	n/a	n/a	n/a	3.08E-07	n/a	U
S10V001243			14234-35-6	Antimony-125		uCi/g	n/a	<7.49E-07	<8.34E-07	n/a	n/a	n/a	n/a	8.34E-07	n/a	U
S10V001243			10045-97-3	Cesium-137		uCi/g	105	<4.16E-07	3.83E-06	n/a	n/a	n/a	n/a	3.46E-07	9.84	
S10V001243			14683-23-9	Europium-152		uCi/g	n/a	<1.56E-06	<1.51E-06	n/a	n/a	n/a	n/a	1.51E-06	n/a	U
S10V001243			15585-10-1	Europium-154		uCi/g	n/a	<9.28E-07	<9.81E-07	n/a	n/a	n/a	n/a	9.81E-07	n/a	U
S10V001243			14391-16-3	Europium-155		uCi/g	n/a	<4.74E-07	<5.04E-07	n/a	n/a	n/a	n/a	5.04E-07	n/a	U
S10V001243			15067-28-4	Lead-214		uCi/g	n/a	n/a	1.17E-06	n/a	n/a	n/a	n/a	6.81E-07	21.66	
S10V001243			14274-82-9	Thorium-228		uCi/g	n/a	<8.76E-06	<9.51E-06	n/a	n/a	n/a	n/a	9.51E-06	n/a	U
S10V001243			15065-10-8	Thorium-234		uCi/g	n/a	<2.72E-06	<3.23E-06	n/a	n/a	n/a	n/a	3.23E-06	n/a	U
S10V001243			15046-84-1	Iodine-129		uCi/g	112	<1.62E-07	<1.76E-07	n/a	n/a	n/a	n/a	1.76E-07	n/a	U
S10V001245		WV	14133-76-7	Technetium-99		ug/g	105	<4.00E-06	<3.91E-06	n/a	n/a	n/a	n/a	3.91E-06	n/a	U
S10V001246		W	14762-75-5	Carbon-14		uCi/g	93.9	<1.07E-06	<6.63E-07	n/a	n/a	n/a	n/a	6.63E-07	n/a	U
S10V001246		W	10028-17-8	Tritium		uCi/g	90.5	<2.69E-07	<1.33E-06	n/a	n/a	n/a	n/a	1.33E-06	n/a	U
~~S10V001247~~		~~A~~	~~7440-36-0~~	~~Antimony~~		~~ug/g~~	~~104~~	~~<2.00E-04~~	~~0.165~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~9.64E-03~~	~~n/a~~	~~b~~
S10V001248		O	120-82-1	1,2,4-Trichlorobenzene	UJ	ug/kg	66.6	<77.4	<77.1	n/a	n/a	n/a	n/a	77.1	n/a	U
S10V001248		O	95-50-1	1,2-Dichlorobenzene	UJ	ug/kg	n/a	<101	<100	n/a	n/a	n/a	n/a	100	n/a	U
S10V001248		O	121-14-2	2,4-Dinitrotoluene		ug/kg	81.3	<38.1	<38.0	n/a	n/a	n/a	n/a	38.0	n/a	U
S10V001248		O	95-95-4	2,4,5-Trichlorophenol	UJ	ug/kg	n/a	<44.0	<43.8	n/a	n/a	n/a	n/a	43.8	n/a	U
S10V001248		O	88-06-2	2,4,6-Trichlorophenol	UJ	ug/kg	n/a	<49.5	<49.3	n/a	n/a	n/a	n/a	49.3	n/a	U
S10V001248		O	95-48-7	2-Methylphenol	UJ	ug/kg	n/a	<57.5	<57.3	n/a	n/a	n/a	n/a	57.3	n/a	U
S10V001248		O	88-75-5	2-Nitrophenol	UJ	ug/kg	n/a	<53.7	<53.5	n/a	n/a	n/a	n/a	53.5	n/a	U
S10V001248		O	65794-96-9	3 &4 Methylphenol	UJ	ug/kg	n/a	<51.4	<51.2	n/a	n/a	n/a	n/a	51.2	n/a	U

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U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26JK3
Sample Depth: Surface Dup

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte		Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001248		O	83-32-9	Acenaphthene		ug/kg	71.6	<17.6	<17.5	n/a	n/a	n/a	n/a	17.5	n/a	U
S10V001248		O	56-55-3	Benzo(a)anthracene		ug/kg	n/a	<37.8	<37.7	n/a	n/a	n/a	n/a	37.7	n/a	U
S10V001248		O	205-99-2	Benzo(b)fluoranthene		ug/kg	n/a	<48.9	<48.7	n/a	n/a	n/a	n/a	48.7	n/a	U
S10V001248		O	50-32-8	Benzo(a)pyrene		ug/kg	n/a	<41.2	<41.0	n/a	n/a	n/a	n/a	41.0	n/a	U
S10V001248		O	117-81-7	Bis(2-ethylhexyl) phthalate	UJ	ug/kg	n/a	<590	<588	n/a	n/a	n/a	n/a	588	n/a	U
S10V001248		O	207-08-9	Benzo(k)fluoranthene		ug/kg	n/a	<39.1	<38.9	n/a	n/a	n/a	n/a	38.9	n/a	U
S10V001248		O	85-68-7	Butylbenzylphthalate	126UJ	ug/kg	n/a	116	126	n/a	n/a	n/a	n/a	49.8	n/a	BJ
S10V001248		O	59-50-7	4-Chloro-3-methylphenol		ug/kg	73.1	<43.2	<43.0	n/a	n/a	n/a	n/a	43.0	n/a	U
S10V001248		O	95-57-8	2-Chlorophenol	UJ	ug/kg	62.1	<66.5	<66.2	n/a	n/a	n/a	n/a	66.2	n/a	U
S10V001248		O	218-01-9	Chrysene		ug/kg	n/a	<81.4	<81.1	n/a	n/a	n/a	n/a	81.1	n/a	U
S10V001248		O	53-70-3	Dibenz[a,h]anthracene		ug/kg	n/a	<51.1	<50.9	n/a	n/a	n/a	n/a	50.9	n/a	U
S10V001248		O	84-74-2	Di-n-butylphthalate	UJ	ug/kg	n/a	<562	<560	n/a	n/a	n/a	n/a	560	n/a	U
S10V001248		O	117-84-0	Di-n-octylphthalate	UJ	ug/kg	n/a	<47.7	<47.5	n/a	n/a	n/a	n/a	47.5	n/a	U
S10V001248		O	621-64-7	N-Nitroso-di-n-dipropylamine	UJ	ug/kg	61.4	<58.1	<57.9	n/a	n/a	n/a	n/a	57.9	n/a	U
S10V001248		O	206-44-0	Fluoranthene		ug/kg	n/a	<35.4	<35.3	n/a	n/a	n/a	n/a	35.3	n/a	U
S10V001248		O	87-68-3	Hexachlorobutadiene	UJ	ug/kg	n/a	<69.7	<69.4	n/a	n/a	n/a	n/a	69.4	n/a	U
S10V001248		O	67-72-1	Hexachloroethane	UJ	ug/kg	n/a	<112	<111	n/a	n/a	n/a	n/a	111	n/a	U
S10V001248		O	193-39-5	Indeno(1,2,3-cd)pyrene		ug/kg	n/a	<51.0	<50.8	n/a	n/a	n/a	n/a	50.8	n/a	U
S10V001248		O	91-20-3	Naphthalene		ug/kg	n/a	<62.6	<62.4	n/a	n/a	n/a	n/a	62.4	n/a	U
S10V001248		O	98-95-3	Nitrobenzene		ug/kg	n/a	<64.6	<64.3	n/a	n/a	n/a	n/a	64.3	n/a	U
S10V001248		O	129-00-0	Pyrene		ug/kg	88.1	<62.9	<62.7	n/a	n/a	n/a	n/a	62.7	n/a	U
S10V001248		O	110-86-1	Pyridine	UJ	ug/kg	n/a	<65.0	<64.7	n/a	n/a	n/a	n/a	64.7	n/a	U
S10V001248		O	126-73-8	Tributyl phosphate	UJ	ug/kg	n/a	<108	<107	n/a	n/a	n/a	n/a	107	n/a	U
S10V001248		O	128-37-0	BHT		ug/kg	n/a	<236	<235	n/a	n/a	n/a	n/a	235	n/a	U
S10V001248		O	110-80-5	2-Ethoxyethanol	UJ	ug/kg	n/a	<182	<182	n/a	n/a	n/a	n/a	182	n/a	U
S10V001248		O	1319-77-3	Total Methylphenols	UJ	ug/kg	n/a	<107	<106	n/a	n/a	n/a	n/a	106	n/a	U
S10V001248		O	108-94-1	Cyclohexanone	UJ	ug/kg	n/a	<558	<556	n/a	n/a	n/a	n/a	556	n/a	U
S10V001248		O	59-89-2	N-Nitrosomorpholine	UJ	ug/kg	n/a	<191	<191	n/a	n/a	n/a	n/a	191	n/a	U

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B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C70
Sample Depth: 10-12

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte		Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
~~S10V001299~~			~~BULKDENSI~~	~~Bulk Density~~		~~g/mL~~	~~n/a~~	~~n/a~~	~~2.29~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	
S10V001300			BULKDENSI	Bulk Density		g/mL	n/a	n/a	2.18	n/a	n/a	n/a	n/a	n/a	n/a	
S10V001301			BULKDENSI	Bulk Density		g/mL	n/a	n/a	2.17	n/a	n/a	n/a	n/a	n/a	n/a	
S10V001302			%WATERA	%WATER-APD		%	n/a	n/a	5.140	4.960	5.050	3.564	n/a	0.01000	n/a	
S10V001302			57-12-5	Cyanide		ug/g	94.1	<0.0370	<2.55	n/a	n/a	n/a	n/a	2.55	n/a	U
S10V001302			7439-97-6	Mercury		ug/g	97.4	<1.00E-04	<9.90E-03	n/a	n/a	n/a	n/a	9.90E-03	n/a	U
S10V001302			PH	pH		unitless	n/a	n/a	8.97	n/a	n/a	n/a	n/a	0.0100	n/a	
S10V001302			18496-25-8	Sulfide		ug/g	99.2	<0.180	20.2	n/a	n/a	n/a	n/a	7.24	n/a	J
S10V001303			10198-40-0	Cobalt-60		uCi/g	101	<3.07E-07	<3.42E-07	<3.46E-07	n/a	n/a	n/a	3.42E-07	n/a	U
S10V001303			14234-35-6	Antimony-125		uCi/g	n/a	<7.49E-07	<9.47E-07	<9.05E-07	n/a	n/a	n/a	9.47E-07	n/a	U
S10V001303			10045-97-3	Cesium-137		uCi/g	105	<4.16E-07	<4.57E-07	<4.26E-07	n/a	n/a	n/a	4.57E-07	n/a	U
S10V001303			14683-23-9	Europium-152		uCi/g	n/a	<1.56E-06	<1.79E-06	<1.71E-06	n/a	n/a	n/a	1.79E-06	n/a	U
S10V001303			15585-10-1	Europium-154		uCi/g	n/a	<9.28E-07	<1.08E-06	<1.03E-06	n/a	n/a	n/a	1.08E-06	n/a	U
S10V001303			14391-16-3	Europium-155		uCi/g	n/a	<4.74E-07	<6.07E-07	<5.58E-07	n/a	n/a	n/a	6.07E-07	n/a	U
S10V001303			14733-03-0	Bismuth-214		uCi/g	n/a	n/a	1.24E-06	n/a	n/a	n/a	n/a	6.30E-07	31.87	J
S10V001303			15067-28-4	Lead-214		uCi/g	n/a	n/a	1.57E-06	9.71E-07	1.27E-06	47.4	n/a	8.32E-07	19.99	
S10V001303			14274-82-9	Thorium-228		uCi/g	n/a	<8.76E-06	<1.12E-05	<1.05E-05	n/a	n/a	n/a	1.12E-05	n/a	U
S10V001303			15065-10-8	Thorium-234		uCi/g	n/a	<2.72E-06	<3.81E-06	<3.66E-06	n/a	n/a	n/a	3.81E-06	n/a	U
S10V001303			15046-84-1	Iodine-129		uCi/g	112	<1.62E-07	<1.61E-07	n/a	n/a	n/a	n/a	1.61E-07	n/a	U
S10V001305		WV	14133-76-7	Technetium-99		ug/g	105	<4.00E-06	<4.01E-06	n/a	n/a	n/a	n/a	4.01E-06	n/a	U
S10V001306		W	14762-75-5	Carbon-14		uCi/g	93.9	<1.07E-06	<6.77E-07	n/a	n/a	n/a	n/a	6.77E-07	n/a	U
S10V001306		W	10028-17-8	Tritium		uCi/g	90.5	<2.69E-07	<1.35E-06	n/a	n/a	n/a	n/a	1.35E-06	n/a	U
~~S10V001307~~		~~A~~	~~7440-36-0~~	~~Antimony~~		~~ug/g~~	~~104~~	~~<2.00E-04~~	~~0.0926~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~9.39E-03~~	~~n/a~~	~~Jb~~
S10V001308		O	120-82-1	1,2,4-Trichlorobenzene	UJ	ug/kg	66.6	<77.4	<76.6	n/a	n/a	n/a	70.4	76.6	n/a	U
S10V001308		O	95-50-1	1,2-Dichlorobenzene	UJ	ug/kg	n/a	<101	<99.6	n/a	n/a	n/a	n/a	99.6	n/a	U
S10V001308		O	121-14-2	2,4-Dinitrotoluene		ug/kg	81.3	<38.1	<37.7	n/a	n/a	n/a	89.8	37.7	n/a	U
S10V001308		O	95-95-4	2,4,5-Trichlorophenol	UJ	ug/kg	n/a	<44.0	<43.5	n/a	n/a	n/a	n/a	43.5	n/a	U
S10V001308		O	88-06-2	2,4,6-Trichlorophenol	UJ	ug/kg	n/a	<49.5	<49.0	n/a	n/a	n/a	n/a	49.0	n/a	U

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B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C70
Sample Depth: 10-12

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte		Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001308		O	95-48-7	2-Methylphenol	UJ	ug/kg	n/a	<57.5	<56.9	n/a	n/a	n/a	n/a	56.9	n/a	U
S10V001308		O	88-75-5	2-Nitrophenol	UJ	ug/kg	n/a	<53.7	<53.1	n/a	n/a	n/a	n/a	53.1	n/a	U
S10V001308		O	65794-96-9	3 &4 Methylphenol	UJ	ug/kg	n/a	<51.4	<50.9	n/a	n/a	n/a	n/a	50.9	n/a	U
S10V001308		O	83-32-9	Acenaphthene		ug/kg	71.6	<17.6	<17.4	n/a	n/a	n/a	75.9	17.4	n/a	U
S10V001308		O	56-55-3	Benzo(a)anthracene		ug/kg	n/a	<37.8	<37.4	n/a	n/a	n/a	n/a	37.4	n/a	U
S10V001308		O	205-99-2	Benzo(b)fluoranthene		ug/kg	n/a	<48.9	<48.4	n/a	n/a	n/a	n/a	48.4	n/a	U
S10V001308		O	50-32-8	Benzo(a)pyrene		ug/kg	n/a	<41.2	<40.8	n/a	n/a	n/a	n/a	40.8	n/a	U
S10V001308		O	117-81-7	Bis(2-ethylhexyl) phthalate	UJ	ug/kg	n/a	<590	<584	n/a	n/a	n/a	n/a	584	n/a	U
S10V001308		O	207-08-9	Benzo(k)fluoranthene		ug/kg	n/a	<39.1	<38.7	n/a	n/a	n/a	n/a	38.7	n/a	U
S10V001308		O	85-68-7	Butylbenzylphthalate	118UJ	ug/kg	n/a	116	118	n/a	n/a	n/a	n/a	49.5	n/a	BJ
S10V001308		O	59-50-7	4-Chloro-3-methylphenol		ug/kg	73.1	<43.2	<42.7	n/a	n/a	n/a	83.6	42.7	n/a	U
S10V001308		O	95-57-8	2-Chlorophenol	UJ	ug/kg	62.1	<66.5	<65.8	n/a	n/a	n/a	69.3	65.8	n/a	U
S10V001308		O	218-01-9	Chrysene		ug/kg	n/a	<81.4	<80.5	n/a	n/a	n/a	n/a	80.5	n/a	U
S10V001308		O	53-70-3	Dibenz[a,h]anthracene		ug/kg	n/a	<51.1	<50.6	n/a	n/a	n/a	n/a	50.6	n/a	U
S10V001308		O	84-74-2	Di-n-butylphthalate	UJ	ug/kg	n/a	<562	<556	n/a	n/a	n/a	n/a	556	n/a	U
S10V001308		O	117-84-0	Di-n-octylphthalate	UJ	ug/kg	n/a	<47.7	<47.2	n/a	n/a	n/a	n/a	47.2	n/a	U
S10V001308		O	621-64-7	N-Nitroso-di-n-dipropylamine	UJ	ug/kg	61.4	<58.1	<57.5	n/a	n/a	n/a	67.5	57.5	n/a	U
S10V001308		O	206-44-0	Fluoranthene		ug/kg	n/a	<35.4	<35.0	n/a	n/a	n/a	n/a	35.0	n/a	U
S10V001308		O	87-68-3	Hexachlorobutadiene	UJ	ug/kg	n/a	<69.7	<69.0	n/a	n/a	n/a	n/a	69.0	n/a	U
S10V001308		O	67-72-1	Hexachloroethane	UJ	ug/kg	n/a	<112	<111	n/a	n/a	n/a	n/a	111	n/a	U
S10V001308		O	193-39-5	Indeno(1,2,3-cd)pyrene		ug/kg	n/a	<51.0	<50.5	n/a	n/a	n/a	n/a	50.5	n/a	U
S10V001308		O	91-20-3	Naphthalene		ug/kg	n/a	<62.6	<61.9	n/a	n/a	n/a	n/a	61.9	n/a	U
S10V001308		O	98-95-3	Nitrobenzene		ug/kg	n/a	<64.6	<63.9	n/a	n/a	n/a	n/a	63.9	n/a	U
S10V001308		O	129-00-0	Pyrene		ug/kg	88.1	<62.9	<62.2	n/a	n/a	n/a	96.9	62.2	n/a	U
S10V001308		O	110-86-1	Pyridine	UJ	ug/kg	n/a	<65.0	<64.3	n/a	n/a	n/a	n/a	64.3	n/a	U
S10V001308		O	126-73-8	Tributyl phosphate	UJ	ug/kg	n/a	<108	<107	n/a	n/a	n/a	n/a	107	n/a	U
S10V001308		O	128-37-0	BHT		ug/kg	n/a	<236	<233	n/a	n/a	n/a	n/a	233	n/a	U
S10V001308		O	110-80-5	2-Ethoxyethanol	UJ	ug/kg	n/a	<182	<180	n/a	n/a	n/a	n/a	180	n/a	U

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C70
Sample Depth: 10-12

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte		Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001308		O	1319-77-3	Total Methylphenols	UJ	ug/kg	n/a	<107	<105	n/a	n/a	n/a	n/a	105	n/a	U
S10V001308		O	108-94-1	Cyclohexanone	UJ	ug/kg	n/a	<558	<552	n/a	n/a	n/a	n/a	552	n/a	U
S10V001308		O	59-89-2	N-Nitrosomorpholine	UJ	ug/kg	n/a	<191	<189	n/a	n/a	n/a	n/a	189	n/a	U
S10V001309		W	16984-48-8	Fluoride		ug/g	101	<1.61E-03	1.48	n/a	n/a	n/a	n/a	0.0160	n/a	c
S10V001309		W	666-14-8	Glycolate		ug/g	99.3	<9.37E-03	<0.0931	n/a	n/a	n/a	n/a	0.0931	n/a	U
S10V001309		W	71-50-1	Acetate		ug/g	98.3	<6.04E-03	<0.0600	n/a	n/a	n/a	n/a	0.0600	n/a	U
S10V001309		W	12311-97-6	Formate		ug/g	102	<4.67E-03	0.109	n/a	n/a	n/a	n/a	0.0464	n/a	J
S10V001309		W	16887-00-6	Chloride		ug/g	100	<9.98E-03	0.355	n/a	n/a	n/a	n/a	0.0991	n/a	J
S10V001309		W	14797-65-0	Nitrite		ug/g	100	<0.0192	1.40	n/a	n/a	n/a	n/a	0.191	n/a	J
S10V001309		W	14808-79-8	Sulfate		ug/g	99.0	<0.0187	3.08	n/a	n/a	n/a	n/a	0.186	n/a	
S10V001309		W	338-70-5	Oxalate		ug/g	101	<0.0231	<0.229	n/a	n/a	n/a	n/a	0.229	n/a	U
S10V001309		W	24959-67-9	Bromide		ug/g	96.5	<0.0580	<0.576	n/a	n/a	n/a	n/a	0.576	n/a	U
S10V001309		W	14797-55-8	Nitrate		ug/g	98.5	<0.0208	2.85	n/a	n/a	n/a	n/a	0.207	n/a	
S10V001309		W	14265-44-2	Phosphate		ug/g	99.1	<0.0167	0.975	n/a	n/a	n/a	n/a	0.166	n/a	J
S10V001310		A	7429-90-5	Aluminum		ug/g	89.9	<0.0300	7.42E+03	n/a	n/a	n/a	n/a	2.99	n/a	
S10V001310		A	7440-42-8	Boron		ug/g	89.1	<0.0300	3.25	n/a	n/a	n/a	n/a	2.99	n/a	J
S10V001310		A	7440-39-3	Barium		ug/g	93.7	<3.00E-03	76.4	n/a	n/a	n/a	n/a	0.299	n/a	
S10V001310		A	7440-41-7	Beryllium		ug/g	95.7	<1.00E-03	0.158	n/a	n/a	n/a	n/a	0.0996	n/a	J
S10V001310		A	7440-70-2	Calcium		ug/g	82.2	0.0545	8.39E+03	n/a	n/a	n/a	n/a	4.98	n/a	
S10V001310		A	7440-43-9	Cadmium		ug/g	88.5	<5.00E-03	2.87	n/a	n/a	n/a	n/a	0.498	n/a	J
S10V001310		A	7440-45-1	Cerium		ug/g	91.9	<0.0300	22.2	n/a	n/a	n/a	n/a	2.99	n/a	J
S10V001310		A	7440-48-4	Cobalt		ug/g	87.0	<0.0100	7.99	n/a	n/a	n/a	n/a	0.996	n/a	J
S10V001310		A	7440-47-3	Chromium		ug/g	86.1	<5.00E-03	17.2	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7440-50-8	Copper		ug/g	99.3	<5.00E-03	16.5	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7439-89-6	Iron		ug/g	88.7	7.48E-03	2.21E+04	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7440-09-7	Potassium		ug/g	115	<0.500	1.10E+03	n/a	n/a	n/a	n/a	49.8	n/a	
S10V001310		A	7439-91-0	Lanthanum		ug/g	93.8	<3.00E-03	10.6	n/a	n/a	n/a	n/a	0.299	n/a	
S10V001310		A	7439-93-2	Lithium		ug/g	116	<3.00E-03	7.73	n/a	n/a	n/a	n/a	0.299	n/a	

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

222-S LABORATORY

FINAL ANALYTICAL REPORT FOR SAMPLES FROM WASTE MANAGEMENT AREA C FOR CORE HOLE C7672 IN SUPPORT OF RCRA SOIL CHARACTERIZATION

1.0 INTRODUCTION

This final report presents the results for the samples taken from Waste Management Area C between July 7, 2010 and July 16, 2010. The samples were analyzed in accordance with RPP-PLAN-40564, *Field Sampling and Analysis Plan for Sites P and L at Waste Management Area C* (FSAP); RPP-PLAN-38777, *Sampling and Analysis Plan for Phase 2 Characterization of Vadose Zone Soil in Waste Management Area C* (SAP); ATL-MP-1011, *ATL Quality Assurance Project Plan for 222-S Laboratory* (QAPP); SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*; and the additional guidance given by the client's point of contact.

Because the 222-S Laboratory facility was designed to analyze hazardous and complex tank waste samples, most SW-846 test methods performed at the 222-S Laboratory contain deviations that are listed in an appendix in the analytical procedures. All other known deviations or variances from SW-846 are documented in this narrative. The following attachments are included in this report.

Attachment 1	Data Summary Report
Attachment 2	Sample Breakdown Diagrams
Attachment 3	Holding Time Report
Attachment 4	Additional Organic Analyses QC Results
Attachment 5	Tentatively Identified Compounds (TIC) for Organic Analyses
Attachment 6	Geological Report
Attachment 7	Characterization Change Notices (CCN) and Correspondence
Attachment 8	Receipt Paperwork

2.0 SAMPLE RECEIPT AND BREAKDOWN

2.1 SAMPLE RECEIPT

A total of seven core intervals and two surface grab samples from core hole C7672 along with six field blanks, six trip blanks, and one equipment blank were received by the 222-S Laboratory between July 7, 2010 and July 16, 2010. The samples were delivered in a cooler with ice or, in the case of the volatile organic soil samples, in a freezer. The temperatures of the temperature blanks were measured and recorded on the sample receipt check list and/or the chain of custody form.

The chain of custody requested that conductivity be analyzed on the soil samples. Since this analysis was not listed in the SAP or FSAP it was not performed. The client has indicated that

this analysis may be performed later after a CCN is issued to cover the change to the FSAP (see Attachment 7).

2.2 SAMPLE BREAKDOWN

The laboratory received each core interval as a set of volatile organic analysis (VOA) samples and three liner samples when complete core recovery was obtained. The VOA samples were made from the shoe section of each core interval following SW-846 5035. The liner samples from each core interval were extruded, described, and composited by the Washington River Protection Solutions, Inc. (WRPS) geologist. The geologist's report is included in Attachment 6. Provided sufficient samples existed, the composite for each core interval was analyzed as described in the SAP and FSAP. One core interval, I001, had less than full recovery (see Attachment 2 and Attachment 8). There was no I003 for core hole C7672. All intervals were extruded and composited in the normal manner. The surface samples were received as a single grab in a 500-mL jar and a set of VOA samples.

WRPS shipped subsamples of the composites to Test America Laboratories, Inc. (TAL) in St Louis, Missouri and Knoxville, Tennessee to be analyzed for dibutyl and monobutyl phosphate, total petroleum hydrocarbons (diesel and gasoline range), ethylene glycol, chlorinated pesticides, and polychlorinated biphenyls (Aroclors and congeners). TAL subsequently subcontracted the monobutyl and dibutyl phosphate analyses to Southwest Research Institute. The results of these analyses will be released in the final WRPS report.

3.0 ANALYTICAL RESULTS SUMMARY

The Data Summary Report (Attachment 1) presents the final analytical results for those analytes requested in the SAP and FSAP. Secondary analytes are only reported if detected. The TIC from gas chromatography-mass spectrometry (GC/MS) analysis of semivolatile organic compounds (SVOC) is presented in Attachment 5. In addition to the required isotopes, all isotopes with positive gamma energy analysis (GEA) results were reported.

The "Det Limit" column in Attachment 1 contains the method detection limit (MDL) for non-radionuclide analyses, or the minimum detectable activity for radionuclides.

In Attachment 1, the column labeled "A#" indicates the aliquot class or the method used for sample preparation before analysis. For solid samples, the aliquot classes are defined as follows:

"A" indicates samples that were prepared by SW-846 3050B.

"E" indicates samples that were prepared by a strong acid digest.

"O" indicates samples that were extracted for organic analysis.

"S" indicates samples that were prepared by a distillation.

"W" indicates samples that were prepared by a standard water digest.

"WV" indicates samples that were prepared by a Vadose water digest.

Samples without a letter identifier in the "A#" column were analyzed directly with no separate preparation or with sample preparation performed as a part of the procedure steps.

The "Qual Flags" column in Attachment 1 contains data qualifier flags that are defined as follows:

> "B" is used to indicate that the analyte was detected in the method or preparation blank and in the sample, and the result for the blank was greater than 5% of the reported sample result.
>
> "J" indicates that the reported result should be considered an estimate because it is below the quantitation limit. The "J" flag is applied to sample concentrations that are greater than the MDL but less than the quantitation limit or sample activity with a counting uncertainty greater than 30%.
>
> "N" indicates a TIC which has been named.
>
> "T" indicates a TIC.
>
> "U" indicates that the reported result is less than the calculated detection limit.
>
> "b" indicates that the matrix spike (MS) recovery was outside of the specified range in the QAPP or SAP.
>
> "c" indicates that the relative percent difference (RPD) between the sample and the duplicate is greater than 30%.

Manual calculations using rounded results from the Data Summary Report (Attachment 1) or result calculation forms may differ slightly from the actual results derived from the raw data.

3.1 SAMPLE DIGESTIONS

3.1.1 Radiochemistry Strong Acid Digestion

Strong acid digestions with a hot plate for the heat source were performed using a mixture of concentrated nitric and hydrochloric acids. For each digest, approximately 1 to 10 g of sample was digested depending on the analysis being performed. The digestate was then filtered and diluted to a final volume. This digestion was used for all radiochemical analyses except ^{3}H, ^{14}C, and ^{129}I. This digestion is a leach of the acid soluble species only.

3.1.2 SW-846 3050B - Acid Digestion-Heating Block

This acid digestion follows SW-846 3050B using a heating block and nitric and hydrochloric acids. An aliquot of approximately 5 g of sample was digested. All heating-block digestions were filtered and diluted to a final volume of 50 mL. In soil, this digestion is a leach of the acid soluble species only. This digestion was used for all inductively coupled plasma/mass spectrometry (ICP/MS) and inductively coupled plasma/atomic emission spectroscopy (ICP/AES) analyses except for ^{99}Tc and isotopic tin (^{117}Sn and ^{126}Sn) analyses. The digestion is modified for the ^{99}Tc analysis by using only nitric acid. This is done to eliminate the possibility of the formation a zinc-chlorine ion pair of mass 99. The laboratory believes this ion, when

present, is responsible for low level false positives. A separate digestion for antimony was prepared using additional hydrochloric acid, as recommended in SW-846.

3.1.3 Water Digestion

A water digestion or leach was prepared for the anions by ion chromatography, ^{14}C, and ^{3}H analyses using approximately 0.25 to 4 g of sample diluted to 25 mL. Sonification was used, and the leachate was then filtered. In soil, this digestion is a leach of the water soluble species only.

3.1.4 Vadose Water Digestion

A 70-g sample of soil was leached using a ratio of one part water to one part soil. To maintain a one-to-one ratio, the amount of water added to the sample was adjusted based on the percent moisture of the soil. The slurries were placed on a shaker table for about 1 hour. They were then transferred to a centrifuge tube and centrifuged at 4,000 rpm for 30 minutes. An unfiltered aliquot was set aside for alkalinity analysis. The remainder was filtered using a disposable vacuum filtration system. The filtrates were transferred to a clean bottle and then analyzed for anions using IC nitrate analysis (intervals I005 to I010) and ^{99}Tc by ICP/MS analysis.

3.2 INORGANIC ANALYSES

3.2.1 Cyanide

The cyanide analysis by distillation and spectrophotometry was performed on the grab samples, liner composite samples, and the equipment blank. All analyses met the SW-846 holding time of 14 days. There was no required reporting limit in the SAP for cyanide. The target detection limit was 0.5 µg/g, which is lower than what the current laboratory method (lachet micro-distillation) can reach. There were no notable quality control (QC) issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.2 Sulfide

Sulfide analysis by distillation and ion selective electrode was performed on the grab samples, liner composite samples, and the equipment blank. All analyses met the SW-846 holding time of 7 days. There was no required reporting limit in the SAP for sulfide. The target detection limit was 5 µg/g. All sample results had adjusted MDLs of approximately 7 µg/g. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.3 pH Analysis

The pH analysis was performed on the grab samples, liner composite samples, and equipment blank. These analyses met all QC requirements in the FSAP, SAP, and QAPP. The FSAP lists a pH holding time requirement of “as soon as possible.” All pH measurements were taken after the water leach was performed. The sampling to analysis time varied from 6 to 15 days (see Attachment 3). There is no correlation between pH results and days to analysis, and the results

fall within an expected range for alkaline soils. This indicates that the variation in time has no apparent effect on the results.

3.2.4 Mercury

Analysis for Hg by cold-vapor graphic furnace/atomic absorption was performed on the grab samples, liner composite samples, and the equipment bank. All results met the QC requirements in the FSAP, SAP, and QAPP. All analyses met the holding time of 28 days. This analysis met the required and target detection limits.

3.2.5 Ion Chromatography – Ammonium

Analysis for ammonium was performed using a distillation preparation of the grab samples, the liner composite samples, and the equipment blank. There is no regulatory holding time limit promulgated for ammonium in soil. The SAP lists an administrative holding time of 7 days. The laboratory believes that after distillation and preservation, the holding time is 28 days based on U.S. Environmental Protection Agency drinking water and waste water holding times for preserved samples. All samples met these holding times. These analyses met the target detection limit listed in the SAP. There was no required reporting limit in the SAP or FSAP for ammonium.

Batch 20647: The RPD between the duplicate and the sample exceeded the required 30%. Since the result for this analyte was below the quantitation limit, the criterion does not apply and reanalysis is not required. Ammonium was detected in the preparation blanks at a level below the quantitation limit and above the MDL. Ammonium was also detected in the samples at a similar level; these results have been flagged with a “B”. Since all results were below the quantitation limit, reanalysis was not required.

Batch 20662: Ammonium was detected in the preparation blanks at a level below the quantitation limit and above the MDL. Since ammonium was not detected in the sample reanalysis was not required.

Batch 20716: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20930: The RPD between the sample and duplicate exceeded the required 30%. Since the result for this analyte was below the quantitation limit, the criterion does not apply and reanalysis is not required.

3.2.6 Ion Chromatography – Anions and Small Organic Acids

Ion chromatography analysis was performed on all grab samples, liner composite samples, and the equipment blank. The laboratory met all of the required and target detection limits. All analyses were within the applicable SW-846 holding times. The sample spikes used for the standard water digestions are predigestion spikes.

Batch 20596: The result for nitrate in the preparation blank was slightly below the quantitation limit. Since the sample was non-detect for nitrate, the blank is acceptable.

Batch 21046: The RPD between the sample and duplicate for fluoride exceeded the required 30% at 40%. The laboratory believes this was due to sample inhomogeneity, which is indicated by high RPDs for the other anions in this sample. All fluoride results in this batch have been flagged with a "c". The RPD for nitrite was above the required 30%, however the result was below the quantitation limit, and the criterion does not apply. The low level standard (LLS) for chloride exceeded the ±50% requirement in SW-846 at 153%. This could indicate a high bias for results near the LLS level. Since all chloride results were below the continuous calibration verification sample (CCV) level, a "J" was applied, even to the results above the laboratory's quantitation limit (the LLS level).

Batch 21073: The low level standard (LLS) for chloride exceeded the ±50% requirement in SW-846 at 153%. This could indicate a high bias for results near the LLS level. Since the result was below quantitation level, the data quality was not affected.

3.2.7 Inductively Coupled Plasma/Atomic Emission Spectroscopy

The ICP/AES analysis was performed on an acid-digest (SW-846 3050B) of all grab samples, liner composite samples, and the equipment blank. The ICP/AES analysis was unable to obtain the required detection limit for antimony, arsenic, cadmium, lead, selenium, silver, and thallium for the soil sample. These elements have been reported from separate ICP/MS analyses. Total uranium has not been reported by the ICP/AES analysis since it cannot meet the required detection limits in the SAP. The isotopic uranium analysis by ICP/MS met the required detection limit for ^{238}U, which is essentially total uranium. The overall data usability was not affected. For all other metals reported by ICP/AES, all target and required detection limits were met. SW-846 lists the holding time for ICP/AES metals as 6 months. All analyses met the holding times.

Batch 21204: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21230: The interference check standard-AB (ICSAB) had a result above the quantitation limits for neodymium. This indicates that spectral interference was occurring. Neodymium results were not reported due to the high probability that they were the result of this interference. Results slightly above the MDL for cadmium, chromium, manganese, and silver in the ICSAB indicate a possible high bias for these elements. However, the recovery of these elements in the ICSAB was within the ±20% requirement; this indicates no significant bias was present. Low levels of iron and calcium were detected in the preparation blank, but reanalysis was not required since these levels were less than 5% of the lowest sample result.

The MS recoveries for aluminum, calcium, iron, magnesium, manganese, potassium, phosphorous, sodium, and titanium exceeded the ±25% requirement in the FSAP and SAP. Since the sample results for these elements exceeded the MS level by more than four times, this criterion does not apply.

The MS recovery for silicon exceeded the ±25% requirement in the SAP and FSAP. The laboratory believes this was due to matrix interference. Reanalysis was not required since this is secondary element. It should be noted that silicon is not listed with other elements in SW-846 3050B, section 1.1, under "Scope and Application" for the method and does not perform consistently when using this digest.

The RPD between the sample and the duplicate exceeded the ±30% requirement in the SAP for manganese. The laboratory believes this was due to sample inhomogeneity and, with the client's permission, the result has been reported (see Attachment 7).

3.2.8 Inductively Coupled Plasma/Mass Spectroscopy

The ICP/MS actinide and trace metal analyses were performed on the standard SW-846 3050 acid digestion of all grab samples and liner composite samples. The ICP/MS actinide analysis was also performed on the equipment blank. The ICP/MS ^{126}Sn and ^{99}Tc analysis was performed on the sample digest without the addition of hydrochloric acid. Hydrochloric acid is not used for ^{99}Tc analysis because of the potential formation of a ZnCl ion pair with mass 99. ICP/MS trace metal analysis for antimony was perform on the SW-846 3050 digest with additional hydrochloric acid, which is required to keep antimony in the solution. In addition to these acid digests, ICP/MS ^{99}Tc analysis was performed on a vadose water digest of all solid samples.

Direct is the most accurate type of calibration; however, standard material is not commercially available for all of the isotopes of interest. Concentrations of those isotopes without available standards are estimated based on the instrument's mass-response curve, which is generated by using the intensity/concentration relationship for the available isotope standards. Results estimated in this manner are designated "semi-quantitative."

Table 1. Inductively Coupled Plasma-Mass Spectroscopy Standards and Spikes

Standard Type	Analytes Analyzed
Initial calibration verification (nondigested)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Acid digest standard (laboratory control standard)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Predigest spike (MS)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Post-digest spike	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
No standard or spike of either type	^{126}Sn, ^{230}Th, ^{233}U, ^{234}U, ^{236}U

3.2.8.1 Technetium-99 and Tin-126

The required detection limit listed in the SAP for ^{99}Tc was met. The target detection limit for ^{99}Tc was not met. There were no required or target detection limits for ^{126}Sn listed in the SAP. The SAP lists the holding time for isotopic analytes as 6 months. All samples were analyzed within the holding time.

Because there is no available source for ^{126}Sn, ^{117}Sn is used to monitor the chemical recovery for this analysis. Though not specifically requested in the SAP, ^{117}Sn is reported for the laboratory control sample (LCS) and MS in order to demonstrate method accuracy and presence of possible matrix interference.

All sample results were above the MDL and below the quantitation limit with one exception. Based on this, the laboratory suspects that a low level isobaric interference is present in these samples at mass 126. The laboratory believes the most likely suspect is ^{126}Te, but there are other possible candidates. One sample result was above the quantitation level for ^{126}Sn. Users of this data should be aware that all positive ^{126}Sn results in the report may be due to isobaric interference. The laboratory is currently evaluating how to quantify the possible isobaric interferences for ^{126}Sn.

Batch 22899: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21705: The MS for ^{117}Sn was recovered below the ±25% requirement. Similar results have been observed in other batches; this appears to be a matrix interference issue. This batch was not reanalyzed, but others have been with no improvement. Tin results should be considered biased low at these levels. All samples in the batch have been flagged with a "b". The laboratory is investigating change the acid mixture used to perform low level ^{126}Sn analysis in hopes of improving spike recoveries.

3.2.8.2 Technetium-99 (Vadose Water Digest)

The required and target detection limits listed in the SAP for ^{99}Tc were met. The SAP lists a holding time of 6 months for isotopic analytes. All analyses met this holding time.

Batch 23804: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.8.3 Actinides

The required and target detection limits were met for all isotopes and in all samples. The SAP lists the holding time for isotopic analytes as 6 months. All samples were analyzed within the holding time.

Batch 21671: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 23850: The results for ^{232}Th and ^{236}U in the preparation blank were slightly above the MDL. The sample in this batch demonstrated a similar result for ^{236}U and has been flagged with a "B". The sample result for ^{232}Th was below the MDL. Since all results were below the quantitation limit, the blank was acceptable and reanalysis was not required.

3.2.8.4 Trace Metals

Antimony, arsenic, cadmium, lead, selenium, silver, and thallium were analyzed by ICP/MS to obtain the required detection limits in the SAP. Except for the required detection limit for selenium, all required detection limits were met or the sample results were above the quantitation limit and the sample detection limit criteria do not apply. All target detection limits were met. The required detection limit for selenium was approximately an order of magnitude below the detection limit obtained by ICP/MS. The laboratory does not anticipate reaching this detection

limit for future projects. The adjusted MDL for selenium was approximately 0.12 µg/g. SW-846 lists the holding time for metals as 6 months. All samples were analyzed within the holding time.

Batch 21982: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21350: The MS recovery exceeded the required ±25% for antimony at 63%. Reanalysis was not performed due to a facility room outage. The client was informed of the outage (see Attachment 7) and these results were reported. A "b" was added to all sample results in the batch. Since an antimony-specific digestion was used, the laboratory believes the failure was due to matrix interference.

3.3 RADIOCHEMICAL ANALYSIS

The holding time listed in the SAP for radioactive isotopes is 6 months. The FSAP list the holding time as "none". SW-846 does not address holding times for radiochemical analytes. All radiochemical analyses met the 6-month holding time listed in the SAP. Holding time tables for these analytes have not been included in Attachment 3. With the exception of the ^{14}C and ^{3}H analyses, tracers and spikes are added prior to the digestion.

3.3.1 Gamma Energy Analysis

Gamma energy analysis was performed directly on the grab samples, liner composite samples, and the equipment blank. The SAP requires the reporting of all isotopes with positive results above the minimum detectable activity (MDA); therefore, isotopes additional to those required in the SAP were reported when detected. The GEA analysis met all of the required detection limits in the SAP. The laboratory was unable to meet any of the target detection limits.

Batch 21109: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21198: The RPD for ^{214}Pb was above the 30% requirement in the FSAP. Since the counting error was > 15%, this criterion does not apply.

3.3.2 Strontium-89/90

Strontium-89/90 analysis was performed on the grab samples, liner composite samples, and the equipment blank. All of the sample analyses met the required and target detection limits. The FSAP and SAP requested ^{90}Sr, not $^{89/90}Sr$, be reported. The 222-S Laboratory only performs the latter analysis. Since the half-life for ^{89}Sr is approximately 51 days and ^{89}Sr has not been produced at Hanford for years, $^{89/90}Sr$ is essentially ^{90}Sr. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.3.3 Tritium

The ^{3}H analysis by liquid scintillation counting (LSC) was performed on the equipment blank and a water leach of all grab samples and liner composite samples. This method only measured

the ^{3}H in the samples that could be dissolved in water. This analysis achieved the required and target detection limits in the FSAP.

Batches 21194 and 24544: There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21310: The laboratory failed to include an MS with this batch and did not analyze an MS for C7672 as required. This was discussed with the client (see Attachment 7), and a single sample was reanalyzed in a batch containing an MS in order to meet this requirement.

3.3.4 Selenium-79

The ^{79}Se analysis by LSC was performed on the grab samples, liner composite samples, and the equipment blank. The analysis achieved the target detection limit in the FSAP. No required detection limit was listed. No standard is currently available for ^{79}Se, and a cold carrier is used to monitor recovery and is measured gravimetrically. The ^{14}C LSC curve is used to determine the ^{79}Se results since their energies are similar. Since both ^{63}Ni and ^{79}Se use a single digestion batch that is equally split prior to the separation step, the maximum tracer/carrier recovery is 50%.

Batches 21328 and 23959: The preparation blanks demonstrated a positive result below the quantitation limit, as did the five samples in these batches. All results had very large counting uncertainties and were below the target detection limit. Because of these factors, reanalysis was not required. The associated positive results have been flagged with a “B”.

3.3.5 Carbon-14

The ^{14}C analysis by LSC was performed on a water leach of the grab samples and liner composite samples and directly on the equipment blank. The analysis achieved the required detection limit in the FSAP but exceeded the target detection limit. This analysis will only detect water soluble forms of ^{14}C.

Batch 23609: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 2130: Carbon-14 was detected in the method blank below the quantitation limit. Since ^{14}C was not detected in the sample, reanalysis was not required.

3.3.6 Nickel-63

The ^{63}Ni analysis by LSC was performed on the grab samples, liner composite samples, and equipment blank. The analysis achieved the required and target detection limits in the FSAP. Since both ^{63}Ni and ^{79}Se use a single digestion batch that is equally split prior to the separation step, the maximum trace/carrier recovery is 50%.

Batch 24148: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21112: The preparation blanks demonstrated a positive result below the quantitation limit, as did the sample. All results had very large counting uncertainties and were below the target detection limit. Because of these factors, reanalysis was not required. The associated positive results have been flagged with a “B”.

Batch 22827: This duplicate for this batch was reanalyzed in batch 24148 along with the other sample that had a positive result for ^{63}Ni. All sample results were below the MDA in the reanalysis.

3.3.7 Iodine-129

Analysis for ^{129}I by low energy GEA was performed on an iodine-specific fusion digest of all grab samples, liner composite samples, and the equipment blank. The required and target detection limits in the SAP were met. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.3.8 Americium-241, Curium-243/244, and Curium-242

Analysis for ^{241}Am, $^{243/244}$Cm, and ^{242}Cm by alpha energy analysis (AEA) was performed on the grab samples, liner composite samples, and the equipment blank. For this analysis, there were no notable issues with any batches and all QC requirements in the FSAP, SAP, and QAPP were met. The required and target detection limits in the SAP were met. The SAP and FSAP requested ^{243}Cm and ^{244}Cm be reported separately. Since it is not possible to resolve these individual isotopes when using AEA, these isotopes have been reported as $^{243/244}$Cm.

3.3.9 Plutonium-238 and Plutonium-239/240

Plutonium isotopic (^{238}Pu and $^{239/240}$Pu) analysis by AEA was performed on the grab samples, liner composite samples, and the equipment blank. For this analysis, there were no notable issues with any batches and all QC requirements in the FSAP, SAP, and QAPP were met. The required and target detection limits in the SAP were met.

3.4 ORGANIC ANALYSES

3.4.1 Volatile Organic Analysis

The VOA by GC/MS was performed on field samples by purge and trap. Field sampling methods, sample containers, and preservation methods followed SW-846 5035.The soil samples were delivered in a freezer in pre-weighed VOA vials with magnetic stir bars and approximately 5 g of sample. After receipt, the VOA samples were stored in a freezer. For each sample interval, an additional high level sample preserved in methanol was also received. These were not used because none of the results for the frozen samples were above the calibration range. The exact weight of the sample and the tare weight of the VOA vials were recorded by sampling personnel and delivered with the samples. One equipment blank, six field blanks, and six trip blanks were also received and analyzed. The samples were preserved with either HCl or H_2SO_4 to a pH < 2.The holding time for all samples is 14 days. All samples met the required holding time.

The VOA met the target and required detection limits in the SAP. The SAP and FSAP requested m-xylene and p-xylene be reported separately. Since it is not possible to resolve these individual compounds when performing VOA by SW-846 8260C, these compounds have been reported as m+p xylene. The SAP and FSAP request that methanol be reported with this analysis; however, this compound is too polar to be purged and cannot be reported (see Attachment 7). Isobutanol, another poor purger, was reported as a semivolatile organic compound.

All of the field blanks, trip blanks, and the equipment blank contained chloroform above the quantification level. Since chloroform is a common chlorination byproduct, the laboratory believes the source of chloroform was the water used by sampling personnel to make the various blanks.

The LCS, MS, and matrix spike duplicate (MSD) recoveries were compared against the laboratory's statistical process control (SPC) limits, as required by SW-846. The use of SPC limits is allowed in the FSAP, SAP, and QAPP.

Batches 20645 and 21741: There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20614: The method blank results for acetone and methylene chloride were above the MDL but below the quantitation limit. The sample results were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required.

Batch 20618: The method blank result for 2-hexanone was above the MDL and below the quantitation limit. The sample result is similar to the blank and has been flagged with "B". Since all results were below the quantitation limit and 2-hexanone is not a primary analyte, reanalysis was not required.

Batch 20731: The method blank results for toluene and 2-butanone were above the MDL but below the quantitation limit. Since the sample results were non-detect for these compounds, reanalysis was not required.

Batch 20910: The method blank result for toluene was above the MDL but below the quantitation limit. Since the sample result was non-detect for this compound, reanalysis was not required. The MS and MSD experienced low recoveries for the internal standards. Since the sample internal standard (IS) recoveries were within the required range and the MS/MSD IS recoveries were sufficient to produce MS and MSD results that met acceptance criteria, the data for this batch was considered acceptable and reported.

Batch 20912: The method blank result for toluene was above the MDL but below the quantitation limit. The sample result is similar to the blank and has been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required.

Batch 21742: The MSD experienced low recoveries for the internal standards. Since the sample and MS IS recoveries were within the required range and the MSD IS recoveries were sufficient to produce MSD results that met acceptance criteria (RPD), the data for this batch was considered acceptable and reported.

Batch 21745: The method blank results for acetone, toluene, and styrene were above the MDL but below the quantitation limit. The sample results for toluene and styrene were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit and styrene is not a primary analyte, reanalysis was not required. The internal standards were recovered low (approximately -45%) in the sample but were sufficient to produce surrogate results within acceptance criteria. Since this was the second analysis of the sample and the holding time was expiring, the results have been reported. The original analysis had similar IS recoveries. The cause for low IS recoveries in the vadose sample has typically been associated with a leaking vial cap. However, the TIC analysis indicated the presence of hydrocarbons, which could also affect IS recoveries.

Batch 23601: The method blank results for 2-butanone and toluene were above the MDL but below the quantitation limit. The sample results for 2-butanone and toluene were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required. The MS recoveries for 1-butanol, hexone, acetone, and 2-butanone were all above their upper acceptance limit. This would indicate a high bias in the sample results for these compounds. Since 2-butanone was detected below the quantitation limit and other results were below the MDL, this data was acceptable. These results have been flagged with a "b". The results were from the second analysis of the sample. A third analysis was performed past the holding time but not reported. All results were similar. The MSD failed twice with extremely low IS recoveries. Since only one MS/MSD pair is required for each core hole (see Attachment 7) and there are three MS/MSD pairs for core C7672, project quality control requirements have been met.

3.4.2 Semivolatile Organic Analysis

The semivolatile organic analysis (SVOA) by GC/MS was performed on methylene chloride extractions of all grab samples and liner composite samples. All holding times were met.

The SVOA analysis met the required and target detection limits with two exceptions:

- The adjusted MDLs for cyclohexanone were above the 0.5-mg/kg target detection limit for most samples. This compound obtained detection limits between 0.5 mg/kg and 0.6 mg/kg.
- The adjusted MDLs for di-n-butyl-phthalate were above the target detection limit of 0.33 mg/kg. The analysis achieved a detection limit of between 0.5 mg/kg and 0.6 mg/kg for this compound.

LCS, MS, and MSD recoveries were compared against the laboratory's SPC limits, as required by SW-846. The use of SPC limits is permitted in the FSAP, SAP, and QAPP.

The SAP and FSAP requested m-cresol and p-cresol be reported separately. Since it is not possible to resolve these individual compounds when performing SVOA by SW-846 8270C, these compounds have been reported as m+p cresol.

Batch 20887: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20883: Butylbenzylphthalate was detected in the method blank and samples at slightly above the MDL and below the quantitation limit. Therefore, the blank is acceptable and reanalysis was unnecessary. Sample results have been flagged with a "B".

Batch 20921: Butylbenzylphthalate, bis(2-ethylhexyl) phthalate, and di-n-octylphthalate were detected in the method blank above the MDL and below the quantitation limit. Therefore, the blank is acceptable and reanalysis was unnecessary. Only Butylbenzylphthalate was detected in the samples, and these results have been flagged with a "B".

3.4.3 Tentatively Identified Compounds

Unassigned peaks or TICs were treated as follows. Standards were obtained and analyzed for each secondary analyte identified in the SAP. This data was accumulated in the Hanford library. Following analysis, the largest TICs with instrument responses greater than 10% of the response of the nearest internal standard were evaluated and compared to the Hanford library. The estimated concentration of these TICs was calculated using measured response factors from the Hanford library compound list.

After comparison to the Hanford library, remaining unknowns were compared to the National Institute of Standards and Technology's NIST 02, *HP Mass Spectral Libraries*. The estimated concentration of compounds identified in the NIST library was calculated based on an arbitrary response factor of 1.0. If the compounds were not identified as a result of this comparison, they were reported as "unknown." Summaries of the SVOA and VOA TICs from the field samples and method blanks are provided in Attachment 5. TICs that were found in the field samples and were present in the associated batch method blank have been flagged with "B".

4.0 PROCEDURES

Table 2 lists the analytical procedures used for analysis of the Area C samples.

Table 2. Analytical Procedures

Analysis	Preparation Method	Analysis Procedure
Inorganic Analyses		
Cyanide	LA-695-103, Rev. J-0 (SW-846 9010C)	LA-695-103, Rev. J-0 (SW-846 9014)
Sulfide	LA-361-101, Rev. D-0 (SW-846 9030B)	LA-361-101, Rev. D-0 (SW-846 9215)
pH (solid)	LA-212-105, Rev. G-0 (SW-846 9045D)	LA-212-105, Rev. G-0 (SW-846 9045D)
pH (liquid)		LA-212-106, Rev. H-0-A (SW-846 9040C)
Mercury – Cold Vapor Atomic Absorption	LA-325-110, Rev. A-0 (SW-846 7470A, 7471A)	LA-325-110, Rev. A-0 (SW-846 7470A, 7471A)
Ammonia – IC	LA-544-112, Rev. E-0	LA-533-101, Rev. Q-0

Analysis	Preparation Method	Analysis Procedure
Anions & Organic Acids – IC	LA-504-101, Rev. M-0	LA-533-115, Rev. J-0
Metals – ICP /AES	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-505-161, Rev. J-0-A (SW-846 6010C)
^{99}Tc, ^{126}Sn – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1
^{99}Tc – ICP/MS	08-ATL-078 Vadose Water Digest	LA-506-102, Rev. F-1
Metals – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1 (SW-846 6020A)
Actinides – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1
Radiochemical Analyses		
GEA	Direct	LA-548-121, Rev. I-0
^{90}Sr – Separation/Beta counting (Solid)	LA-544-101, Rev. F-0	LA-220-101, Rev. J-0, I-0
^{3}H – LSC	LA-504-101, Rev. M-0	LA-218-111, Rev. G-0
^{14}C – LSC	LA-504-101, Rev. M-0	LA-348-104, Rev. H-0, I-0
^{79}Se – Separation/LSC	LA-544-101, Rev. F-0	LA-365-132, Rev. I-0
^{63}Ni – Separation/LSC	LA-544-101, Rev. F-0	LA-285-102, Rev. E-0
^{129}I – Separation/GEA	LA-378-105, Rev. C-0, D-0	LA-378-105, Rev. C-0, D-0
^{241}Am, $^{243/244,\ 242}$Cm – Separation/AEA	LA-544-101, Rev. F-0	LA-953-104, Rev. H-1
$^{239/240,\ 238}$Pu – Separation/AEA	LA-544-101, Rev. F-0	LA-953-104, Rev. H-1
Organic Analyses		
VOC – GC/MS	Direct	LA-523-118, Rev. G-O-A (SW-846 8260B)
SVOC – GC/MS	LA-523-138, Rev. G-0 (SW-846 3540C) LA-523-115, Rev. H (SW-846 3520C)	LA-523-135, Rev. D-0 (SW-846 8270C)

5.0 REFERENCES

ATL-MP-1011, 2010, *ATL Quality Assurance Project Plan for 222-S Laboratory*, Rev. 9, Advanced Technologies and Laboratories International, Inc., Richland, Washington.

NIST 02, 2002, *HP Mass Spectral Libraries*, July 2002 Release, Hewlett-Packard Company, Palo Alto, California.

SW-846, 1986, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods,* Third Edition, as amended, U.S. Environmental Protection Agency, Washington, D.C.

RPP-PLAN-40564, 2009, *Field Sampling and Analysis Plan for Sites P and L at Waste Management Area C,* Rev. 2, Washington River Protection Solutions, Inc.

RPP-PLAN-38777, 2009, *Sampling and Analysis Plan for Phase 2 Characterization of Vadose Zone Soil in Waste Management Area C*, Rev. 1, Washington River Protection Solutions, Inc.

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	V10-003-245	PAGE 1 OF 2

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8P	DATA TURNAROUND
Ekstrom / Campbell	TEMPLETON, AM	373-5589	BERLIN, PC	AIR QUALITY ☐	75 Days / 75 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
C7672 Surface Dup	WMA C Sampling for CMS		V10-003		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**ACTUAL SAMPLE DEPTH**	**COA**	**METHOD OF SHIPMENT**	
TFVS-09-003	TFVZ-09-000001	Surface Dup	N/A	Govt. Vehicle	
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
222-S Lab Operations			N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C
HOLDING TIME	14/40 Days
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B26JK3	SOIL	7/7/10	1030	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RR Ekstrom RR Ekstrom	7/7/10 1215	RH Steele RH STEELE	7-7-10 1215
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

O ✓

GRP# 20100520
Sam# S10V001242

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V10-003-245	PAGE 2 OF 2
COLLECTOR Ekstrom / Campbell	**COMPANY CONTACT** TEMPLETON, AM	**TELEPHONE NO.** 373-5589	**PROJECT COORDINATOR** BERLIN, PC	**PRICE CODE** 8P	**DATA TURNAROUND**
SAMPLING LOCATION C7672 Surface Dup	**PROJECT DESIGNATION** WMA C Sampling for CMS		**SAF NO.** V10-003	**AIR QUALITY** ☐	**75 Days / 75 Days**
ICE CHEST NO. TFVS-09-003	**FIELD LOGBOOK NO.** TFVZ-09-00000	**ACTUAL SAMPLE DEPTH** Surface Dup	**COA** N/A	**METHOD OF SHIPMENT** Govt. Vehicle	
SHIPPED TO 222-S Lab Operations	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A		

SPECIAL INSTRUCTIONS

** After VOA bottles for the direct pushes are filled, the sampler will cap remaining liners for shipment to 222-S. Where capping is not possible, the sample shall be put into 500 mL or 250 mL glass bottles with Teflon-lined lids.

(1) Semi-VOA - 8270 Complete (TF); TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D; PCBs - 8082; Pesticides - 8081 (TF); 1668 PCB CONGENER (TCL); ICP Metals - 6010 (SW-846) (TF); Mercury - 7471 - (CV) (TF); 300.7_AMMONIUM (TF); IC Anions - 9056; Sulfide - 9215; Total Cyanide - 9014 (TF); pH (Soil) - 9045; Americium-241 (TF); C-14; CURIUM; GAMMA ENERGY ANALYSIS (TF); H3 - TRITIUM; I129_SEP_GEA (TF); Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Nickel-63 (TF); RADISO_ICPMS (TF); Selenium-79 (TF); Strontium-90; Conductivity - 9050_WE; Percent Solids (TF); Percent Water (TF);

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V10-003-182	PAGE 1 OF 2
COLLECTOR Campbell / Harris	COMPANY CONTACT TEMPLETON, AM	TELEPHONE NO. 373-5589	PROJECT COORDINATOR BERLIN, PC	PRICE CODE 8P AIR QUALITY ☐	DATA TURNAROUND 75 Days / 75 Days
SAMPLING LOCATION C7672 I002	PROJECT DESIGNATION WMA C Sampling for CMS		SAF NO. V10-003		
ICE CHEST NO. TFV2-09-003	FIELD LOGBOOK NO. TFV2-09-000001	ACTUAL SAMPLE DEPTH 10-12	COA n/A	METHOD OF SHIPMENT Govt. Vehicle	
SHIPPED TO 222-S Lab Operations	OFFSITE PROPERTY NO. n/A		BILL OF LADING/AIR BILL NO. n/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C
HOLDING TIME	14/40 Days
TYPE OF CONTAINER	Gs jar/Liners
NO. OF CONTAINER(S)	3
VOLUME	160g
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B26C70	SOIL	7-8-10	1055	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM Campbell Campbell	DATE/TIME 7-8-10 1220	RECEIVED BY/STORED IN -0°C Rehtas	DATE/TIME 7-8-10 1220
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

GRP# 2010005 20
SAM# 510V00 1299
1300
1301

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V10-003-182	PAGE 2 OF 2
COLLECTOR Campbell / Harris	COMPANY CONTACT TEMPLETON, AM	TELEPHONE NO. 373-5589	PROJECT COORDINATOR BERLIN, PC	PRICE CODE 8P AIR QUALITY ☐	DATA TURNAROUND 75 Days / 75 Days
SAMPLING LOCATION C7672 I002	PROJECT DESIGNATION WMA C Sampling for CMS		SAF NO. V10-003		
ICE CHEST NO. TFV2-09-003	FIELD LOGBOOK NO. TFV2-09-000001	ACTUAL SAMPLE DEPTH 10-12	COA n/A	METHOD OF SHIPMENT Govt. Vehicle	
SHIPPED TO 222-S Lab Operations	OFFSITE PROPERTY NO. n/A		BILL OF LADING/AIR BILL NO. n/A		

SPECIAL INSTRUCTIONS

** After VOA bottles for the direct pushes are filled, the sampler will cap remaining liners for shipment to 222-S. Where capping is not possible, the sample shall be put into 500 mL or 250 mL glass bottles with Teflon-lined lids.
(1) Semi-VOA - 8270 Complete (TF); TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D; PCBs - 8082; Pesticides - 8081 (TF); 1668 PCB CONGENER (TCL); ICP Metals - 6010 (SW-846) (TF); Mercury - 7471 - (CV) (TF); 300.7_AMMONIUM (TF); IC Anions - 9056; Sulfide - 9215; Total Cyanide - 9014 (TF); pH (Soil) - 9045; Americium-241 (TF); C-14; CURIUM; GAMMA ENERGY ANALYSIS (TF); H3 - TRITIUM; I129_SEP_GEA (TF); Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Nickel-63 (TF); RADISO_ICPMS (TF); Selenium-79 (TF); Strontium-90; Conductivity - 9050_WE; Percent Solids (TF); Percent Water (TF);

Appendix 5

Data Validation Supporting Documentation

Appendix A - Chemical Data Validation Checklist

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: WMA C			DATA PACKAGE: VSR11-045		
VALIDATOR: Carl Schloesslin		LAB: 222-S Lab		DATE: 5-23-2011	
			SDG: 20100520		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270 X		SW-846 8270 (TCLP)
SAMPLES/MATRIX Soil samples B26JK3 and B26C70					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present?..... Yes (No) N/A

Comments: None

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A

Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

MB Hit: butylbenzylphthalate 116 ug/kg

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A

Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A

Surrogates traceable? (Levels D, E) ..... Yes No N/A

Surrogates expired? (Levels D, E) ..... Yes No N/A

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments:

7 spiked LCS and MS/MSD analytes, 18 non-represented analytes

1,2,4-trichlorobenzene	LCS %R = 67%, MSD %R = 68%
2-chlorophenol	LCS %R = 62%, MS %R = 69%
n-nitroso-di-n-dipropylamine	LCS %R = 61%, MS %R = 67%, MSD %R = 69%

5. PRECISION (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD RPD values acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: None

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A

Internal standard areas acceptable? ..... Yes No N/A

Internal standard retention times acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments: None

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A

Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A

Results reported for all requested analyses?..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E)..... Yes No N/A

Laboratory properly identified and coded all TIC? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL?..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: None

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed? ..... Yes No N/A

GPC check performed?..... Yes No N/A

GPC check recoveries acceptable?..... Yes No N/A

GPC calibration performed?..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

Check/calibration materials traceable? ..... Yes No N/A

Check/calibration materials Expired?..... Yes No N/A

Analytical batch QC given similar cleanup?..... Yes No N/A

Transcription/Calculation Errors?..... Yes No N/A

Comments:

Comments (attach additional sheets as necessary): None

Appendix 6

Additional Documentation Requested By Client

Holding Time Report: SVOA by GC/MS

Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Prep Date	Analysis Date	Missed Holding Time
20100520	S10V001231	SOLID	SW-846 8270D	SW-8463540C	07/07/10 10:30	07/07/10 12:15	07/14/10 16:05	07/20/10 14:32	N
20100520	S10V001248	SOLID	SW-846 8270D	SW-8463540C	07/07/10 10:30	07/07/10 12:15	07/14/10 16:05	07/20/10 15:22	N
20100520	S10V001288	SOLID	SW-846 8270D	SW-8463540C	07/08/10 09:40	07/08/10 12:20	07/14/10 16:05	07/20/10 16:10	N
20100520	S10V001308	SOLID	SW-846 8270D	SW-8463540C	07/08/10 10:55	07/08/10 12:20	07/14/10 16:05	07/20/10 12:06	N
20100520	S10V001348	SOLID	SW-846 8270D	SW-8463540C	07/13/10 09:15	07/13/10 13:00	07/21/10 03:35	07/27/10 20:01	N
20100520	S10V001368	SOLID	SW-846 8270D	SW-8463540C	07/13/10 11:30	07/13/10 13:00	07/21/10 03:35	07/27/10 20:50	N
20100520	S10V001388	SOLID	SW-846 8270D	SW-8463540C	07/14/10 10:30	07/14/10 13:30	07/21/10 03:35	07/27/10 17:37	N
20100520	S10V001408	SOLID	SW-846 8270D	SW-8463540C	07/15/10 09:25	07/15/10 10:30	07/21/10 03:35	07/27/10 21:38	N
20100520	S10V001428	SOLID	SW-846 8270D	SW-8463540C	07/16/10 10:45	07/16/10 11:40	07/21/10 03:35	07/27/10 22:26	N
20100529	S10V001437	LIQUID	SW-846 8270D	SW-846 3520C	07/12/10 10:20	07/12/10 13:45	07/19/10 10:59	07/21/10 17:30	N

LABCORE Completed Batch Report for Batch# 00020883

Analyst: Ojanen, Carol

Book#:

Instrument: GCMSD5 (TUVOK) for SVOA

Method: SVOA 222S #2, LA-523-135 Rev/Mod D-0

Specification: C Farm WMC 2010-2

Prep Batch: 00020602

Batch Comment:

C-Farm WMC 2010-2, SVOA, SOL, prep batch# 20602

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	BLNK	S1007140005		0 0	O		1,2,4-Trichlorobenzene	SOLID		<7.7400E+01			77.4	ug/Kg			U
1	BLNK	S1007140005		0 0	O		1,2-Dichlorobenzene	SOLID		<1.0070E+02			100.7	ug/Kg			U
1	BLNK	S1007140005		0 0	O		2,4-Dinitrotoluene	SOLID		<3.8100E+01			38.1	ug/Kg			U
1	BLNK	S1007140005		0 0	O		2,4,5-Trichlorophenol	SOLID		<4.4000E+01			44	ug/Kg			U
1	BLNK	S1007140005		0 0	O		2,4,6-Trichlorophenol	SOLID		<4.9500E+01			49.5	ug/Kg			U
1	BLNK	S1007140005		0 0	O		2-Methylphenol	SOLID		<5.7500E+01			57.5	ug/Kg			U
1	BLNK	S1007140005		0 0	O		2-Nitrophenol	SOLID		<5.3700E+01			53.7	ug/Kg			U
1	BLNK	S1007140005		0 0	O		3 & 4 Methylphenol Total	SOLID		<5.1400E+01			51.4	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Acenaphthene	SOLID		<1.7600E+01			17.6	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Benzo(a)anthracene	SOLID		<3.7800E+01			37.8	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Benzo(b)fluoranthene	SOLID		<4.8900E+01			48.9	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Benzo(a)pyrene	SOLID		<4.1200E+01			41.2	ug/Kg			U
1	BLNK	S1007140005		0 0	O		bis(2-Ethylhexyl)phthalate	SOLID		<5.9020E+02			590.2	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Benzo(k)fluoranthene	SOLID		<3.9100E+01			39.1	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Butylbenzylphthalate	SOLID		1.1604E+02			50	ug/Kg			J
1	BLNK	S1007140005		0 0	O		4-Chloro-3-methylphenol	SOLID		<4.3200E+01			43.2	ug/Kg			U
1	BLNK	S1007140005		0 0	O		2-Chlorophenol	SOLID		<6.6500E+01			66.5	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Chrysene	SOLID		<8.1400E+01			81.4	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Dibenz(a,h)anthracene	SOLID		<5.1100E+01			51.1	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Di-n-butylphthalate	SOLID		<5.6230E+02			562.3	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Di-n-octylphthalate	SOLID		<4.7700E+01			47.7	ug/Kg			U
1	BLNK	S1007140005		0 0	O		N-Nitrosodipropylamine	SOLID		<5.8100E+01			58.1	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Fluoranthene	SOLID		<3.5400E+01			35.4	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Hexachlorobutadiene	SOLID		<6.9700E+01			69.7	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Hexachloroethane	SOLID		<1.1180E+02			111.8	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Indeno(1,2,3-cd)pyrene	SOLID		<5.1000E+01			51	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Naphthalene	SOLID		<6.2600E+01			62.6	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Nitrobenzene	SOLID		<6.4600E+01			64.6	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Pyrene	SOLID		<6.2900E+01			62.9	ug/Kg			U

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020883

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
1	BLNK	S1007140005		0 0	O		Pyridine	SOLID		<6.5000E+01			65	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Tri-n-butylphosphate	SOLID		<1.0780E+02			107.8	ug/Kg			U
1	BLNK	S1007140005		0 0	O		2,6 bis-4Methylphenol	SOLID		<2.3560E+02			235.6	ug/Kg			U
1	BLNK	S1007140005		0 0	O		2-Ethoxyethanol	SOLID		<1.8240E+02			182.4	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Methylphenols, Total	SOLID		<1.0660E+02			106.6	ug/Kg			U
1	BLNK	S1007140005		0 0	O		Cyclohexanone	SOLID		<5.5810E+02			558.1	ug/Kg			U
1	BLNK	S1007140005		0 0	O		N-Nitrosomorpholine	SOLID		<1.9130E+02			191.3	ug/Kg			U
1	BLNK	S1007140005		0 0	O		1,2-Benzenedicarboxyli	SOLID		240.83226				ug/Kg			JNT
1	BLNK	S1007140005		0 0	O		Unknown-1	SOLID		302.1505				ug/Kg			JT
1	BLNK	S1007140005		0 0	O		Unknown-2	SOLID		233.87349				ug/Kg			JT
Sample Sequence 2																	
2	LCS	S1007140006		0 0	O		1,2,4-Trichlorobenzene	SOLID	2000	1.3321E+03			77.4	ug/Kg	66.605	% Recovery	
2	LCS	S1007140006		0 0	O		2,4-Dinitrotoluene	SOLID	2000	1.6251E+03			38.1	ug/Kg	81.255	% Recovery	
2	LCS	S1007140006		0 0	O		Acenaphthene	SOLID	2000	1.4323E+03			17.6	ug/Kg	71.615	% Recovery	
2	LCS	S1007140006		0 0	O		4-Chloro-3-methylphenol	SOLID	4000	2.9256E+03			43.2	ug/Kg	73.14	% Recovery	
2	LCS	S1007140006		0 0	O		2-Chlorophenol	SOLID	4000	2.4838E+03			66.5	ug/Kg	62.095	% Recovery	
2	LCS	S1007140006		0 0	O		N-Nitrosodipropylamine	SOLID	2000	1.2274E+03			58.1	ug/Kg	61.37	% Recovery	
2	LCS	S1007140006		0 0	O		Pyrene	SOLID	2000	1.7623E+03			62.9	ug/Kg	88.115	% Recovery	
Sample Sequence 3																	
3	SAMPLE	S10V001231		0 0	O		1,2,4-Trichlorobenzene	SOLID	N/A	<7.7069E+01			77.069	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		1,2-Dichlorobenzene	SOLID	N/A	<1.0027E+02			100.27	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		2,4-Dinitrotoluene	SOLID	N/A	<3.7937E+01			37.937	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		2,4,5-Trichlorophenol	SOLID	N/A	<4.3812E+01			43.812	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		2,4,6-Trichlorophenol	SOLID	N/A	<4.9288E+01			49.288	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		2-Methylphenol	SOLID	N/A	<5.7254E+01			57.254	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		2-Nitrophenol	SOLID	N/A	<5.3470E+01			53.47	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		3 & 4 Methylphenol Total	SOLID	N/A	<5.1180E+01			51.18	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Acenaphthene	SOLID	N/A	<1.7525E+01			17.525	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Benzo(a)anthracene	SOLID	N/A	<3.7638E+01			37.638	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Benzo(b)fluoranthene	SOLID	N/A	<4.8691E+01			48.691	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Benzo(a)pyrene	SOLID	N/A	<4.1024E+01			41.024	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		bis(2-Ethylhexyl)phthalate	SOLID	N/A	<5.8767E+02			587.67	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Benzo(k)fluoranthene	SOLID	N/A	<3.8933E+01			38.933	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Butylbenzylphthalate	SOLID	N/A	1.2429E+02			49.786	ug/Kg			BJ
3	SAMPLE	S10V001231		0 0	O		4-Chloro-3-methylphenol	SOLID	N/A	<4.3015E+01			43.015	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		2-Chlorophenol	SOLID	N/A	<6.6215E+01			66.215	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Chrysene	SOLID	N/A	<8.1051E+01			81.051	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Dibenz(a,h)anthracene	SOLID	N/A	<5.0881E+01			50.881	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Di-n-butylphthalate	SOLID	N/A	<5.5989E+02			559.89	ug/Kg			U

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020883

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
3	SAMPLE	S10V001231		0 0	O		Di-n-octylphthalate	SOLID	N/A	<4.7496E+01			47.496	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		N-Nitrosodipropylamine	SOLID	N/A	<5.7851E+01			57.851	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Fluoranthene	SOLID	N/A	<3.5248E+01			35.248	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Hexachlorobutadiene	SOLID	N/A	<6.9402E+01			69.402	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Hexachloroethane	SOLID	N/A	<1.1132E+02			111.32	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Indeno(1,2,3-cd)pyrene	SOLID	N/A	<5.0782E+01			50.782	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Naphthalene	SOLID	N/A	<6.2332E+01			62.332	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Nitrobenzene	SOLID	N/A	<6.4323E+01			64.323	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Pyrene	SOLID	N/A	<6.2631E+01			62.631	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Pyridine	SOLID	N/A	<6.4722E+01			64.722	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Tri-n-butylphosphate	SOLID	N/A	<1.0734E+02			107.34	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		2,6 bis-4Methylphenol	SOLID	N/A	<2.3459E+02			234.59	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		2-Ethoxyethanol	SOLID	N/A	<1.8162E+02			181.62	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Methylphenols, Total	SOLID	N/A	<1.0614E+02			106.14	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		Cyclohexanone	SOLID	N/A	<5.5571E+02			555.71	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		N-Nitrosomorpholine	SOLID	N/A	<1.9048E+02			190.48	ug/Kg			U
3	SAMPLE	S10V001231		0 0	O		2-Fluorobiphenyl	SOLID	1991.436	1.4194E+03				ug/Kg	71.275	% Recovery	
3	SAMPLE	S10V001231		0 0	O		2-Fluorophenol	SOLID	3982.873	2.5559E+03				ug/Kg	64.172	% Recovery	
3	SAMPLE	S10V001231		0 0	O		Nitrobenzene-d5	SOLID	1991.436	1.3264E+03				ug/Kg	66.605	% Recovery	
3	SAMPLE	S10V001231		0 0	O		2,4,6-Tribromophenol	SOLID	3982.873	3.5986E+03				ug/Kg	90.352	% Recovery	
3	SAMPLE	S10V001231		0 0	O		Terphenyl-d14	SOLID	1991.436	1.8791E+03				ug/Kg	94.359	% Recovery	
3	SAMPLE	S10V001231		0 0	O		Phenol-d6	SOLID	3982.873	2.8045E+03				ug/Kg	70.4	% Recovery	
3	SAMPLE	S10V001231		0 0	O		1,2-Benzenedicarboxyli	SOLID		206.81907				ug/Kg			BJNT
3	SAMPLE	S10V001231		0 0	O		Unknown-1	SOLID		267.76069				ug/Kg			JT
3	SAMPLE	S10V001231		0 0	O		Unknown-2	SOLID		294.85736				ug/Kg			JT
Sample Sequence 4																	
4	SAMPLE	S10V001248		0 0	O		1,2,4-Trichlorobenzene	SOLID	N/A	<7.7095E+01			77.095	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		1,2-Dichlorobenzene	SOLID	N/A	<1.0030E+02			100.3	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		2,4-Dinitrotoluene	SOLID	N/A	<3.7950E+01			37.95	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		2,4,5-Trichlorophenol	SOLID	N/A	<4.3827E+01			43.827	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		2,4,6-Trichlorophenol	SOLID	N/A	<4.9305E+01			49.305	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		2-Methylphenol	SOLID	N/A	<5.7274E+01			57.274	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		2-Nitrophenol	SOLID	N/A	<5.3489E+01			53.489	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		3 & 4 Methylphenol Total	SOLID	N/A	<5.1198E+01			51.198	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Acenaphthene	SOLID	N/A	<1.7531E+01			17.531	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Benzo(a)anthracene	SOLID	N/A	<3.7651E+01			37.651	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Benzo(b)fluoranthene	SOLID	N/A	<4.8708E+01			48.708	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Benzo(a)pyrene	SOLID	N/A	<4.1038E+01			41.038	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		bis(2-Ethylhexyl)phthalate	SOLID	N/A	<5.8788E+02			587.88	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Benzo(k)fluoranthene	SOLID	N/A	<3.8946E+01			38.946	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Butylbenzylphthalate	SOLID	N/A	1.2622E+02			49.803	ug/Kg			BJ

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020883

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
4	SAMPLE	S10V001248		0 0	O		4-Chloro-3-methylphenol	SOLID	N/A	<4.3030E+01			43.03	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		2-Chlorophenol	SOLID	N/A	<6.6238E+01			66.238	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Chrysene	SOLID	N/A	<8.1080E+01			81.08	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Dibenz(a,h)anthracene	SOLID	N/A	<5.0899E+01			50.899	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Di-n-butylphthalate	SOLID	N/A	<5.6009E+02			560.09	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Di-n-octylphthalate	SOLID	N/A	<4.7512E+01			47.512	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		N-Nitrosodipropylamine	SOLID	N/A	<5.7871E+01			57.871	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Fluoranthene	SOLID	N/A	<3.5261E+01			35.261	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Hexachlorobutadiene	SOLID	N/A	<6.9426E+01			69.426	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Hexachloroethane	SOLID	N/A	<1.1136E+02			111.36	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Indeno(1,2,3-cd)pyrene	SOLID	N/A	<5.0799E+01			50.799	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Naphthalene	SOLID	N/A	<6.2354E+01			62.354	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Nitrobenzene	SOLID	N/A	<6.4346E+01			64.346	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Pyrene	SOLID	N/A	<6.2653E+01			62.653	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Pyridine	SOLID	N/A	<6.4744E+01			64.744	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Tri-n-butylphosphate	SOLID	N/A	<1.0738E+02			107.38	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		2,6 bis-4Methylphenol	SOLID	N/A	<2.3467E+02			234.67	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		2-Ethoxyethanol	SOLID	N/A	<1.8168E+02			181.68	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Methylphenols, Total	SOLID	N/A	<1.0618E+02			106.18	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		Cyclohexanone	SOLID	N/A	<5.5590E+02			555.9	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		N-Nitrosomorpholine	SOLID	N/A	<1.9055E+02			190.55	ug/Kg			U
4	SAMPLE	S10V001248		0 0	O		2-Fluorobiphenyl	SOLID	1992.131	1.5878E+03				ug/Kg	79.704	% Recovery	
4	SAMPLE	S10V001248		0 0	O		2-Fluorophenol	SOLID	3984.262	2.8206E+03				ug/Kg	70.794	% Recovery	
4	SAMPLE	S10V001248		0 0	O		Nitrobenzene-d5	SOLID	1992.131	1.4537E+03				ug/Kg	72.972	% Recovery	
4	SAMPLE	S10V001248		0 0	O		2,4,6-Tribromophenol	SOLID	3984.262	3.7863E+03				ug/Kg	95.031	% Recovery	
4	SAMPLE	S10V001248		0 0	O		Terphenyl-d14	SOLID	1992.131	1.9278E+03				ug/Kg	96.771	% Recovery	
4	SAMPLE	S10V001248		0 0	O		Phenol-d6	SOLID	3984.262	3.1525E+03				ug/Kg	79.1	% Recovery	
4	SAMPLE	S10V001248		0 0	O		1,2-Benzenedicarboxyli	SOLID		410.58672				ug/Kg			BJNT
4	SAMPLE	S10V001248		0 0	O		Unknown-1	SOLID		418.71862				ug/Kg			BJT
4	SAMPLE	S10V001248		0 0	O		Unknown-2	SOLID		285.54529				ug/Kg			JT
4	SAMPLE	S10V001248		0 0	O		Unknown-3	SOLID		366.62038				ug/Kg			JT
Sample Sequence 5																	
5	SAMPLE	S10V001308		0 0	O		1,2,4-Trichlorobenzene	SOLID	N/A	<7.6581E+01			76.581	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		1,2-Dichlorobenzene	SOLID	N/A	<9.9634E+01			99.634	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		2,4-Dinitrotoluene	SOLID	N/A	<3.7697E+01			37.697	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		2,4,5-Trichlorophenol	SOLID	N/A	<4.3534E+01			43.534	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		2,4,6-Trichlorophenol	SOLID	N/A	<4.8976E+01			48.976	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		2-Methylphenol	SOLID	N/A	<5.6891E+01			56.891	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		2-Nitrophenol	SOLID	N/A	<5.3131E+01			53.131	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		3 & 4 Methylphenol Total	SOLID	N/A	<5.0856E+01			50.856	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Acenaphthene	SOLID	N/A	<1.7414E+01			17.414	ug/Kg			U

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LABCORE Completed Batch Report for Batch# 00020883

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
5	SAMPLE	S10V001308		0 0	O		Benzo(a)anthracene	SOLID	N/A	<3.7400E+01			37.4	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Benzo(b)fluoranthene	SOLID	N/A	<4.8382E+01			48.382	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Benzo(a)pyrene	SOLID	N/A	<4.0764E+01			40.764	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		bis(2-Ethylhexyl)phthalate	SOLID	N/A	<5.8395E+02			583.95	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Benzo(k)fluoranthene	SOLID	N/A	<3.8686E+01			38.686	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Butylbenzylphthalate	SOLID	N/A	1.1847E+02			49.471	ug/Kg			BJ
5	SAMPLE	S10V001308		0 0	O		4-Chloro-3-methylphenol	SOLID	N/A	<4.2743E+01			42.743	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		2-Chlorophenol	SOLID	N/A	<6.5796E+01			65.796	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Chrysene	SOLID	N/A	<8.0538E+01			80.538	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Dibenz(a,h)anthracene	SOLID	N/A	<5.0559E+01			50.559	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Di-n-butylphthalate	SOLID	N/A	<5.5635E+02			556.35	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Di-n-octylphthalate	SOLID	N/A	<4.7195E+01			47.195	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		N-Nitrosodipropylamine	SOLID	N/A	<5.7485E+01			57.485	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Fluoranthene	SOLID	N/A	<3.5025E+01			35.025	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Hexachlorobutadiene	SOLID	N/A	<6.8962E+01			68.962	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Hexachloroethane	SOLID	N/A	<1.1062E+02			110.62	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Indeno(1,2,3-cd)pyrene	SOLID	N/A	<5.0460E+01			50.46	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Naphthalene	SOLID	N/A	<6.1937E+01			61.937	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Nitrobenzene	SOLID	N/A	<6.3916E+01			63.916	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Pyrene	SOLID	N/A	<6.2234E+01			62.234	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Pyridine	SOLID	N/A	<6.4312E+01			64.312	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Tri-n-butylphosphate	SOLID	N/A	<1.0666E+02			106.66	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		2,6 bis-4Methylphenol	SOLID	N/A	<2.3311E+02			233.11	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		2-Ethoxyethanol	SOLID	N/A	<1.8047E+02			180.47	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Methylphenols, Total	SOLID	N/A	<1.0547E+02			105.47	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		Cyclohexanone	SOLID	N/A	<5.5219E+02			552.19	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		N-Nitrosomorpholine	SOLID	N/A	<1.8927E+02			189.27	ug/Kg			U
5	SAMPLE	S10V001308		0 0	O		2-Fluorobiphenyl	SOLID	1978.826	1.4168E+03				ug/Kg	71.598	% Recovery	
5	SAMPLE	S10V001308		0 0	O		2-Fluorophenol	SOLID	3957.653	2.7535E+03				ug/Kg	69.574	% Recovery	
5	SAMPLE	S10V001308		0 0	O		Nitrobenzene-d5	SOLID	1978.826	1.3839E+03				ug/Kg	69.935	% Recovery	
5	SAMPLE	S10V001308		0 0	O		2,4,6-Tribromophenol	SOLID	3957.653	3.5929E+03				ug/Kg	90.784	% Recovery	
5	SAMPLE	S10V001308		0 0	O		Terphenyl-d14	SOLID	1978.826	1.9375E+03				ug/Kg	97.912	% Recovery	
5	SAMPLE	S10V001308		0 0	O		Phenol-d6	SOLID	3957.653	2.9157E+03				ug/Kg	73.7	% Recovery	
5	SAMPLE	S10V001308		0 0	O		1,2-Benzenedicarboxyli	SOLID		203.30169				ug/Kg			BJNT
5	SAMPLE	S10V001308		0 0	O		Unknown-1	SOLID		250.86325				ug/Kg			BJT
5	SAMPLE	S10V001308		0 0	O		Unknown-2	SOLID		245.32913				ug/Kg			JT
Sample Sequence 6																	
6	MS	S1007140008	S10V001308	0 0	O		1,2,4-Trichlorobenzene	SOLID	1994.714	1.4044E+03			77.195	ug/Kg	70.406	% Recovery	
6	MS	S1007140008	S10V001308	0 0	O		2,4-Dinitrotoluene	SOLID	1994.714	1.7912E+03			37.999	ug/Kg	89.797	% Recovery	
6	MS	S1007140008	S10V001308	0 0	O		Acenaphthene	SOLID	1994.714	1.5142E+03			17.553	ug/Kg	75.911	% Recovery	

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LABCORE Completed Batch Report for Batch# 00020883

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
6	MS	S1007140008	S10V001308	0 0	O		4-Chloro-3-methylphenol	SOLID	3989.428	3.3345E+03			43.086	ug/Kg	83.583	% Recovery	
6	MS	S1007140008	S10V001308	0 0	O		2-Chlorophenol	SOLID	3989.428	2.7656E+03			66.324	ug/Kg	69.323	% Recovery	
6	MS	S1007140008	S10V001308	0 0	O		N-Nitrosodipropylamine	SOLID	1994.714	1.3464E+03			57.946	ug/Kg	67.498	% Recovery	
6	MS	S1007140008	S10V001308	0 0	O		Pyrene	SOLID	1994.714	1.9328E+03			62.734	ug/Kg	96.896	% Recovery	
Sample Sequence 7																	
7	MSD	S1007140009	S10V001308	0 0	O		1,2,4-Trichlorobenzene	SOLID	1985.407	1.3581E+03			76.835	ug/Kg	68.404	% Recovery	
															2.8845	% RPD	
7	MSD	S1007140009	S10V001308	0 0	O		2,4-Dinitrotoluene	SOLID	1985.407	1.7245E+03			37.822	ug/Kg	86.859	% Recovery	
															3.3262	% RPD	
7	MSD	S1007140009	S10V001308	0 0	O		Acenaphthene	SOLID	1985.407	1.4711E+03			17.472	ug/Kg	74.096	% Recovery	
															2.4199	% RPD	
7	MSD	S1007140009	S10V001308	0 0	O		4-Chloro-3-methylphenol	SOLID	3970.814	3.1762E+03			42.885	ug/Kg	79.989	% Recovery	
															4.3944	% RPD	
7	MSD	S1007140009	S10V001308	0 0	O		2-Chlorophenol	SOLID	3970.814	2.7860E+03			66.015	ug/Kg	70.162	% Recovery	
															1.2030	% RPD	
7	MSD	S1007140009	S10V001308	0 0	O		N-Nitrosodipropylamine	SOLID	1985.407	1.3611E+03			57.676	ug/Kg	68.555	% Recovery	
															1.5538	% RPD	
7	MSD	S1007140009	S10V001308	0 0	O		Pyrene	SOLID	1985.407	1.8064E+03			62.441	ug/Kg	90.984	% Recovery	
															6.2934	% RPD	
Sample Sequence 8																	
8	SAMPLE	S10V001288		0 0	O		1,2,4-Trichlorobenzene	SOLID	N/A	<7.6516E+01			76.516	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		1,2-Dichlorobenzene	SOLID	N/A	<9.9550E+01			99.55	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		2,4-Dinitrotoluene	SOLID	N/A	<3.7665E+01			37.665	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		2,4,5-Trichlorophenol	SOLID	N/A	<4.3498E+01			43.498	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		2,4,6-Trichlorophenol	SOLID	N/A	<4.8935E+01			48.935	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		2-Methylphenol	SOLID	N/A	<5.6843E+01			56.843	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		2-Nitrophenol	SOLID	N/A	<5.3087E+01			53.087	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		3 & 4 Methylphenol Total	SOLID	N/A	<5.0813E+01			50.813	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Acenaphthene	SOLID	N/A	<1.7399E+01			17.399	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Benzo(a)anthracene	SOLID	N/A	<3.7368E+01			37.368	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Benzo(b)fluoranthene	SOLID	N/A	<4.8342E+01			48.342	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Benzo(a)pyrene	SOLID	N/A	<4.0730E+01			40.73	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		bis(2-Ethylhexyl)phthalate	SOLID	N/A	<5.8346E+02			583.46	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Benzo(k)fluoranthene	SOLID	N/A	<3.8654E+01			38.654	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Butylbenzylphthalate	SOLID	N/A	1.2269E+02			49.429	ug/Kg			BJ
8	SAMPLE	S10V001288		0 0	O		4-Chloro-3-methylphenol	SOLID	N/A	<4.2707E+01			42.707	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		2-Chlorophenol	SOLID	N/A	<6.5741E+01			65.741	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Chrysene	SOLID	N/A	<8.0471E+01			80.471	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Dibenz(a,h)anthracene	SOLID	N/A	<5.0517E+01			50.517	ug/Kg			U

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LABCORE Completed Batch Report for Batch# 00020883

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
8	SAMPLE	S10V001288		0 0	O		Di-n-butylphthalate	SOLID	N/A	<5.5588E+02			555.88	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Di-n-octylphthalate	SOLID	N/A	<4.7155E+01			47.155	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		N-Nitrosodipropylamine	SOLID	N/A	<5.7437E+01			57.437	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Fluoranthene	SOLID	N/A	<3.4996E+01			34.996	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Hexachlorobutadiene	SOLID	N/A	<6.8904E+01			68.904	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Hexachloroethane	SOLID	N/A	<1.1052E+02			110.52	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Indeno(1,2,3-cd)pyrene	SOLID	N/A	<5.0418E+01			50.418	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Naphthalene	SOLID	N/A	<6.1885E+01			61.885	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Nitrobenzene	SOLID	N/A	<6.3862E+01			63.862	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Pyrene	SOLID	N/A	<6.2182E+01			62.182	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Pyridine	SOLID	N/A	<6.4258E+01			64.258	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Tri-n-butylphosphate	SOLID	N/A	<1.0657E+02			106.57	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		2,6 bis-4Methylphenol	SOLID	N/A	<2.3291E+02			232.91	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		2-Ethoxyethanol	SOLID	N/A	<1.8032E+02			180.32	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Methylphenols, Total	SOLID	N/A	<1.0538E+02			105.38	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		Cyclohexanone	SOLID	N/A	<5.5173E+02			551.73	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		N-Nitrosomorpholine	SOLID	N/A	<1.8912E+02			189.12	ug/Kg			U
8	SAMPLE	S10V001288		0 0	O		2-Fluorobiphenyl	SOLID	1977.163	1.3495E+03				ug/Kg	68.254	% Recovery	
8	SAMPLE	S10V001288		0 0	O		2-Fluorophenol	SOLID	3954.327	2.6896E+03				ug/Kg	68.017	% Recovery	
8	SAMPLE	S10V001288		0 0	O		Nitrobenzene-d5	SOLID	1977.163	1.3347E+03				ug/Kg	67.506	% Recovery	
8	SAMPLE	S10V001288		0 0	O		2,4,6-Tribromophenol	SOLID	3954.327	3.6484E+03				ug/Kg	92.263	% Recovery	
8	SAMPLE	S10V001288		0 0	O		Terphenyl-d14	SOLID	1977.163	1.8145E+03				ug/Kg	91.773	% Recovery	
8	SAMPLE	S10V001288		0 0	O		Phenol-d6	SOLID	3954.327	2.8469E+03				ug/Kg	72	% Recovery	
8	SAMPLE	S10V001288		0 0	O		1,2-Benzenedicarboxyli	SOLID		245.58354				ug/Kg			BJNT
8	SAMPLE	S10V001288		0 0	O		Unknown-1	SOLID		662.15122				ug/Kg			BJT
8	SAMPLE	S10V001288		0 0	O		Unknown-2	SOLID		582.47502				ug/Kg			BJT
8	SAMPLE	S10V001288		0 0	O		Unknown-3	SOLID		258.66282				ug/Kg			JT

Comments Section:

Data Flagger Status:
Flagging Completed

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LABCORE Completed Batch Report for Batch# 00020883

Final Page for Batch# 00020883

Reviewer Signature **Date**

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LABCORE Completed Batch Report for Batch# 00020883

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1007140005	BLNK				
2	S1007140006	LCS				
3	S10V001231	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
4	S10V001248	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
5	S10V001308	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
6	S1007140008	MS	S10V001308			
7	S1007140009	MSD	S10V001308			
8	S10V001288	SAMPLE		20100520	B26C68	C Farm WMC 2010-2

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

20883

FORM 2
SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: CFARMWMC0714

Level: (low/med) LOW

	CHG SAMPLE NO.	S1 (FBP) #	S2 (2FP) #	S3 (NBZ) #	S4 #	S5 (TBP) #	S6 (TPH) #	S7 #	S8 #	TOT OUT
01	BLANK	72	68	71	72	83	100			0
02	LCS	69	65	68	67	84	92			0
03	S10V001308	72	70	70	74	91	98			0
04	S10V001308MS	73	72	73	76	99	100			0
05	S10V001308MS	72	71	70	73	91	94			0
06	S10V001231	71	64	67	70	90	94			0
07	S10V001248	80	71	73	79	95	97			0
08	S10V001288	68	68	68	72	92	92			0
09										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

		QC LIMITS
S1 (FBP)	= 2-Fluorobiphenyl	(10-147)
S2 (2FP)	= 2-Fluorophenol	(0-127)
S3 (NBZ)	= Nitrobenzene-d5	(0-125)
S4	= Phenol-d6	(37-125)
S5 (TBP)	= 2,4,6-Tribromophenol	(40-176)
S6 (TPH)	= Terphenyl-d14	(71-175)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 3
SOIL SEMIVOLATILE LAB CONTROL SAMPLE

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: CFARMWMC0714

Matrix Spike - CHG Sample No.: LCS Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC #	QC. LIMITS REC.
1,2,4-Trichlorobenzene	2000.0		1332.1	67	2-128
2,4-Dinitrotoluene	2000.0		1625.1	81	55-111
Acenaphthene	2000.0		1432.3	72	36-114
4-Chloro-3-Methylphenol	4000.0		2925.6	73	42-103
2-Chlorophenol	4000.0		2483.8	62	28-111
N-Nitroso-di-n-prop.(1)	2000.0		1227.4	61	18-108
Pyrene	2000.0		1762.3	88	64-113

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 7 outside limits

COMMENTS:

Date: 23 May 2011
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: WMA C
Subject: Inorganics - Sample Data Group (SDG) 20100520

INTRODUCTION

This memorandum presents the results of data validation for SDG 20100520 prepared by 222-S Laboratory. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B26JK3	7/07/2010	Soil	C	See note 1
B26C70	7/08/2010	Soil	C	See note 1

1 – 6010C (ICP-AES), 6020A (ICP-MS), ICP-MS actinides, ICP-MS fission products, ICP-MS Tc-99 Vadose Water Digest, 7471A (CVAA Hg)

Data validation was conducted in accordance with the CHPRC validation statement of work and the Field Sampling and Analysis Plan for Waste Management Area C, RPP-PLAN-40564, Rev. 2 (SAP). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested By Client

DATA QUALITY OBJECTIVES

- **Holding Times and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The holding time requirement for ICP metals are analysis within 180 days of sample collection, and the holding time requirement for mercury is analysis within 28 days of sample collection. Radionuclides in soil have no holding time. Sample preservation for soil samples requires chilling to <6 degrees Celsius.

The samples were analyzed within the prescribed holding times and properly preserved.

- **Blanks**

The blank data results are reviewed to assess the extent of contamination introduced through sampling, sample preparation, and analysis.

Laboratory Blanks

All laboratory blank results were acceptable with the following exception. The Ca and Fe laboratory blank results were > the MDLs. The Ca and Fe results for samples B26JK3 and B26C70 were >5X the laboratory blank results and should not be qualified.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

No equipment blanks were submitted for validation.

- **Accuracy**

Accuracy is evaluated by reviewing matrix spike sample results and laboratory control sample results. According to the SAP, the matrix spike sample accuracy limits are 75% to 125% and the laboratory control sample accuracy limits are 80% to 120%. The limits for reported analytes not listed in the SAP are specified by the DV procedure.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

All MS/MSD recoveries were acceptable with the following exceptions.

The MS recovery for Si was < the lower acceptance limit and the associated post spike recovery was acceptable. The Si results for samples B26JK3 and B26C70 were detects and should be qualified as estimates and flagged "J."

The MS recovery for Sn-117 was < the lower acceptance limit and the associated post spike recovery was acceptable. The Sn-117 and Sn-126 results for samples B26JK3 and B26C70 were detects and should be qualified as estimates and flagged "J."

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable with the following exceptions. The LCS recoveries for Ag and Se were > the upper acceptance limits. The Ag and Se results for samples B26JK3 and B26C70 were detects and should be qualified as estimates and flagged "J+."

- **Precision**

Precision is evaluated by reviewing MS/MSD results, laboratory duplicate sample results, field duplicate sample results and field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are ±30%. The limits for reported analytes not listed in the SAP are specified by the DV procedure. When soil duplicate RPDs exceed the limits and have associated results <5X the SAP required detection limits with differences <2X the required detection limits no precision infraction occurred.

MS/MSD Samples

All MS/MSD RPD values were acceptable.

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

Sample B26JK2 is the field duplicate to sample B26JK3 but was not chosen for validation.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

Reported MDLs are compared against the required detection limits (RDLs) to ensure that laboratory detection limits meet the required criteria.

All reported sample MDLs with associated non-detected sample results were below the RDLs.

- **Completeness**

SDG 20100520 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Multiple minor deficiencies leading to qualification of sample results as estimates occurred. See the table in Appendix 2 for a listing of all affected sample results.

REFERENCES

GRP-GD-003, Rev. 0, Change 0, *Data Validation for Chemical Analyses*, August 2010.

RPP-PLAN-40564, Rev. 2, *Field Sampling and Analysis Plan for Waste Management Area C*, December 2009

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers that may be applied by data validators in compliance with the CHPRC statement of work are as follows:

- **U** — The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.

- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.

- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **N** — The analysis indicates the presence of an analyte that has been tentatively identified.

- **NJ** — The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

- **NJ+** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.

- **NJ-** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.

- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

- **R** — Indicates the constituent was analyzed for and detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

Appendix 2

Summary of Data Qualification

Inorganic Data Qualification Summary			
SDG: 20100520	Reviewer: AQA	Project: WMA C	Page 1 of 1
Analyte(s)	**DV Flag**	**Samples Affected**	**Reason**
Si	J	B26JK3, B26C70	Low MS recovery
Ag, Se	J+	B26JK3, B26C70	High LCS recovery
Sn-117, Sn-126	J	B26JK3, B26C70	Low MS recovery

Comments: None

Appendix 3

Annotated Laboratory Reports

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26JK3
Sample Depth: Surface Dup

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001242			%WATERA	%WATER-APD	%	n/a	n/a	4.240	n/a	n/a	n/a	n/a	0.01000	n/a	
S10V001242			57-12-5	Cyanide	ug/g	94.1	<0.0370	<2.71	n/a	n/a	n/a	n/a	2.71	n/a	U
S10V001242			7439-97-6	Mercury	ug/g	97.4	<1.00E-04	0.0232	n/a	n/a	n/a	n/a	8.98E-03	n/a	J
S10V001242			PH	pH	unitless	n/a	n/a	8.92	n/a	n/a	n/a	n/a	0.0100	n/a	
S10V001242			18496-25-8	Sulfide	ug/g	99.2	<0.180	30.1	n/a	n/a	n/a	n/a	7.08	n/a	J
S10V001243			13966-00-2	Potassium-40	uCi/g	n/a	n/a	9.26E-06	n/a	n/a	n/a	n/a	5.83E-06	40.98	J
S10V001243			10198-40-0	Cobalt-60	uCi/g	101	<3.07E-07	<3.08E-07	n/a	n/a	n/a	n/a	3.08E-07	n/a	U
S10V001243			14234-35-6	Antimony-125	uCi/g	n/a	<7.49E-07	<8.34E-07	n/a	n/a	n/a	n/a	8.34E-07	n/a	U
S10V001243			10045-97-3	Cesium-137	uCi/g	105	<4.16E-07	3.83E-06	n/a	n/a	n/a	n/a	3.46E-07	9.84	
S10V001243			14683-23-9	Europium-152	uCi/g	n/a	<1.56E-06	<1.51E-06	n/a	n/a	n/a	n/a	1.51E-06	n/a	U
S10V001243			15585-10-1	Europium-154	uCi/g	n/a	<9.28E-07	<9.81E-07	n/a	n/a	n/a	n/a	9.81E-07	n/a	U
S10V001243			14391-16-3	Europium-155	uCi/g	n/a	<4.74E-07	<5.04E-07	n/a	n/a	n/a	n/a	5.04E-07	n/a	U
S10V001243			15067-28-4	Lead-214	uCi/g	n/a	n/a	1.17E-06	n/a	n/a	n/a	n/a	6.81E-07	21.66	
S10V001243			14274-82-9	Thorium-228	uCi/g	n/a	<8.76E-06	<9.51E-06	n/a	n/a	n/a	n/a	9.51E-06	n/a	U
S10V001243			15065-10-8	Thorium-234	uCi/g	n/a	<2.72E-06	<3.23E-06	n/a	n/a	n/a	n/a	3.23E-06	n/a	U
S10V001243			15046-84-1	Iodine-129	uCi/g	112	<1.62E-07	<1.76E-07	n/a	n/a	n/a	n/a	1.76E-07	n/a	U
S10V001245		WV	14133-76-7	Technetium-99	ug/g	105	<4.00E-06	<3.91E-06	n/a	n/a	n/a	n/a	3.91E-06	n/a	U
S10V001246		W	14762-75-5	Carbon-14	uCi/g	93.9	<1.07E-06	<6.63E-07	n/a	n/a	n/a	n/a	6.63E-07	n/a	U
S10V001246		W	10028-17-8	Tritium	uCi/g	90.5	<2.69E-07	<1.33E-06	n/a	n/a	n/a	n/a	1.33E-06	n/a	U
S10V001247		A	7440-36-0	Antimony	ug/g	104	<2.00E-04	0.165	n/a	n/a	n/a	n/a	9.64E-03	n/a	b
S10V001248		O	120-82-1	1,2,4-Trichlorobenzene	ug/kg	66.6	<77.4	<77.1	n/a	n/a	n/a	n/a	77.1	n/a	U
S10V001248		O	95-50-1	1,2-Dichlorobenzene	ug/kg	n/a	<101	<100	n/a	n/a	n/a	n/a	100	n/a	U
S10V001248		O	121-14-2	2,4-Dinitrotoluene	ug/kg	81.3	<38.1	<38.0	n/a	n/a	n/a	n/a	38.0	n/a	U
S10V001248		O	95-95-4	2,4,5-Trichlorophenol	ug/kg	n/a	<44.0	<43.8	n/a	n/a	n/a	n/a	43.8	n/a	U
S10V001248		O	88-06-2	2,4,6-Trichlorophenol	ug/kg	n/a	<49.5	<49.3	n/a	n/a	n/a	n/a	49.3	n/a	U
S10V001248		O	95-48-7	2-Methylphenol	ug/kg	n/a	<57.5	<57.3	n/a	n/a	n/a	n/a	57.3	n/a	U
S10V001248		O	88-75-5	2-Nitrophenol	ug/kg	n/a	<53.7	<53.5	n/a	n/a	n/a	n/a	53.5	n/a	U
S10V001248		O	65794-96-9	3 &4 Methylphenol	ug/kg	n/a	<51.4	<51.2	n/a	n/a	n/a	n/a	51.2	n/a	U

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26JK3
Sample Depth: Surface Dup

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001249		W	16984-48-8	Fluoride	ug/g	101	<1.61E-03	0.995	n/a	n/a	n/a	n/a	0.0161	n/a	c
S10V001249		W	666-14-8	Glycolate	ug/g	99.3	<9.37E-03	<0.0935	n/a	n/a	n/a	n/a	0.0935	n/a	U
S10V001249		W	71-50-1	Acetate	ug/g	98.3	<6.04E-03	<0.0603	n/a	n/a	n/a	n/a	0.0603	n/a	U
S10V001249		W	12311-97-6	Formate	ug/g	102	<4.67E-03	0.124	n/a	n/a	n/a	n/a	0.0466	n/a	J
S10V001249		W	16887-00-6	Chloride	ug/g	100	<9.98E-03	0.475	n/a	n/a	n/a	n/a	0.0996	n/a	J
S10V001249		W	14797-65-0	Nitrite	ug/g	100	<0.0192	1.06	n/a	n/a	n/a	n/a	0.192	n/a	J
S10V001249		W	14808-79-8	Sulfate	ug/g	99.0	<0.0187	2.81	n/a	n/a	n/a	n/a	0.187	n/a	J
S10V001249		W	338-70-5	Oxalate	ug/g	101	<0.0231	1.05	n/a	n/a	n/a	n/a	0.231	n/a	J
S10V001249		W	24959-67-9	Bromide	ug/g	96.5	<0.0580	<0.579	n/a	n/a	n/a	n/a	0.579	n/a	U
S10V001249		W	14797-55-8	Nitrate	ug/g	98.5	<0.0208	5.02	n/a	n/a	n/a	n/a	0.208	n/a	
S10V001249		W	14265-44-2	Phosphate	ug/g	99.1	<0.0167	1.65	n/a	n/a	n/a	n/a	0.167	n/a	J
S10V001250		A	7429-90-5	Aluminum	ug/g	89.9	<0.0300	7.08E+03	n/a	n/a	n/a	n/a	2.97	n/a	
S10V001250		A	7440-42-8	Boron	ug/g	89.1	<0.0300	3.34	n/a	n/a	n/a	n/a	2.97	n/a	J
S10V001250		A	7440-39-3	Barium	ug/g	93.7	<3.00E-03	76.6	n/a	n/a	n/a	n/a	0.297	n/a	
S10V001250		A	7440-41-7	Beryllium	ug/g	95.7	<1.00E-03	0.154	n/a	n/a	n/a	n/a	0.0991	n/a	J
S10V001250		A	7440-70-2	Calcium	ug/g	82.2	0.0545	9.27E+03	n/a	n/a	n/a	n/a	4.96	n/a	
S10V001250		A	7440-43-9	Cadmium	ug/g	88.5	<5.00E-03	3.26	n/a	n/a	n/a	n/a	0.496	n/a	J
S10V001250		A	7440-45-1	Cerium	ug/g	91.9	<0.0300	22.6	n/a	n/a	n/a	n/a	2.97	n/a	J
S10V001250		A	7440-48-4	Cobalt	ug/g	87.0	<0.0100	8.82	n/a	n/a	n/a	n/a	0.991	n/a	J
S10V001250		A	7440-47-3	Chromium	ug/g	86.1	<5.00E-03	7.98	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	7440-50-8	Copper	ug/g	99.3	<5.00E-03	12.9	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	7439-89-6	Iron	ug/g	88.7	7.48E-03	2.42E+04	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	7440-09-7	Potassium	ug/g	115	<0.500	1.08E+03	n/a	n/a	n/a	n/a	49.6	n/a	
S10V001250		A	7439-91-0	Lanthanum	ug/g	93.8	<3.00E-03	10.6	n/a	n/a	n/a	n/a	0.297	n/a	
S10V001250		A	7439-93-2	Lithium	ug/g	116	<3.00E-03	7.39	n/a	n/a	n/a	n/a	0.297	n/a	
S10V001250		A	7439-95-4	Magnesium	ug/g	89.1	<0.0500	5.28E+03	n/a	n/a	n/a	n/a	4.96	n/a	
S10V001250		A	7439-96-5	Manganese	ug/g	85.5	<3.00E-03	355	n/a	n/a	n/a	n/a	0.297	n/a	c
S10V001250		A	7439-98-7	Molybdenum	ug/g	87.0	<0.0200	<1.98	n/a	n/a	n/a	n/a	1.98	n/a	U

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26JK3
Sample Depth: Surface Dup

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte		Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001250		A	7440-23-5	Sodium		ug/g	115	<0.100	299	n/a	n/a	n/a	n/a	9.91	n/a	
S10V001250		A	7440-02-0	Nickel		ug/g	87.8	<0.0200	8.64	n/a	n/a	n/a	n/a	1.98	n/a	J
S10V001250		A	7723-14-0	Phosphorus		ug/g	88.6	<0.0500	870	n/a	n/a	n/a	n/a	4.96	n/a	
S10V001250		A	7439-92-1	Lead		ug/g	87.5	<0.0500	<4.96	n/a	n/a	n/a	n/a	4.96	n/a	U
S10V001250		A	7704-34-9	Sulfur		ug/g	88.1	<0.100	70.9	n/a	n/a	n/a	n/a	9.91	n/a	J
S10V001250		A	7440-21-3	Silicon	J	ug/g	81.4	<0.0300	25.3	n/a	n/a	n/a	n/a	2.97	n/a	Jb
S10V001250		A	7440-24-6	Strontium		ug/g	93.4	<3.00E-03	28.9	n/a	n/a	n/a	n/a	0.297	n/a	
S10V001250		A	7440-32-6	Titanium		ug/g	86.7	<5.00E-03	1.53E+03	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	7440-62-2	Vanadium		ug/g	89.2	<5.00E-03	58.8	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	7440-65-5	Yttrium		ug/g	86.2	<2.00E-03	10.4	n/a	n/a	n/a	n/a	0.198	n/a	
S10V001250		A	7440-66-6	Zinc		ug/g	89.9	<5.00E-03	44.8	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	7440-67-7	Zirconium		ug/g	85.4	<5.00E-03	15.3	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	14269-63-7	Thorium-230		ug/g	n/a	<2.80E-06	<2.78E-05	n/a	n/a	n/a	n/a	2.78E-05	n/a	U
S10V001250		A	TH-232	Thorium-232		ug/g	103	<2.00E-04	3.58	n/a	n/a	n/a	n/a	1.98E-03	n/a	
S10V001250		A	13968-55-3	Uranium-233		ug/g	n/a	<4.00E-06	2.02E-04	n/a	n/a	n/a	n/a	3.96E-05	n/a	J
S10V001250		A	13966-29-5	Uranium-234		ug/g	n/a	<2.00E-06	3.81E-05	n/a	n/a	n/a	n/a	1.98E-05	n/a	J
S10V001250		A	15117-96-1	Uranium-235		ug/g	93.0	<4.00E-06	4.81E-03	n/a	n/a	n/a	n/a	3.96E-05	n/a	
S10V001250		A	13982-70-2	Uranium-236		ug/g	n/a	<1.60E-06	<1.59E-05	n/a	n/a	n/a	n/a	1.59E-05	n/a	U
S10V001250		A	13994-20-2	Neptunium-237		ug/g	99.1	<4.00E-05	<3.96E-04	n/a	n/a	n/a	n/a	3.96E-04	n/a	U
S10V001250		A	U-238	Uranium-238		ug/g	101	<2.00E-04	0.709	n/a	n/a	n/a	n/a	1.98E-03	n/a	
S10V001250		A	7440-22-4	Silver	J+	ug/g	106	<1.60E-03	0.0850	n/a	n/a	n/a	n/a	0.0159	n/a	J
S10V001250		A	7440-38-2	Arsenic		ug/g	105	<8.40E-03	5.20	n/a	n/a	n/a	n/a	0.0833	n/a	
S10V001250		A	7782-49-2	Selenium	J+	ug/g	104	<0.0122	0.466	n/a	n/a	n/a	n/a	0.121	n/a	J
S10V001250		A	7440-28-0	Thallium		ug/g	101	<4.00E-04	0.0788	n/a	n/a	n/a	n/a	7.93E-03	n/a	J
~~S10V001251~~		~~S~~	~~14798-03-9~~	~~Ammonium~~		~~ug/g~~	~~99.3~~	~~0.278~~	~~2.44~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~0.479~~	~~n/a~~	~~BJ~~
S10V001252		A	14133-76-7	Technetium-99		ug/g	110	<1.50E-05	<1.49E-04	<1.49E-04	n/a	n/a	108	1.49E-04	n/a	U
S10V001252		A	SN-117	Tin-117	J	ug/g	106	<5.00E-04	0.0190	0.0182	0.0186	4.21	69.0	4.95E-03	n/a	J
S10V001252		A	15832-50-5	Tin-126	J	ug/g	n/a	<1.00E-05	3.58E-04	3.92E-04	3.75E-04	9.07	n/a	9.90E-05	n/a	J

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C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C70
Sample Depth: 10-12

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5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001299			BULKDENSI	Bulk Density	g/mL	n/a	n/a	2.29	n/a	n/a	n/a	n/a	n/a	n/a	
S10V001300			BULKDENSI	Bulk Density	g/mL	n/a	n/a	2.18	n/a	n/a	n/a	n/a	n/a	n/a	
S10V001301			BULKDENSI	Bulk Density	g/mL	n/a	n/a	2.17	n/a	n/a	n/a	n/a	n/a	n/a	
S10V001302			%WATERA	%WATER APD	%	n/a	n/a	5.140	4.960	5.050	3.564	n/a	0.01000	n/a	
S10V001302			57-12-5	Cyanide	ug/g	94.1	<0.0370	<2.55	n/a	n/a	n/a	n/a	2.55	n/a	U
S10V001302			7439-97-6	Mercury	ug/g	97.4	<1.00E-04	<9.90E-03	n/a	n/a	n/a	n/a	9.90E-03	n/a	U
S10V001302			PH	pH	unitless	n/a	n/a	8.97	n/a	n/a	n/a	n/a	0.0100	n/a	
S10V001302			18496-25-8	Sulfide	ug/g	99.2	<0.180	20.2	n/a	n/a	n/a	n/a	7.24	n/a	J
S10V001303			10198-40-0	Cobalt-60	uCi/g	101	<3.07E-07	<3.42E-07	<3.46E-07	n/a	n/a	n/a	3.42E-07	n/a	U
S10V001303			14234-35-6	Antimony-125	uCi/g	n/a	<7.49E-07	<9.47E-07	<9.05E-07	n/a	n/a	n/a	9.47E-07	n/a	U
S10V001303			10045-97-3	Cesium-137	uCi/g	105	<4.16E-07	<4.57E-07	<4.26E-07	n/a	n/a	n/a	4.57E-07	n/a	U
S10V001303			14683-23-9	Europium-152	uCi/g	n/a	<1.56E-06	<1.79E-06	<1.71E-06	n/a	n/a	n/a	1.79E-06	n/a	U
S10V001303			15585-10-1	Europium-154	uCi/g	n/a	<9.28E-07	<1.08E-06	<1.03E-06	n/a	n/a	n/a	1.08E-06	n/a	U
S10V001303			14391-16-3	Europium-155	uCi/g	n/a	<4.74E-07	<6.07E-07	<5.58E-07	n/a	n/a	n/a	6.07E-07	n/a	U
S10V001303			14733-03-0	Bismuth-214	uCi/g	n/a	n/a	1.24E-06	n/a	n/a	n/a	n/a	6.30E-07	31.87	J
S10V001303			15067-28-4	Lead-214	uCi/g	n/a	n/a	1.57E-06	9.71E-07	1.27E-06	47.4	n/a	8.32E-07	19.99	
S10V001303			14274-82-9	Thorium-228	uCi/g	n/a	<8.76E-06	<1.12E-05	<1.05E-05	n/a	n/a	n/a	1.12E-05	n/a	U
S10V001303			15065-10-8	Thorium-234	uCi/g	n/a	<2.72E-06	<3.81E-06	<3.66E-06	n/a	n/a	n/a	3.81E-06	n/a	U
S10V001303			15046-84-1	Iodine-129	uCi/g	112	<1.62E-07	<1.61E-07	n/a	n/a	n/a	n/a	1.61E-07	n/a	U
S10V001305		WV	14133-76-7	Technetium-99	ug/g	105	<4.00E-06	<4.01E-06	n/a	n/a	n/a	n/a	4.01E-06	n/a	U
S10V001306		W	14762-75-5	Carbon-14	uCi/g	93.9	<1.07E-06	<6.77E-07	n/a	n/a	n/a	n/a	6.77E-07	n/a	U
S10V001306		W	10028-17-8	Tritium	uCi/g	90.5	<2.69E-07	<1.35E-06	n/a	n/a	n/a	n/a	1.35E-06	n/a	U
S10V001307		A	7440-36-0	Antimony	ug/g	104	<2.00E-04	0.0926	n/a	n/a	n/a	n/a	9.39E-03	n/a	Jb
S10V001308		O	120-82-1	1,2,4-Trichlorobenzene	ug/kg	66.6	<77.4	<76.6	n/a	n/a	n/a	70.4	76.6	n/a	U
S10V001308		O	95-50-1	1,2-Dichlorobenzene	ug/kg	n/a	<101	<99.6	n/a	n/a	n/a	n/a	99.6	n/a	U
S10V001308		O	121-14-2	2,4-Dinitrotoluene	ug/kg	81.3	<38.1	<37.7	n/a	n/a	n/a	89.8	37.7	n/a	U
S10V001308		O	95-95-4	2,4,5-Trichlorophenol	ug/kg	n/a	<44.0	<43.5	n/a	n/a	n/a	n/a	43.5	n/a	U
S10V001308		O	88-06-2	2,4,6-Trichlorophenol	ug/kg	n/a	<49.5	<49.0	n/a	n/a	n/a	n/a	49.0	n/a	U

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C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C70
Sample Depth: 10-12

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5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001308		O	1319-77-3	Total Methylphenols	ug/kg	n/a	<107	<105	n/a	n/a	n/a	n/a	105	n/a	U
S10V001308		O	108-94-1	Cyclohexanone	ug/kg	n/a	<558	<552	n/a	n/a	n/a	n/a	552	n/a	U
S10V001308		O	59-89-2	N-Nitrosomorpholine	ug/kg	n/a	<191	<189	n/a	n/a	n/a	n/a	189	n/a	U
S10V001309		W	16984-48-8	Fluoride	ug/g	101	<1.61E-03	1.48	n/a	n/a	n/a	n/a	0.0160	n/a	c
S10V001309		W	666-14-8	Glycolate	ug/g	99.3	<9.37E-03	<0.0931	n/a	n/a	n/a	n/a	0.0931	n/a	U
S10V001309		W	71-50-1	Acetate	ug/g	98.3	<6.04E-03	<0.0600	n/a	n/a	n/a	n/a	0.0600	n/a	U
S10V001309		W	12311-97-6	Formate	ug/g	102	<4.67E-03	0.109	n/a	n/a	n/a	n/a	0.0464	n/a	J
S10V001309		W	16887-00-6	Chloride	ug/g	100	<9.98E-03	0.355	n/a	n/a	n/a	n/a	0.0991	n/a	J
S10V001309		W	14797-65-0	Nitrite	ug/g	100	<0.0192	1.40	n/a	n/a	n/a	n/a	0.191	n/a	J
S10V001309		W	14808-79-8	Sulfate	ug/g	99.0	<0.0187	3.08	n/a	n/a	n/a	n/a	0.186	n/a	
S10V001309		W	338-70-5	Oxalate	ug/g	101	<0.0231	<0.229	n/a	n/a	n/a	n/a	0.229	n/a	U
S10V001309		W	24959-67-9	Bromide	ug/g	96.5	<0.0580	<0.576	n/a	n/a	n/a	n/a	0.576	n/a	U
S10V001309		W	14797-55-8	Nitrate	ug/g	98.5	<0.0208	2.85	n/a	n/a	n/a	n/a	0.207	n/a	
S10V001309		W	14265-44-2	Phosphate	ug/g	99.1	<0.0167	0.975	n/a	n/a	n/a	n/a	0.166	n/a	J
S10V001310		A	7429-90-5	Aluminum	ug/g	89.9	<0.0300	7.42E+03	n/a	n/a	n/a	n/a	2.99	n/a	
S10V001310		A	7440-42-8	Boron	ug/g	89.1	<0.0300	3.25	n/a	n/a	n/a	n/a	2.99	n/a	J
S10V001310		A	7440-39-3	Barium	ug/g	93.7	<3.00E-03	76.4	n/a	n/a	n/a	n/a	0.299	n/a	
S10V001310		A	7440-41-7	Beryllium	ug/g	95.7	<1.00E-03	0.158	n/a	n/a	n/a	n/a	0.0996	n/a	J
S10V001310		A	7440-70-2	Calcium	ug/g	82.2	0.0545	8.39E+03	n/a	n/a	n/a	n/a	4.98	n/a	
S10V001310		A	7440-43-9	Cadmium	ug/g	88.5	<5.00E-03	2.87	n/a	n/a	n/a	n/a	0.498	n/a	J
S10V001310		A	7440-45-1	Cerium	ug/g	91.9	<0.0300	22.2	n/a	n/a	n/a	n/a	2.99	n/a	J
S10V001310		A	7440-48-4	Cobalt	ug/g	87.0	<0.0100	7.99	n/a	n/a	n/a	n/a	0.996	n/a	J
S10V001310		A	7440-47-3	Chromium	ug/g	86.1	<5.00E-03	17.2	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7440-50-8	Copper	ug/g	99.3	<5.00E-03	16.5	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7439-89-6	Iron	ug/g	88.7	7.48E-03	2.21E+04	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7440-09-7	Potassium	ug/g	115	<0.500	1.10E+03	n/a	n/a	n/a	n/a	49.8	n/a	
S10V001310		A	7439-91-0	Lanthanum	ug/g	93.8	<3.00E-03	10.6	n/a	n/a	n/a	n/a	0.299	n/a	
S10V001310		A	7439-93-2	Lithium	ug/g	116	<3.00E-03	7.73	n/a	n/a	n/a	n/a	0.299	n/a	

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C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C70
Sample Depth: 10-12

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte		Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001310		A	7439-95-4	Magnesium		ug/g	89.1	<0.0500	4.68E+03	n/a	n/a	n/a	n/a	4.98	n/a	
S10V001310		A	7439-96-5	Manganese		ug/g	85.5	<3.00E-03	331	n/a	n/a	n/a	n/a	0.299	n/a	c
S10V001310		A	7439-98-7	Molybdenum		ug/g	87.0	<0.0200	<1.99	n/a	n/a	n/a	n/a	1.99	n/a	U
S10V001310		A	7440-23-5	Sodium		ug/g	115	<0.100	397	n/a	n/a	n/a	n/a	9.96	n/a	
S10V001310		A	7440-02-0	Nickel		ug/g	87.8	<0.0200	12.4	n/a	n/a	n/a	n/a	1.99	n/a	J
S10V001310		A	7723-14-0	Phosphorus		ug/g	88.6	<0.0500	786	n/a	n/a	n/a	n/a	4.98	n/a	
S10V001310		A	7439-92-1	Lead		ug/g	87.5	<0.0500	<4.98	n/a	n/a	n/a	n/a	4.98	n/a	U
S10V001310		A	7704-34-9	Sulfur		ug/g	88.1	<0.100	55.7	n/a	n/a	n/a	n/a	9.96	n/a	J
S10V001310		A	7440-21-3	Silicon	J	ug/g	81.4	<0.0300	34.2	n/a	n/a	n/a	n/a	2.99	n/a	b
S10V001310		A	7440-24-6	Strontium		ug/g	93.4	<3.00E-03	34.7	n/a	n/a	n/a	n/a	0.299	n/a	
S10V001310		A	7440-32-6	Titanium		ug/g	86.7	<5.00E-03	1.44E+03	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7440-62-2	Vanadium		ug/g	89.2	<5.00E-03	54.6	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7440-65-5	Yttrium		ug/g	86.2	<2.00E-03	8.88	n/a	n/a	n/a	n/a	0.199	n/a	
S10V001310		A	7440-66-6	Zinc		ug/g	89.9	<5.00E-03	39.8	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7440-67-7	Zirconium		ug/g	85.4	<5.00E-03	15.3	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	14269-63-7	Thorium-230		ug/g	n/a	<2.80E-06	3.72E-05	n/a	n/a	n/a	n/a	2.79E-05	n/a	J
S10V001310		A	TH-232	Thorium-232		ug/g	103	<2.00E-04	3.44	n/a	n/a	n/a	n/a	1.99E-03	n/a	
S10V001310		A	13968-55-3	Uranium-233		ug/g	n/a	<4.00E-06	1.78E-04	n/a	n/a	n/a	n/a	3.98E-05	n/a	J
S10V001310		A	13966-29-5	Uranium-234		ug/g	n/a	<2.00E-06	<1.99E-05	n/a	n/a	n/a	n/a	1.99E-05	n/a	U
S10V001310		A	15117-96-1	Uranium-235		ug/g	93.0	<4.00E-06	3.82E-03	n/a	n/a	n/a	n/a	3.98E-05	n/a	
S10V001310		A	13982-70-2	Uranium-236		ug/g	n/a	<1.60E-06	1.87E-05	n/a	n/a	n/a	n/a	1.59E-05	n/a	J
S10V001310		A	13994-20-2	Neptunium-237		ug/g	99.1	<4.00E-05	<3.98E-04	n/a	n/a	n/a	n/a	3.98E-04	n/a	U
S10V001310		A	U-238	Uranium-238		ug/g	101	<2.00E-04	0.565	n/a	n/a	n/a	n/a	1.99E-03	n/a	
S10V001310		A	7440-22-4	Silver	J+	ug/g	106	<1.60E-03	0.0667	n/a	n/a	n/a	n/a	0.0159	n/a	J
S10V001310		A	7440-38-2	Arsenic		ug/g	105	<8.40E-03	3.39	n/a	n/a	n/a	n/a	0.0837	n/a	
S10V001310		A	7782-49-2	Selenium	J+	ug/g	104	<0.0122	0.210	n/a	n/a	n/a	n/a	0.122	n/a	J
S10V001310		A	7440-28-0	Thallium		ug/g	101	<4.00E-04	0.0744	n/a	n/a	n/a	n/a	7.97E-03	n/a	J
~~S10V001311~~		~~S~~	~~14798-03-9~~	~~Ammonium~~		~~ug/g~~	~~99.3~~	~~0.278~~	~~1.55~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~0.479~~	~~n/a~~	~~BJ~~

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C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C70
Sample Depth: 10-12

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Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001312		A	14133-76-7	Technetium-99	ug/g	110	<1.50E-05	<1.47E-04	n/a	n/a	n/a	n/a	1.47E-04	n/a	U
S10V001312		A	SN-117	Tin-117 J	ug/g	106	<5.00E-04	0.0130	n/a	n/a	n/a	n/a	4.91E-03	n/a	J
S10V001312		A	15832-50-5	Tin-126 J	ug/g	n/a	<1.00E-05	3.04E-04	n/a	n/a	n/a	n/a	9.82E-05	n/a	J
S10V001313		E	CM-243/244	Curium-243/244	uCi/g	n/a	<2.22E-07	<2.07E-07	<2.31E-07	n/a	n/a	n/a	2.07E-07	n/a	U
S10V001313		E	14596-10-2	Americium-241	uCi/g	96.5	<5.54E-07	<5.17E-07	<5.79E-07	n/a	n/a	n/a	5.17E-07	n/a	U
S10V001313		E	15510-73-3	Curium-242	uCi/g	n/a	<2.22E-07	<2.07E-07	<2.31E-07	n/a	n/a	n/a	2.07E-07	n/a	U
S10V001313		E	PU-239/240	Plutonium-239/240	uCi/g	103	<7.86E-07	<2.73E-07	<3.09E-07	n/a	n/a	n/a	2.73E-07	n/a	U
S10V001313		E	13981-16-3	Plutonium-238	uCi/g	n/a	<7.86E-07	<2.73E-07	<3.09E-07	n/a	n/a	n/a	2.73E-07	n/a	U
S10V001314		E	SR-89/90	Strontium-89/90	uCi/g	98.6	<7.04E-07	<2.17E-07	<8.82E-07	n/a	n/a	n/a	2.17E-07	n/a	U
S10V001315		E	13981-37-8	Nickel-63	uCi/g	102	<5.95E-06	<8.92E-06	<9.07E-06	n/a	n/a	n/a	8.92E-06	n/a	U
S10V001315		E	15758-45-9	Selenium-79	uCi/g	n/a	2.51E-06	3.77E-06	3.36E-06	3.56E-06	11.5	n/a	1.58E-06	202.816	BJ

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

222-S LABORATORY

FINAL ANALYTICAL REPORT FOR SAMPLES FROM WASTE MANAGEMENT AREA C FOR CORE HOLE C7672 IN SUPPORT OF RCRA SOIL CHARACTERIZATION

1.0 INTRODUCTION

This final report presents the results for the samples taken from Waste Management Area C between July 7, 2010 and July 16, 2010. The samples were analyzed in accordance with RPP-PLAN-40564, *Field Sampling and Analysis Plan for Sites P and L at Waste Management Area C* (FSAP); RPP-PLAN-38777, *Sampling and Analysis Plan for Phase 2 Characterization of Vadose Zone Soil in Waste Management Area C* (SAP); ATL-MP-1011, *ATL Quality Assurance Project Plan for 222-S Laboratory* (QAPP); SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*; and the additional guidance given by the client's point of contact.

Because the 222-S Laboratory facility was designed to analyze hazardous and complex tank waste samples, most SW-846 test methods performed at the 222-S Laboratory contain deviations that are listed in an appendix in the analytical procedures. All other known deviations or variances from SW-846 are documented in this narrative. The following attachments are included in this report.

Attachment 1	Data Summary Report
Attachment 2	Sample Breakdown Diagrams
Attachment 3	Holding Time Report
Attachment 4	Additional Organic Analyses QC Results
Attachment 5	Tentatively Identified Compounds (TIC) for Organic Analyses
Attachment 6	Geological Report
Attachment 7	Characterization Change Notices (CCN) and Correspondence
Attachment 8	Receipt Paperwork

2.0 SAMPLE RECEIPT AND BREAKDOWN

2.1 SAMPLE RECEIPT

A total of seven core intervals and two surface grab samples from core hole C7672 along with six field blanks, six trip blanks, and one equipment blank were received by the 222-S Laboratory between July 7, 2010 and July 16, 2010. The samples were delivered in a cooler with ice or, in the case of the volatile organic soil samples, in a freezer. The temperatures of the temperature blanks were measured and recorded on the sample receipt check list and/or the chain of custody form.

The chain of custody requested that conductivity be analyzed on the soil samples. Since this analysis was not listed in the SAP or FSAP it was not performed. The client has indicated that

this analysis may be performed later after a CCN is issued to cover the change to the FSAP (see Attachment 7).

2.2 SAMPLE BREAKDOWN

The laboratory received each core interval as a set of volatile organic analysis (VOA) samples and three liner samples when complete core recovery was obtained. The VOA samples were made from the shoe section of each core interval following SW-846 5035. The liner samples from each core interval were extruded, described, and composited by the Washington River Protection Solutions, Inc. (WRPS) geologist. The geologist's report is included in Attachment 6. Provided sufficient samples existed, the composite for each core interval was analyzed as described in the SAP and FSAP. One core interval, I001, had less than full recovery (see Attachment 2 and Attachment 8). There was no I003 for core hole C7672. All intervals were extruded and composited in the normal manner. The surface samples were received as a single grab in a 500-mL jar and a set of VOA samples.

WRPS shipped subsamples of the composites to Test America Laboratories, Inc. (TAL) in St Louis, Missouri and Knoxville, Tennessee to be analyzed for dibutyl and monobutyl phosphate, total petroleum hydrocarbons (diesel and gasoline range), ethylene glycol, chlorinated pesticides, and polychlorinated biphenyls (Aroclors and congeners). TAL subsequently subcontracted the monobutyl and dibutyl phosphate analyses to Southwest Research Institute. The results of these analyses will be released in the final WRPS report.

3.0 ANALYTICAL RESULTS SUMMARY

The Data Summary Report (Attachment 1) presents the final analytical results for those analytes requested in the SAP and FSAP. Secondary analytes are only reported if detected. The TIC from gas chromatography-mass spectrometry (GC/MS) analysis of semivolatile organic compounds (SVOC) is presented in Attachment 5. In addition to the required isotopes, all isotopes with positive gamma energy analysis (GEA) results were reported.

The "Det Limit" column in Attachment 1 contains the method detection limit (MDL) for non-radionuclide analyses, or the minimum detectable activity for radionuclides.

In Attachment 1, the column labeled "A#" indicates the aliquot class or the method used for sample preparation before analysis. For solid samples, the aliquot classes are defined as follows:

"A" indicates samples that were prepared by SW-846 3050B.

"E" indicates samples that were prepared by a strong acid digest.

"O" indicates samples that were extracted for organic analysis.

"S" indicates samples that were prepared by a distillation.

"W" indicates samples that were prepared by a standard water digest.

"WV" indicates samples that were prepared by a Vadose water digest.

Samples without a letter identifier in the "A#" column were analyzed directly with no separate preparation or with sample preparation performed as a part of the procedure steps.

The "Qual Flags" column in Attachment 1 contains data qualifier flags that are defined as follows:

> "B" is used to indicate that the analyte was detected in the method or preparation blank and in the sample, and the result for the blank was greater than 5% of the reported sample result.
>
> "J" indicates that the reported result should be considered an estimate because it is below the quantitation limit. The "J" flag is applied to sample concentrations that are greater than the MDL but less than the quantitation limit or sample activity with a counting uncertainty greater than 30%.
>
> "N" indicates a TIC which has been named.
>
> "T" indicates a TIC.
>
> "U" indicates that the reported result is less than the calculated detection limit.
>
> "b" indicates that the matrix spike (MS) recovery was outside of the specified range in the QAPP or SAP.
>
> "c" indicates that the relative percent difference (RPD) between the sample and the duplicate is greater than 30%.

Manual calculations using rounded results from the Data Summary Report (Attachment 1) or result calculation forms may differ slightly from the actual results derived from the raw data.

3.1 SAMPLE DIGESTIONS

3.1.1 Radiochemistry Strong Acid Digestion

Strong acid digestions with a hot plate for the heat source were performed using a mixture of concentrated nitric and hydrochloric acids. For each digest, approximately 1 to 10 g of sample was digested depending on the analysis being performed. The digestate was then filtered and diluted to a final volume. This digestion was used for all radiochemical analyses except ^{3}H, ^{14}C, and ^{129}I. This digestion is a leach of the acid soluble species only.

3.1.2 SW-846 3050B - Acid Digestion-Heating Block

This acid digestion follows SW-846 3050B using a heating block and nitric and hydrochloric acids. An aliquot of approximately 5 g of sample was digested. All heating-block digestions were filtered and diluted to a final volume of 50 mL. In soil, this digestion is a leach of the acid soluble species only. This digestion was used for all inductively coupled plasma/mass spectrometry (ICP/MS) and inductively coupled plasma/atomic emission spectroscopy (ICP/AES) analyses except for ^{99}Tc and isotopic tin (^{117}Sn and ^{126}Sn) analyses. The digestion is modified for the ^{99}Tc analysis by using only nitric acid. This is done to eliminate the possibility of the formation a zinc-chlorine ion pair of mass 99. The laboratory believes this ion, when

present, is responsible for low level false positives. A separate digestion for antimony was prepared using additional hydrochloric acid, as recommended in SW-846.

3.1.3 Water Digestion

A water digestion or leach was prepared for the anions by ion chromatography, ^{14}C, and ^{3}H analyses using approximately 0.25 to 4 g of sample diluted to 25 mL. Sonification was used, and the leachate was then filtered. In soil, this digestion is a leach of the water soluble species only.

3.1.4 Vadose Water Digestion

A 70-g sample of soil was leached using a ratio of one part water to one part soil. To maintain a one-to-one ratio, the amount of water added to the sample was adjusted based on the percent moisture of the soil. The slurries were placed on a shaker table for about 1 hour. They were then transferred to a centrifuge tube and centrifuged at 4,000 rpm for 30 minutes. An unfiltered aliquot was set aside for alkalinity analysis. The remainder was filtered using a disposable vacuum filtration system. The filtrates were transferred to a clean bottle and then analyzed for anions using IC nitrate analysis (intervals I005 to I010) and ^{99}Tc by ICP/MS analysis.

3.2 INORGANIC ANALYSES

3.2.1 Cyanide

The cyanide analysis by distillation and spectrophotometry was performed on the grab samples, liner composite samples, and the equipment blank. All analyses met the SW-846 holding time of 14 days. There was no required reporting limit in the SAP for cyanide. The target detection limit was 0.5 µg/g, which is lower than what the current laboratory method (lachet micro-distillation) can reach. There were no notable quality control (QC) issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.2 Sulfide

Sulfide analysis by distillation and ion selective electrode was performed on the grab samples, liner composite samples, and the equipment blank. All analyses met the SW-846 holding time of 7 days. There was no required reporting limit in the SAP for sulfide. The target detection limit was 5 µg/g. All sample results had adjusted MDLs of approximately 7 µg/g. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.3 pH Analysis

The pH analysis was performed on the grab samples, liner composite samples, and equipment blank. These analyses met all QC requirements in the FSAP, SAP, and QAPP. The FSAP lists a pH holding time requirement of “as soon as possible.” All pH measurements were taken after the water leach was performed. The sampling to analysis time varied from 6 to 15 days (see Attachment 3). There is no correlation between pH results and days to analysis, and the results

fall within an expected range for alkaline soils. This indicates that the variation in time has no apparent effect on the results.

3.2.4 Mercury

Analysis for Hg by cold-vapor graphic furnace/atomic absorption was performed on the grab samples, liner composite samples, and the equipment bank. All results met the QC requirements in the FSAP, SAP, and QAPP. All analyses met the holding time of 28 days. This analysis met the required and target detection limits.

3.2.5 Ion Chromatography – Ammonium

Analysis for ammonium was performed using a distillation preparation of the grab samples, the liner composite samples, and the equipment blank. There is no regulatory holding time limit promulgated for ammonium in soil. The SAP lists an administrative holding time of 7 days. The laboratory believes that after distillation and preservation, the holding time is 28 days based on U.S. Environmental Protection Agency drinking water and waste water holding times for preserved samples. All samples met these holding times. These analyses met the target detection limit listed in the SAP. There was no required reporting limit in the SAP or FSAP for ammonium.

Batch 20647: The RPD between the duplicate and the sample exceeded the required 30%. Since the result for this analyte was below the quantitation limit, the criterion does not apply and reanalysis is not required. Ammonium was detected in the preparation blanks at a level below the quantitation limit and above the MDL. Ammonium was also detected in the samples at a similar level; these results have been flagged with a “B”. Since all results were below the quantitation limit, reanalysis was not required.

Batch 20662: Ammonium was detected in the preparation blanks at a level below the quantitation limit and above the MDL. Since ammonium was not detected in the sample reanalysis was not required.

Batch 20716: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20930: The RPD between the sample and duplicate exceeded the required 30%. Since the result for this analyte was below the quantitation limit, the criterion does not apply and reanalysis is not required.

3.2.6 Ion Chromatography – Anions and Small Organic Acids

Ion chromatography analysis was performed on all grab samples, liner composite samples, and the equipment blank. The laboratory met all of the required and target detection limits. All analyses were within the applicable SW-846 holding times. The sample spikes used for the standard water digestions are predigestion spikes.

Batch 20596: The result for nitrate in the preparation blank was slightly below the quantitation limit. Since the sample was non-detect for nitrate, the blank is acceptable.

Batch 21046: The RPD between the sample and duplicate for fluoride exceeded the required 30% at 40%. The laboratory believes this was due to sample inhomogeneity, which is indicated by high RPDs for the other anions in this sample. All fluoride results in this batch have been flagged with a "c". The RPD for nitrite was above the required 30%, however the result was below the quantitation limit, and the criterion does not apply. The low level standard (LLS) for chloride exceeded the ±50% requirement in SW-846 at 153%. This could indicate a high bias for results near the LLS level. Since all chloride results were below the continuous calibration verification sample (CCV) level, a "J" was applied, even to the results above the laboratory's quantitation limit (the LLS level).

Batch 21073: The low level standard (LLS) for chloride exceeded the ±50% requirement in SW-846 at 153%. This could indicate a high bias for results near the LLS level. Since the result was below quantitation level, the data quality was not affected.

3.2.7 Inductively Coupled Plasma/Atomic Emission Spectroscopy

The ICP/AES analysis was performed on an acid-digest (SW-846 3050B) of all grab samples, liner composite samples, and the equipment blank. The ICP/AES analysis was unable to obtain the required detection limit for antimony, arsenic, cadmium, lead, selenium, silver, and thallium for the soil sample. These elements have been reported from separate ICP/MS analyses. Total uranium has not been reported by the ICP/AES analysis since it cannot meet the required detection limits in the SAP. The isotopic uranium analysis by ICP/MS met the required detection limit for ^{238}U, which is essentially total uranium. The overall data usability was not affected. For all other metals reported by ICP/AES, all target and required detection limits were met. SW-846 lists the holding time for ICP/AES metals as 6 months. All analyses met the holding times.

Batch 21204: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21230: The interference check standard-AB (ICSAB) had a result above the quantitation limits for neodymium. This indicates that spectral interference was occurring. Neodymium results were not reported due to the high probability that they were the result of this interference. Results slightly above the MDL for cadmium, chromium, manganese, and silver in the ICSAB indicate a possible high bias for these elements. However, the recovery of these elements in the ICSAB was within the ±20% requirement; this indicates no significant bias was present. Low levels of iron and calcium were detected in the preparation blank, but reanalysis was not required since these levels were less than 5% of the lowest sample result.

The MS recoveries for aluminum, calcium, iron, magnesium, manganese, potassium, phosphorous, sodium, and titanium exceeded the ±25% requirement in the FSAP and SAP. Since the sample results for these elements exceeded the MS level by more than four times, this criterion does not apply.

The MS recovery for silicon exceeded the ±25% requirement in the SAP and FSAP. The laboratory believes this was due to matrix interference. Reanalysis was not required since this is secondary element. It should be noted that silicon is not listed with other elements in SW-846 3050B, section 1.1, under "Scope and Application" for the method and does not perform consistently when using this digest.

The RPD between the sample and the duplicate exceeded the ±30% requirement in the SAP for manganese. The laboratory believes this was due to sample inhomogeneity and, with the client's permission, the result has been reported (see Attachment 7).

3.2.8 Inductively Coupled Plasma/Mass Spectroscopy

The ICP/MS actinide and trace metal analyses were performed on the standard SW-846 3050 acid digestion of all grab samples and liner composite samples. The ICP/MS actinide analysis was also performed on the equipment blank. The ICP/MS ^{126}Sn and ^{99}Tc analysis was performed on the sample digest without the addition of hydrochloric acid. Hydrochloric acid is not used for ^{99}Tc analysis because of the potential formation of a ZnCl ion pair with mass 99. ICP/MS trace metal analysis for antimony was perform on the SW-846 3050 digest with additional hydrochloric acid, which is required to keep antimony in the solution. In addition to these acid digests, ICP/MS ^{99}Tc analysis was performed on a vadose water digest of all solid samples.

Direct is the most accurate type of calibration; however, standard material is not commercially available for all of the isotopes of interest. Concentrations of those isotopes without available standards are estimated based on the instrument's mass-response curve, which is generated by using the intensity/concentration relationship for the available isotope standards. Results estimated in this manner are designated "semi-quantitative."

Table 1. Inductively Coupled Plasma-Mass Spectroscopy Standards and Spikes

Standard Type	Analytes Analyzed
Initial calibration verification (nondigested)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Acid digest standard (laboratory control standard)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Predigest spike (MS)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Post-digest spike	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
No standard or spike of either type	^{126}Sn, ^{230}Th, ^{233}U, ^{234}U, ^{236}U

3.2.8.1 Technetium-99 and Tin-126

The required detection limit listed in the SAP for ^{99}Tc was met. The target detection limit for ^{99}Tc was not met. There were no required or target detection limits for ^{126}Sn listed in the SAP. The SAP lists the holding time for isotopic analytes as 6 months. All samples were analyzed within the holding time.

Because there is no available source for ^{126}Sn, ^{117}Sn is used to monitor the chemical recovery for this analysis. Though not specifically requested in the SAP, ^{117}Sn is reported for the laboratory control sample (LCS) and MS in order to demonstrate method accuracy and presence of possible matrix interference.

All sample results were above the MDL and below the quantitation limit with one exception. Based on this, the laboratory suspects that a low level isobaric interference is present in these samples at mass 126. The laboratory believes the most likely suspect is ^{126}Te, but there are other possible candidates. One sample result was above the quantitation level for ^{126}Sn. Users of this data should be aware that all positive ^{126}Sn results in the report may be due to isobaric interference. The laboratory is currently evaluating how to quantify the possible isobaric interferences for ^{126}Sn.

Batch 22899: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21705: The MS for ^{117}Sn was recovered below the ±25% requirement. Similar results have been observed in other batches; this appears to be a matrix interference issue. This batch was not reanalyzed, but others have been with no improvement. Tin results should be considered biased low at these levels. All samples in the batch have been flagged with a "b". The laboratory is investigating change the acid mixture used to perform low level ^{126}Sn analysis in hopes of improving spike recoveries.

3.2.8.2 Technetium-99 (Vadose Water Digest)

The required and target detection limits listed in the SAP for ^{99}Tc were met. The SAP lists a holding time of 6 months for isotopic analytes. All analyses met this holding time.

Batch 23804: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.8.3 Actinides

The required and target detection limits were met for all isotopes and in all samples. The SAP lists the holding time for isotopic analytes as 6 months. All samples were analyzed within the holding time.

Batch 21671: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 23850: The results for ^{232}Th and ^{236}U in the preparation blank were slightly above the MDL. The sample in this batch demonstrated a similar result for ^{236}U and has been flagged with a "B". The sample result for ^{232}Th was below the MDL. Since all results were below the quantitation limit, the blank was acceptable and reanalysis was not required.

3.2.8.4 Trace Metals

Antimony, arsenic, cadmium, lead, selenium, silver, and thallium were analyzed by ICP/MS to obtain the required detection limits in the SAP. Except for the required detection limit for selenium, all required detection limits were met or the sample results were above the quantitation limit and the sample detection limit criteria do not apply. All target detection limits were met. The required detection limit for selenium was approximately an order of magnitude below the detection limit obtained by ICP/MS. The laboratory does not anticipate reaching this detection

limit for future projects. The adjusted MDL for selenium was approximately 0.12 µg/g. SW-846 lists the holding time for metals as 6 months. All samples were analyzed within the holding time.

Batch 21982: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21350: The MS recovery exceeded the required ±25% for antimony at 63%. Reanalysis was not performed due to a facility room outage. The client was informed of the outage (see Attachment 7) and these results were reported. A "b" was added to all sample results in the batch. Since an antimony-specific digestion was used, the laboratory believes the failure was due to matrix interference.

3.3 RADIOCHEMICAL ANALYSIS

The holding time listed in the SAP for radioactive isotopes is 6 months. The FSAP list the holding time as "none". SW-846 does not address holding times for radiochemical analytes. All radiochemical analyses met the 6-month holding time listed in the SAP. Holding time tables for these analytes have not been included in Attachment 3. With the exception of the ^{14}C and ^{3}H analyses, tracers and spikes are added prior to the digestion.

3.3.1 Gamma Energy Analysis

Gamma energy analysis was performed directly on the grab samples, liner composite samples, and the equipment blank. The SAP requires the reporting of all isotopes with positive results above the minimum detectable activity (MDA); therefore, isotopes additional to those required in the SAP were reported when detected. The GEA analysis met all of the required detection limits in the SAP. The laboratory was unable to meet any of the target detection limits.

Batch 21109: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21198: The RPD for ^{214}Pb was above the 30% requirement in the FSAP. Since the counting error was > 15%, this criterion does not apply.

3.3.2 Strontium-89/90

Strontium-89/90 analysis was performed on the grab samples, liner composite samples, and the equipment blank. All of the sample analyses met the required and target detection limits. The FSAP and SAP requested ^{90}Sr, not $^{89/90}Sr$, be reported. The 222-S Laboratory only performs the latter analysis. Since the half-life for ^{89}Sr is approximately 51 days and ^{89}Sr has not been produced at Hanford for years, $^{89/90}Sr$ is essentially ^{90}Sr. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.3.3 Tritium

The ^{3}H analysis by liquid scintillation counting (LSC) was performed on the equipment blank and a water leach of all grab samples and liner composite samples. This method only measured

the ^{3}H in the samples that could be dissolved in water. This analysis achieved the required and target detection limits in the FSAP.

Batches 21194 and 24544: There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21310: The laboratory failed to include an MS with this batch and did not analyze an MS for C7672 as required. This was discussed with the client (see Attachment 7), and a single sample was reanalyzed in a batch containing an MS in order to meet this requirement.

3.3.4 Selenium-79

The ^{79}Se analysis by LSC was performed on the grab samples, liner composite samples, and the equipment blank. The analysis achieved the target detection limit in the FSAP. No required detection limit was listed. No standard is currently available for ^{79}Se, and a cold carrier is used to monitor recovery and is measured gravimetrically. The ^{14}C LSC curve is used to determine the ^{79}Se results since their energies are similar. Since both ^{63}Ni and ^{79}Se use a single digestion batch that is equally split prior to the separation step, the maximum tracer/carrier recovery is 50%.

Batches 21328 and 23959: The preparation blanks demonstrated a positive result below the quantitation limit, as did the five samples in these batches. All results had very large counting uncertainties and were below the target detection limit. Because of these factors, reanalysis was not required. The associated positive results have been flagged with a “B”.

3.3.5 Carbon-14

The ^{14}C analysis by LSC was performed on a water leach of the grab samples and liner composite samples and directly on the equipment blank. The analysis achieved the required detection limit in the FSAP but exceeded the target detection limit. This analysis will only detect water soluble forms of ^{14}C.

Batch 23609: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 2130: Carbon-14 was detected in the method blank below the quantitation limit. Since ^{14}C was not detected in the sample, reanalysis was not required.

3.3.6 Nickel-63

The ^{63}Ni analysis by LSC was performed on the grab samples, liner composite samples, and equipment blank. The analysis achieved the required and target detection limits in the FSAP. Since both ^{63}Ni and ^{79}Se use a single digestion batch that is equally split prior to the separation step, the maximum trace/carrier recovery is 50%.

Batch 24148: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21112: The preparation blanks demonstrated a positive result below the quantitation limit, as did the sample. All results had very large counting uncertainties and were below the target detection limit. Because of these factors, reanalysis was not required. The associated positive results have been flagged with a “B”.

Batch 22827: This duplicate for this batch was reanalyzed in batch 24148 along with the other sample that had a positive result for ^{63}Ni. All sample results were below the MDA in the reanalysis.

3.3.7 Iodine-129

Analysis for ^{129}I by low energy GEA was performed on an iodine-specific fusion digest of all grab samples, liner composite samples, and the equipment blank. The required and target detection limits in the SAP were met. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.3.8 Americium-241, Curium-243/244, and Curium-242

Analysis for ^{241}Am, $^{243/244}$Cm, and ^{242}Cm by alpha energy analysis (AEA) was performed on the grab samples, liner composite samples, and the equipment blank. For this analysis, there were no notable issues with any batches and all QC requirements in the FSAP, SAP, and QAPP were met. The required and target detection limits in the SAP were met. The SAP and FSAP requested ^{243}Cm and ^{244}Cm be reported separately. Since it is not possible to resolve these individual isotopes when using AEA, these isotopes have been reported as $^{243/244}$Cm.

3.3.9 Plutonium-238 and Plutonium-239/240

Plutonium isotopic (^{238}Pu and $^{239/240}$Pu) analysis by AEA was performed on the grab samples, liner composite samples, and the equipment blank. For this analysis, there were no notable issues with any batches and all QC requirements in the FSAP, SAP, and QAPP were met. The required and target detection limits in the SAP were met.

3.4 ORGANIC ANALYSES

3.4.1 Volatile Organic Analysis

The VOA by GC/MS was performed on field samples by purge and trap. Field sampling methods, sample containers, and preservation methods followed SW-846 5035.The soil samples were delivered in a freezer in pre-weighed VOA vials with magnetic stir bars and approximately 5 g of sample. After receipt, the VOA samples were stored in a freezer. For each sample interval, an additional high level sample preserved in methanol was also received. These were not used because none of the results for the frozen samples were above the calibration range. The exact weight of the sample and the tare weight of the VOA vials were recorded by sampling personnel and delivered with the samples. One equipment blank, six field blanks, and six trip blanks were also received and analyzed. The samples were preserved with either HCl or H_2SO_4 to a pH < 2.The holding time for all samples is 14 days. All samples met the required holding time.

The VOA met the target and required detection limits in the SAP. The SAP and FSAP requested m-xylene and p-xylene be reported separately. Since it is not possible to resolve these individual compounds when performing VOA by SW-846 8260C, these compounds have been reported as m+p xylene. The SAP and FSAP request that methanol be reported with this analysis; however, this compound is too polar to be purged and cannot be reported (see Attachment 7). Isobutanol, another poor purger, was reported as a semivolatile organic compound.

All of the field blanks, trip blanks, and the equipment blank contained chloroform above the quantification level. Since chloroform is a common chlorination byproduct, the laboratory believes the source of chloroform was the water used by sampling personnel to make the various blanks.

The LCS, MS, and matrix spike duplicate (MSD) recoveries were compared against the laboratory's statistical process control (SPC) limits, as required by SW-846. The use of SPC limits is allowed in the FSAP, SAP, and QAPP.

Batches 20645 and 21741: There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20614: The method blank results for acetone and methylene chloride were above the MDL but below the quantitation limit. The sample results were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required.

Batch 20618: The method blank result for 2-hexanone was above the MDL and below the quantitation limit. The sample result is similar to the blank and has been flagged with "B". Since all results were below the quantitation limit and 2-hexanone is not a primary analyte, reanalysis was not required.

Batch 20731: The method blank results for toluene and 2-butanone were above the MDL but below the quantitation limit. Since the sample results were non-detect for these compounds, reanalysis was not required.

Batch 20910: The method blank result for toluene was above the MDL but below the quantitation limit. Since the sample result was non-detect for this compound, reanalysis was not required. The MS and MSD experienced low recoveries for the internal standards. Since the sample internal standard (IS) recoveries were within the required range and the MS/MSD IS recoveries were sufficient to produce MS and MSD results that met acceptance criteria, the data for this batch was considered acceptable and reported.

Batch 20912: The method blank result for toluene was above the MDL but below the quantitation limit. The sample result is similar to the blank and has been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required.

Batch 21742: The MSD experienced low recoveries for the internal standards. Since the sample and MS IS recoveries were within the required range and the MSD IS recoveries were sufficient to produce MSD results that met acceptance criteria (RPD), the data for this batch was considered acceptable and reported.

Batch 21745: The method blank results for acetone, toluene, and styrene were above the MDL but below the quantitation limit. The sample results for toluene and styrene were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit and styrene is not a primary analyte, reanalysis was not required. The internal standards were recovered low (approximately -45%) in the sample but were sufficient to produce surrogate results within acceptance criteria. Since this was the second analysis of the sample and the holding time was expiring, the results have been reported. The original analysis had similar IS recoveries. The cause for low IS recoveries in the vadose sample has typically been associated with a leaking vial cap. However, the TIC analysis indicated the presence of hydrocarbons, which could also affect IS recoveries.

Batch 23601: The method blank results for 2-butanone and toluene were above the MDL but below the quantitation limit. The sample results for 2-butanone and toluene were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required. The MS recoveries for 1-butanol, hexone, acetone, and 2-butanone were all above their upper acceptance limit. This would indicate a high bias in the sample results for these compounds. Since 2-butanone was detected below the quantitation limit and other results were below the MDL, this data was acceptable. These results have been flagged with a "b". The results were from the second analysis of the sample. A third analysis was performed past the holding time but not reported. All results were similar. The MSD failed twice with extremely low IS recoveries. Since only one MS/MSD pair is required for each core hole (see Attachment 7) and there are three MS/MSD pairs for core C7672, project quality control requirements have been met.

3.4.2 Semivolatile Organic Analysis

The semivolatile organic analysis (SVOA) by GC/MS was performed on methylene chloride extractions of all grab samples and liner composite samples. All holding times were met.

The SVOA analysis met the required and target detection limits with two exceptions:

- The adjusted MDLs for cyclohexanone were above the 0.5-mg/kg target detection limit for most samples. This compound obtained detection limits between 0.5 mg/kg and 0.6 mg/kg.
- The adjusted MDLs for di-n-butyl-phthalate were above the target detection limit of 0.33 mg/kg. The analysis achieved a detection limit of between 0.5 mg/kg and 0.6 mg/kg for this compound.

LCS, MS, and MSD recoveries were compared against the laboratory's SPC limits, as required by SW-846. The use of SPC limits is permitted in the FSAP, SAP, and QAPP.

The SAP and FSAP requested m-cresol and p-cresol be reported separately. Since it is not possible to resolve these individual compounds when performing SVOA by SW-846 8270C, these compounds have been reported as m+p cresol.

Batch 20887: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20883: Butylbenzylphthalate was detected in the method blank and samples at slightly above the MDL and below the quantitation limit. Therefore, the blank is acceptable and reanalysis was unnecessary. Sample results have been flagged with a "B".

Batch 20921: Butylbenzylphthalate, bis(2-ethylhexyl) phthalate, and di-n-octylphthalate were detected in the method blank above the MDL and below the quantitation limit. Therefore, the blank is acceptable and reanalysis was unnecessary. Only Butylbenzylphthalate was detected in the samples, and these results have been flagged with a "B".

3.4.3 Tentatively Identified Compounds

Unassigned peaks or TICs were treated as follows. Standards were obtained and analyzed for each secondary analyte identified in the SAP. This data was accumulated in the Hanford library. Following analysis, the largest TICs with instrument responses greater than 10% of the response of the nearest internal standard were evaluated and compared to the Hanford library. The estimated concentration of these TICs was calculated using measured response factors from the Hanford library compound list.

After comparison to the Hanford library, remaining unknowns were compared to the National Institute of Standards and Technology's NIST 02, *HP Mass Spectral Libraries*. The estimated concentration of compounds identified in the NIST library was calculated based on an arbitrary response factor of 1.0. If the compounds were not identified as a result of this comparison, they were reported as "unknown." Summaries of the SVOA and VOA TICs from the field samples and method blanks are provided in Attachment 5. TICs that were found in the field samples and were present in the associated batch method blank have been flagged with "B".

4.0 PROCEDURES

Table 2 lists the analytical procedures used for analysis of the Area C samples.

Table 2. Analytical Procedures

Analysis	Preparation Method	Analysis Procedure
Inorganic Analyses		
Cyanide	LA-695-103, Rev. J-0 (SW-846 9010C)	LA-695-103, Rev. J-0 (SW-846 9014)
Sulfide	LA-361-101, Rev. D-0 (SW-846 9030B)	LA-361-101, Rev. D-0 (SW-846 9215)
pH (solid)	LA-212-105, Rev. G-0 (SW-846 9045D)	LA-212-105, Rev. G-0 (SW-846 9045D)
pH (liquid)		LA-212-106, Rev. H-0-A (SW-846 9040C)
Mercury – Cold Vapor Atomic Absorption	LA-325-110, Rev. A-0 (SW-846 7470A, 7471A)	LA-325-110, Rev. A-0 (SW-846 7470A, 7471A)
Ammonia – IC	LA-544-112, Rev. E-0	LA-533-101, Rev. Q-0

Analysis	Preparation Method	Analysis Procedure
Anions & Organic Acids – IC	LA-504-101, Rev. M-0	LA-533-115, Rev. J-0
Metals – ICP /AES	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-505-161, Rev. J-0-A (SW-846 6010C)
^{99}Tc, ^{126}Sn – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1
^{99}Tc – ICP/MS	08-ATL-078 Vadose Water Digest	LA-506-102, Rev. F-1
Metals – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1 (SW-846 6020A)
Actinides – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1
Radiochemical Analyses		
GEA	Direct	LA-548-121, Rev. I-0
^{90}Sr – Separation/Beta counting (Solid)	LA-544-101, Rev. F-0	LA-220-101, Rev. J-0, I-0
^{3}H – LSC	LA-504-101, Rev. M-0	LA-218-111, Rev. G-0
^{14}C – LSC	LA-504-101, Rev. M-0	LA-348-104, Rev. H-0, I-0
^{79}Se – Separation/LSC	LA-544-101, Rev. F-0	LA-365-132, Rev. I-0
^{63}Ni – Separation/LSC	LA-544-101, Rev. F-0	LA-285-102, Rev. E-0
^{129}I – Separation/GEA	LA-378-105, Rev. C-0, D-0	LA-378-105, Rev. C-0, D-0
^{241}Am, $^{243/244,\ 242}$Cm – Separation/AEA	LA-544-101, Rev. F-0	LA-953-104, Rev. H-1
$^{239/240,\ 238}$Pu – Separation/AEA	LA-544-101, Rev. F-0	LA-953-104, Rev. H-1
Organic Analyses		
VOC – GC/MS	Direct	LA-523-118, Rev. G-O-A (SW-846 8260B)
SVOC – GC/MS	LA-523-138, Rev. G-0 (SW-846 3540C) LA-523-115, Rev. H (SW-846 3520C)	LA-523-135, Rev. D-0 (SW-846 8270C)

5.0 REFERENCES

ATL-MP-1011, 2010, *ATL Quality Assurance Project Plan for 222-S Laboratory*, Rev. 9, Advanced Technologies and Laboratories International, Inc., Richland, Washington.

NIST 02, 2002, *HP Mass Spectral Libraries*, July 2002 Release, Hewlett-Packard Company, Palo Alto, California.

SW-846, 1986, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods,* Third Edition, as amended, U.S. Environmental Protection Agency, Washington, D.C.

RPP-PLAN-40564, 2009, *Field Sampling and Analysis Plan for Sites P and L at Waste Management Area C,* Rev. 2, Washington River Protection Solutions, Inc.

RPP-PLAN-38777, 2009, *Sampling and Analysis Plan for Phase 2 Characterization of Vadose Zone Soil in Waste Management Area C*, Rev. 1, Washington River Protection Solutions, Inc.

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	V10-003-245	PAGE 1 OF 2

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8P	DATA TURNAROUND
Ekstrom / Campbell	TEMPLETON, AM	373-5589	BERLIN, PC	AIR QUALITY ☐	75 Days / 75 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
C7672 Surface Dup	WMA C Sampling for CMS		V10-003		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**ACTUAL SAMPLE DEPTH**	**COA**	**METHOD OF SHIPMENT**	
TFVS-09-003	TFVZ-09-000001	Surface Dup	N/A	Govt. Vehicle	
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
222-S Lab Operations			N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C
HOLDING TIME	14/40 Days
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B26JK3	SOIL	7/7/10	1030	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RR Ekstrom RR Ekstrom	7/7/10 1215	RH Steele RH STEELE	7-7-10 1215
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

O ✓ ✓

GRP# 20100520
Sam# S10V001242

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V10-003-245	PAGE 2 OF 2
COLLECTOR Ekstrom / Campbell	**COMPANY CONTACT** TEMPLETON, AM	**TELEPHONE NO.** 373-5589	**PROJECT COORDINATOR** BERLIN, PC	**PRICE CODE** 8P	**DATA TURNAROUND**
SAMPLING LOCATION C7672 Surface Dup	**PROJECT DESIGNATION** WMA C Sampling for CMS		**SAF NO.** V10-003	**AIR QUALITY** ☐	**75 Days / 75 Days**
ICE CHEST NO. TFVS-09-003	**FIELD LOGBOOK NO.** TFVZ-09-000001	**ACTUAL SAMPLE DEPTH** Surface Dup	**COA** N/A	**METHOD OF SHIPMENT** Govt. Vehicle	
SHIPPED TO 222-S Lab Operations	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A		

SPECIAL INSTRUCTIONS

** After VOA bottles for the direct pushes are filled, the sampler will cap remaining liners for shipment to 222-S. Where capping is not possible, the sample shall be put into 500 mL or 250 mL glass bottles with Teflon-lined lids.

(1) Semi-VOA - 8270 Complete (TF); TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D; PCBs - 8082; Pesticides - 8081 (TF); 1668 PCB CONGENER (TCL); ICP Metals - 6010 (SW-846) (TF); Mercury - 7471 - (CV) (TF); 300.7_AMMONIUM (TF); IC Anions - 9056; Sulfide - 9215; Total Cyanide - 9014 (TF); pH (Soil) - 9045; Americium-241 (TF); C-14; CURIUM; GAMMA ENERGY ANALYSIS (TF); H3 - TRITIUM; I129_SEP_GEA (TF); Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Nickel-63 (TF); RADISO_ICPMS (TF); Selenium-79 (TF); Strontium-90; Conductivity - 9050_WE; Percent Solids (TF); Percent Water (TF);

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V10-003-182	PAGE 1 OF 2
COLLECTOR Campbell / Harris	**COMPANY CONTACT** TEMPLETON, AM	**TELEPHONE NO.** 373-5589	**PROJECT COORDINATOR** BERLIN, PC	**PRICE CODE** 8P	**DATA TURNAROUND**
SAMPLING LOCATION C7672 I002	**PROJECT DESIGNATION** WMA C Sampling for CMS		**SAF NO.** V10-003	**AIR QUALITY** ☐	75 Days / 75 Days
ICE CHEST NO. TFV2-09-003	**FIELD LOGBOOK NO.** TFV2-09-000001	**ACTUAL SAMPLE DEPTH** 10-12	**COA** n/a	**METHOD OF SHIPMENT** Govt. Vehicle	
SHIPPED TO 222-S Lab Operations	**OFFSITE PROPERTY NO.** n/a		**BILL OF LADING/AIR BILL NO.** n/a		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C
HOLDING TIME	14/40 Days
TYPE OF CONTAINER	Gs jar/Liners
NO. OF CONTAINER(S)	3
VOLUME	160g
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B26C70	SOIL	7-8-10	1055	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Campbell Campbell	7-8-10 1220		7-8-10 1220
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
-0°C Rehtad
GRP# 20100520
SAM# 510V001299
1300
1301

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V10-003-182	PAGE 2 OF 2
COLLECTOR Campbell / Harris	COMPANY CONTACT TEMPLETON, AM	TELEPHONE NO. 373-5589	PROJECT COORDINATOR BERLIN, PC	PRICE CODE 8P AIR QUALITY ☐	DATA TURNAROUND 75 Days / 75 Days
SAMPLING LOCATION C7672 I002	PROJECT DESIGNATION WMA C Sampling for CMS		SAF NO. V10-003		
ICE CHEST NO. TFV2-09-003	FIELD LOGBOOK NO. TFV2-09-000001	ACTUAL SAMPLE DEPTH 10-12	COA n/A	METHOD OF SHIPMENT Govt. Vehicle	
SHIPPED TO 222-S Lab Operations	OFFSITE PROPERTY NO. n/A		BILL OF LADING/AIR BILL NO. n/A		

SPECIAL INSTRUCTIONS

** After VOA bottles for the direct pushes are filled, the sampler will cap remaining liners for shipment to 222-S. Where capping is not possible, the sample shall be put into 500 mL or 250 mL glass bottles with Teflon-lined lids.
(1) Semi-VOA - 8270 Complete (TF); TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D; PCBs - 8082; Pesticides - 8081 (TF); 1668 PCB CONGENER (TCL); ICP Metals - 6010 (SW-846) (TF); Mercury - 7471 - (CV) (TF); 300.7_AMMONIUM (TF); IC Anions - 9056; Sulfide - 9215; Total Cyanide - 9014 (TF); pH (Soil) - 9045; Americium-241 (TF); C-14; CURIUM; GAMMA ENERGY ANALYSIS (TF); H3 - TRITIUM; I129_SEP_GEA (TF); Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Nickel-63 (TF); RADISO_ICPMS (TF); Selenium-79 (TF); Strontium-90; Conductivity - 9050_WE; Percent Solids (TF); Percent Water (TF);

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: WMA C			DATA PACKAGE: VSR11-045		
VALIDATOR: Carl Schloesslin		LAB: 222-S Lab		DATE: 5-23-2011	
			SDG: 20100520		
ANALYSES PERFORMED					
SW-846/ICP X	SW-846/GFAA	SW-846/Hg X		EPA 200.8	
SAMPLES/MATRIX Soil samples B26JK3 and B26C70					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present?..... Yes (No) N/A

Comments: None

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICP interference checks acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

6010C Batch 21230 MB Hits: Ca 5.45 ug/g, Fe 0.75 ug/g

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments:

6010C Batch 21230: Si MS/PS %Rs = 73%/OK

6020A Batch 21982: Ag LCS %R = 131%, Se LCS %R = 134%

ICP-MS Fission Batch 21705: Sn-117 MS/PS %Rs = 69%/OK

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable?..... Yes No N/A

Duplicate results acceptable?..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E)..... Yes No N/A

MS/MSD standards expired? (Levels D, E)..... Yes No N/A

Field duplicate RPD values acceptable?..... Yes No N/A

Field split RPD values acceptable?..... Yes No N/A

Transcription/calculation errors? (Levels D, E)..... Yes No N/A

Comments:

None

C,

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? ..... Yes No N/A

ICP serial dilution %D values acceptable? ..... Yes No N/A

ICP post digestion spike required? ..... Yes No N/A

ICP post digestion spike values acceptable?..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors?..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

None

8. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses?.....Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E)..... Yes No N/A

Detection limits meet RDL?..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

The MDL for Se significantly > the RDL of 0.03 ug/g. The Se results for both samples were detects.

Appendix 6

Additional Documentation Requested By Client

Holding Time Report: Mercury

Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Analysis Date	Missed Holding Time
20100520	S10V001225	SOLID	SW-846 7471A	SW-846 7471A	07/07/10 10:30	07/07/10 12:15	07/20/10 22:28	N
20100520	S10V001242	SOLID	SW-846 7471A	SW-846 7471A	07/07/10 10:30	07/07/10 12:15	07/20/10 22:46	N
20100520	S10V001282	SOLID	SW-846 7471A	SW-846 7471A	07/08/10 09:40	07/08/10 12:20	07/20/10 22:46	N
20100520	S10V001302	SOLID	SW-846 7471A	SW-846 7471A	07/08/10 10:55	07/08/10 12:20	07/20/10 22:46	N
20100520	S10V001342	SOLID	SW-846 7471A	SW-846 7471A	07/13/10 09:15	07/13/10 13:00	07/20/10 22:46	N
20100520	S10V001362	SOLID	SW-846 7471A	SW-846 7471A	07/13/10 11:30	07/13/10 13:00	07/20/10 22:46	N
20100520	S10V001382	SOLID	SW-846 7471A	SW-846 7471A	07/14/10 10:30	07/14/10 13:30	07/20/10 22:46	N
20100520	S10V001402	SOLID	SW-846 7471A	SW-846 7471A	07/15/10 09:25	07/15/10 10:30	07/20/10 22:46	N
20100520	S10V001422	SOLID	SW-846 7471A	SW-846 7471A	07/16/10 10:45	07/16/10 11:40	07/27/10 14:30	N
20100529	S10V001438	LIQUID	SW-846 7470A	SW-846 7470A	07/12/10 10:20	07/12/10 13:45	08/02/10 16:16	N

Holding Time Report: Metals, ICP/AES, ICP/MS

Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Prep Date	Analysis Date	Missed Holding Time
20100520	S10V001233	SOLID	SW846-6010C	SW846-3050B	07/07/10 10:30	07/07/10 12:15	07/29/10 16:45	08/03/10 12:56	N
20100520	S10V001250	SOLID	SW846-6010C	SW846-3050B	07/07/10 10:30	07/07/10 12:15	07/29/10 16:45	08/03/10 13:52	N
20100520	S10V001290	SOLID	SW846-6010C	SW846-3050B	07/08/10 09:40	07/08/10 12:20	07/29/10 16:45	08/03/10 13:55	N
20100520	S10V001310	SOLID	SW846-6010C	SW846-3050B	07/08/10 10:55	07/08/10 12:20	07/29/10 16:45	08/03/10 13:58	N
20100520	S10V001350	SOLID	SW846-6010C	SW846-3050B	07/13/10 09:15	07/13/10 13:00	07/29/10 16:45	08/03/10 14:01	N
20100520	S10V001370	SOLID	SW846-6010C	SW846-3050B	07/13/10 11:30	07/13/10 13:00	07/29/10 16:45	08/03/10 14:06	N
20100520	S10V001390	SOLID	SW846-6010C	SW846-3050B	07/14/10 10:30	07/14/10 13:30	07/29/10 16:45	08/03/10 14:09	N
20100520	S10V001410	SOLID	SW846-6010C	SW846-3050B	07/15/10 09:25	07/15/10 10:30	07/29/10 16:45	08/03/10 14:16	N
20100520	S10V001430	SOLID	SW846-6010C	SW846-3050B	07/16/10 10:45	07/16/10 11:40	07/29/10 16:45	08/03/10 14:19	N
20100529	S10V001438	LIQUID	SW846-6010C	N/A	07/12/10 10:20	07/12/10 13:45	N/A	07/27/10 13:44	N
20100520	S10V001230	SOLID	SW846-6020A	SW846-3050B	07/07/10 10:30	07/07/10 12:15	07/29/10 11:59	08/04/10 16:53	N
20100520	S10V001233	SOLID	SW846-6020A	SW846-3050B	07/07/10 10:30	07/07/10 12:15	07/29/10 16:45	08/24/10 19:59	N
20100520	S10V001233	SOLID	SW846-6020A	SW846-3050B	07/07/10 10:30	07/07/10 12:15	07/29/10 16:45	08/30/10 12:29	N
20100520	S10V001247	SOLID	SW846-6020A	SW846-3050B	07/07/10 10:30	07/07/10 12:15	07/29/10 11:59	08/04/10 17:01	N
20100520	S10V001250	SOLID	SW846-6020A	SW846-3050B	07/07/10 10:30	07/07/10 12:15	07/29/10 16:45	08/24/10 20:11	N
20100520	S10V001250	SOLID	SW846-6020A	SW846-3050B	07/07/10 10:30	07/07/10 12:15	07/29/10 16:45	08/30/10 12:41	N
20100520	S10V001287	SOLID	SW846-6020A	SW846-3050B	07/08/10 09:40	07/08/10 12:20	07/29/10 11:59	08/04/10 17:52	N
20100520	S10V001290	SOLID	SW846-6020A	SW846-3050B	07/08/10 09:40	07/08/10 12:20	07/29/10 16:45	08/24/10 20:17	N
20100520	S10V001290	SOLID	SW846-6020A	SW846-3050B	07/08/10 09:40	07/08/10 12:20	07/29/10 16:45	08/30/10 12:46	N
20100520	S10V001307	SOLID	SW846-6020A	SW846-3050B	07/08/10 10:55	07/08/10 12:20	07/29/10 11:59	08/04/10 17:08	N
20100520	S10V001310	SOLID	SW846-6020A	SW846-3050B	07/08/10 10:55	07/08/10 12:20	07/29/10 16:45	08/24/10 20:23	N
20100520	S10V001310	SOLID	SW846-6020A	SW846-3050B	07/08/10 10:55	07/08/10 12:20	07/29/10 16:45	08/30/10 12:52	N
20100520	S10V001347	SOLID	SW846-6020A	SW846-3050B	07/13/10 09:15	07/13/10 13:00	07/29/10 11:59	08/04/10 17:16	N
20100520	S10V001350	SOLID	SW846-6020A	SW846-3050B	07/13/10 09:15	07/13/10 13:00	07/29/10 16:45	08/24/10 20:29	N
20100520	S10V001350	SOLID	SW846-6020A	SW846-3050B	07/13/10 09:15	07/13/10 13:00	07/29/10 16:45	08/30/10 12:58	N
20100520	S10V001367	SOLID	SW846-6020A	SW846-3050B	07/13/10 11:30	07/13/10 13:00	07/29/10 11:59	08/04/10 17:23	N
20100520	S10V001370	SOLID	SW846-6020A	SW846-3050B	07/13/10 11:30	07/13/10 13:00	07/29/10 16:45	08/24/10 20:35	N
20100520	S10V001370	SOLID	SW846-6020A	SW846-3050B	07/13/10 11:30	07/13/10 13:00	07/29/10 16:45	08/30/10 13:04	N
20100520	S10V001387	SOLID	SW846-6020A	SW846-3050B	07/14/10 10:30	07/14/10 13:30	07/29/10 11:59	08/04/10 18:07	N
20100520	S10V001390	SOLID	SW846-6020A	SW846-3050B	07/14/10 10:30	07/14/10 13:30	07/29/10 16:45	08/24/10 21:05	N

Holding Time Report: Metals, ICP/AES, ICP/MS

Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Prep Date	Analysis Date	Missed Holding Time
20100520	S10V001390	SOLID	SW846-6020A	SW846-3050B	07/14/10 10:30	07/14/10 13:30	07/29/10 16:45	08/30/10 13:59	N
20100520	S10V001407	SOLID	SW846-6020A	SW846-3050B	07/15/10 09:25	07/15/10 10:30	07/29/10 11:59	08/04/10 18:15	N
20100520	S10V001410	SOLID	SW846-6020A	SW846-3050B	07/15/10 09:25	07/15/10 10:30	07/29/10 16:45	08/24/10 21:12	N
20100520	S10V001410	SOLID	SW846-6020A	SW846-3050B	07/15/10 09:25	07/15/10 10:30	07/29/10 16:45	08/30/10 14:05	N
20100520	S10V001427	SOLID	SW846-6020A	SW846-3050B	07/16/10 10:45	07/16/10 11:40	07/29/10 11:59	08/04/10 18:22	N
20100520	S10V001430	SOLID	SW846-6020A	SW846-3050B	07/16/10 10:45	07/16/10 11:40	07/29/10 16:45	08/24/10 21:18	N
20100520	S10V001430	SOLID	SW846-6020A	SW846-3050B	07/16/10 10:45	07/16/10 11:40	07/29/10 16:45	08/30/10 14:11	N

Holding Time Report: Radio-Isotopes by ICP/MS

Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Prep Date	Analysis Date	Missed Holding Time
20100520	S10V001233	SOLID	Actindes	SW-846 3050B	07/07/10 10:30	07/07/10 12:15	07/29/10 16:45	08/24/10 11:38	N
20100520	S10V001250	SOLID	Actindes	SW-846 3050B	07/07/10 10:30	07/07/10 12:15	07/29/10 16:45	08/24/10 11:51	N
20100520	S10V001290	SOLID	Actindes	SW-846 3050B	07/08/10 09:40	07/08/10 12:20	07/29/10 16:45	08/24/10 11:58	N
20100520	S10V001310	SOLID	Actindes	SW-846 3050B	07/08/10 10:55	07/08/10 12:20	07/29/10 16:45	08/24/10 12:05	N
20100520	S10V001350	SOLID	Actindes	SW-846 3050B	07/13/10 09:15	07/13/10 13:00	07/29/10 16:45	08/24/10 12:12	N
20100520	S10V001370	SOLID	Actindes	SW-846 3050B	07/13/10 11:30	07/13/10 13:00	07/29/10 16:45	08/24/10 12:18	N
20100520	S10V001390	SOLID	Actindes	SW-846 3050B	07/14/10 10:30	07/14/10 13:30	07/29/10 16:45	08/24/10 12:50	N
20100520	S10V001410	SOLID	Actindes	SW-846 3050B	07/15/10 09:25	07/15/10 10:30	07/29/10 16:45	08/24/10 12:57	N
20100520	S10V001430	SOLID	Actindes	SW-846 3050B	07/16/10 10:45	07/16/10 11:40	07/29/10 16:45	08/24/10 13:04	N
20100529	S10V001438	LIQUID	Actindes	N/A	07/12/10 10:20	07/12/10 13:45	N/A	11/03/10 21:59	N
20100520	S10V001252	SOLID	Fission Products	SW-846 3050B	07/07/10 10:30	07/07/10 12:15	07/28/10 16:45	08/25/10 20:05	N
20100520	S10V001292	SOLID	Fission Products	SW-846 3050B	07/08/10 09:40	07/08/10 12:20	07/28/10 16:45	08/25/10 20:52	N
20100520	S10V001312	SOLID	Fission Products	SW-846 3050B	07/08/10 10:55	07/08/10 12:20	07/28/10 16:45	08/25/10 20:59	N
20100520	S10V001352	SOLID	Fission Products	SW-846 3050B	07/13/10 09:15	07/13/10 13:00	07/28/10 16:45	08/25/10 21:06	N
20100520	S10V001372	SOLID	Fission Products	SW-846 3050B	07/13/10 11:30	07/13/10 13:00	07/28/10 16:45	08/25/10 21:12	N
20100520	S10V001392	SOLID	Fission Products	SW-846 3050B	07/14/10 10:30	07/14/10 13:30	07/28/10 16:45	08/25/10 21:19	N
20100520	S10V001412	SOLID	Fission Products	SW-846 3050B	07/15/10 09:25	07/15/10 10:30	07/28/10 16:45	08/25/10 21:26	N
20100520	S10V001432	SOLID	Fission Products	SW-846 3050B	07/16/10 10:45	07/16/10 11:40	07/28/10 16:45	08/25/10 21:33	N
20100529	S10V001438	LIQUID	Fission Products	N/A	07/12/10 10:20	07/12/10 13:45	N/A	10/05/10 20:36	N
20100520	S10V001228	SOLID	Technetium-99	Vadose Water Digest	07/07/10 10:30	07/07/10 12:15	10/21/10 10:30	11/02/10 09:33	N
20100520	S10V001245	SOLID	Technetium-99	Vadose Water Digest	07/07/10 10:30	07/07/10 12:15	10/21/10 10:30	11/02/10 09:45	N
20100520	S10V001285	SOLID	Technetium-99	Vadose Water Digest	07/08/10 09:40	07/08/10 12:20	10/21/10 10:30	11/02/10 09:51	N
20100520	S10V001305	SOLID	Technetium-99	Vadose Water Digest	07/08/10 10:55	07/08/10 12:20	10/21/10 10:30	11/02/10 09:57	N
20100520	S10V001345	SOLID	Technetium-99	Vadose Water Digest	07/13/10 09:15	07/13/10 13:00	10/21/10 10:30	11/02/10 10:03	N
20100520	S10V001365	SOLID	Technetium-99	Vadose Water Digest	07/13/10 11:30	07/13/10 13:00	10/21/10 10:30	11/02/10 10:38	N
20100520	S10V001385	SOLID	Technetium-99	Vadose Water Digest	07/14/10 10:30	07/14/10 13:30	10/21/10 10:30	11/02/10 10:44	N
20100520	S10V001405	SOLID	Technetium-99	Vadose Water Digest	07/15/10 09:25	07/15/10 10:30	10/21/10 10:30	11/02/10 10:50	N
20100520	S10V001425	SOLID	Technetium-99	Vadose Water Digest	07/16/10 10:45	07/16/10 11:40	10/21/10 10:30	11/02/10 10:56	N

LABCORE Completed Batch Report for Batch# 00021230

Analyst: Maling, Tracy

Book#: A-124-100708-2, A-124-100708-3, A-124-100712-1

Instrument: ICP-TJA

Method: ICP-TOTAL METALS, LA-505-161 Rev/Mod J-0-A

Specification: C Farm WMC 2010-2

Prep Batch: 00021048

Batch Comment:

C-Farm WMc 2010-2 ICP TJA Total Metals trm

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	ICV	S1008090001		0 0			Silver	LIQUID	1	9.4694E-01			5.00E-03	ug/mL	94.694	% Recovery	
1	ICV	S1008090001		0 0			Aluminum	LIQUID	5	5.1931E+00			0.03	ug/mL	103.86	% Recovery	
1	ICV	S1008090001		0 0			Arsenic	LIQUID	5	5.0114E+00			0.05	ug/mL	100.23	% Recovery	
1	ICV	S1008090001		0 0			Boron	LIQUID	5	5.0919E+00			0.03	ug/mL	101.84	% Recovery	
1	ICV	S1008090001		0 0			Barium	LIQUID	5	5.0340E+00			3.00E-03	ug/mL	100.68	% Recovery	
1	ICV	S1008090001		0 0			Beryllium	LIQUID	5	5.0184E+00			1.00E-03	ug/mL	100.37	% Recovery	
1	ICV	S1008090001		0 0			Bismuth	LIQUID	5	4.9784E+00			0.1	ug/mL	99.568	% Recovery	
1	ICV	S1008090001		0 0			Calcium	LIQUID	5	5.2931E+00			0.05	ug/mL	105.86	% Recovery	
1	ICV	S1008090001		0 0			Cadmium	LIQUID	5	5.0794E+00			5.00E-03	ug/mL	101.59	% Recovery	
2	ICV	S1008090001		0 1			Cerium	LIQUID	5	5.1550E+00			0.03	ug/mL	103.1	% Recovery	
1	ICV	S1008090001		0 0			Cobalt	LIQUID	5	5.0864E+00			0.01	ug/mL	101.73	% Recovery	
1	ICV	S1008090001		0 0			Chromium	LIQUID	5	5.0865E+00			5.00E-03	ug/mL	101.73	% Recovery	
1	ICV	S1008090001		0 0			Copper	LIQUID	5	5.0132E+00			5.00E-03	ug/mL	100.26	% Recovery	
2	ICV	S1008090001		0 1			Europium	LIQUID	5	5.0025E+00			5.00E-03	ug/mL	100.05	% Recovery	
1	ICV	S1008090001		0 0			Iron	LIQUID	5	5.0820E+00			5.00E-03	ug/mL	101.64	% Recovery	
1	ICV	S1008090001		0 0			Potassium	LIQUID	5	5.2115E+00			0.5	ug/mL	104.23	% Recovery	
1	ICV	S1008090001		0 0			Lanthanum	LIQUID	5	4.9502E+00			3.00E-03	ug/mL	99.004	% Recovery	
1	ICV	S1008090001		0 0			Lithium	LIQUID	5	5.2223E+00			3.00E-03	ug/mL	104.45	% Recovery	
1	ICV	S1008090001		0 0			Magnesium	LIQUID	5	5.1039E+00			0.05	ug/mL	102.08	% Recovery	
1	ICV	S1008090001		0 0			Manganese	LIQUID	5	5.0437E+00			3.00E-03	ug/mL	100.87	% Recovery	
1	ICV	S1008090001		0 0			Molybdenum	LIQUID	5	5.0230E+00			0.02	ug/mL	100.46	% Recovery	
1	ICV	S1008090001		0 0			Sodium	LIQUID	5	5.2492E+00			0.1	ug/mL	104.98	% Recovery	
2	ICV	S1008090001		0 1			Neodymium	LIQUID	5	5.0319E+00			0.01	ug/mL	100.64	% Recovery	
1	ICV	S1008090001		0 0			Nickel	LIQUID	5	5.0227E+00			0.02	ug/mL	100.45	% Recovery	
3	ICV	S1008090001		0 2			Niobium	LIQUID	5	4.9125E+00			0.03	ug/mL	98.25	% Recovery	
1	ICV	S1008090001		0 0			Phosphorus	LIQUID	5	5.0193E+00			0.05	ug/mL	100.39	% Recovery	
1	ICV	S1008090001		0 0			Lead	LIQUID	5	5.1634E+00			0.05	ug/mL	103.27	% Recovery	
2	ICV	S1008090001		0 1			Palladium	LIQUID	5	4.9922E+00			0.1	ug/mL	99.844	% Recovery	
2	ICV	S1008090001		0 1			Praseodymium	LIQUID	5	5.1127E+00			0.01	ug/mL	102.25	% Recovery	
2	ICV	S1008090001		0 1			Rhodium	LIQUID	5	5.1776E+00			0.05	ug/mL	103.55	% Recovery	
2	ICV	S1008090001		0 1			Ruthenium	LIQUID	5	5.0224E+00			0.03	ug/mL	100.45	% Recovery	

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
1	ICV	S1008090001		0 0			Sulfur	LIQUID	5	5.0879E+00			0.1	ug/mL	101.76	% Recovery	
1	ICV	S1008090001		0 0			Antimony	LIQUID	5	5.0473E+00			0.05	ug/mL	100.95	% Recovery	
1	ICV	S1008090001		0 0			Selenium	LIQUID	5	5.1614E+00			0.1	ug/mL	103.23	% Recovery	
1	ICV	S1008090001		0 0			Silicon	LIQUID	5	4.8575E+00			0.03	ug/mL	97.15	% Recovery	
2	ICV	S1008090001		0 1			Samarium	LIQUID	5	4.9775E+00			0.02	ug/mL	99.55	% Recovery	
3	ICV	S1008090001		0 2			Tin	LIQUID	5	4.9796E+00			0.03	ug/mL	99.592	% Recovery	
1	ICV	S1008090001		0 0			Strontium	LIQUID	5	5.0073E+00			3.00E-03	ug/mL	100.15	% Recovery	
3	ICV	S1008090001		0 2			Tantalum	LIQUID	5	4.9846E+00			0.05	ug/mL	99.692	% Recovery	
3	ICV	S1008090001		0 2			Tellurium	LIQUID	5	5.1002E+00			0.1	ug/mL	102	% Recovery	
2	ICV	S1008090001		0 1			Thorium	LIQUID	5	5.0962E+00			0.05	ug/mL	101.92	% Recovery	
1	ICV	S1008090001		0 0			Titanium	LIQUID	5	4.9773E+00			5.00E-03	ug/mL	99.545	% Recovery	
2	ICV	S1008090001		0 1			Thallium	LIQUID	5	5.2289E+00			0.1	ug/mL	104.58	% Recovery	
2	ICV	S1008090001		0 1			Uranium	LIQUID	5	5.2840E+00			0.1	ug/mL	105.68	% Recovery	
1	ICV	S1008090001		0 0			Vanadium	LIQUID	5	5.1496E+00			5.00E-03	ug/mL	102.99	% Recovery	
3	ICV	S1008090001		0 2			Tungsten	LIQUID	5	5.0090E+00			0.2	ug/mL	100.18	% Recovery	
2	ICV	S1008090001		0 1			Yttrium	LIQUID	5	5.0249E+00			2.00E-03	ug/mL	100.5	% Recovery	
1	ICV	S1008090001		0 0			Zinc	LIQUID	5	5.1066E+00			5.00E-03	ug/mL	102.13	% Recovery	
1	ICV	S1008090001		0 0			Zirconium	LIQUID	5	4.8977E+00			5.00E-03	ug/mL	97.953	% Recovery	
Sample Sequence 4																	
4	LLS	S1008090003		0 0			Silver	LIQUID	.02	2.0500E-02			5.00E-03	ug/mL	102.5	% Recovery	
4	LLS	S1008090003		0 0			Aluminum	LIQUID	.1	9.2310E-02			0.03	ug/mL	92.31	% Recovery	
4	LLS	S1008090003		0 0			Arsenic	LIQUID	.2	1.9397E-01			0.05	ug/mL	96.985	% Recovery	
5	LLS	S1008090003		0 1			Boron	LIQUID	.1	9.8110E-02			0.03	ug/mL	98.11	% Recovery	
4	LLS	S1008090003		0 0			Barium	LIQUID	.01	9.2400E-03			3.00E-03	ug/mL	92.4	% Recovery	
4	LLS	S1008090003		0 0			Beryllium	LIQUID	.001	7.6000E-04			1.00E-04	ug/mL	76	% Recovery	
4	LLS	S1008090003		0 0			Bismuth	LIQUID	.2	1.5175E-01			0.1	ug/mL	75.875	% Recovery	
4	LLS	S1008090003		0 0			Calcium	LIQUID	.2	1.7641E-01			0.05	ug/mL	88.205	% Recovery	
4	LLS	S1008090003		0 0			Cadmium	LIQUID	.01	1.1970E-02			5.00E-03	ug/mL	119.7	% Recovery	
4	LLS	S1008090003		0 0			Cerium	LIQUID	.2	1.7128E-01			0.03	ug/mL	85.64	% Recovery	
5	LLS	S1008090003		0 1			Cobalt	LIQUID	.04	3.2910E-02			0.01	ug/mL	82.275	% Recovery	
4	LLS	S1008090003		0 0			Chromium	LIQUID	.02	2.2050E-02			5.00E-03	ug/mL	110.25	% Recovery	
5	LLS	S1008090003		0 1			Copper	LIQUID	.02	1.9090E-02			5.00E-03	ug/mL	95.45	% Recovery	
6	LLS	S1008090003		0 2			Europium	LIQUID	.1	9.5180E-02			5.00E-03	ug/mL	95.18	% Recovery	
4	LLS	S1008090003		0 0			Iron	LIQUID	.05	4.5260E-02			5.00E-03	ug/mL	90.52	% Recovery	
4	LLS	S1008090003		0 0			Potassium	LIQUID	.5	3.8750E-01			0.1	ug/mL	77.5	% Recovery	
4	LLS	S1008090003		0 0			Lanthanum	LIQUID	.01	9.8100E-03			3.00E-03	ug/mL	98.1	% Recovery	
4	LLS	S1008090003		0 0			Lithium	LIQUID	.02	1.9050E-02			3.00E-03	ug/mL	95.25	% Recovery	
4	LLS	S1008090003		0 0			Magnesium	LIQUID	.2	2.0228E-01			0.05	ug/mL	101.14	% Recovery	
4	LLS	S1008090003		0 0			Manganese	LIQUID	.02	1.8580E-02			3.00E-03	ug/mL	92.9	% Recovery	
5	LLS	S1008090003		0 1			Molybdenum	LIQUID	.1	9.3090E-02			0.02	ug/mL	93.09	% Recovery	
4	LLS	S1008090003		0 0			Sodium	LIQUID	.2	1.6791E-01			0.1	ug/mL	83.955	% Recovery	
4	LLS	S1008090003		0 0			Neodymium	LIQUID	.1	8.9870E-02			0.01	ug/mL	89.87	% Recovery	

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
4	LLS	S1008090003		0 0			Nickel	LIQUID	.04	5.1720E-02			0.02	ug/mL	129.3	% Recovery	
8	LLS	S1008090003		0 4			Niobium	LIQUID	.1	9.5650E-02			0.03	ug/mL	95.65	% Recovery	
5	LLS	S1008090003		0 1			Phosphorus	LIQUID	.4	3.5319E-01			0.05	ug/mL	88.298	% Recovery	
4	LLS	S1008090003		0 0			Lead	LIQUID	.2	2.0023E-01			0.05	ug/mL	100.12	% Recovery	
7	LLS	S1008090003		0 3			Palladium	LIQUID	1	9.1172E-01			0.1	ug/mL	91.172	% Recovery	
6	LLS	S1008090003		0 2			Praseodymium	LIQUID	.1	9.9630E-02			0.01	ug/mL	99.63	% Recovery	
6	LLS	S1008090003		0 2			Rubidium	LIQUID	1	9.6729E-01			0.1	ug/mL	96.729	% Recovery	
7	LLS	S1008090003		0 3			Rhodium	LIQUID	.1	1.0686E-01			0.05	ug/mL	106.86	% Recovery	
7	LLS	S1008090003		0 3			Ruthenium	LIQUID	.1	1.1200E-01			0.03	ug/mL	112	% Recovery	
5	LLS	S1008090003		0 1			Sulfur	LIQUID	.2	1.7121E-01			0.1	ug/mL	85.605	% Recovery	
5	LLS	S1008090003		0 1			Antimony	LIQUID	.1	1.0018E-01			0.05	ug/mL	100.18	% Recovery	
4	LLS	S1008090003		0 0			Selenium	LIQUID	.2	2.3612E-01			0.1	ug/mL	118.06	% Recovery	
5	LLS	S1008090003		0 1			Silicon	LIQUID	.1	9.1050E-02			0.03	ug/mL	91.05	% Recovery	
4	LLS	S1008090003		0 0			Samarium	LIQUID	.1	9.2710E-02			0.02	ug/mL	92.71	% Recovery	
8	LLS	S1008090003		0 4			Tin	LIQUID	.1	1.2508E-01			0.03	ug/mL	125.08	% Recovery	
4	LLS	S1008090003		0 0			Strontium	LIQUID	.02	1.9210E-02			3.00E-03	ug/mL	96.05	% Recovery	
8	LLS	S1008090003		0 4			Tantalum	LIQUID	1	9.7777E-01			0.05	ug/mL	97.777	% Recovery	
8	LLS	S1008090003		0 4			Tellurium	LIQUID	1	1.0018E+00			0.1	ug/mL	100.18	% Recovery	
6	LLS	S1008090003		0 2			Thorium	LIQUID	.1	9.3820E-02			0.05	ug/mL	93.82	% Recovery	
5	LLS	S1008090003		0 1			Titanium	LIQUID	.02	1.9100E-02			5.00E-03	ug/mL	95.5	% Recovery	
4	LLS	S1008090003		0 0			Thallium	LIQUID	.4	4.0957E-01			0.1	ug/mL	102.39	% Recovery	
5	LLS	S1008090003		0 1			Uranium	LIQUID	.5	4.7689E-01			0.1	ug/mL	95.378	% Recovery	
5	LLS	S1008090003		0 1			Vanadium	LIQUID	.05	4.8600E-02			5.00E-03	ug/mL	97.2	% Recovery	
8	LLS	S1008090003		0 4			Tungsten	LIQUID	1	1.0626E+00			0.2	ug/mL	106.26	% Recovery	
6	LLS	S1008090003		0 2			Yttrium	LIQUID	.1	9.8340E-02			2.00E-03	ug/mL	98.34	% Recovery	
5	LLS	S1008090003		0 1			Zinc	LIQUID	.02	1.6940E-02			5.00E-03	ug/mL	84.7	% Recovery	
5	LLS	S1008090003		0 1			Zirconium	LIQUID	.02	2.0220E-02			5.00E-03	ug/mL	101.1	% Recovery	
Sample Sequence 9																	
9	ICB	S1008090002		0 0			Silver	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Aluminum	LIQUID		<3.0000E-02			0.03	ug/mL			
9	ICB	S1008090002		0 0			Arsenic	LIQUID		<5.0000E-02			0.05	ug/mL			
9	ICB	S1008090002		0 0			Boron	LIQUID		<3.0000E-02			0.03	ug/mL			
9	ICB	S1008090002		0 0			Barium	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Beryllium	LIQUID		<1.0000E-03			1.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Bismuth	LIQUID		<1.0000E-01			0.1	ug/mL			
9	ICB	S1008090002		0 0			Calcium	LIQUID		<5.0000E-02			0.05	ug/mL			
9	ICB	S1008090002		0 0			Cadmium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Cerium	LIQUID		<3.0000E-02			0.03	ug/mL			
9	ICB	S1008090002		0 0			Cobalt	LIQUID		<1.0000E-02			0.01	ug/mL			
9	ICB	S1008090002		0 0			Chromium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Copper	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Europium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
9	ICB	S1008090002		0 0			Iron	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Potassium	LIQUID		<5.0000E-01			0.5	ug/mL			
9	ICB	S1008090002		0 0			Lanthanum	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Lithium	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Magnesium	LIQUID		<5.0000E-02			0.05	ug/mL			
9	ICB	S1008090002		0 0			Manganese	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Molybdenum	LIQUID		<2.0000E-02			0.02	ug/mL			
9	ICB	S1008090002		0 0			Sodium	LIQUID		<1.0000E-01			0.1	ug/mL			
9	ICB	S1008090002		0 0			Neodymium	LIQUID		<1.0000E-02			0.01	ug/mL			
9	ICB	S1008090002		0 0			Nickel	LIQUID		<2.0000E-02			0.02	ug/mL			
9	ICB	S1008090002		0 0			Niobium	LIQUID		<3.0000E-02			0.03	ug/mL			
9	ICB	S1008090002		0 0			Phosphorus	LIQUID		<5.0000E-02			0.05	ug/mL			
9	ICB	S1008090002		0 0			Lead	LIQUID		<5.0000E-02			0.05	ug/mL			
9	ICB	S1008090002		0 0			Palladium	LIQUID		<1.0000E-01			0.1	ug/mL			
9	ICB	S1008090002		0 0			Praseodymium	LIQUID		<1.0000E-02			0.01	ug/mL			
9	ICB	S1008090002		0 0			Rubidium	LIQUID		<1.0000E+00			1	ug/mL			
9	ICB	S1008090002		0 0			Rhodium	LIQUID		<5.0000E-02			0.05	ug/mL			
9	ICB	S1008090002		0 0			Ruthenium	LIQUID		<3.0000E-02			0.03	ug/mL			
9	ICB	S1008090002		0 0			Sulfur	LIQUID		<1.0000E-01			0.1	ug/mL			
9	ICB	S1008090002		0 0			Antimony	LIQUID		<5.0000E-02			0.05	ug/mL			
9	ICB	S1008090002		0 0			Selenium	LIQUID		<1.0000E-01			0.1	ug/mL			
9	ICB	S1008090002		0 0			Silicon	LIQUID		<3.0000E-02			0.03	ug/mL			
9	ICB	S1008090002		0 0			Samarium	LIQUID		<2.0000E-02			0.02	ug/mL			
9	ICB	S1008090002		0 0			Tin	LIQUID		<3.0000E-02			0.03	ug/mL			
9	ICB	S1008090002		0 0			Strontium	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Tantalum	LIQUID		<5.0000E-02			0.05	ug/mL			
9	ICB	S1008090002		0 0			Tellurium	LIQUID		<1.0000E-01			0.1	ug/mL			
9	ICB	S1008090002		0 0			Thorium	LIQUID		<5.0000E-02			0.05	ug/mL			
9	ICB	S1008090002		0 0			Titanium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Thallium	LIQUID		<1.0000E-01			0.1	ug/mL			
9	ICB	S1008090002		0 0			Uranium	LIQUID		<1.0000E-01			0.1	ug/mL			
9	ICB	S1008090002		0 0			Vanadium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Tungsten	LIQUID		<2.0000E-01			0.2	ug/mL			
9	ICB	S1008090002		0 0			Yttrium	LIQUID		<2.0000E-03			2.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Zinc	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
9	ICB	S1008090002		0 0			Zirconium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
Sample Sequence 10																	
10	ICSA	S1008090004		0 0			Silver	LIQUID		5.5900E-03			5.00E-03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Aluminum	LIQUID	200	2.0431E+02			0.03	ug/mL	102.16	% Recovery	
10	ICSA	S1008090004		0 0			Arsenic	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Boron	LIQUID		<3.0000E-02			0.03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Barium	LIQUID		<3.0000E-03			3.00E-03	ug/mL	N/A		

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
10	ICSA	S1008090004		0 0			Beryllium	LIQUID		<1.0000E-03			1.00E-03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Bismuth	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Calcium	LIQUID	200	2.1495E+02			0.05	ug/mL	107.48	% Recovery	
10	ICSA	S1008090004		0 0			Cadmium	LIQUID		1.3320E-02			5.00E-03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Cerium	LIQUID		<3.0000E-02			0.03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Cobalt	LIQUID		<1.0000E-02			0.01	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Chromium	LIQUID		<5.0000E-03			5.00E-03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Copper	LIQUID		<5.0000E-03			5.00E-03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Iron	LIQUID	200	1.9707E+02			5.00E-03	ug/mL	98.534	% Recovery	
10	ICSA	S1008090004		0 0			Potassium	LIQUID		<5.0000E-01			0.5	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Lanthanum	LIQUID		<3.0000E-03			3.00E-03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Lithium	LIQUID		<3.0000E-03			3.00E-03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Magnesium	LIQUID	200	1.9766E+02			0.05	ug/mL	98.829	% Recovery	
10	ICSA	S1008090004		0 0			Manganese	LIQUID		9.3500E-03			3.00E-03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Molybdenum	LIQUID		<2.0000E-02			0.02	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Sodium	LIQUID	200	1.8734E+02			0.1	ug/mL	93.67	% Recovery	
10	ICSA	S1008090004		0 0			Neodymium	LIQUID		<1.0000E-02			0.01	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Nickel	LIQUID		<2.0000E-02			0.02	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Phosphorus	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Lead	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Palladium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Praseodymium	LIQUID		<1.0000E-02			0.01	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Rubidium	LIQUID		<1.0000E+00			1	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Rhodium	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Sulfur	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Antimony	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Selenium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Silicon	LIQUID		<3.0000E-02			0.03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Samarium	LIQUID		<2.0000E-02			0.02	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Strontium	LIQUID		<3.0000E-03			3.00E-03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Tantalum	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Tellurium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Thorium	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Titanium	LIQUID		<5.0000E-03			5.00E-03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Thallium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Uranium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Vanadium	LIQUID		<5.0000E-03			5.00E-03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Tungsten	LIQUID		<2.0000E-01			0.2	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Yttrium	LIQUID		<2.0000E-03			2.00E-03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Zinc	LIQUID		<5.0000E-03			5.00E-03	ug/mL	N/A		
10	ICSA	S1008090004		0 0			Zirconium	LIQUID		<5.0000E-03			5.00E-03	ug/mL	N/A		

Sample Sequence 11

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
11	ICSAB	S1008090005		0 0			Silver	LIQUID	1	1.0578E+00			5.00E-03	ug/mL	105.78	% Recovery	
11	ICSAB	S1008090005		0 0			Aluminum	LIQUID	200	2.0798E+02			0.03	ug/mL	103.99	% Recovery	
11	ICSAB	S1008090005		0 0			Arsenic	LIQUID	5	5.1812E+00			0.05	ug/mL	103.62	% Recovery	
11	ICSAB	S1008090005		0 0			Boron	LIQUID	1	1.0200E+00			0.03	ug/mL	102	% Recovery	
11	ICSAB	S1008090005		0 0			Barium	LIQUID	1	9.7804E-01			3.00E-03	ug/mL	97.804	% Recovery	
11	ICSAB	S1008090005		0 0			Beryllium	LIQUID	.1	8.9430E-02			1.00E-03	ug/mL	89.43	% Recovery	
11	ICSAB	S1008090005		0 0			Bismuth	LIQUID	5	4.9678E+00			0.1	ug/mL	99.356	% Recovery	
11	ICSAB	S1008090005		0 0			Calcium	LIQUID	200	2.1010E+02			0.05	ug/mL	105.05	% Recovery	
11	ICSAB	S1008090005		0 0			Cadmium	LIQUID	.2	2.1426E-01			5.00E-03	ug/mL	107.13	% Recovery	
11	ICSAB	S1008090005		0 0			Cerium	LIQUID		<3.0000E-02			0.03	ug/mL	N/A		
11	ICSAB	S1008090005		0 0			Cobalt	LIQUID	5	5.0528E+00			0.01	ug/mL	101.06	% Recovery	
11	ICSAB	S1008090005		0 0			Chromium	LIQUID	5	4.9688E+00			5.00E-03	ug/mL	99.375	% Recovery	
11	ICSAB	S1008090005		0 0			Copper	LIQUID	5	5.2551E+00			5.00E-03	ug/mL	105.1	% Recovery	
11	ICSAB	S1008090005		0 0			Iron	LIQUID	200	1.9435E+02			5.00E-03	ug/mL	97.176	% Recovery	
11	ICSAB	S1008090005		0 0			Potassium	LIQUID		<5.0000E-01			0.5	ug/mL	N/A		
11	ICSAB	S1008090005		0 0			Lanthanum	LIQUID		<3.0000E-03			3.00E-03	ug/mL	N/A		
11	ICSAB	S1008090005		0 0			Lithium	LIQUID	1	1.0799E+00			3.00E-03	ug/mL	107.99	% Recovery	
11	ICSAB	S1008090005		0 0			Magnesium	LIQUID	200	1.9462E+02			0.05	ug/mL	97.312	% Recovery	
11	ICSAB	S1008090005		0 0			Manganese	LIQUID	5	4.9423E+00			3.00E-03	ug/mL	98.845	% Recovery	
11	ICSAB	S1008090005		0 0			Molybdenum	LIQUID	5	4.8389E+00			0.02	ug/mL	96.778	% Recovery	
11	ICSAB	S1008090005		0 0			Sodium	LIQUID	200	2.0514E+02			0.1	ug/mL	102.57	% Recovery	
11	ICSAB	S1008090005		0 0			Neodymium	LIQUID		4.6280E-02			0.01	ug/mL	N/A		
11	ICSAB	S1008090005		0 0			Nickel	LIQUID	5	5.0153E+00			0.02	ug/mL	100.31	% Recovery	
11	ICSAB	S1008090005		0 0			Niobium	LIQUID	5	4.9187E+00			0.03	ug/mL	98.373	% Recovery	
11	ICSAB	S1008090005		0 0			Phosphorus	LIQUID	1	9.8960E-01			0.05	ug/mL	98.96	% Recovery	
11	ICSAB	S1008090005		0 0			Lead	LIQUID	1	7.8308E-01			0.05	ug/mL	78.308	% Recovery	
11	ICSAB	S1008090005		0 0			Palladium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
11	ICSAB	S1008090005		0 0			Praseodymium	LIQUID		<1.0000E-02			0.01	ug/mL	N/A		
11	ICSAB	S1008090005		0 0			Rubidium	LIQUID		<1.0000E+00			1	ug/mL	N/A		
11	ICSAB	S1008090005		0 0			Rhodium	LIQUID	1	1.0745E+00			0.05	ug/mL	107.45	% Recovery	
11	ICSAB	S1008090005		0 0			Sulfur	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
11	ICSAB	S1008090005		0 0			Antimony	LIQUID	5	5.0858E+00			0.05	ug/mL	101.72	% Recovery	
11	ICSAB	S1008090005		0 0			Selenium	LIQUID	5	5.1441E+00			0.1	ug/mL	102.88	% Recovery	
11	ICSAB	S1008090005		0 0			Silicon	LIQUID	5	4.9499E+00			0.03	ug/mL	98.998	% Recovery	
11	ICSAB	S1008090005		0 0			Samarium	LIQUID		<2.0000E-02			0.02	ug/mL	N/A		
11	ICSAB	S1008090005		0 0			Tin	LIQUID	1	1.1508E+00			0.03	ug/mL	115.08	% Recovery	
11	ICSAB	S1008090005		0 0			Strontium	LIQUID	1	9.8124E-01			3.00E-03	ug/mL	98.124	% Recovery	
11	ICSAB	S1008090005		0 0			Tellurium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
11	ICSAB	S1008090005		0 0			Thorium	LIQUID	5	4.7728E+00			0.05	ug/mL	95.455	% Recovery	
11	ICSAB	S1008090005		0 0			Titanium	LIQUID	50	4.8810E+01			5.00E-03	ug/mL	97.62	% Recovery	
11	ICSAB	S1008090005		0 0			Thallium	LIQUID	5	4.9708E+00			0.1	ug/mL	99.417	% Recovery	
11	ICSAB	S1008090005		0 0			Uranium	LIQUID	5	4.7782E+00			0.1	ug/mL	95.563	% Recovery	

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
11	ICSAB	S1008090005		0 0			Vanadium	LIQUID	1	1.0035E+00			5.00E-03	ug/mL	100.35	% Recovery	
11	ICSAB	S1008090005		0 0			Tungsten	LIQUID	5	4.0513E+00			0.2	ug/mL	81.026	% Recovery	
11	ICSAB	S1008090005		0 0			Yttrium	LIQUID		<2.0000E-03			2.00E-03	ug/mL	N/A		
11	ICSAB	S1008090005		0 0			Zinc	LIQUID	5	4.9653E+00			5.00E-03	ug/mL	99.306	% Recovery	
11	ICSAB	S1008090005		0 0			Zirconium	LIQUID	5	4.3088E+00			5.00E-03	ug/mL	86.177	% Recovery	
Sample Sequence 12																	
12	BLNK-PREP	S1007290017		0 0	A		Silver	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Aluminum	LIQUID		<3.0000E-02			0.03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Arsenic	LIQUID		<5.0000E-02			0.05	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Boron	LIQUID		<3.0000E-02			0.03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Barium	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Beryllium	LIQUID		<1.0000E-03			1.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Bismuth	LIQUID		<1.0000E-01			0.1	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Calcium	LIQUID		5.4470E-02			0.05	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Cadmium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Cerium	LIQUID		<3.0000E-02			0.03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Cobalt	LIQUID		<1.0000E-02			0.01	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Chromium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Copper	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Europium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Iron	LIQUID		7.4800E-03			5.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Potassium	LIQUID		<5.0000E-01			0.5	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Lanthanum	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Lithium	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Magnesium	LIQUID		<5.0000E-02			0.05	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Manganese	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Molybdenum	LIQUID		<2.0000E-02			0.02	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Sodium	LIQUID		<1.0000E-01			0.1	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Neodymium	LIQUID		<1.0000E-02			0.01	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Nickel	LIQUID		<2.0000E-02			0.02	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Niobium	LIQUID		<3.0000E-02			0.03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Phosphorus	LIQUID		<5.0000E-02			0.05	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Lead	LIQUID		<5.0000E-02			0.05	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Palladium	LIQUID		<1.0000E-01			0.1	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Praseodymium	LIQUID		<1.0000E-02			0.01	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Rubidium	LIQUID		<1.0000E+00			1	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Rhodium	LIQUID		<5.0000E-02			0.05	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Ruthenium	LIQUID		<3.0000E-02			0.03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Sulfur	LIQUID		<1.0000E-01			0.1	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Antimony	LIQUID		<5.0000E-02			0.05	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Selenium	LIQUID		<1.0000E-01			0.1	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Silicon	LIQUID		<3.0000E-02			0.03	ug/mL			

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
12	BLNK-PREP	S1007290017		0 0	A		Samarium	LIQUID		<2.0000E-02			0.02	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Tin	LIQUID		<3.0000E-02			0.03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Strontium	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Tantalum	LIQUID		<5.0000E-02			0.05	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Tellurium	LIQUID		<1.0000E-01			0.1	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Thorium	LIQUID		<5.0000E-02			0.05	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Titanium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Thallium	LIQUID		<1.0000E-01			0.1	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Uranium	LIQUID		<1.0000E-01			0.1	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Vanadium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Tungsten	LIQUID		<2.0000E-01			0.2	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Yttrium	LIQUID		<2.0000E-03			2.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Zinc	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
12	BLNK-PREP	S1007290017		0 0	A		Zirconium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
Sample Sequence 13																	
13	STD-PREP	S1007290018		0 0	A		Silver	LIQUID	1	7.9087E-01			5.00E-03	ug/mL	79.087	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Aluminum	LIQUID	5	4.4972E+00			0.03	ug/mL	89.944	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Arsenic	LIQUID	5	4.5246E+00			0.05	ug/mL	90.493	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Boron	LIQUID	5	4.4526E+00			0.03	ug/mL	89.053	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Barium	LIQUID	5	4.6849E+00			3.00E-03	ug/mL	93.699	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Beryllium	LIQUID	5	4.7845E+00			1.00E-03	ug/mL	95.689	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Bismuth	LIQUID	5	4.3950E+00			0.1	ug/mL	87.9	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Calcium	LIQUID	5	4.1110E+00			0.05	ug/mL	82.219	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Cadmium	LIQUID	5	4.4227E+00			5.00E-03	ug/mL	88.453	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Cobalt	LIQUID	5	4.3481E+00			0.01	ug/mL	86.961	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Chromium	LIQUID	5	4.3033E+00			5.00E-03	ug/mL	86.067	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Copper	LIQUID	5	4.9657E+00			5.00E-03	ug/mL	99.314	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Iron	LIQUID	5	4.4339E+00			5.00E-03	ug/mL	88.679	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Potassium	LIQUID	5	5.7602E+00			0.5	ug/mL	115.2	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Lanthanum	LIQUID	5	4.6907E+00			3.00E-03	ug/mL	93.814	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Lithium	LIQUID	5	5.7845E+00			3.00E-03	ug/mL	115.69	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Magnesium	LIQUID	5	4.4526E+00			0.05	ug/mL	89.052	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Manganese	LIQUID	5	4.2766E+00			3.00E-03	ug/mL	85.533	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Molybdenum	LIQUID	5	4.3516E+00			0.02	ug/mL	87.032	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Sodium	LIQUID	5	5.7442E+00			0.1	ug/mL	114.88	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Nickel	LIQUID	5	4.3884E+00			0.02	ug/mL	87.768	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Phosphorus	LIQUID	5	4.4277E+00			0.05	ug/mL	88.554	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Lead	LIQUID	5	4.3765E+00			0.05	ug/mL	87.531	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Sulfur	LIQUID	5	4.4034E+00			0.1	ug/mL	88.069	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Antimony	LIQUID	5	4.3757E+00			0.05	ug/mL	87.515	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Selenium	LIQUID	5	4.7118E+00			0.1	ug/mL	94.236	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Silicon	LIQUID	5	4.0717E+00			0.03	ug/mL	81.435	% Recovery	

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
13	STD-PREP	S1007290018		0 0	A		Strontium	LIQUID	5	4.6702E+00			3.00E-03	ug/mL	93.404	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Titanium	LIQUID	5	4.3342E+00			5.00E-03	ug/mL	86.685	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Vanadium	LIQUID	5	4.4612E+00			5.00E-03	ug/mL	89.224	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Zinc	LIQUID	5	4.4966E+00			5.00E-03	ug/mL	89.931	% Recovery	
13	STD-PREP	S1007290018		0 0	A		Zirconium	LIQUID	5	4.2714E+00			5.00E-03	ug/mL	85.428	% Recovery	
Sample Sequence 14																	
14	STD-PREP	S1007290024		0 0	A		Cerium	LIQUID	5	4.5971E+00			0.03	ug/mL	91.942	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Europium	LIQUID	5	4.4861E+00			5.00E-03	ug/mL	89.722	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Neodymium	LIQUID	5	4.6668E+00			0.01	ug/mL	93.336	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Niobium	LIQUID	5	4.3228E+00			0.03	ug/mL	86.457	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Palladium	LIQUID	5	4.3225E+00			0.1	ug/mL	86.45	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Praseodymium	LIQUID	5	4.7645E+00			0.01	ug/mL	95.291	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Rubidium	LIQUID	5	3.5824E+00			1	ug/mL	71.649	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Rhodium	LIQUID	5	4.8146E+00			0.05	ug/mL	96.291	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Ruthenium	LIQUID	5	4.1635E+00			0.03	ug/mL	83.27	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Samarium	LIQUID	5	4.8074E+00			0.02	ug/mL	96.148	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Tin	LIQUID	5	4.0950E+00			0.03	ug/mL	81.9	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Tantalum	LIQUID	5	4.0820E+00			0.05	ug/mL	81.639	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Tellurium	LIQUID	5	4.4573E+00			0.1	ug/mL	89.146	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Thorium	LIQUID	5	4.2236E+00			0.05	ug/mL	84.472	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Thallium	LIQUID	5	4.3602E+00			0.1	ug/mL	87.204	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Uranium	LIQUID	5	5.0321E+00			0.1	ug/mL	100.64	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Tungsten	LIQUID	5	4.4525E+00			0.2	ug/mL	89.049	% Recovery	
14	STD-PREP	S1007290024		0 0	A		Yttrium	LIQUID	5	4.3088E+00			2.00E-03	ug/mL	86.175	% Recovery	
Sample Sequence 15																	
15	SERDIL	S1008090006	S10V001233	0 0			Aluminum	SOLID		7.1861E+03			14.728	ug/g	2.0486	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Boron	SOLID		<1.4728E+01			14.728	ug/g	N/A		
15	SERDIL	S1008090006	S10V001233	0 0			Barium	SOLID		7.3617E+01			1.4728	ug/g	4.1415	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Beryllium	SOLID		<4.9093E-01			0.49093	ug/g	N/A		
15	SERDIL	S1008090006	S10V001233	0 0			Calcium	SOLID		9.4216E+03			24.546	ug/g	2.6382	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Cadmium	SOLID		<2.4546E+00			2.4546	ug/g	N/A		
15	SERDIL	S1008090006	S10V001233	0 0			Cerium	SOLID		1.9699E+01			14.728	ug/g	4.0455	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Cobalt	SOLID		6.0657E+00			4.9093	ug/g	22.667	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Chromium	SOLID		9.8115E+00			2.4546	ug/g	31.942	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Copper	SOLID		1.1880E+01			2.4546	ug/g	.92932	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Iron	SOLID		2.2057E+04			2.4546	ug/g	5.1806	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Potassium	SOLID		1.6134E+03			245.46	ug/g	21.425	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Lanthanum	SOLID		1.1012E+01			1.4728	ug/g	11.044	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Lithium	SOLID		1.0130E+01			1.4728	ug/g	10.888	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Magnesium	SOLID		5.1818E+03			24.546	ug/g	5.1486	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Manganese	SOLID		5.0908E+02			1.4728	ug/g	2.8204	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Molybdenum	SOLID		<9.8186E+00			9.8186	ug/g	N/A		

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
15	SERDIL	S1008090006	S10V001233	0 0			Sodium	SOLID		3.7832E+02			49.093	ug/g	10.038	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Neodymium	SOLID		1.3429E+01			4.9093	ug/g	2.5296	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Nickel	SOLID		<9.8186E+00			9.8186	ug/g	N/A		
15	SERDIL	S1008090006	S10V001233	0 0			Phosphorus	SOLID		8.3844E+02			24.546	ug/g	2.3176	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Lead	SOLID		<2.4546E+01			24.546	ug/g	N/A		
15	SERDIL	S1008090006	S10V001233	0 0			Sulfur	SOLID		4.9849E+01			49.093	ug/g	14.404	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Silicon	SOLID		2.3876E+01			14.728	ug/g	19.335	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Strontium	SOLID		2.9548E+01			1.4728	ug/g	4.1649	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Titanium	SOLID		1.4651E+03			2.4546	ug/g	4.0455	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Vanadium	SOLID		5.2227E+01			2.4546	ug/g	5.4312	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Yttrium	SOLID		1.0079E+01			0.98186	ug/g	7.9683	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Zinc	SOLID		3.9447E+01			2.4546	ug/g	1.6141	% Diff	
15	SERDIL	S1008090006	S10V001233	0 0			Zirconium	SOLID		1.6911E+01			2.4546	ug/g	8.3772	% Diff	
Sample Sequence 16																	
16	SAMPLE	S10V001233		0 0	A		Aluminum	SOLID	N/A	7.0418E+03			2.9456	ug/g			
16	SAMPLE	S10V001233		0 0	A		Boron	SOLID	N/A	<2.9456E+00			2.9456	ug/g			U
16	SAMPLE	S10V001233		0 0	A		Barium	SOLID	N/A	7.0689E+01			0.29456	ug/g			
16	SAMPLE	S10V001233		0 0	A		Beryllium	SOLID	N/A	1.5788E-01			0.098186	ug/g			J
16	SAMPLE	S10V001233		0 0	A		Calcium	SOLID	N/A	9.1794E+03			4.9093	ug/g			
16	SAMPLE	S10V001233		0 0	A		Cadmium	SOLID	N/A	2.7236E+00			0.49093	ug/g			J
16	SAMPLE	S10V001233		0 0	A		Cerium	SOLID	N/A	2.0530E+01			2.9456	ug/g			J
16	SAMPLE	S10V001233		0 0	A		Cobalt	SOLID	N/A	7.8436E+00			0.98186	ug/g			J
16	SAMPLE	S10V001233		0 0	A		Chromium	SOLID	N/A	7.4362E+00			0.49093	ug/g			
16	SAMPLE	S10V001233		0 0	A		Copper	SOLID	N/A	1.1991E+01			0.49093	ug/g			
16	SAMPLE	S10V001233		0 0	A		Iron	SOLID	N/A	2.0971E+04			0.49093	ug/g			
16	SAMPLE	S10V001233		0 0	A		Potassium	SOLID	N/A	1.3287E+03			49.093	ug/g			
16	SAMPLE	S10V001233		0 0	A		Lanthanum	SOLID	N/A	9.9167E+00			0.29456	ug/g			
16	SAMPLE	S10V001233		0 0	A		Lithium	SOLID	N/A	9.1349E+00			0.29456	ug/g			
16	SAMPLE	S10V001233		0 0	A		Magnesium	SOLID	N/A	4.9281E+03			4.9093	ug/g			
16	SAMPLE	S10V001233		0 0	A		Manganese	SOLID	N/A	4.9512E+02			0.29456	ug/g			c
16	SAMPLE	S10V001233		0 0	A		Molybdenum	SOLID	N/A	<1.9637E+00			1.9637	ug/g			U
16	SAMPLE	S10V001233		0 0	A		Sodium	SOLID	N/A	3.4381E+02			9.8186	ug/g			
16	SAMPLE	S10V001233		0 0	A		Nickel	SOLID	N/A	9.5478E+00			1.9637	ug/g			J
16	SAMPLE	S10V001233		0 0	A		Phosphorus	SOLID	N/A	8.1945E+02			4.9093	ug/g			
16	SAMPLE	S10V001233		0 0	A		Lead	SOLID	N/A	<4.9093E+00			4.9093	ug/g			U
16	SAMPLE	S10V001233		0 0	A		Sulfur	SOLID	N/A	5.8238E+01			9.8186	ug/g			J
16	SAMPLE	S10V001233		0 0	A		Silicon	SOLID	N/A	2.0008E+01			2.9456	ug/g			Jb
16	SAMPLE	S10V001233		0 0	A		Strontium	SOLID	N/A	2.8367E+01			0.29456	ug/g			
16	SAMPLE	S10V001233		0 0	A		Titanium	SOLID	N/A	1.4081E+03			0.49093	ug/g			
16	SAMPLE	S10V001233		0 0	A		Vanadium	SOLID	N/A	4.9537E+01			0.49093	ug/g			
16	SAMPLE	S10V001233		0 0	A		Yttrium	SOLID	N/A	9.3350E+00			0.19637	ug/g			
16	SAMPLE	S10V001233		0 0	A		Zinc	SOLID	N/A	4.0094E+01			0.49093	ug/g			

Units shown for QC (BLK/BKG) may not reflect the actual units.

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
16	SAMPLE	S10V001233		0 0	A		Zirconium	SOLID	N/A	1.5604E+01			0.49093	ug/g			
Sample Sequence 17																	
17	DUP	S1007290019	S10V001233	0 0	A		Aluminum	SOLID	7.0418E+03	7.6649E+03			2.9634	ug/g	8.4733	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Barium	SOLID	7.0689E+01	7.7356E+01			0.29634	ug/g	9.0069	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Beryllium	SOLID	1.5788E-01	1.8235E-01			0.098781	ug/g	14.383	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Calcium	SOLID	9.1794E+03	9.2866E+03			4.9391	ug/g	1.1610	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Cadmium	SOLID	2.7236E+00	3.0393E+00			0.49391	ug/g	10.957	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Cobalt	SOLID	7.8436E+00	7.6220E+00			0.98781	ug/g	2.8663	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Chromium	SOLID	7.4362E+00	8.3887E+00			0.49391	ug/g	12.038	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Copper	SOLID	1.1991E+01	1.3908E+01			0.49391	ug/g	14.800	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Iron	SOLID	2.0971E+04	2.2858E+04			0.49391	ug/g	8.6124	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Potassium	SOLID	1.3287E+03	1.3667E+03			49.391	ug/g	2.8201	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Lithium	SOLID	9.1349E+00	9.2418E+00			0.29634	ug/g	1.1636	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Magnesium	SOLID	4.9281E+03	5.5225E+03			4.9391	ug/g	11.375	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Manganese	SOLID	4.9512E+02	3.4355E+02			0.29634	ug/g	36.145	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Molybdenum	SOLID	<1.9637E+00	<1.9756E+00			1.9756	ug/g			
17	DUP	S1007290019	S10V001233	0 0	A		Sodium	SOLID	3.4381E+02	3.8176E+02			9.8781	ug/g	10.460	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Nickel	SOLID	9.5478E+00	1.0596E+01			1.9756	ug/g	10.408	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Phosphorus	SOLID	8.1945E+02	8.8004E+02			4.9391	ug/g	7.1305	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Lead	SOLID	<4.9093E+00	<4.9391E+00			4.9391	ug/g			
17	DUP	S1007290019	S10V001233	0 0	A		Strontium	SOLID	2.8367E+01	3.0442E+01			0.29634	ug/g	7.0551	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Vanadium	SOLID	4.9537E+01	5.2454E+01			0.49391	ug/g	5.7196	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Zinc	SOLID	4.0094E+01	4.3112E+01			0.49391	ug/g	7.2554	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Boron	SOLID	<2.9456E+00	<2.9634E+00			2.9634	ug/g			
17	DUP	S1007290019	S10V001233	0 0	A		Neodymium	SOLID		1.3318E+01			0.98781	ug/g			
17	DUP	S1007290019	S10V001233	0 0	A		Silicon	SOLID	2.0008E+01	2.0140E+01			2.9634	ug/g	0.65878	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Sulfur	SOLID	5.8238E+01	7.2127E+01			9.8781	ug/g	21.308	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Titanium	SOLID	1.4081E+03	1.4833E+03			0.49391	ug/g	5.1981	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Yttrium	SOLID	9.3350E+00	1.0215E+01			0.19756	ug/g	9.0027	% RPD	
17	DUP	S1007290019	S10V001233	0 0	A		Zirconium	SOLID	1.5604E+01	1.7371E+01			0.49391	ug/g	10.716	% RPD	
Sample Sequence 18																	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Aluminum	SOLID	49.246528	8.4076E+03			2.9548	ug/g	2773.3	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Boron	SOLID	49.246528	4.8993E+01			2.9548	ug/g	99.485	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Barium	SOLID	49.246528	1.2819E+02			0.29548	ug/g	116.76	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Beryllium	SOLID	49.246528	4.5596E+01			0.098493	ug/g	92.266	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Calcium	SOLID	49.246528	9.2135E+03			4.9247	ug/g	69.307	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Cadmium	SOLID	49.246528	4.9542E+01			0.49247	ug/g	95.069	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Cobalt	SOLID	49.246528	5.4216E+01			0.98493	ug/g	94.163	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Chromium	SOLID	49.246528	5.2949E+01			0.49247	ug/g	92.418	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Copper	SOLID	49.246528	6.3304E+01			0.49247	ug/g	104.2	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Iron	SOLID	49.246528	2.2489E+04			0.49247	ug/g	3081.6	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Potassium	SOLID	49.246528	1.6686E+03			49.247	ug/g	690.16	% Recovery	

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Lanthanum	SOLID	49.246528	5.7792E+01			0.29548	ug/g	97.215	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Lithium	SOLID	49.246528	6.8678E+01			0.29548	ug/g	120.91	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Magnesium	SOLID	49.246528	5.3442E+03			4.9247	ug/g	844.98	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Manganese	SOLID	49.246528	3.8316E+02			0.29548	ug/g	-227.35	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Molybdenum	SOLID	49.246528	4.3420E+01			1.9699	ug/g	88.168	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Sodium	SOLID	49.246528	6.4297E+02			9.8493	ug/g	607.47	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Nickel	SOLID	49.246528	5.4153E+01			1.9699	ug/g	90.576	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Phosphorus	SOLID	49.246528	9.4911E+02			4.9247	ug/g	263.29	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Lead	SOLID	49.246528	4.0932E+01			4.9247	ug/g	83.116	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Sulfur	SOLID	49.246528	1.1784E+02			9.8493	ug/g	121.02	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Silicon	SOLID	49.246528	5.6010E+01			2.9548	ug/g	73.106	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Strontium	SOLID	49.246528	7.9665E+01			0.29548	ug/g	104.17	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Titanium	SOLID	49.246528	1.6401E+03			0.49247	ug/g	471.08	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Vanadium	SOLID	49.246528	9.8885E+01			0.49247	ug/g	100.21	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Zinc	SOLID	49.246528	8.9241E+01			0.49247	ug/g	99.799	% Recovery	
18	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Zirconium	SOLID	49.246528	5.7173E+01			0.49247	ug/g	84.41	% Recovery	
Sample Sequence 19																	
19	SPK-PREDIG	S1007290027	S10V001233	0 0	A		Cerium	SOLID	49.6031745	7.6840E+01			2.9762	ug/g	113.52	% Recovery	
19	SPK-PREDIG	S1007290027	S10V001233	0 0	A		Neodymium	SOLID	49.6031745	6.2961E+01			0.99206	ug/g	100.52	% Recovery	
19	SPK-PREDIG	S1007290027	S10V001233	0 0	A		Yttrium	SOLID	49.6031745	5.6674E+01			0.19841	ug/g	95.436	% Recovery	
Sample Sequence 20																	
20	SPK-POST	S1008090007	S10V001233	0 0			Aluminum	SOLID	100	8.3018E+02			0.03	ug/g	112.99	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Boron	SOLID	100	9.6266E+01			0.03	ug/g	96.266	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Barium	SOLID	100	1.0448E+02			3.00E-03	ug/g	97.277	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Beryllium	SOLID	100	8.9601E+01			1.00E-03	ug/g	89.585	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Calcium	SOLID	100	1.0178E+03			0.05	ug/g	82.908	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Cadmium	SOLID	100	9.3400E+01			5.00E-03	ug/g	93.123	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Cerium	SOLID	100	9.7782E+01			0.03	ug/g	95.691	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Cobalt	SOLID	100	9.4243E+01			0.01	ug/g	93.444	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Chromium	SOLID	100	9.2398E+01			5.00E-03	ug/g	91.641	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Copper	SOLID	100	1.0608E+02			5.00E-03	ug/g	104.86	% Recovery	
21	SPK-POST	S1008090007	S10V001233	0 1			Iron	SOLID	1000	3.2403E+03			5.00E-03	ug/g	110.45	% Recovery	
21	SPK-POST	S1008090007	S10V001233	0 1			Potassium	SOLID	1000	1.1295E+03			0.5	ug/g	99.415	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Lanthanum	SOLID	100	9.4773E+01			3.00E-03	ug/g	93.763	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Lithium	SOLID	100	1.1383E+02			3.00E-03	ug/g	112.89	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Magnesium	SOLID	100	5.9110E+02			0.05	ug/g	89.184	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Manganese	SOLID	100	1.4450E+02			3.00E-03	ug/g	94.07	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Molybdenum	SOLID	100	9.0783E+01			0.02	ug/g	90.783	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Sodium	SOLID	100	1.5099E+02			0.1	ug/g	115.97	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Neodymium	SOLID	100	9.4703E+01			0.01	ug/g	93.369	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Nickel	SOLID	100	9.4150E+01			0.02	ug/g	93.178	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Phosphorus	SOLID	100	1.8046E+02			0.05	ug/g	97.003	% Recovery	

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
20	SPK-POST	S1008090007	S10V001233	0 0			Lead	SOLID	100	9.4152E+01			0.05	ug/g	94.152	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Sulfur	SOLID	100	1.0323E+02			0.1	ug/g	97.297	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Silicon	SOLID	100	9.2482E+01			0.03	ug/g	90.444	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Strontium	SOLID	100	9.8138E+01			3.00E-03	ug/g	95.249	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Titanium	SOLID	100	2.3382E+02			5.00E-03	ug/g	90.401	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Vanadium	SOLID	100	9.7550E+01			5.00E-03	ug/g	92.504	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Zinc	SOLID	100	9.7370E+01			5.00E-03	ug/g	93.286	% Recovery	
20	SPK-POST	S1008090007	S10V001233	0 0			Zirconium	SOLID	100	8.6347E+01			5.00E-03	ug/g	84.758	% Recovery	
Sample Sequence 22																	
22	CCV	S1008090012		0 0			Silver	LIQUID	1	9.5967E-01			5.00E-03	ug/mL	95.967	% Recovery	
22	CCV	S1008090012		0 0			Aluminum	LIQUID	5	5.0328E+00			0.03	ug/mL	100.66	% Recovery	
22	CCV	S1008090012		0 0			Arsenic	LIQUID	5	4.9310E+00			0.05	ug/mL	98.619	% Recovery	
22	CCV	S1008090012		0 0			Boron	LIQUID	5	5.0451E+00			0.03	ug/mL	100.9	% Recovery	
22	CCV	S1008090012		0 0			Barium	LIQUID	5	5.1039E+00			3.00E-03	ug/mL	102.08	% Recovery	
22	CCV	S1008090012		0 0			Beryllium	LIQUID	5	5.0870E+00			1.00E-03	ug/mL	101.74	% Recovery	
22	CCV	S1008090012		0 0			Bismuth	LIQUID	5	4.9728E+00			0.1	ug/mL	99.455	% Recovery	
22	CCV	S1008090012		0 0			Calcium	LIQUID	5	5.2055E+00			0.05	ug/mL	104.11	% Recovery	
22	CCV	S1008090012		0 0			Cadmium	LIQUID	5	5.1551E+00			5.00E-03	ug/mL	103.1	% Recovery	
23	CCV	S1008090012		0 1			Cerium	LIQUID	5	5.3678E+00			0.03	ug/mL	107.36	% Recovery	
22	CCV	S1008090012		0 0			Cobalt	LIQUID	5	5.1949E+00			0.01	ug/mL	103.9	% Recovery	
22	CCV	S1008090012		0 0			Chromium	LIQUID	5	5.1698E+00			5.00E-03	ug/mL	103.4	% Recovery	
22	CCV	S1008090012		0 0			Copper	LIQUID	5	5.0614E+00			5.00E-03	ug/mL	101.23	% Recovery	
23	CCV	S1008090012		0 1			Europium	LIQUID	5	4.9580E+00			5.00E-03	ug/mL	99.161	% Recovery	
22	CCV	S1008090012		0 0			Iron	LIQUID	5	5.1562E+00			5.00E-03	ug/mL	103.12	% Recovery	
22	CCV	S1008090012		0 0			Potassium	LIQUID	5	5.3096E+00			0.5	ug/mL	106.19	% Recovery	
22	CCV	S1008090012		0 0			Lanthanum	LIQUID	5	5.0181E+00			3.00E-03	ug/mL	100.36	% Recovery	
22	CCV	S1008090012		0 0			Lithium	LIQUID	5	5.2456E+00			3.00E-03	ug/mL	104.91	% Recovery	
22	CCV	S1008090012		0 0			Magnesium	LIQUID	5	5.1502E+00			0.05	ug/mL	103	% Recovery	
22	CCV	S1008090012		0 0			Manganese	LIQUID	5	5.1199E+00			3.00E-03	ug/mL	102.4	% Recovery	
22	CCV	S1008090012		0 0			Molybdenum	LIQUID	5	4.9602E+00			0.02	ug/mL	99.204	% Recovery	
22	CCV	S1008090012		0 0			Sodium	LIQUID	5	5.2428E+00			0.1	ug/mL	104.86	% Recovery	
23	CCV	S1008090012		0 1			Neodymium	LIQUID	5	4.9137E+00			0.01	ug/mL	98.275	% Recovery	
22	CCV	S1008090012		0 0			Nickel	LIQUID	5	5.1062E+00			0.02	ug/mL	102.12	% Recovery	
24	CCV	S1008090012		0 2			Niobium	LIQUID	5	5.0266E+00			0.03	ug/mL	100.53	% Recovery	
22	CCV	S1008090012		0 0			Phosphorus	LIQUID	5	4.9821E+00			0.05	ug/mL	99.642	% Recovery	
22	CCV	S1008090012		0 0			Lead	LIQUID	5	5.2421E+00			0.05	ug/mL	104.84	% Recovery	
23	CCV	S1008090012		0 1			Palladium	LIQUID	5	4.9716E+00			0.1	ug/mL	99.432	% Recovery	
23	CCV	S1008090012		0 1			Praseodymium	LIQUID	5	5.0465E+00			0.01	ug/mL	100.93	% Recovery	
23	CCV	S1008090012		0 1			Rubidium	LIQUID	5	5.1194E+00			1	ug/mL	102.39	% Recovery	
23	CCV	S1008090012		0 1			Rhodium	LIQUID	5	5.1191E+00			0.05	ug/mL	102.38	% Recovery	
23	CCV	S1008090012		0 1			Ruthenium	LIQUID	5	5.0089E+00			0.03	ug/mL	100.18	% Recovery	
22	CCV	S1008090012		0 0			Sulfur	LIQUID	5	5.1279E+00			0.1	ug/mL	102.56	% Recovery	

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
22	CCV	S1008090012		0 0			Antimony	LIQUID	5	5.0073E+00			0.05	ug/mL	100.15	% Recovery	
22	CCV	S1008090012		0 0			Selenium	LIQUID	5	5.2308E+00			0.1	ug/mL	104.62	% Recovery	
22	CCV	S1008090012		0 0			Silicon	LIQUID	5	4.7970E+00			0.03	ug/mL	95.94	% Recovery	
23	CCV	S1008090012		0 1			Samarium	LIQUID	5	5.2125E+00			0.02	ug/mL	104.25	% Recovery	
24	CCV	S1008090012		0 2			Tin	LIQUID	5	5.0957E+00			0.03	ug/mL	101.91	% Recovery	
22	CCV	S1008090012		0 0			Strontium	LIQUID	5	5.0788E+00			3.00E-03	ug/mL	101.58	% Recovery	
24	CCV	S1008090012		0 2			Tantalum	LIQUID	5	5.0374E+00			0.05	ug/mL	100.75	% Recovery	
24	CCV	S1008090012		0 2			Tellurium	LIQUID	5	5.1502E+00			0.1	ug/mL	103	% Recovery	
23	CCV	S1008090012		0 1			Thorium	LIQUID	5	5.0773E+00			0.05	ug/mL	101.55	% Recovery	
22	CCV	S1008090012		0 0			Titanium	LIQUID	5	4.8600E+00			5.00E-03	ug/mL	97.2	% Recovery	
23	CCV	S1008090012		0 1			Thallium	LIQUID	5	5.2445E+00			0.1	ug/mL	104.89	% Recovery	
23	CCV	S1008090012		0 1			Uranium	LIQUID	5	5.2644E+00			0.1	ug/mL	105.29	% Recovery	
22	CCV	S1008090012		0 0			Vanadium	LIQUID	5	5.2301E+00			5.00E-03	ug/mL	104.6	% Recovery	
24	CCV	S1008090012		0 2			Tungsten	LIQUID	5	4.9491E+00			0.2	ug/mL	98.983	% Recovery	
23	CCV	S1008090012		0 1			Yttrium	LIQUID	5	4.9887E+00			2.00E-03	ug/mL	99.774	% Recovery	
22	CCV	S1008090012		0 0			Zinc	LIQUID	5	5.1639E+00			5.00E-03	ug/mL	103.28	% Recovery	
22	CCV	S1008090012		0 0			Zirconium	LIQUID	5	4.7651E+00			5.00E-03	ug/mL	95.302	% Recovery	
Sample Sequence 25																	
25	CCB	S1008090013		0 0			Silver	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Aluminum	LIQUID		<3.0000E-02			0.03	ug/mL			
25	CCB	S1008090013		0 0			Arsenic	LIQUID		<5.0000E-02			0.05	ug/mL			
25	CCB	S1008090013		0 0			Boron	LIQUID		<3.0000E-02			0.03	ug/mL			
25	CCB	S1008090013		0 0			Barium	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Beryllium	LIQUID		<1.0000E-03			1.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Bismuth	LIQUID		<1.0000E-01			0.1	ug/mL			
25	CCB	S1008090013		0 0			Calcium	LIQUID		6.2710E-02			0.05	ug/mL			
25	CCB	S1008090013		0 0			Cadmium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Cerium	LIQUID		<3.0000E-02			0.03	ug/mL			
25	CCB	S1008090013		0 0			Cobalt	LIQUID		<1.0000E-02			0.01	ug/mL			
25	CCB	S1008090013		0 0			Chromium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Copper	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Europium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Iron	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Potassium	LIQUID		<5.0000E-01			0.5	ug/mL			
25	CCB	S1008090013		0 0			Lanthanum	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Lithium	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Magnesium	LIQUID		<5.0000E-02			0.05	ug/mL			
25	CCB	S1008090013		0 0			Manganese	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Molybdenum	LIQUID		<2.0000E-02			0.02	ug/mL			
25	CCB	S1008090013		0 0			Sodium	LIQUID		<1.0000E-01			0.1	ug/mL			
25	CCB	S1008090013		0 0			Neodymium	LIQUID		<1.0000E-02			0.01	ug/mL			
25	CCB	S1008090013		0 0			Nickel	LIQUID		<2.0000E-02			0.02	ug/mL			

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
25	CCB	S1008090013		0 0			Niobium	LIQUID		<3.0000E-02			0.03	ug/mL			
25	CCB	S1008090013		0 0			Phosphorus	LIQUID		<5.0000E-02			0.05	ug/mL			
25	CCB	S1008090013		0 0			Lead	LIQUID		<5.0000E-02			0.05	ug/mL			
25	CCB	S1008090013		0 0			Palladium	LIQUID		<1.0000E-01			0.1	ug/mL			
25	CCB	S1008090013		0 0			Praseodymium	LIQUID		<1.0000E-02			0.01	ug/mL			
25	CCB	S1008090013		0 0			Rubidium	LIQUID		<1.0000E+00			1	ug/mL			
25	CCB	S1008090013		0 0			Rhodium	LIQUID		<5.0000E-02			0.05	ug/mL			
25	CCB	S1008090013		0 0			Ruthenium	LIQUID		<3.0000E-02			0.03	ug/mL			
25	CCB	S1008090013		0 0			Sulfur	LIQUID		<1.0000E-01			0.1	ug/mL			
25	CCB	S1008090013		0 0			Antimony	LIQUID		<5.0000E-02			0.05	ug/mL			
25	CCB	S1008090013		0 0			Selenium	LIQUID		<1.0000E-01			0.1	ug/mL			
25	CCB	S1008090013		0 0			Silicon	LIQUID		<3.0000E-02			0.03	ug/mL			
25	CCB	S1008090013		0 0			Samarium	LIQUID		<2.0000E-02			0.02	ug/mL			
25	CCB	S1008090013		0 0			Tin	LIQUID		<3.0000E-02			0.03	ug/mL			
25	CCB	S1008090013		0 0			Strontium	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Tantalum	LIQUID		<5.0000E-02			0.05	ug/mL			
25	CCB	S1008090013		0 0			Tellurium	LIQUID		<1.0000E-01			0.1	ug/mL			
25	CCB	S1008090013		0 0			Thorium	LIQUID		<5.0000E-02			0.05	ug/mL			
25	CCB	S1008090013		0 0			Titanium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Thallium	LIQUID		<1.0000E-01			0.1	ug/mL			
25	CCB	S1008090013		0 0			Uranium	LIQUID		<1.0000E-01			0.1	ug/mL			
25	CCB	S1008090013		0 0			Vanadium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Tungsten	LIQUID		<2.0000E-01			0.2	ug/mL			
25	CCB	S1008090013		0 0			Yttrium	LIQUID		<2.0000E-03			2.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Zinc	LIQUID		5.0000E-03			5.00E-03	ug/mL			
25	CCB	S1008090013		0 0			Zirconium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
Sample Sequence 26																	
26	SAMPLE	S10V001250		0 0	A		Aluminum	SOLID	N/A	7.0757E+03			2.9737	ug/g			
26	SAMPLE	S10V001250		0 0	A		Boron	SOLID	N/A	3.3440E+00			2.9737	ug/g			J
26	SAMPLE	S10V001250		0 0	A		Barium	SOLID	N/A	7.6572E+01			0.29737	ug/g			
26	SAMPLE	S10V001250		0 0	A		Beryllium	SOLID	N/A	1.5354E-01			0.099122	ug/g			J
26	SAMPLE	S10V001250		0 0	A		Calcium	SOLID	N/A	9.2653E+03			4.9561	ug/g			
26	SAMPLE	S10V001250		0 0	A		Cadmium	SOLID	N/A	3.2558E+00			0.49561	ug/g			J
26	SAMPLE	S10V001250		0 0	A		Cerium	SOLID	N/A	2.2629E+01			2.9737	ug/g			J
26	SAMPLE	S10V001250		0 0	A		Cobalt	SOLID	N/A	8.8193E+00			0.99122	ug/g			J
26	SAMPLE	S10V001250		0 0	A		Chromium	SOLID	N/A	7.9768E+00			0.49561	ug/g			
26	SAMPLE	S10V001250		0 0	A		Copper	SOLID	N/A	1.2917E+01			0.49561	ug/g			
26	SAMPLE	S10V001250		0 0	A		Iron	SOLID	N/A	2.4210E+04			0.49561	ug/g			
26	SAMPLE	S10V001250		0 0	A		Potassium	SOLID	N/A	1.0824E+03			49.561	ug/g			
26	SAMPLE	S10V001250		0 0	A		Lanthanum	SOLID	N/A	1.0596E+01			0.29737	ug/g			
26	SAMPLE	S10V001250		0 0	A		Lithium	SOLID	N/A	7.3931E+00			0.29737	ug/g			
26	SAMPLE	S10V001250		0 0	A		Magnesium	SOLID	N/A	5.2809E+03			4.9561	ug/g			

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
26	SAMPLE	S10V001250		0 0	A		Manganese	SOLID	N/A	3.5516E+02			0.29737	ug/g			c
26	SAMPLE	S10V001250		0 0	A		Molybdenum	SOLID	N/A	<1.9824E+00			1.9824	ug/g			U
26	SAMPLE	S10V001250		0 0	A		Sodium	SOLID	N/A	2.9880E+02			9.9122	ug/g			
26	SAMPLE	S10V001250		0 0	A		Nickel	SOLID	N/A	8.6406E+00			1.9824	ug/g			J
26	SAMPLE	S10V001250		0 0	A		Phosphorus	SOLID	N/A	8.7001E+02			4.9561	ug/g			
26	SAMPLE	S10V001250		0 0	A		Lead	SOLID	N/A	<4.9561E+00			4.9561	ug/g			U
26	SAMPLE	S10V001250		0 0	A		Sulfur	SOLID	N/A	7.0883E+01			9.9122	ug/g			J
26	SAMPLE	S10V001250		0 0	A		Silicon	SOLID	N/A	2.5302E+01			2.9737	ug/g			Jb
26	SAMPLE	S10V001250		0 0	A		Strontium	SOLID	N/A	2.8881E+01			0.29737	ug/g			
26	SAMPLE	S10V001250		0 0	A		Titanium	SOLID	N/A	1.5303E+03			0.49561	ug/g			
26	SAMPLE	S10V001250		0 0	A		Vanadium	SOLID	N/A	5.8752E+01			0.49561	ug/g			
26	SAMPLE	S10V001250		0 0	A		Yttrium	SOLID	N/A	1.0381E+01			0.19824	ug/g			
26	SAMPLE	S10V001250		0 0	A		Zinc	SOLID	N/A	4.4772E+01			0.49561	ug/g			
26	SAMPLE	S10V001250		0 0	A		Zirconium	SOLID	N/A	1.5292E+01			0.49561	ug/g			
Sample Sequence 27																	
27	SAMPLE	S10V001290		0 0	A		Aluminum	SOLID	N/A	7.1743E+03			2.9879	ug/g			
27	SAMPLE	S10V001290		0 0	A		Boron	SOLID	N/A	<2.9879E+00			2.9879	ug/g			U
27	SAMPLE	S10V001290		0 0	A		Barium	SOLID	N/A	7.4993E+01			0.29879	ug/g			
27	SAMPLE	S10V001290		0 0	A		Beryllium	SOLID	N/A	1.5895E-01			0.099596	ug/g			J
27	SAMPLE	S10V001290		0 0	A		Calcium	SOLID	N/A	9.3291E+03			4.9798	ug/g			
27	SAMPLE	S10V001290		0 0	A		Cadmium	SOLID	N/A	2.6986E+00			0.49798	ug/g			J
27	SAMPLE	S10V001290		0 0	A		Cerium	SOLID	N/A	2.4466E+01			2.9879	ug/g			J
27	SAMPLE	S10V001290		0 0	A		Cobalt	SOLID	N/A	8.1240E+00			0.99596	ug/g			J
27	SAMPLE	S10V001290		0 0	A		Chromium	SOLID	N/A	1.0390E+01			0.49798	ug/g			
27	SAMPLE	S10V001290		0 0	A		Copper	SOLID	N/A	1.2693E+01			0.49798	ug/g			
27	SAMPLE	S10V001290		0 0	A		Iron	SOLID	N/A	2.2382E+04			0.49798	ug/g			
27	SAMPLE	S10V001290		0 0	A		Potassium	SOLID	N/A	1.0416E+03			49.798	ug/g			
27	SAMPLE	S10V001290		0 0	A		Lanthanum	SOLID	N/A	1.1890E+01			0.29879	ug/g			
27	SAMPLE	S10V001290		0 0	A		Lithium	SOLID	N/A	7.4152E+00			0.29879	ug/g			
27	SAMPLE	S10V001290		0 0	A		Magnesium	SOLID	N/A	5.1290E+03			4.9798	ug/g			
27	SAMPLE	S10V001290		0 0	A		Manganese	SOLID	N/A	3.3208E+02			0.29879	ug/g			c
27	SAMPLE	S10V001290		0 0	A		Molybdenum	SOLID	N/A	<1.9919E+00			1.9919	ug/g			U
27	SAMPLE	S10V001290		0 0	A		Sodium	SOLID	N/A	3.4467E+02			9.9596	ug/g			
27	SAMPLE	S10V001290		0 0	A		Nickel	SOLID	N/A	7.8221E+00			1.9919	ug/g			J
27	SAMPLE	S10V001290		0 0	A		Phosphorus	SOLID	N/A	8.5143E+02			4.9798	ug/g			
27	SAMPLE	S10V001290		0 0	A		Lead	SOLID	N/A	<4.9798E+00			4.9798	ug/g			U
27	SAMPLE	S10V001290		0 0	A		Sulfur	SOLID	N/A	6.6343E+01			9.9596	ug/g			J
27	SAMPLE	S10V001290		0 0	A		Silicon	SOLID	N/A	2.0903E+01			2.9879	ug/g			Jb
27	SAMPLE	S10V001290		0 0	A		Strontium	SOLID	N/A	3.1764E+01			0.29879	ug/g			
27	SAMPLE	S10V001290		0 0	A		Titanium	SOLID	N/A	1.4736E+03			0.49798	ug/g			
27	SAMPLE	S10V001290		0 0	A		Vanadium	SOLID	N/A	5.3065E+01			0.49798	ug/g			
27	SAMPLE	S10V001290		0 0	A		Yttrium	SOLID	N/A	9.7651E+00			0.19919	ug/g			

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
27	SAMPLE	S10V001290		0 0	A		Zinc	SOLID	N/A	4.1939E+01			0.49798	ug/g			
27	SAMPLE	S10V001290		0 0	A		Zirconium	SOLID	N/A	1.6542E+01			0.49798	ug/g			
Sample Sequence 28																	
28	SAMPLE	S10V001310		0 0	A		Aluminum	SOLID	N/A	7.4250E+03			2.9878	ug/g			
28	SAMPLE	S10V001310		0 0	A		Boron	SOLID	N/A	3.2507E+00			2.9878	ug/g			J
28	SAMPLE	S10V001310		0 0	A		Barium	SOLID	N/A	7.6381E+01			0.29878	ug/g			
28	SAMPLE	S10V001310		0 0	A		Beryllium	SOLID	N/A	1.5835E-01			0.099592	ug/g			J
28	SAMPLE	S10V001310		0 0	A		Calcium	SOLID	N/A	8.3894E+03			4.9796	ug/g			
28	SAMPLE	S10V001310		0 0	A		Cadmium	SOLID	N/A	2.8699E+00			0.49796	ug/g			J
28	SAMPLE	S10V001310		0 0	A		Cerium	SOLID	N/A	2.2168E+01			2.9878	ug/g			J
28	SAMPLE	S10V001310		0 0	A		Cobalt	SOLID	N/A	7.9854E+00			0.99592	ug/g			J
28	SAMPLE	S10V001310		0 0	A		Chromium	SOLID	N/A	1.7227E+01			0.49796	ug/g			
28	SAMPLE	S10V001310		0 0	A		Copper	SOLID	N/A	1.6541E+01			0.49796	ug/g			
28	SAMPLE	S10V001310		0 0	A		Iron	SOLID	N/A	2.2122E+04			0.49796	ug/g			
28	SAMPLE	S10V001310		0 0	A		Potassium	SOLID	N/A	1.1027E+03			49.796	ug/g			
28	SAMPLE	S10V001310		0 0	A		Lanthanum	SOLID	N/A	1.0604E+01			0.29878	ug/g			
28	SAMPLE	S10V001310		0 0	A		Lithium	SOLID	N/A	7.7324E+00			0.29878	ug/g			
28	SAMPLE	S10V001310		0 0	A		Magnesium	SOLID	N/A	4.6805E+03			4.9796	ug/g			
28	SAMPLE	S10V001310		0 0	A		Manganese	SOLID	N/A	3.3110E+02			0.29878	ug/g			c
28	SAMPLE	S10V001310		0 0	A		Molybdenum	SOLID	N/A	<1.9918E+00			1.9918	ug/g			U
28	SAMPLE	S10V001310		0 0	A		Sodium	SOLID	N/A	3.9694E+02			9.9592	ug/g			
28	SAMPLE	S10V001310		0 0	A		Nickel	SOLID	N/A	1.2428E+01			1.9918	ug/g			J
28	SAMPLE	S10V001310		0 0	A		Phosphorus	SOLID	N/A	7.8636E+02			4.9796	ug/g			
28	SAMPLE	S10V001310		0 0	A		Lead	SOLID	N/A	<4.9796E+00			4.9796	ug/g			U
28	SAMPLE	S10V001310		0 0	A		Sulfur	SOLID	N/A	5.5684E+01			9.9592	ug/g			J
28	SAMPLE	S10V001310		0 0	A		Silicon	SOLID	N/A	3.4220E+01			2.9878	ug/g			b
28	SAMPLE	S10V001310		0 0	A		Strontium	SOLID	N/A	3.4735E+01			0.29878	ug/g			
28	SAMPLE	S10V001310		0 0	A		Titanium	SOLID	N/A	1.4396E+03			0.49796	ug/g			
28	SAMPLE	S10V001310		0 0	A		Vanadium	SOLID	N/A	5.4597E+01			0.49796	ug/g			
28	SAMPLE	S10V001310		0 0	A		Yttrium	SOLID	N/A	8.8772E+00			0.19918	ug/g			
28	SAMPLE	S10V001310		0 0	A		Zinc	SOLID	N/A	3.9807E+01			0.49796	ug/g			
28	SAMPLE	S10V001310		0 0	A		Zirconium	SOLID	N/A	1.5287E+01			0.49796	ug/g			
Sample Sequence 29																	
29	SAMPLE	S10V001350		0 0	A		Aluminum	SOLID	N/A	6.8089E+03			2.9806	ug/g			
29	SAMPLE	S10V001350		0 0	A		Boron	SOLID	N/A	<2.9806E+00			2.9806	ug/g			U
29	SAMPLE	S10V001350		0 0	A		Barium	SOLID	N/A	7.8445E+01			0.29806	ug/g			
29	SAMPLE	S10V001350		0 0	A		Beryllium	SOLID	N/A	1.4655E-01			0.099354	ug/g			J
29	SAMPLE	S10V001350		0 0	A		Calcium	SOLID	N/A	7.6774E+03			4.9677	ug/g			
29	SAMPLE	S10V001350		0 0	A		Cadmium	SOLID	N/A	3.1756E+00			0.49677	ug/g			J
29	SAMPLE	S10V001350		0 0	A		Cerium	SOLID	N/A	2.1319E+01			2.9806	ug/g			J
29	SAMPLE	S10V001350		0 0	A		Cobalt	SOLID	N/A	7.6199E+00			0.99354	ug/g			J
29	SAMPLE	S10V001350		0 0	A		Chromium	SOLID	N/A	1.1922E+01			0.49677	ug/g			

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
29	SAMPLE	S10V001350		0 0	A		Copper	SOLID	N/A	1.1980E+01			0.49677	ug/g			
29	SAMPLE	S10V001350		0 0	A		Iron	SOLID	N/A	2.1582E+04			0.49677	ug/g			
29	SAMPLE	S10V001350		0 0	A		Potassium	SOLID	N/A	9.0515E+02			49.677	ug/g			
29	SAMPLE	S10V001350		0 0	A		Lanthanum	SOLID	N/A	1.0930E+01			0.29806	ug/g			
29	SAMPLE	S10V001350		0 0	A		Lithium	SOLID	N/A	7.0277E+00			0.29806	ug/g			
29	SAMPLE	S10V001350		0 0	A		Magnesium	SOLID	N/A	4.6815E+03			4.9677	ug/g			
29	SAMPLE	S10V001350		0 0	A		Manganese	SOLID	N/A	2.9824E+02			0.29806	ug/g			c
29	SAMPLE	S10V001350		0 0	A		Molybdenum	SOLID	N/A	<1.9871E+00			1.9871	ug/g			U
29	SAMPLE	S10V001350		0 0	A		Sodium	SOLID	N/A	4.0976E+02			9.9354	ug/g			
29	SAMPLE	S10V001350		0 0	A		Nickel	SOLID	N/A	1.1141E+01			1.9871	ug/g			J
29	SAMPLE	S10V001350		0 0	A		Phosphorus	SOLID	N/A	8.0110E+02			4.9677	ug/g			
29	SAMPLE	S10V001350		0 0	A		Lead	SOLID	N/A	<4.9677E+00			4.9677	ug/g			U
29	SAMPLE	S10V001350		0 0	A		Sulfur	SOLID	N/A	4.9095E+01			9.9354	ug/g			J
29	SAMPLE	S10V001350		0 0	A		Silicon	SOLID	N/A	2.4664E+01			2.9806	ug/g			Jb
29	SAMPLE	S10V001350		0 0	A		Strontium	SOLID	N/A	3.0063E+01			0.29806	ug/g			
29	SAMPLE	S10V001350		0 0	A		Titanium	SOLID	N/A	1.3921E+03			0.49677	ug/g			
29	SAMPLE	S10V001350		0 0	A		Vanadium	SOLID	N/A	5.0015E+01			0.49677	ug/g			
29	SAMPLE	S10V001350		0 0	A		Yttrium	SOLID	N/A	1.0560E+01			0.19871	ug/g			
29	SAMPLE	S10V001350		0 0	A		Zinc	SOLID	N/A	4.2234E+01			0.49677	ug/g			
29	SAMPLE	S10V001350		0 0	A		Zirconium	SOLID	N/A	1.6530E+01			0.49677	ug/g			
Sample Sequence 30																	
30	SAMPLE	S10V001370		0 0	A		Aluminum	SOLID	N/A	9.3291E+03			2.9938	ug/g			
30	SAMPLE	S10V001370		0 0	A		Boron	SOLID	N/A	<2.9938E+00			2.9938	ug/g			U
30	SAMPLE	S10V001370		0 0	A		Barium	SOLID	N/A	9.9904E+01			0.29938	ug/g			
30	SAMPLE	S10V001370		0 0	A		Beryllium	SOLID	N/A	1.5308E-01			0.099792	ug/g			J
30	SAMPLE	S10V001370		0 0	A		Calcium	SOLID	N/A	1.6244E+04			4.9896	ug/g			
30	SAMPLE	S10V001370		0 0	A		Cadmium	SOLID	N/A	2.1141E+00			0.49896	ug/g			J
30	SAMPLE	S10V001370		0 0	A		Cerium	SOLID	N/A	2.4651E+01			2.9938	ug/g			J
30	SAMPLE	S10V001370		0 0	A		Cobalt	SOLID	N/A	1.1309E+01			0.99792	ug/g			
30	SAMPLE	S10V001370		0 0	A		Chromium	SOLID	N/A	2.9807E+01			0.49896	ug/g			
30	SAMPLE	S10V001370		0 0	A		Copper	SOLID	N/A	1.5293E+01			0.49896	ug/g			
30	SAMPLE	S10V001370		0 0	A		Iron	SOLID	N/A	2.2947E+04			0.49896	ug/g			
30	SAMPLE	S10V001370		0 0	A		Potassium	SOLID	N/A	1.3626E+03			49.896	ug/g			
30	SAMPLE	S10V001370		0 0	A		Lanthanum	SOLID	N/A	1.1141E+01			0.29938	ug/g			
30	SAMPLE	S10V001370		0 0	A		Lithium	SOLID	N/A	8.1258E+00			0.29938	ug/g			
30	SAMPLE	S10V001370		0 0	A		Magnesium	SOLID	N/A	5.3366E+03			4.9896	ug/g			
30	SAMPLE	S10V001370		0 0	A		Manganese	SOLID	N/A	3.0973E+02			0.29938	ug/g			c
30	SAMPLE	S10V001370		0 0	A		Molybdenum	SOLID	N/A	<1.9958E+00			1.9958	ug/g			U
30	SAMPLE	S10V001370		0 0	A		Sodium	SOLID	N/A	9.7158E+02			9.9792	ug/g			
30	SAMPLE	S10V001370		0 0	A		Nickel	SOLID	N/A	1.9270E+01			1.9958	ug/g			J
30	SAMPLE	S10V001370		0 0	A		Phosphorus	SOLID	N/A	8.3214E+02			4.9896	ug/g			
30	SAMPLE	S10V001370		0 0	A		Lead	SOLID	N/A	<4.9896E+00			4.9896	ug/g			U

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
30	SAMPLE	S10V001370		0 0	A		Sulfur	SOLID	N/A	1.6272E+02			9.9792	ug/g			
30	SAMPLE	S10V001370		0 0	A		Silicon	SOLID	N/A	2.5759E+01			2.9938	ug/g			Jb
30	SAMPLE	S10V001370		0 0	A		Strontium	SOLID	N/A	5.6229E+01			0.29938	ug/g			
30	SAMPLE	S10V001370		0 0	A		Titanium	SOLID	N/A	1.6142E+03			0.49896	ug/g			
30	SAMPLE	S10V001370		0 0	A		Vanadium	SOLID	N/A	6.3724E+01			0.49896	ug/g			
30	SAMPLE	S10V001370		0 0	A		Yttrium	SOLID	N/A	1.0330E+01			0.19958	ug/g			
30	SAMPLE	S10V001370		0 0	A		Zinc	SOLID	N/A	4.2974E+01			0.49896	ug/g			
30	SAMPLE	S10V001370		0 0	A		Zirconium	SOLID	N/A	1.8515E+01			0.49896	ug/g			
Sample Sequence 31																	
31	SAMPLE	S10V001390		0 0	A		Aluminum	SOLID	N/A	6.8267E+03			2.9723	ug/g			
31	SAMPLE	S10V001390		0 0	A		Boron	SOLID	N/A	<2.9723E+00			2.9723	ug/g			U
31	SAMPLE	S10V001390		0 0	A		Barium	SOLID	N/A	5.3170E+01			0.29723	ug/g			
31	SAMPLE	S10V001390		0 0	A		Beryllium	SOLID	N/A	1.7299E-01			0.099077	ug/g			J
31	SAMPLE	S10V001390		0 0	A		Calcium	SOLID	N/A	7.6718E+03			4.9538	ug/g			
31	SAMPLE	S10V001390		0 0	A		Cadmium	SOLID	N/A	1.9012E+00			0.49538	ug/g			J
31	SAMPLE	S10V001390		0 0	A		Cerium	SOLID	N/A	2.1081E+01			2.9723	ug/g			J
31	SAMPLE	S10V001390		0 0	A		Cobalt	SOLID	N/A	6.2738E+00			0.99077	ug/g			J
31	SAMPLE	S10V001390		0 0	A		Chromium	SOLID	N/A	2.7645E+01			0.49538	ug/g			
31	SAMPLE	S10V001390		0 0	A		Copper	SOLID	N/A	1.0819E+01			0.49538	ug/g			
31	SAMPLE	S10V001390		0 0	A		Iron	SOLID	N/A	1.6222E+04			0.49538	ug/g			
31	SAMPLE	S10V001390		0 0	A		Potassium	SOLID	N/A	9.0531E+02			49.538	ug/g			
31	SAMPLE	S10V001390		0 0	A		Lanthanum	SOLID	N/A	1.1594E+01			0.29723	ug/g			
31	SAMPLE	S10V001390		0 0	A		Lithium	SOLID	N/A	8.2517E+00			0.29723	ug/g			
31	SAMPLE	S10V001390		0 0	A		Magnesium	SOLID	N/A	5.8329E+03			4.9538	ug/g			
31	SAMPLE	S10V001390		0 0	A		Manganese	SOLID	N/A	2.8244E+02			0.29723	ug/g			c
31	SAMPLE	S10V001390		0 0	A		Molybdenum	SOLID	N/A	<1.9815E+00			1.9815	ug/g			U
31	SAMPLE	S10V001390		0 0	A		Sodium	SOLID	N/A	1.8524E+02			9.9077	ug/g			
31	SAMPLE	S10V001390		0 0	A		Nickel	SOLID	N/A	2.5324E+01			1.9815	ug/g			
31	SAMPLE	S10V001390		0 0	A		Phosphorus	SOLID	N/A	4.9542E+02			4.9538	ug/g			
31	SAMPLE	S10V001390		0 0	A		Lead	SOLID	N/A	<4.9538E+00			4.9538	ug/g			U
31	SAMPLE	S10V001390		0 0	A		Sulfur	SOLID	N/A	4.5481E+01			9.9077	ug/g			J
31	SAMPLE	S10V001390		0 0	A		Silicon	SOLID	N/A	3.3628E+01			2.9723	ug/g			b
31	SAMPLE	S10V001390		0 0	A		Strontium	SOLID	N/A	2.9059E+01			0.29723	ug/g			
31	SAMPLE	S10V001390		0 0	A		Titanium	SOLID	N/A	8.4888E+02			0.49538	ug/g			
31	SAMPLE	S10V001390		0 0	A		Vanadium	SOLID	N/A	3.4756E+01			0.49538	ug/g			
31	SAMPLE	S10V001390		0 0	A		Yttrium	SOLID	N/A	5.7323E+00			0.19815	ug/g			
31	SAMPLE	S10V001390		0 0	A		Zinc	SOLID	N/A	3.1175E+01			0.49538	ug/g			
31	SAMPLE	S10V001390		0 0	A		Zirconium	SOLID	N/A	7.4926E+00			0.49538	ug/g			
Sample Sequence 32																	
32	SAMPLE	S10V001410		0 0	A		Aluminum	SOLID	N/A	7.3809E+03			2.975	ug/g			
32	SAMPLE	S10V001410		0 0	A		Boron	SOLID	N/A	<2.9750E+00			2.975	ug/g			U
32	SAMPLE	S10V001410		0 0	A		Barium	SOLID	N/A	7.6819E+01			0.2975	ug/g			

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
32	SAMPLE	S10V001410		0 0	A		Beryllium	SOLID	N/A	1.9476E-01			0.099167	ug/g			J
32	SAMPLE	S10V001410		0 0	A		Calcium	SOLID	N/A	8.1384E+03			4.9583	ug/g			
32	SAMPLE	S10V001410		0 0	A		Cadmium	SOLID	N/A	1.7591E+00			0.49583	ug/g			J
32	SAMPLE	S10V001410		0 0	A		Cerium	SOLID	N/A	1.8005E+01			2.975	ug/g			J
32	SAMPLE	S10V001410		0 0	A		Cobalt	SOLID	N/A	5.9829E+00			0.99167	ug/g			J
32	SAMPLE	S10V001410		0 0	A		Chromium	SOLID	N/A	1.6499E+01			0.49583	ug/g			
32	SAMPLE	S10V001410		0 0	A		Copper	SOLID	N/A	9.4869E+00			0.49583	ug/g			
32	SAMPLE	S10V001410		0 0	A		Iron	SOLID	N/A	1.5109E+04			0.49583	ug/g			
32	SAMPLE	S10V001410		0 0	A		Potassium	SOLID	N/A	1.5334E+03			49.583	ug/g			
32	SAMPLE	S10V001410		0 0	A		Lanthanum	SOLID	N/A	9.4177E+00			0.2975	ug/g			
32	SAMPLE	S10V001410		0 0	A		Lithium	SOLID	N/A	1.0755E+01			0.2975	ug/g			
32	SAMPLE	S10V001410		0 0	A		Magnesium	SOLID	N/A	4.9442E+03			4.9583	ug/g			
32	SAMPLE	S10V001410		0 0	A		Manganese	SOLID	N/A	2.8587E+02			0.2975	ug/g			c
32	SAMPLE	S10V001410		0 0	A		Molybdenum	SOLID	N/A	<1.9833E+00			1.9833	ug/g			U
32	SAMPLE	S10V001410		0 0	A		Sodium	SOLID	N/A	2.1317E+02			9.9167	ug/g			
32	SAMPLE	S10V001410		0 0	A		Nickel	SOLID	N/A	1.4255E+01			1.9833	ug/g			J
32	SAMPLE	S10V001410		0 0	A		Phosphorus	SOLID	N/A	4.6719E+02			4.9583	ug/g			
32	SAMPLE	S10V001410		0 0	A		Lead	SOLID	N/A	<4.9583E+00			4.9583	ug/g			U
32	SAMPLE	S10V001410		0 0	A		Sulfur	SOLID	N/A	4.9607E+01			9.9167	ug/g			J
32	SAMPLE	S10V001410		0 0	A		Silicon	SOLID	N/A	2.4161E+01			2.975	ug/g			Jb
32	SAMPLE	S10V001410		0 0	A		Strontium	SOLID	N/A	3.1914E+01			0.2975	ug/g			
32	SAMPLE	S10V001410		0 0	A		Titanium	SOLID	N/A	7.1043E+02			0.49583	ug/g			
32	SAMPLE	S10V001410		0 0	A		Vanadium	SOLID	N/A	2.9555E+01			0.49583	ug/g			
32	SAMPLE	S10V001410		0 0	A		Yttrium	SOLID	N/A	5.4004E+00			0.19833	ug/g			
32	SAMPLE	S10V001410		0 0	A		Zinc	SOLID	N/A	3.2570E+01			0.49583	ug/g			
32	SAMPLE	S10V001410		0 0	A		Zirconium	SOLID	N/A	6.8636E+00			0.49583	ug/g			
Sample Sequence 33																	
33	SAMPLE	S10V001430		0 0	A		Aluminum	SOLID	N/A	6.6764E+03			2.972	ug/g			
33	SAMPLE	S10V001430		0 0	A		Boron	SOLID	N/A	3.1013E+00			2.972	ug/g			J
33	SAMPLE	S10V001430		0 0	A		Barium	SOLID	N/A	7.1623E+01			0.2972	ug/g			
33	SAMPLE	S10V001430		0 0	A		Beryllium	SOLID	N/A	1.2492E-01			0.099067	ug/g			J
33	SAMPLE	S10V001430		0 0	A		Calcium	SOLID	N/A	8.3426E+03			4.9533	ug/g			
33	SAMPLE	S10V001430		0 0	A		Cadmium	SOLID	N/A	2.4432E+00			0.49533	ug/g			J
33	SAMPLE	S10V001430		0 0	A		Cerium	SOLID	N/A	1.6938E+01			2.972	ug/g			J
33	SAMPLE	S10V001430		0 0	A		Cobalt	SOLID	N/A	5.5937E+00			0.99067	ug/g			J
33	SAMPLE	S10V001430		0 0	A		Chromium	SOLID	N/A	2.0262E+01			0.49533	ug/g			
33	SAMPLE	S10V001430		0 0	A		Copper	SOLID	N/A	1.1907E+01			0.49533	ug/g			
33	SAMPLE	S10V001430		0 0	A		Iron	SOLID	N/A	1.7838E+04			0.49533	ug/g			
33	SAMPLE	S10V001430		0 0	A		Potassium	SOLID	N/A	1.0118E+03			49.533	ug/g			
33	SAMPLE	S10V001430		0 0	A		Lanthanum	SOLID	N/A	8.6997E+00			0.2972	ug/g			
33	SAMPLE	S10V001430		0 0	A		Lithium	SOLID	N/A	8.4549E+00			0.2972	ug/g			
33	SAMPLE	S10V001430		0 0	A		Magnesium	SOLID	N/A	4.8056E+03			4.9533	ug/g			

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
33	SAMPLE	S10V001430		0 0	A		Manganese	SOLID	N/A	2.6520E+02			0.2972	ug/g			c
33	SAMPLE	S10V001430		0 0	A		Molybdenum	SOLID	N/A	2.5366E+00			1.9813	ug/g			J
33	SAMPLE	S10V001430		0 0	A		Sodium	SOLID	N/A	2.5919E+02			9.9067	ug/g			
33	SAMPLE	S10V001430		0 0	A		Nickel	SOLID	N/A	1.1185E+01			1.9813	ug/g			J
33	SAMPLE	S10V001430		0 0	A		Phosphorus	SOLID	N/A	5.9607E+02			4.9533	ug/g			
33	SAMPLE	S10V001430		0 0	A		Lead	SOLID	N/A	<4.9533E+00			4.9533	ug/g			U
33	SAMPLE	S10V001430		0 0	A		Sulfur	SOLID	N/A	1.6490E+02			9.9067	ug/g			
33	SAMPLE	S10V001430		0 0	A		Silicon	SOLID	N/A	3.0899E+01			2.972	ug/g			b
33	SAMPLE	S10V001430		0 0	A		Strontium	SOLID	N/A	3.7211E+01			0.2972	ug/g			
33	SAMPLE	S10V001430		0 0	A		Titanium	SOLID	N/A	9.9955E+02			0.49533	ug/g			
33	SAMPLE	S10V001430		0 0	A		Vanadium	SOLID	N/A	3.8405E+01			0.49533	ug/g			
33	SAMPLE	S10V001430		0 0	A		Yttrium	SOLID	N/A	6.6336E+00			0.19813	ug/g			
33	SAMPLE	S10V001430		0 0	A		Zinc	SOLID	N/A	3.2578E+01			0.49533	ug/g			
33	SAMPLE	S10V001430		0 0	A		Zirconium	SOLID	N/A	1.1010E+01			0.49533	ug/g			
Sample Sequence 34																	
34	ICSA	S1008090010		0 0			Silver	LIQUID		6.7200E-03			5.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Aluminum	LIQUID	200	2.0538E+02			0.03	ug/mL	102.69	% Recovery	
34	ICSA	S1008090010		0 0			Arsenic	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Boron	LIQUID		<3.0000E-02			0.03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Barium	LIQUID		<3.0000E-03			3.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Beryllium	LIQUID		<1.0000E-03			1.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Bismuth	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Calcium	LIQUID	200	2.1539E+02			0.05	ug/mL	107.7	% Recovery	
34	ICSA	S1008090010		0 0			Cadmium	LIQUID		1.5270E-02			5.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Cerium	LIQUID		<3.0000E-02			0.03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Cobalt	LIQUID		<1.0000E-02			0.01	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Chromium	LIQUID		5.3600E-03			5.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Copper	LIQUID		<5.0000E-03			5.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Iron	LIQUID	200	2.0214E+02			5.00E-03	ug/mL	101.07	% Recovery	
34	ICSA	S1008090010		0 0			Potassium	LIQUID		<5.0000E-01			0.5	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Lanthanum	LIQUID		<3.0000E-03			3.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Lithium	LIQUID		<3.0000E-03			3.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Magnesium	LIQUID	200	1.9756E+02			0.05	ug/mL	98.781	% Recovery	
34	ICSA	S1008090010		0 0			Manganese	LIQUID		8.8100E-03			3.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Molybdenum	LIQUID		<2.0000E-02			0.02	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Sodium	LIQUID	200	1.7518E+02			0.1	ug/mL	87.591	% Recovery	
34	ICSA	S1008090010		0 0			Neodymium	LIQUID		1.0460E-02			0.01	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Nickel	LIQUID		<2.0000E-02			0.02	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Phosphorus	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Lead	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Palladium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Praseodymium	LIQUID		<1.0000E-02			0.01	ug/mL	N/A		

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
34	ICSA	S1008090010		0 0			Rubidium	LIQUID		<1.0000E+00			1	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Rhodium	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Sulfur	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Antimony	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Selenium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Silicon	LIQUID		<3.0000E-02			0.03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Samarium	LIQUID		<2.0000E-02			0.02	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Tin	LIQUID		<3.0000E-02			0.03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Strontium	LIQUID		<3.0000E-03			3.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Tantalum	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Tellurium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Thorium	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Titanium	LIQUID		<5.0000E-03			5.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Thallium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Uranium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Vanadium	LIQUID		<5.0000E-03			5.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Tungsten	LIQUID		<2.0000E-01			0.2	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Yttrium	LIQUID		<2.0000E-03			2.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Zinc	LIQUID		<5.0000E-03			5.00E-03	ug/mL	N/A		
34	ICSA	S1008090010		0 0			Zirconium	LIQUID		<5.0000E-03			5.00E-03	ug/mL	N/A		
Sample Sequence 35																	
35	ICSAB	S1008090011		0 0			Silver	LIQUID	1	1.0820E+00			5.00E-03	ug/mL	108.2	% Recovery	
35	ICSAB	S1008090011		0 0			Aluminum	LIQUID	200	2.0381E+02			0.03	ug/mL	101.9	% Recovery	
35	ICSAB	S1008090011		0 0			Arsenic	LIQUID	5	5.1541E+00			0.05	ug/mL	103.08	% Recovery	
35	ICSAB	S1008090011		0 0			Boron	LIQUID	1	1.0284E+00			0.03	ug/mL	102.84	% Recovery	
35	ICSAB	S1008090011		0 0			Barium	LIQUID	1	9.7363E-01			3.00E-03	ug/mL	97.363	% Recovery	
35	ICSAB	S1008090011		0 0			Beryllium	LIQUID	.1	9.2550E-02			1.00E-03	ug/mL	92.55	% Recovery	
35	ICSAB	S1008090011		0 0			Bismuth	LIQUID	5	4.9246E+00			0.1	ug/mL	98.493	% Recovery	
35	ICSAB	S1008090011		0 0			Calcium	LIQUID	200	2.0880E+02			0.05	ug/mL	104.4	% Recovery	
35	ICSAB	S1008090011		0 0			Cadmium	LIQUID	.2	2.2443E-01			5.00E-03	ug/mL	112.22	% Recovery	
35	ICSAB	S1008090011		0 0			Cerium	LIQUID		<3.0000E-02			0.03	ug/mL	N/A		
35	ICSAB	S1008090011		0 0			Cobalt	LIQUID	5	5.2356E+00			0.01	ug/mL	104.71	% Recovery	
35	ICSAB	S1008090011		0 0			Chromium	LIQUID	5	5.1436E+00			5.00E-03	ug/mL	102.87	% Recovery	
35	ICSAB	S1008090011		0 0			Copper	LIQUID	5	5.2028E+00			5.00E-03	ug/mL	104.06	% Recovery	
35	ICSAB	S1008090011		0 0			Iron	LIQUID	200	1.9926E+02			5.00E-03	ug/mL	99.629	% Recovery	
35	ICSAB	S1008090011		0 0			Potassium	LIQUID		<5.0000E-01			0.5	ug/mL	N/A		
35	ICSAB	S1008090011		0 0			Lanthanum	LIQUID		<3.0000E-03			3.00E-03	ug/mL	N/A		
35	ICSAB	S1008090011		0 0			Lithium	LIQUID	1	9.1396E-01			3.00E-03	ug/mL	91.396	% Recovery	
35	ICSAB	S1008090011		0 0			Magnesium	LIQUID	200	1.9457E+02			0.05	ug/mL	97.283	% Recovery	
35	ICSAB	S1008090011		0 0			Manganese	LIQUID	5	5.0956E+00			3.00E-03	ug/mL	101.91	% Recovery	
35	ICSAB	S1008090011		0 0			Molybdenum	LIQUID	5	4.8236E+00			0.02	ug/mL	96.471	% Recovery	
35	ICSAB	S1008090011		0 0			Sodium	LIQUID	200	1.7192E+02			0.1	ug/mL	85.961	% Recovery	

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
35	ICSAB	S1008090011		0 0			Neodymium	LIQUID		3.4660E-02			0.01	ug/mL	N/A		
35	ICSAB	S1008090011		0 0			Nickel	LIQUID	5	5.1317E+00			0.02	ug/mL	102.63	% Recovery	
35	ICSAB	S1008090011		0 0			Niobium	LIQUID	5	4.8598E+00			0.03	ug/mL	97.197	% Recovery	
35	ICSAB	S1008090011		0 0			Phosphorus	LIQUID	1	9.8732E-01			0.05	ug/mL	98.732	% Recovery	
35	ICSAB	S1008090011		0 0			Lead	LIQUID	1	8.4820E-01			0.05	ug/mL	84.82	% Recovery	
35	ICSAB	S1008090011		0 0			Palladium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
35	ICSAB	S1008090011		0 0			Praseodymium	LIQUID		<1.0000E-02			0.01	ug/mL	N/A		
35	ICSAB	S1008090011		0 0			Rubidium	LIQUID		<1.0000E+00			1	ug/mL	N/A		
35	ICSAB	S1008090011		0 0			Rhodium	LIQUID	1	1.0578E+00			0.05	ug/mL	105.78	% Recovery	
35	ICSAB	S1008090011		0 0			Sulfur	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
35	ICSAB	S1008090011		0 0			Antimony	LIQUID	5	5.0882E+00			0.05	ug/mL	101.76	% Recovery	
35	ICSAB	S1008090011		0 0			Selenium	LIQUID	5	5.1908E+00			0.1	ug/mL	103.82	% Recovery	
35	ICSAB	S1008090011		0 0			Silicon	LIQUID	5	4.9272E+00			0.03	ug/mL	98.544	% Recovery	
35	ICSAB	S1008090011		0 0			Samarium	LIQUID		<2.0000E-02			0.02	ug/mL	N/A		
35	ICSAB	S1008090011		0 0			Tin	LIQUID	1	1.1547E+00			0.03	ug/mL	115.47	% Recovery	
35	ICSAB	S1008090011		0 0			Strontium	LIQUID	1	9.8384E-01			3.00E-03	ug/mL	98.384	% Recovery	
35	ICSAB	S1008090011		0 0			Tantalum	LIQUID		<5.0000E-02			0.05	ug/mL	N/A		
35	ICSAB	S1008090011		0 0			Tellurium	LIQUID		<1.0000E-01			0.1	ug/mL	N/A		
35	ICSAB	S1008090011		0 0			Thorium	LIQUID	5	4.7006E+00			0.05	ug/mL	94.011	% Recovery	
35	ICSAB	S1008090011		0 0			Titanium	LIQUID	50	4.8041E+01			5.00E-03	ug/mL	96.083	% Recovery	
35	ICSAB	S1008090011		0 0			Thallium	LIQUID	5	4.8463E+00			0.1	ug/mL	96.927	% Recovery	
35	ICSAB	S1008090011		0 0			Uranium	LIQUID	5	4.5619E+00			0.1	ug/mL	91.237	% Recovery	
35	ICSAB	S1008090011		0 0			Vanadium	LIQUID	1	1.0317E+00			5.00E-03	ug/mL	103.17	% Recovery	
35	ICSAB	S1008090011		0 0			Tungsten	LIQUID	5	4.0420E+00			0.2	ug/mL	80.839	% Recovery	
35	ICSAB	S1008090011		0 0			Yttrium	LIQUID		<2.0000E-03			2.00E-03	ug/mL	N/A		
35	ICSAB	S1008090011		0 0			Zinc	LIQUID	5	5.1001E+00			5.00E-03	ug/mL	102	% Recovery	
35	ICSAB	S1008090011		0 0			Zirconium	LIQUID	5	4.2176E+00			5.00E-03	ug/mL	84.353	% Recovery	
Sample Sequence 36																	
36	CCV	S1008090015		0 0			Silver	LIQUID	1	9.7787E-01			5.00E-03	ug/mL	97.787	% Recovery	
36	CCV	S1008090015		0 0			Aluminum	LIQUID	5	5.0118E+00			0.03	ug/mL	100.24	% Recovery	
36	CCV	S1008090015		0 0			Arsenic	LIQUID	5	5.0675E+00			0.05	ug/mL	101.35	% Recovery	
36	CCV	S1008090015		0 0			Boron	LIQUID	5	5.0809E+00			0.03	ug/mL	101.62	% Recovery	
36	CCV	S1008090015		0 0			Barium	LIQUID	5	5.1679E+00			3.00E-03	ug/mL	103.36	% Recovery	
36	CCV	S1008090015		0 0			Beryllium	LIQUID	5	5.2346E+00			1.00E-03	ug/mL	104.69	% Recovery	
36	CCV	S1008090015		0 0			Bismuth	LIQUID	5	5.0760E+00			0.1	ug/mL	101.52	% Recovery	
36	CCV	S1008090015		0 0			Calcium	LIQUID	5	5.4249E+00			0.05	ug/mL	108.5	% Recovery	
36	CCV	S1008090015		0 0			Cadmium	LIQUID	5	5.3084E+00			5.00E-03	ug/mL	106.17	% Recovery	
37	CCV	S1008090015		0 1			Cerium	LIQUID	5	5.3581E+00			0.03	ug/mL	107.16	% Recovery	
36	CCV	S1008090015		0 0			Cobalt	LIQUID	5	5.3609E+00			0.01	ug/mL	107.22	% Recovery	
36	CCV	S1008090015		0 0			Chromium	LIQUID	5	5.3845E+00			5.00E-03	ug/mL	107.69	% Recovery	
36	CCV	S1008090015		0 0			Copper	LIQUID	5	5.0294E+00			5.00E-03	ug/mL	100.59	% Recovery	
37	CCV	S1008090015		0 1			Europium	LIQUID	5	4.9423E+00			5.00E-03	ug/mL	98.845	% Recovery	

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
36	CCV	S1008090015		0 0			Iron	LIQUID	5	5.2932E+00			5.00E-03	ug/mL	105.86	% Recovery	
36	CCV	S1008090015		0 0			Potassium	LIQUID	5	4.5814E+00			0.5	ug/mL	91.627	% Recovery	
36	CCV	S1008090015		0 0			Lanthanum	LIQUID	5	5.1043E+00			3.00E-03	ug/mL	102.09	% Recovery	
36	CCV	S1008090015		0 0			Lithium	LIQUID	5	4.8092E+00			3.00E-03	ug/mL	96.183	% Recovery	
36	CCV	S1008090015		0 0			Magnesium	LIQUID	5	5.1093E+00			0.05	ug/mL	102.19	% Recovery	
36	CCV	S1008090015		0 0			Manganese	LIQUID	5	5.3002E+00			3.00E-03	ug/mL	106	% Recovery	
36	CCV	S1008090015		0 0			Molybdenum	LIQUID	5	5.1404E+00			0.02	ug/mL	102.81	% Recovery	
36	CCV	S1008090015		0 0			Sodium	LIQUID	5	4.8359E+00			0.1	ug/mL	96.719	% Recovery	
37	CCV	S1008090015		0 1			Neodymium	LIQUID	5	4.8600E+00			0.01	ug/mL	97.2	% Recovery	
36	CCV	S1008090015		0 0			Nickel	LIQUID	5	5.2555E+00			0.02	ug/mL	105.11	% Recovery	
38	CCV	S1008090015		0 2			Niobium	LIQUID	5	5.0594E+00			0.03	ug/mL	101.19	% Recovery	
36	CCV	S1008090015		0 0			Phosphorus	LIQUID	5	5.0369E+00			0.05	ug/mL	100.74	% Recovery	
36	CCV	S1008090015		0 0			Lead	LIQUID	5	5.3410E+00			0.05	ug/mL	106.82	% Recovery	
37	CCV	S1008090015		0 1			Palladium	LIQUID	5	4.9572E+00			0.1	ug/mL	99.144	% Recovery	
37	CCV	S1008090015		0 1			Praseodymium	LIQUID	5	5.0079E+00			0.01	ug/mL	100.16	% Recovery	
37	CCV	S1008090015		0 1			Rubidium	LIQUID	5	4.7096E+00			1	ug/mL	94.193	% Recovery	
37	CCV	S1008090015		0 1			Rhodium	LIQUID	5	4.9865E+00			0.05	ug/mL	99.73	% Recovery	
37	CCV	S1008090015		0 1			Ruthenium	LIQUID	5	5.0634E+00			0.03	ug/mL	101.27	% Recovery	
36	CCV	S1008090015		0 0			Sulfur	LIQUID	5	5.1704E+00			0.1	ug/mL	103.41	% Recovery	
36	CCV	S1008090015		0 0			Antimony	LIQUID	5	5.0555E+00			0.05	ug/mL	101.11	% Recovery	
36	CCV	S1008090015		0 0			Selenium	LIQUID	5	5.2812E+00			0.1	ug/mL	105.62	% Recovery	
36	CCV	S1008090015		0 0			Silicon	LIQUID	5	4.8508E+00			0.03	ug/mL	97.016	% Recovery	
37	CCV	S1008090015		0 1			Samarium	LIQUID	5	5.1581E+00			0.02	ug/mL	103.16	% Recovery	
38	CCV	S1008090015		0 2			Tin	LIQUID	5	5.1479E+00			0.03	ug/mL	102.96	% Recovery	
36	CCV	S1008090015		0 0			Strontium	LIQUID	5	5.1640E+00			3.00E-03	ug/mL	103.28	% Recovery	
38	CCV	S1008090015		0 2			Tantalum	LIQUID	5	5.1517E+00			0.05	ug/mL	103.03	% Recovery	
38	CCV	S1008090015		0 2			Tellurium	LIQUID	5	5.0486E+00			0.1	ug/mL	100.97	% Recovery	
37	CCV	S1008090015		0 1			Thorium	LIQUID	5	5.1207E+00			0.05	ug/mL	102.41	% Recovery	
36	CCV	S1008090015		0 0			Titanium	LIQUID	5	4.9628E+00			5.00E-03	ug/mL	99.256	% Recovery	
37	CCV	S1008090015		0 1			Thallium	LIQUID	5	5.2166E+00			0.1	ug/mL	104.33	% Recovery	
37	CCV	S1008090015		0 1			Uranium	LIQUID	5	5.1507E+00			0.1	ug/mL	103.01	% Recovery	
36	CCV	S1008090015		0 0			Vanadium	LIQUID	5	5.3940E+00			5.00E-03	ug/mL	107.88	% Recovery	
38	CCV	S1008090015		0 2			Tungsten	LIQUID	5	4.9803E+00			0.2	ug/mL	99.606	% Recovery	
37	CCV	S1008090015		0 1			Yttrium	LIQUID	5	5.0184E+00			2.00E-03	ug/mL	100.37	% Recovery	
36	CCV	S1008090015		0 0			Zinc	LIQUID	5	5.2675E+00			5.00E-03	ug/mL	105.35	% Recovery	
36	CCV	S1008090015		0 0			Zirconium	LIQUID	5	4.8852E+00			5.00E-03	ug/mL	97.703	% Recovery	
Sample Sequence 39																	
39	LLS	S1008090016		0 0			Silver	LIQUID	.02	1.9190E-02			5.00E-03	ug/mL	95.95	% Recovery	
39	LLS	S1008090016		0 0			Aluminum	LIQUID	.1	8.6990E-02			0.03	ug/mL	86.99	% Recovery	
39	LLS	S1008090016		0 0			Arsenic	LIQUID	.2	1.9894E-01			0.05	ug/mL	99.47	% Recovery	
40	LLS	S1008090016		0 1			Boron	LIQUID	.1	1.0334E-01			0.03	ug/mL	103.34	% Recovery	
39	LLS	S1008090016		0 0			Barium	LIQUID	.01	9.6200E-03			3.00E-03	ug/mL	96.2	% Recovery	

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
39	LLS	S1008090016		0 0			Beryllium	LIQUID	.001	8.0000E-04			1.00E-04	ug/mL	80	% Recovery	
39	LLS	S1008090016		0 0			Bismuth	LIQUID	.2	1.8145E-01			0.1	ug/mL	90.725	% Recovery	
39	LLS	S1008090016		0 0			Calcium	LIQUID	.2	1.8443E-01			0.05	ug/mL	92.215	% Recovery	
39	LLS	S1008090016		0 0			Cadmium	LIQUID	.01	8.9400E-03			5.00E-03	ug/mL	89.4	% Recovery	
39	LLS	S1008090016		0 0			Cerium	LIQUID	.2	1.7906E-01			0.03	ug/mL	89.53	% Recovery	
40	LLS	S1008090016		0 1			Cobalt	LIQUID	.04	3.0190E-02			0.01	ug/mL	75.475	% Recovery	
39	LLS	S1008090016		0 0			Chromium	LIQUID	.02	2.3000E-02			5.00E-03	ug/mL	115	% Recovery	
40	LLS	S1008090016		0 1			Copper	LIQUID	.02	1.9120E-02			5.00E-03	ug/mL	95.6	% Recovery	
41	LLS	S1008090016		0 2			Europium	LIQUID	.1	9.3710E-02			5.00E-03	ug/mL	93.71	% Recovery	
39	LLS	S1008090016		0 0			Iron	LIQUID	.05	4.7840E-02			5.00E-03	ug/mL	95.68	% Recovery	
39	LLS	S1008090016		0 0			Potassium	LIQUID	.5	3.7633E-01			0.1	ug/mL	75.266	% Recovery	
39	LLS	S1008090016		0 0			Lanthanum	LIQUID	.01	8.8900E-03			3.00E-03	ug/mL	88.9	% Recovery	
39	LLS	S1008090016		0 0			Lithium	LIQUID	.02	1.9390E-02			3.00E-03	ug/mL	96.95	% Recovery	
39	LLS	S1008090016		0 0			Magnesium	LIQUID	.2	1.9004E-01			0.05	ug/mL	95.02	% Recovery	
39	LLS	S1008090016		0 0			Manganese	LIQUID	.02	1.9760E-02			3.00E-03	ug/mL	98.8	% Recovery	
40	LLS	S1008090016		0 1			Molybdenum	LIQUID	.1	1.0220E-01			0.02	ug/mL	102.2	% Recovery	
39	LLS	S1008090016		0 0			Sodium	LIQUID	.2	1.5750E-01			0.1	ug/mL	78.75	% Recovery	
39	LLS	S1008090016		0 0			Neodymium	LIQUID	.1	8.6700E-02			0.01	ug/mL	86.7	% Recovery	
39	LLS	S1008090016		0 0			Nickel	LIQUID	.04	4.0250E-02			0.02	ug/mL	100.62	% Recovery	
43	LLS	S1008090016		0 4			Niobium	LIQUID	.1	9.8560E-02			0.03	ug/mL	98.56	% Recovery	
40	LLS	S1008090016		0 1			Phosphorus	LIQUID	.4	3.8835E-01			0.05	ug/mL	97.088	% Recovery	
39	LLS	S1008090016		0 0			Lead	LIQUID	.2	2.0972E-01			0.05	ug/mL	104.86	% Recovery	
42	LLS	S1008090016		0 3			Palladium	LIQUID	1	1.0245E+00			0.1	ug/mL	102.45	% Recovery	
41	LLS	S1008090016		0 2			Praseodymium	LIQUID	.1	1.0303E-01			0.01	ug/mL	103.03	% Recovery	
41	LLS	S1008090016		0 2			Rubidium	LIQUID	1	1.0369E+00			1	ug/mL	103.69	% Recovery	
42	LLS	S1008090016		0 3			Rhodium	LIQUID	.1	9.0490E-02			0.05	ug/mL	90.49	% Recovery	
42	LLS	S1008090016		0 3			Ruthenium	LIQUID	.1	1.1419E-01			0.03	ug/mL	114.19	% Recovery	
40	LLS	S1008090016		0 1			Sulfur	LIQUID	.2	1.6935E-01			0.1	ug/mL	84.675	% Recovery	
40	LLS	S1008090016		0 1			Antimony	LIQUID	.1	1.0569E-01			0.05	ug/mL	105.69	% Recovery	
39	LLS	S1008090016		0 0			Selenium	LIQUID	.2	2.1545E-01			0.1	ug/mL	107.72	% Recovery	
40	LLS	S1008090016		0 1			Silicon	LIQUID	.1	9.9980E-02			0.03	ug/mL	99.98	% Recovery	
39	LLS	S1008090016		0 0			Samarium	LIQUID	.1	9.0350E-02			0.02	ug/mL	90.35	% Recovery	
43	LLS	S1008090016		0 4			Tin	LIQUID	.1	1.1922E-01			0.03	ug/mL	119.22	% Recovery	
39	LLS	S1008090016		0 0			Strontium	LIQUID	.02	2.0150E-02			3.00E-03	ug/mL	100.75	% Recovery	
43	LLS	S1008090016		0 4			Tantalum	LIQUID	1	1.0674E+00			0.05	ug/mL	106.74	% Recovery	
43	LLS	S1008090016		0 4			Tellurium	LIQUID	1	1.0803E+00			0.1	ug/mL	108.03	% Recovery	
41	LLS	S1008090016		0 2			Thorium	LIQUID	.1	1.1484E-01			0.05	ug/mL	114.84	% Recovery	
40	LLS	S1008090016		0 1			Titanium	LIQUID	.02	1.9950E-02			5.00E-03	ug/mL	99.75	% Recovery	
39	LLS	S1008090016		0 0			Thallium	LIQUID	.4	4.6546E-01			0.1	ug/mL	116.36	% Recovery	
40	LLS	S1008090016		0 1			Uranium	LIQUID	.5	4.4347E-01			0.1	ug/mL	88.694	% Recovery	
40	LLS	S1008090016		0 1			Vanadium	LIQUID	.05	5.1570E-02			5.00E-03	ug/mL	103.14	% Recovery	
43	LLS	S1008090016		0 4			Tungsten	LIQUID	1	9.4207E-01			0.2	ug/mL	94.207	% Recovery	

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
41	LLS	S1008090016		0 2			Yttrium	LIQUID	.1	9.9670E-02			2.00E-03	ug/mL	99.67	% Recovery	
40	LLS	S1008090016		0 1			Zinc	LIQUID	.02	1.7170E-02			5.00E-03	ug/mL	85.85	% Recovery	
40	LLS	S1008090016		0 1			Zirconium	LIQUID	.02	1.6650E-02			5.00E-03	ug/mL	83.25	% Recovery	
Sample Sequence 44																	
44	CCB	S1008090014		0 0			Silver	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Aluminum	LIQUID		<3.0000E-02			0.03	ug/mL			
44	CCB	S1008090014		0 0			Arsenic	LIQUID		<5.0000E-02			0.05	ug/mL			
44	CCB	S1008090014		0 0			Boron	LIQUID		<3.0000E-02			0.03	ug/mL			
44	CCB	S1008090014		0 0			Barium	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Beryllium	LIQUID		<1.0000E-03			1.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Bismuth	LIQUID		<1.0000E-01			0.1	ug/mL			
44	CCB	S1008090014		0 0			Calcium	LIQUID		7.8150E-02			0.05	ug/mL			
44	CCB	S1008090014		0 0			Cadmium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Cerium	LIQUID		<3.0000E-02			0.03	ug/mL			
44	CCB	S1008090014		0 0			Cobalt	LIQUID		<1.0000E-02			0.01	ug/mL			
44	CCB	S1008090014		0 0			Chromium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Copper	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Europium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Iron	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Potassium	LIQUID		<5.0000E-01			0.5	ug/mL			
44	CCB	S1008090014		0 0			Lanthanum	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Lithium	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Magnesium	LIQUID		<5.0000E-02			0.05	ug/mL			
44	CCB	S1008090014		0 0			Manganese	LIQUID		<3.0000E-03			3.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Molybdenum	LIQUID		<2.0000E-02			0.02	ug/mL			
44	CCB	S1008090014		0 0			Sodium	LIQUID		<1.0000E-01			0.1	ug/mL			
44	CCB	S1008090014		0 0			Neodymium	LIQUID		<1.0000E-02			0.01	ug/mL			
44	CCB	S1008090014		0 0			Nickel	LIQUID		<2.0000E-02			0.02	ug/mL			
44	CCB	S1008090014		0 0			Niobium	LIQUID		<3.0000E-02			0.03	ug/mL			
44	CCB	S1008090014		0 0			Phosphorus	LIQUID		<5.0000E-02			0.05	ug/mL			
44	CCB	S1008090014		0 0			Lead	LIQUID		<5.0000E-02			0.05	ug/mL			
44	CCB	S1008090014		0 0			Palladium	LIQUID		<1.0000E-01			0.1	ug/mL			
44	CCB	S1008090014		0 0			Rubidium	LIQUID		<1.0000E+00			1	ug/mL			
44	CCB	S1008090014		0 0			Rhodium	LIQUID		<5.0000E-02			0.05	ug/mL			
44	CCB	S1008090014		0 0			Ruthenium	LIQUID		<3.0000E-02			0.03	ug/mL			
44	CCB	S1008090014		0 0			Sulfur	LIQUID		<1.0000E-01			0.1	ug/mL			
44	CCB	S1008090014		0 0			Antimony	LIQUID		<5.0000E-02			0.05	ug/mL			
44	CCB	S1008090014		0 0			Selenium	LIQUID		<1.0000E-01			0.1	ug/mL			
44	CCB	S1008090014		0 0			Silicon	LIQUID		<3.0000E-02			0.03	ug/mL			
44	CCB	S1008090014		0 0			Samarium	LIQUID		<2.0000E-02			0.02	ug/mL			
44	CCB	S1008090014		0 0			Tin	LIQUID		<3.0000E-02			0.03	ug/mL			
44	CCB	S1008090014		0 0			Strontium	LIQUID		<3.0000E-03			3.00E-03	ug/mL			

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
44	CCB	S1008090014		0 0			Tantalum	LIQUID		<5.0000E-02			0.05	ug/mL			
44	CCB	S1008090014		0 0			Tellurium	LIQUID		<1.0000E-01			0.1	ug/mL			
44	CCB	S1008090014		0 0			Thorium	LIQUID		<5.0000E-02			0.05	ug/mL			
44	CCB	S1008090014		0 0			Titanium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Thallium	LIQUID		<1.0000E-01			0.1	ug/mL			
44	CCB	S1008090014		0 0			Uranium	LIQUID		<1.0000E-01			0.1	ug/mL			
44	CCB	S1008090014		0 0			Vanadium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Tungsten	LIQUID		<2.0000E-01			0.2	ug/mL			
44	CCB	S1008090014		0 0			Yttrium	LIQUID		<2.0000E-03			2.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Zinc	LIQUID		<5.0000E-03			5.00E-03	ug/mL			
44	CCB	S1008090014		0 0			Zirconium	LIQUID		<5.0000E-03			5.00E-03	ug/mL			

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00021230

Reviewer Signature **Date**

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LABCORE Completed Batch Report for Batch# 00021230

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1008090001	ICV				
2	S1008090001	ICV				
3	S1008090001	ICV				
4	S1008090003	LLS				
5	S1008090003	LLS				
6	S1008090003	LLS				
7	S1008090003	LLS				
8	S1008090003	LLS				
9	S1008090002	ICB				
10	S1008090004	ICSA				
11	S1008090005	ICSAB				
12	S1007290017	BLNK-PREP				
13	S1007290018	STD-PREP				
14	S1007290024	STD-PREP				
15	S1008090006	SERDIL	S10V001233			
16	S10V001233	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
17	S1007290019	DUP	S10V001233			
18	S1007290020	SPK-PREDIG	S10V001233			
19	S1007290027	SPK-PREDIG	S10V001233			
20	S1008090007	SPK-POST	S10V001233			
21	S1008090007	SPK-POST	S10V001233			
22	S1008090012	CCV				
23	S1008090012	CCV				
24	S1008090012	CCV				
25	S1008090013	CCB				
26	S10V001250	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
27	S10V001290	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
28	S10V001310	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
29	S10V001350	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
30	S10V001370	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
31	S10V001390	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
32	S10V001410	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
33	S10V001430	SAMPLE		20100520	B26C82	C Farm WMC 2010-2
34	S1008090010	ICSA				
35	S1008090011	ICSAB				

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LABCORE Completed Batch Report for Batch# 00021230

36	S1008090015	CCV
37	S1008090015	CCV
38	S1008090015	CCV
39	S1008090016	LLS
40	S1008090016	LLS
41	S1008090016	LLS
42	S1008090016	LLS
43	S1008090016	LLS
44	S1008090014	CCB

Units shown for QC (BLK/BKG) may not reflect the actual units.

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LABCORE Completed Batch Report for Batch# 00021982

Analyst: Shaw, Levi **Book#:**

Instrument: ICP/MS AGILENT

Method: MS PERIODIC TABLE, LA-506-102 Rev/Mod F-1, LA-506-103 Rev/Mod A-0

Specification: C Farm WMC 2010-2

Prep Batch: 00021048

Batch Comment:

ICP-MS determination of periodic table analytes for C Farm WMC 2010-2 soil digestates. bsm

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	ICV	S1009070175		0 0			Silver	LIQUID	.0004	4.0720E-04			8.00E-06	ug/mL	101.8	% Recovery	
1	ICV	S1009070175		0 0			Arsenic	LIQUID	.002	1.9660E-03			4.20E-05	ug/mL	98.3	% Recovery	
1	ICV	S1009070175		0 0			Selenium	LIQUID	.002	2.0980E-03			6.10E-05	ug/mL	104.9	% Recovery	
2	ICV	S1009070175		0 1			Thallium	LIQUID	.002	2.0100E-03			2.00E-06	ug/mL	100.5	% Recovery	
Sample Sequence 3																	
3	LLS	S1009070177		0 0			Silver	LIQUID	.00004	3.8440E-05			8.00E-06	ug/mL	96.1	% Recovery	
3	LLS	S1009070177		0 0			Arsenic	LIQUID	.0002	1.9930E-04			4.20E-05	ug/mL	99.65	% Recovery	
3	LLS	S1009070177		0 0			Selenium	LIQUID	.0002	1.7800E-04			6.10E-05	ug/mL	89	% Recovery	
4	LLS	S1009070177		0 1			Thallium	LIQUID	.00001	1.1380E-05			2.00E-06	ug/mL	113.8	% Recovery	
Sample Sequence 5																	
5	ICB	S1009070176		0 0			Silver	LIQUID		<8.0000E-06			8.00E-06	ug/mL			
5	ICB	S1009070176		0 0			Arsenic	LIQUID		<4.2000E-05			4.20E-05	ug/mL			
5	ICB	S1009070176		0 0			Selenium	LIQUID		<6.1000E-05			6.10E-05	ug/mL			
6	ICB	S1009070176		0 1			Thallium	LIQUID		<2.0000E-06			2.00E-06	ug/mL			
Sample Sequence 7																	
7	BLNK-PREP	S1007290017		0 0	A		Silver	LIQUID		<1.6000E-03			1.60E-03	ug/mL			
7	BLNK-PREP	S1007290017		0 0	A		Arsenic	LIQUID		<8.4000E-03			8.40E-03	ug/mL			
7	BLNK-PREP	S1007290017		0 0	A		Selenium	LIQUID		<1.2200E-02			0.0122	ug/mL			
8	BLNK-PREP	S1007290017		0 1	A		Thallium	LIQUID		<4.0000E-04			4.00E-04	ug/mL			
Sample Sequence 9																	
9	SERDIL	S1009070178	S10V001233	0 0			Silver	SOLID		<7.8548E-02			0.078548	ug/g	N/A		
9	SERDIL	S1009070178	S10V001233	0 0			Arsenic	SOLID		5.0546E+00			0.41238	ug/g	10.71	% Diff	
9	SERDIL	S1009070178	S10V001233	0 0			Selenium	SOLID		<5.9893E-01			0.59893	ug/g	N/A		
10	SERDIL	S1009070178	S10V001233	0 1			Thallium	SOLID		8.4479E-02			0.039274	ug/g	10.805	% Diff	
Sample Sequence 11																	
11	SAMPLE	S10V001233		0 0	A		Silver	SOLID	N/A	8.1789E-02			0.01571	ug/g			J
11	SAMPLE	S10V001233		0 0	A		Arsenic	SOLID	N/A	4.5656E+00			0.082476	ug/g			
11	SAMPLE	S10V001233		0 0	A		Selenium	SOLID	N/A	5.6025E-01			0.11979	ug/g			J
12	SAMPLE	S10V001233		0 1	A		Thallium	SOLID	N/A	7.6241E-02			7.85E-03	ug/g			J
Sample Sequence 13																	
13	DUP	S1007290019	S10V001233	0 0	A		Silver	SOLID	8.1789E-02	7.9459E-02			0.015805	ug/g	2.8894	% RPD	
13	DUP	S1007290019	S10V001233	0 0	A		Arsenic	SOLID	4.5656E+00	4.7336E+00			0.082976	ug/g	3.6126	% RPD	

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LABCORE Completed Batch Report for Batch# 00021982

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
13	DUP	S1007290019	S10V001233	0 0	A		Selenium	SOLID	5.6025E-01	3.1649E-01			0.12051	ug/g	55.605	% RPD	
14	DUP	S1007290019	S10V001233	0 1	A		Thallium	SOLID	7.6241E-02	8.0398E-02			7.90E-03	ug/g	5.3077	% RPD	
Sample Sequence 15																	
15	SAMPLE	S10V001250		0 0	A		Silver	SOLID	N/A	8.5027E-02			0.015859	ug/g			J
15	SAMPLE	S10V001250		0 0	A		Arsenic	SOLID	N/A	5.1999E+00			0.083262	ug/g			
15	SAMPLE	S10V001250		0 0	A		Selenium	SOLID	N/A	4.6627E-01			0.12093	ug/g			J
16	SAMPLE	S10V001250		0 1	A		Thallium	SOLID	N/A	7.8812E-02			7.93E-03	ug/g			J
Sample Sequence 17																	
17	SAMPLE	S10V001290		0 0	A		Silver	SOLID	N/A	7.5294E-02			0.015935	ug/g			J
17	SAMPLE	S10V001290		0 0	A		Arsenic	SOLID	N/A	5.0694E+00			0.08366	ug/g			
17	SAMPLE	S10V001290		0 0	A		Selenium	SOLID	N/A	3.4261E-01			0.12151	ug/g			J
18	SAMPLE	S10V001290		0 1	A		Thallium	SOLID	N/A	8.0065E-02			7.97E-03	ug/g			
Sample Sequence 19																	
19	SAMPLE	S10V001310		0 0	A		Silver	SOLID	N/A	6.6667E-02			0.015935	ug/g			J
19	SAMPLE	S10V001310		0 0	A		Arsenic	SOLID	N/A	3.3881E+00			0.083657	ug/g			
19	SAMPLE	S10V001310		0 0	A		Selenium	SOLID	N/A	2.0994E-01			0.1215	ug/g			J
20	SAMPLE	S10V001310		0 1	A		Thallium	SOLID	N/A	7.4435E-02			7.97E-03	ug/g			J
Sample Sequence 21																	
21	SAMPLE	S10V001350		0 0	A		Silver	SOLID	N/A	7.4078E-02			0.015897	ug/g			J
21	SAMPLE	S10V001350		0 0	A		Arsenic	SOLID	N/A	2.9906E+00			0.083458	ug/g			
21	SAMPLE	S10V001350		0 0	A		Selenium	SOLID	N/A	3.0541E-01			0.12121	ug/g			J
22	SAMPLE	S10V001350		0 1	A		Thallium	SOLID	N/A	6.3676E-02			7.95E-03	ug/g			J
Sample Sequence 23																	
23	SAMPLE	S10V001370		0 0	A		Silver	SOLID	N/A	7.8038E-02			0.015967	ug/g			J
23	SAMPLE	S10V001370		0 0	A		Arsenic	SOLID	N/A	2.2433E+00			0.083826	ug/g			
23	SAMPLE	S10V001370		0 0	A		Selenium	SOLID	N/A	3.4408E-01			0.12175	ug/g			J
24	SAMPLE	S10V001370		0 1	A		Thallium	SOLID	N/A	5.9426E-02			7.98E-03	ug/g			J
Sample Sequence 25																	
25	CCV	S1009070180		0 0			Silver	LIQUID	.0004	4.0470E-04			8.00E-06	ug/mL	101.18	% Recovery	
25	CCV	S1009070180		0 0			Arsenic	LIQUID	.002	1.8810E-03			4.20E-05	ug/mL	94.05	% Recovery	
25	CCV	S1009070180		0 0			Selenium	LIQUID	.002	1.9770E-03			6.10E-05	ug/mL	98.85	% Recovery	
26	CCV	S1009070180		0 1			Thallium	LIQUID	.002	1.9740E-03			2.00E-06	ug/mL	98.7	% Recovery	
Sample Sequence 27																	
27	CCB	S1009070181		0 0			Silver	LIQUID		<8.0000E-06			8.00E-06	ug/mL			
27	CCB	S1009070181		0 0			Arsenic	LIQUID		<4.2000E-05			4.20E-05	ug/mL			
27	CCB	S1009070181		0 0			Selenium	LIQUID		<6.1000E-05			6.10E-05	ug/mL			
28	CCB	S1009070181		0 1			Thallium	LIQUID		<2.0000E-06			2.00E-06	ug/mL			
Sample Sequence 29																	
29	SAMPLE	S10V001390		0 0	A		Silver	SOLID	N/A	5.4413E-02			0.015852	ug/g			J
29	SAMPLE	S10V001390		0 0	A		Arsenic	SOLID	N/A	3.7134E+00			0.083224	ug/g			
29	SAMPLE	S10V001390		0 0	A		Selenium	SOLID	N/A	2.4512E-01			0.12087	ug/g			J
30	SAMPLE	S10V001390		0 1	A		Thallium	SOLID	N/A	6.5817E-02			7.93E-03	ug/g			J
Sample Sequence 31																	

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LABCORE Completed Batch Report for Batch# 00021982

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
31	SAMPLE	S10V001410		0 0	A		Silver	SOLID	N/A	4.6450E-02			0.015867	ug/g			J
31	SAMPLE	S10V001410		0 0	A		Arsenic	SOLID	N/A	3.3955E+00			0.0833	ug/g			
31	SAMPLE	S10V001410		0 0	A		Selenium	SOLID	N/A	1.9482E-01			0.12098	ug/g			J
32	SAMPLE	S10V001410		0 1	A		Thallium	SOLID	N/A	8.4510E-02			7.93E-03	ug/g			
Sample Sequence 33																	
33	SAMPLE	S10V001430		0 0	A		Silver	SOLID	N/A	6.9763E-02			0.015851	ug/g			J
33	SAMPLE	S10V001430		0 0	A		Arsenic	SOLID	N/A	2.9145E+00			0.083216	ug/g			
33	SAMPLE	S10V001430		0 0	A		Selenium	SOLID	N/A	5.6785E-01			0.12086	ug/g			J
34	SAMPLE	S10V001430		0 1	A		Thallium	SOLID	N/A	6.2224E-02			7.93E-03	ug/g			J
Sample Sequence 35																	
35	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Silver	SOLID	9.8493056	9.7114E+00			0.15759	ug/g	97.77	% Recovery	
35	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Arsenic	SOLID	49.246528	5.2713E+01			0.82734	ug/g	97.769	% Recovery	
35	SPK-PREDIG	S1007290020	S10V001233	0 0	A		Selenium	SOLID	49.246528	4.4302E+01			1.2016	ug/g	88.822	% Recovery	
Sample Sequence 36																	
37	SPK-PREDIG	S1007290027	S10V001233	0 1	A		Thallium	SOLID	49.6031745	5.2629E+01			0.079365	ug/g	105.95	% Recovery	
Sample Sequence 38																	
38	SPK-POST	S1009070179	S10V001233	0 0			Silver	SOLID	.04	4.7620E-02			8.00E-06	ug/mL	98.225	% Recovery	
38	SPK-POST	S1009070179	S10V001233	0 0			Arsenic	SOLID	.2	6.5480E-01			4.20E-05	ug/mL	94.9	% Recovery	
38	SPK-POST	S1009070179	S10V001233	0 0			Selenium	SOLID	.2	2.3440E-01			6.10E-05	ug/mL	88.67	% Recovery	
39	SPK-POST	S1009070179	S10V001233	0 1			Thallium	SOLID	.2	2.0340E-01			4.00E-06	ug/mL	97.818	% Recovery	
Sample Sequence 40																	
40	STD-PREP	S1007290018		0 0	A	*	Silver	LIQUID	1	1.3072E+00			4.00E-03	ug/mL	130.72	% Recovery	
40	STD-PREP	S1007290018		0 0	A	*	Arsenic	LIQUID	5	4.4720E+00			0.126	ug/mL	89.44	% Recovery	
40	STD-PREP	S1007290018		0 0	A	*	Selenium	LIQUID	5	6.6900E+00			0.27	ug/mL	133.8	% Recovery	
42	STD-PREP	S1007290018		0 2	A		Thallium	LIQUID	5	5.0360E+00			4.00E-03	ug/mL	100.72	% Recovery	
Sample Sequence 43																	
43	CCV	S1009070182		0 0			Silver	LIQUID	.0004	4.0250E-04			8.00E-06	ug/mL	100.62	% Recovery	
43	CCV	S1009070182		0 0			Arsenic	LIQUID	.002	1.9860E-03			4.20E-05	ug/mL	99.3	% Recovery	
43	CCV	S1009070182		0 0			Selenium	LIQUID	.002	1.9480E-03			6.10E-05	ug/mL	97.4	% Recovery	
44	CCV	S1009070182		0 1			Thallium	LIQUID	.002	1.9680E-03			2.00E-06	ug/mL	98.4	% Recovery	
Sample Sequence 45																	
45	LLS	S1009070184		0 0			Silver	LIQUID	.00004	4.1860E-05			8.00E-06	ug/mL	104.65	% Recovery	
45	LLS	S1009070184		0 0			Arsenic	LIQUID	.0002	1.7420E-04			4.20E-05	ug/mL	87.1	% Recovery	
45	LLS	S1009070184		0 0			Selenium	LIQUID	.0002	2.2390E-04			6.10E-05	ug/mL	111.95	% Recovery	
46	LLS	S1009070184		0 1			Thallium	LIQUID	.00001	1.1470E-05			2.00E-06	ug/mL	114.7	% Recovery	
Sample Sequence 47																	
47	CCB	S1009070183		0 0			Silver	LIQUID		<8.0000E-06			8.00E-06	ug/mL			
47	CCB	S1009070183		0 0			Arsenic	LIQUID		<4.2000E-05			4.20E-05	ug/mL			
47	CCB	S1009070183		0 0			Selenium	LIQUID		<6.1000E-05			6.10E-05	ug/mL			
48	CCB	S1009070183		0 1			Thallium	LIQUID		<2.0000E-06			2.00E-06	ug/mL			

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LABCORE Completed Batch Report for Batch# 00021982

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00021982

Reviewer Signature **Date**

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LABCORE Completed Batch Report for Batch# 00021982

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1009070175	ICV				
2	S1009070175	ICV				
3	S1009070177	LLS				
4	S1009070177	LLS				
5	S1009070176	ICB				
6	S1009070176	ICB				
7	S1007290017	BLNK-PREP				
8	S1007290017	BLNK-PREP				
9	S1009070178	SERDIL	S10V001233			
10	S1009070178	SERDIL	S10V001233			
11	S10V001233	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
12	S10V001233	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
13	S1007290019	DUP	S10V001233			
14	S1007290019	DUP	S10V001233			
15	S10V001250	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
16	S10V001250	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
17	S10V001290	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
18	S10V001290	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
19	S10V001310	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
20	S10V001310	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
21	S10V001350	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
22	S10V001350	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
23	S10V001370	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
24	S10V001370	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
25	S1009070180	CCV				
26	S1009070180	CCV				
27	S1009070181	CCB				
28	S1009070181	CCB				
29	S10V001390	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
30	S10V001390	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
31	S10V001410	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
32	S10V001410	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
33	S10V001430	SAMPLE		20100520	B26C82	C Farm WMC 2010-2
34	S10V001430	SAMPLE		20100520	B26C82	C Farm WMC 2010-2
35	S1007290020	SPK-PREDIG	S10V001233			

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LABCORE Completed Batch Report for Batch# 00021982

36	S1007290027	SPK-PREDIG	S10V001233
37	S1007290027	SPK-PREDIG	S10V001233
38	S1009070179	SPK-POST	S10V001233
39	S1009070179	SPK-POST	S10V001233
40	S1007290018	STD-PREP	
41	S1007290018	STD-PREP	
42	S1007290018	STD-PREP	
43	S1009070182	CCV	
44	S1009070182	CCV	
45	S1009070184	LLS	
46	S1009070184	LLS	
47	S1009070183	CCB	
48	S1009070183	CCB	

Units shown for QC (BLK/BKG) may not reflect the actual units.

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LABCORE Completed Batch Report for Batch# 00021671

Analyst: Mull, Bryanna

Book#:

Instrument: ICP/MS PQ-EXCELL

Method: MS ACTINIDES, LA-506-102 Rev/Mod F-1

Specification: C Farm WMC 2010-2

Prep Batch: 00021048

Batch Comment:

C Farm Actinides on ICPMS PQ Excell. ls

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	ICV	S1008260147		0 0			Thorium-232	LIQUID	.001	9.9470E-04			5.00E-07	ug/mL	99.47	% Recovery	
1	ICV	S1008260147		0 0			Uranium-235	LIQUID	.0000072	7.1510E-06			1.00E-08	ug/mL	99.319	% Recovery	
1	ICV	S1008260147		0 0			Neptunium-237	LIQUID	.00115	1.0800E-03			1.00E-07	ug/mL	93.913	% Recovery	
1	ICV	S1008260147		0 0			Uranium-238	LIQUID	.0009928	9.6010E-04			5.00E-07	ug/mL	96.706	% Recovery	
Sample Sequence 2																	
2	LLS	S1008260149		0 0			Thorium-232	LIQUID	.000005	5.3010E-06			5.00E-07	ug/mL	106.02	% Recovery	
2	LLS	S1008260149		0 0			Uranium-235	LIQUID	.000000036	4.1000E-08			1.00E-08	ug/mL	113.89	% Recovery	
2	LLS	S1008260149		0 0			Neptunium-237	LIQUID	.0000049175	5.0720E-06			1.00E-07	ug/mL	103.14	% Recovery	
2	LLS	S1008260149		0 0			Uranium-238	LIQUID	.000004964	5.0000E-06			5.00E-07	ug/mL	100.73	% Recovery	
Sample Sequence 3																	
3	ICB	S1008260148		0 0			Thorium-230	LIQUID		<7.0000E-09			7.00E-09	ug/mL			
3	ICB	S1008260148		0 0			Thorium-232	LIQUID		<5.0000E-07			5.00E-07	ug/mL			
3	ICB	S1008260148		0 0			Uranium-233	LIQUID		<1.0000E-08			1.00E-08	ug/mL			
3	ICB	S1008260148		0 0			Uranium-234	LIQUID		<5.0000E-09			5.00E-09	ug/mL			
3	ICB	S1008260148		0 0			Uranium-235	LIQUID		<1.0000E-08			1.00E-08	ug/mL			
3	ICB	S1008260148		0 0			Uranium-236	LIQUID		<4.0000E-09			4.00E-09	ug/mL			
3	ICB	S1008260148		0 0			Neptunium-237	LIQUID		<1.0000E-07			1.00E-07	ug/mL			
3	ICB	S1008260148		0 0			Uranium-238	LIQUID		<5.0000E-07			5.00E-07	ug/mL			
Sample Sequence 4																	
4	BLNK-PREP	S1007290017		0 0	A		Thorium-230	LIQUID		<2.8000E-06			2.80E-06	ug/mL			
4	BLNK-PREP	S1007290017		0 0	A		Thorium-232	LIQUID		<2.0000E-04			2.00E-04	ug/mL			
4	BLNK-PREP	S1007290017		0 0	A		Uranium-233	LIQUID		<4.0000E-06			4.00E-06	ug/mL			
4	BLNK-PREP	S1007290017		0 0	A		Uranium-234	LIQUID		<2.0000E-06			2.00E-06	ug/mL			
4	BLNK-PREP	S1007290017		0 0	A		Uranium-235	LIQUID		<4.0000E-06			4.00E-06	ug/mL			
4	BLNK-PREP	S1007290017		0 0	A		Uranium-236	LIQUID		<1.6000E-06			1.60E-06	ug/mL			
4	BLNK-PREP	S1007290017		0 0	A		Neptunium-237	LIQUID		<4.0000E-05			4.00E-05	ug/mL			
4	BLNK-PREP	S1007290017		0 0	A		Uranium-238	LIQUID		<2.0000E-04			2.00E-04	ug/mL			
Sample Sequence 5																	
5	SERDIL	S1008260150	S10V001233	0 0			Thorium-230	SOLID		<1.3746E-04			1.37E-04	ug/g	N/A		
5	SERDIL	S1008260150	S10V001233	0 0			Thorium-232	SOLID		3.6132E+00			9.82E-03	ug/g	.65542	% Diff	
5	SERDIL	S1008260150	S10V001233	0 0			Uranium-233	SOLID		<1.9637E-04			1.96E-04	ug/g	N/A		

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LABCORE Completed Batch Report for Batch# 00021671

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
5	SERDIL	S1008260150	S10V001233	0 0			Uranium-234	SOLID		<9.8186E-05			9.82E-05	ug/g	N/A		
5	SERDIL	S1008260150	S10V001233	0 0			Uranium-235	SOLID		3.5828E-03			1.96E-04	ug/g	1.8706	% Diff	
5	SERDIL	S1008260150	S10V001233	0 0			Uranium-236	SOLID		<7.8548E-05			7.85E-05	ug/g	N/A		
5	SERDIL	S1008260150	S10V001233	0 0			Neptunium-237	SOLID		<1.9637E-03			1.96E-03	ug/g	N/A		
5	SERDIL	S1008260150	S10V001233	0 0			Uranium-238	SOLID		5.3982E-01			9.82E-03	ug/g	1.3278	% Diff	
Sample Sequence 6																	
6	SAMPLE	S10V001233		0 0	A		Thorium-230	SOLID	N/A	<2.7492E-05			2.75E-05	ug/g			U
6	SAMPLE	S10V001233		0 0	A		Thorium-232	SOLID	N/A	3.5897E+00			1.96E-03	ug/g			
6	SAMPLE	S10V001233		0 0	A		Uranium-233	SOLID	N/A	1.6417E-04			3.93E-05	ug/g			J
6	SAMPLE	S10V001233		0 0	A		Uranium-234	SOLID	N/A	3.0231E-05			1.96E-05	ug/g			J
6	SAMPLE	S10V001233		0 0	A		Uranium-235	SOLID	N/A	3.5170E-03			3.93E-05	ug/g			
6	SAMPLE	S10V001233		0 0	A		Uranium-236	SOLID	N/A	<1.5710E-05			1.57E-05	ug/g			U
6	SAMPLE	S10V001233		0 0	A		Neptunium-237	SOLID	N/A	<3.9274E-04			3.93E-04	ug/g			U
6	SAMPLE	S10V001233		0 0	A		Uranium-238	SOLID	N/A	5.3275E-01			1.96E-03	ug/g			
Sample Sequence 7																	
7	DUP	S1007290019	S10V001233	0 0	A		Thorium-230	SOLID	<2.7492E-05	<2.7659E-05			2.77E-05	ug/g			
7	DUP	S1007290019	S10V001233	0 0	A		Thorium-232	SOLID	3.5897E+00	3.3813E+00			1.98E-03	ug/g	5.9791	% RPD	
7	DUP	S1007290019	S10V001233	0 0	A		Uranium-233	SOLID	1.6417E-04	1.8907E-04			3.95E-05	ug/g	14.098	% RPD	
7	DUP	S1007290019	S10V001233	0 0	A		Uranium-234	SOLID	3.0231E-05	3.4228E-05			1.98E-05	ug/g	12.402	% RPD	
7	DUP	S1007290019	S10V001233	0 0	A		Uranium-235	SOLID	3.5170E-03	4.2170E-03			3.95E-05	ug/g	18.102	% RPD	
7	DUP	S1007290019	S10V001233	0 0	A		Uranium-236	SOLID	<1.5710E-05	<1.5805E-05			1.58E-05	ug/g			
7	DUP	S1007290019	S10V001233	0 0	A		Neptunium-237	SOLID	<3.9274E-04	<3.9512E-04			3.95E-04	ug/g			
7	DUP	S1007290019	S10V001233	0 0	A		Uranium-238	SOLID	5.3275E-01	6.2805E-01			1.98E-03	ug/g	16.420	% RPD	
Sample Sequence 8																	
8	SAMPLE	S10V001250		0 0	A		Thorium-230	SOLID	N/A	<2.7754E-05			2.78E-05	ug/g			U
8	SAMPLE	S10V001250		0 0	A		Thorium-232	SOLID	N/A	3.5842E+00			1.98E-03	ug/g			
8	SAMPLE	S10V001250		0 0	A		Uranium-233	SOLID	N/A	2.0191E-04			3.96E-05	ug/g			J
8	SAMPLE	S10V001250		0 0	A		Uranium-234	SOLID	N/A	3.8063E-05			1.98E-05	ug/g			J
8	SAMPLE	S10V001250		0 0	A		Uranium-235	SOLID	N/A	4.8054E-03			3.96E-05	ug/g			
8	SAMPLE	S10V001250		0 0	A		Uranium-236	SOLID	N/A	<1.5859E-05			1.59E-05	ug/g			U
8	SAMPLE	S10V001250		0 0	A		Neptunium-237	SOLID	N/A	<3.9649E-04			3.96E-04	ug/g			U
8	SAMPLE	S10V001250		0 0	A		Uranium-238	SOLID	N/A	7.0872E-01			1.98E-03	ug/g			
Sample Sequence 9																	
9	SAMPLE	S10V001290		0 0	A		Thorium-230	SOLID	N/A	<2.7887E-05			2.79E-05	ug/g			U
9	SAMPLE	S10V001290		0 0	A		Thorium-232	SOLID	N/A	3.9191E+00			1.99E-03	ug/g			
9	SAMPLE	S10V001290		0 0	A		Uranium-233	SOLID	N/A	2.0696E-04			3.98E-05	ug/g			J
9	SAMPLE	S10V001290		0 0	A		Uranium-234	SOLID	N/A	3.0656E-05			1.99E-05	ug/g			J
9	SAMPLE	S10V001290		0 0	A		Uranium-235	SOLID	N/A	4.0087E-03			3.98E-05	ug/g			
9	SAMPLE	S10V001290		0 0	A		Uranium-236	SOLID	N/A	<1.5935E-05			1.59E-05	ug/g			U
9	SAMPLE	S10V001290		0 0	A		Neptunium-237	SOLID	N/A	<3.9838E-04			3.98E-04	ug/g			U
9	SAMPLE	S10V001290		0 0	A		Uranium-238	SOLID	N/A	5.8024E-01			1.99E-03	ug/g			
Sample Sequence 10																	

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LABCORE Completed Batch Report for Batch# 00021671

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
10	SAMPLE	S10V001310		0 0	A		Thorium-230	SOLID	N/A	3.7207E-05			2.79E-05	ug/g			J
10	SAMPLE	S10V001310		0 0	A		Thorium-232	SOLID	N/A	3.4409E+00			1.99E-03	ug/g			
10	SAMPLE	S10V001310		0 0	A		Uranium-233	SOLID	N/A	1.7827E-04			3.98E-05	ug/g			J
10	SAMPLE	S10V001310		0 0	A		Uranium-234	SOLID	N/A	<1.9918E-05			1.99E-05	ug/g			U
10	SAMPLE	S10V001310		0 0	A		Uranium-235	SOLID	N/A	3.8193E-03			3.98E-05	ug/g			
10	SAMPLE	S10V001310		0 0	A		Uranium-236	SOLID	N/A	1.8654E-05			1.59E-05	ug/g			J
10	SAMPLE	S10V001310		0 0	A		Neptunium-237	SOLID	N/A	<3.9837E-04			3.98E-04	ug/g			U
10	SAMPLE	S10V001310		0 0	A		Uranium-238	SOLID	N/A	5.6508E-01			1.99E-03	ug/g			
Sample Sequence 11																	
11	SAMPLE	S10V001350		0 0	A		Thorium-230	SOLID	N/A	3.0840E-05			2.78E-05	ug/g			J
11	SAMPLE	S10V001350		0 0	A		Thorium-232	SOLID	N/A	2.5971E+00			1.99E-03	ug/g			
11	SAMPLE	S10V001350		0 0	A		Uranium-233	SOLID	N/A	1.6503E-04			3.97E-05	ug/g			J
11	SAMPLE	S10V001350		0 0	A		Uranium-234	SOLID	N/A	7.2141E-05			1.99E-05	ug/g			J
11	SAMPLE	S10V001350		0 0	A		Uranium-235	SOLID	N/A	5.3661E-03			3.97E-05	ug/g			
11	SAMPLE	S10V001350		0 0	A		Uranium-236	SOLID	N/A	<1.5897E-05			1.59E-05	ug/g			U
11	SAMPLE	S10V001350		0 0	A		Neptunium-237	SOLID	N/A	<3.9742E-04			3.97E-04	ug/g			U
11	SAMPLE	S10V001350		0 0	A		Uranium-238	SOLID	N/A	8.2096E-01			1.99E-03	ug/g			
Sample Sequence 12																	
12	SAMPLE	S10V001370		0 0	A		Thorium-230	SOLID	N/A	<2.7942E-05			2.79E-05	ug/g			U
12	SAMPLE	S10V001370		0 0	A		Thorium-232	SOLID	N/A	2.8022E+00			2.00E-03	ug/g			
12	SAMPLE	S10V001370		0 0	A		Uranium-233	SOLID	N/A	1.2933E-04			3.99E-05	ug/g			J
12	SAMPLE	S10V001370		0 0	A		Uranium-234	SOLID	N/A	6.4785E-05			2.00E-05	ug/g			J
12	SAMPLE	S10V001370		0 0	A		Uranium-235	SOLID	N/A	5.3539E-03			3.99E-05	ug/g			
12	SAMPLE	S10V001370		0 0	A		Uranium-236	SOLID	N/A	<1.5967E-05			1.60E-05	ug/g			U
12	SAMPLE	S10V001370		0 0	A		Neptunium-237	SOLID	N/A	<3.9917E-04			3.99E-04	ug/g			U
12	SAMPLE	S10V001370		0 0	A		Uranium-238	SOLID	N/A	8.5183E-01			2.00E-03	ug/g			
Sample Sequence 13																	
13	CCV	S1008260152		0 0			Thorium-232	LIQUID	.001	9.8880E-04			5.00E-07	ug/mL	98.88	% Recovery	
13	CCV	S1008260152		0 0			Uranium-235	LIQUID	.0000072	7.2220E-06			1.00E-08	ug/mL	100.31	% Recovery	
13	CCV	S1008260152		0 0			Neptunium-237	LIQUID	.00115	1.0710E-03			1.00E-07	ug/mL	93.13	% Recovery	
13	CCV	S1008260152		0 0			Uranium-238	LIQUID	.0009928	9.5780E-04			5.00E-07	ug/mL	96.475	% Recovery	
Sample Sequence 14																	
14	CCB	S1008260153		0 0			Thorium-230	LIQUID		<7.0000E-09			7.00E-09	ug/mL			
14	CCB	S1008260153		0 0			Thorium-232	LIQUID		<5.0000E-07			5.00E-07	ug/mL			
14	CCB	S1008260153		0 0			Uranium-233	LIQUID		<1.0000E-08			1.00E-08	ug/mL			
14	CCB	S1008260153		0 0			Uranium-234	LIQUID		<5.0000E-09			5.00E-09	ug/mL			
14	CCB	S1008260153		0 0			Uranium-235	LIQUID		<1.0000E-08			1.00E-08	ug/mL			
14	CCB	S1008260153		0 0			Uranium-236	LIQUID		<4.0000E-09			4.00E-09	ug/mL			
14	CCB	S1008260153		0 0			Neptunium-237	LIQUID		<1.0000E-07			1.00E-07	ug/mL			
14	CCB	S1008260153		0 0			Uranium-238	LIQUID		<5.0000E-07			5.00E-07	ug/mL			
Sample Sequence 15																	
15	SAMPLE	S10V001390		0 0	A		Thorium-230	SOLID	N/A	<2.7741E-05			2.77E-05	ug/g			U

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LABCORE Completed Batch Report for Batch# 00021671

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
15	SAMPLE	S10V001390		0 0	A		Thorium-232	SOLID	N/A	4.0423E+00			1.98E-03	ug/g			
15	SAMPLE	S10V001390		0 0	A		Uranium-233	SOLID	N/A	2.2154E-04			3.96E-05	ug/g			J
15	SAMPLE	S10V001390		0 0	A		Uranium-234	SOLID	N/A	4.9489E-05			1.98E-05	ug/g			J
15	SAMPLE	S10V001390		0 0	A		Uranium-235	SOLID	N/A	3.8521E-03			3.96E-05	ug/g			
15	SAMPLE	S10V001390		0 0	A		Uranium-236	SOLID	N/A	<1.5852E-05			1.59E-05	ug/g			U
15	SAMPLE	S10V001390		0 0	A		Neptunium-237	SOLID	N/A	<3.9631E-04			3.96E-04	ug/g			U
15	SAMPLE	S10V001390		0 0	A		Uranium-238	SOLID	N/A	5.4145E-01			1.98E-03	ug/g			
Sample Sequence 16																	
16	SAMPLE	S10V001410		0 0	A		Thorium-230	SOLID	N/A	<2.7767E-05			2.78E-05	ug/g			U
16	SAMPLE	S10V001410		0 0	A		Thorium-232	SOLID	N/A	4.6162E+00			1.98E-03	ug/g			
16	SAMPLE	S10V001410		0 0	A		Uranium-233	SOLID	N/A	2.5843E-04			3.97E-05	ug/g			J
16	SAMPLE	S10V001410		0 0	A		Uranium-234	SOLID	N/A	4.5775E-05			1.98E-05	ug/g			J
16	SAMPLE	S10V001410		0 0	A		Uranium-235	SOLID	N/A	4.1680E-03			3.97E-05	ug/g			
16	SAMPLE	S10V001410		0 0	A		Uranium-236	SOLID	N/A	<1.5867E-05			1.59E-05	ug/g			U
16	SAMPLE	S10V001410		0 0	A		Neptunium-237	SOLID	N/A	<3.9667E-04			3.97E-04	ug/g			U
16	SAMPLE	S10V001410		0 0	A		Uranium-238	SOLID	N/A	6.2168E-01			1.98E-03	ug/g			
Sample Sequence 17																	
17	SAMPLE	S10V001430		0 0	A		Thorium-230	SOLID	N/A	<2.7739E-05			2.77E-05	ug/g			U
17	SAMPLE	S10V001430		0 0	A		Thorium-232	SOLID	N/A	2.8729E+00			1.98E-03	ug/g			
17	SAMPLE	S10V001430		0 0	A		Uranium-233	SOLID	N/A	1.4454E-04			3.96E-05	ug/g			J
17	SAMPLE	S10V001430		0 0	A		Uranium-234	SOLID	N/A	5.2921E-05			1.98E-05	ug/g			J
17	SAMPLE	S10V001430		0 0	A		Uranium-235	SOLID	N/A	3.5684E-03			3.96E-05	ug/g			
17	SAMPLE	S10V001430		0 0	A		Uranium-236	SOLID	N/A	<1.5851E-05			1.59E-05	ug/g			U
17	SAMPLE	S10V001430		0 0	A		Neptunium-237	SOLID	N/A	<3.9627E-04			3.96E-04	ug/g			U
17	SAMPLE	S10V001430		0 0	A		Uranium-238	SOLID	N/A	5.3377E-01			1.98E-03	ug/g			
Sample Sequence 18																	
19	STD-PREP	S1007290018		0 1	A		Thorium-232	LIQUID	.02	2.0640E-02			1.00E-05	ug/mL	103.2	% Recovery	
19	STD-PREP	S1007290018		0 1	A		Uranium-235	LIQUID	.000144	1.3390E-04			2.00E-07	ug/mL	92.986	% Recovery	
18	STD-PREP	S1007290018		0 0	A		Neptunium-237	LIQUID	.0175	1.7350E-02			2.00E-06	ug/mL	99.143	% Recovery	
19	STD-PREP	S1007290018		0 1	A		Uranium-238	LIQUID	.019856	2.0010E-02			1.00E-05	ug/mL	100.78	% Recovery	
Sample Sequence 20																	
20	SPK-PREDIG	S1007290029	S10V001233	0 0	A		Neptunium-237	SOLID	.4949946792	5.1329E-01			3.96E-04	ug/g	103.7	% Recovery	
Sample Sequence 21																	
21	SPK-PREDIG	S1007290028	S10V001233	0 0	A		Thorium-232	SOLID	1.993541	5.7723E+00			1.99E-03	ug/g	109.48	% Recovery	
21	SPK-PREDIG	S1007290028	S10V001233	0 0	A		Uranium-235	SOLID	.0143534952	1.7593E-02			3.99E-05	ug/g	98.067	% Recovery	
21	SPK-PREDIG	S1007290028	S10V001233	0 0	A		Uranium-238	SOLID	1.9791875048	2.5856E+00			1.99E-03	ug/g	103.72	% Recovery	
Sample Sequence 22																	
22	SPK-POST	S1008260151	S10V001233	0 0			Thorium-232	SOLID	.4	7.5640E-01			5.00E-07	ug/mL	97.7	% Recovery	
22	SPK-POST	S1008260151	S10V001233	0 0			Uranium-235	SOLID	.00288	3.2090E-03			1.00E-08	ug/mL	98.986	% Recovery	
22	SPK-POST	S1008260151	S10V001233	0 0			Neptunium-237	SOLID	.3934	3.9640E-01			1.00E-07	ug/mL	100.76	% Recovery	
22	SPK-POST	S1008260151	S10V001233	0 0			Uranium-238	SOLID	.39712	4.5230E-01			5.00E-07	ug/mL	100.23	% Recovery	
Sample Sequence 23																	
23	CCV	S1008260154		0 0			Thorium-232	LIQUID	.001	9.9240E-04			5.00E-07	ug/mL	99.24	% Recovery	

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LABCORE Completed Batch Report for Batch# 00021671

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
23	CCV	S1008260154		0 0			Uranium-235	LIQUID	.0000072	7.0930E-06			1.00E-08	ug/mL	98.514	% Recovery	
23	CCV	S1008260154		0 0			Neptunium-237	LIQUID	.00115	1.0730E-03			1.00E-07	ug/mL	93.304	% Recovery	
23	CCV	S1008260154		0 0			Uranium-238	LIQUID	.0009928	9.5930E-04			5.00E-07	ug/mL	96.626	% Recovery	
Sample Sequence 24																	
24	LLS	S1008260156		0 0			Thorium-232	LIQUID	.000005	5.2780E-06			5.00E-07	ug/mL	105.56	% Recovery	
24	LLS	S1008260156		0 0			Uranium-235	LIQUID	.000000036	2.9000E-08			1.00E-08	ug/mL	80.556	% Recovery	
24	LLS	S1008260156		0 0			Neptunium-237	LIQUID	.0000049175	4.9220E-06			1.00E-07	ug/mL	100.09	% Recovery	
24	LLS	S1008260156		0 0			Uranium-238	LIQUID	.000004964	4.9740E-06			5.00E-07	ug/mL	100.2	% Recovery	
Sample Sequence 25																	
25	CCB	S1008260155		0 0			Thorium-230	LIQUID		<7.0000E-09			7.00E-09	ug/mL			
25	CCB	S1008260155		0 0			Thorium-232	LIQUID		<5.0000E-07			5.00E-07	ug/mL			
25	CCB	S1008260155		0 0			Uranium-233	LIQUID		<1.0000E-08			1.00E-08	ug/mL			
25	CCB	S1008260155		0 0			Uranium-234	LIQUID		<5.0000E-09			5.00E-09	ug/mL			
25	CCB	S1008260155		0 0			Uranium-235	LIQUID		<1.0000E-08			1.00E-08	ug/mL			
25	CCB	S1008260155		0 0			Uranium-236	LIQUID		<4.0000E-09			4.00E-09	ug/mL			
25	CCB	S1008260155		0 0			Neptunium-237	LIQUID		<1.0000E-07			1.00E-07	ug/mL			
25	CCB	S1008260155		0 0			Uranium-238	LIQUID		<5.0000E-07			5.00E-07	ug/mL			

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00021671

Reviewer Signature **Date**

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LABCORE Completed Batch Report for Batch# 00021671

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1008260147	ICV				
2	S1008260149	LLS				
3	S1008260148	ICB				
4	S1007290017	BLNK-PREP				
5	S1008260150	SERDIL	S10V001233			
6	S10V001233	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
7	S1007290019	DUP	S10V001233			
8	S10V001250	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
9	S10V001290	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
10	S10V001310	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
11	S10V001350	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
12	S10V001370	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
13	S1008260152	CCV				
14	S1008260153	CCB				
15	S10V001390	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
16	S10V001410	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
17	S10V001430	SAMPLE		20100520	B26C82	C Farm WMC 2010-2
18	S1007290018	STD-PREP				
19	S1007290018	STD-PREP				
20	S1007290029	SPK-PREDIG	S10V001233			
21	S1007290028	SPK-PREDIG	S10V001233			
22	S1008260151	SPK-POST	S10V001233			
23	S1008260154	CCV				
24	S1008260156	LLS				
25	S1008260155	CCB				

Units shown for QC (BLK/BKG) may not reflect the actual units.

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LABCORE Completed Batch Report for Batch# 00021705

Analyst: Shaw, Levi

Book#:

Instrument: ICP/MS PQ-EXCELL

Method: MS FISSION PRODUCTS, LA-506-102 Rev/Mod F-1

Specification: C Farm WMC 2010-2

Prep Batch: 00021074

Batch Comment:

ICP-MS analysis of fission products for C Farm WMC 2010-2 soils. bsm

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	ICV	S1008270105		0 0			Technetium-99	LIQUID	.001	1.0150E-03			3.00E-07	ug/mL	101.5	% Recovery	
2	ICV	S1008270105		0 1			Tin-117	LIQUID	.001	1.0620E-03			1.00E-05	ug/mL	106.2	% Recovery	
Sample Sequence 3																	
3	LLS	S1008270107		0 0			Technetium-99	LIQUID	.000001856	2.0620E-06			3.00E-07	ug/mL	111.1	% Recovery	
4	LLS	S1008270107		0 1			Tin-117	LIQUID	.000016	1.7210E-05			1.00E-05	ug/mL	107.56	% Recovery	
Sample Sequence 5																	
5	ICB	S1008270106		0 0			Technetium-99	LIQUID		<3.0000E-07			3.00E-07	ug/mL			
5	ICB	S1008270106		0 0			Tin-117	LIQUID		<1.0000E-05			1.00E-05	ug/mL			
5	ICB	S1008270106		0 0			Tin-126	LIQUID		<2.0000E-07			2.00E-07	ug/mL			
Sample Sequence 6																	
6	BLNK-PREP	S1007300053		0 0	A		Technetium-99	LIQUID		<1.5000E-05			1.50E-05	ug/mL			
6	BLNK-PREP	S1007300053		0 0	A		Tin-117	LIQUID		<5.0000E-04			5.00E-04	ug/mL			
6	BLNK-PREP	S1007300053		0 0	A		Tin-126	LIQUID		<1.0000E-05			1.00E-05	ug/mL			
Sample Sequence 7																	
7	SERDIL	S1008270108	S10V001252	0 0			Technetium-99	SOLID		<7.4266E-04			7.43E-04	ug/g	N/A		
7	SERDIL	S1008270108	S10V001252	0 0			Tin-117	SOLID		<2.4755E-02			0.024755	ug/g	N/A		
7	SERDIL	S1008270108	S10V001252	0 0			Tin-126	SOLID		5.5244E-04			4.95E-04	ug/g	54.331	% Diff	
Sample Sequence 8																	
8	SAMPLE	S10V001252		0 0	A		Technetium-99	SOLID	N/A	<1.4853E-04			1.49E-04	ug/g			U
8	SAMPLE	S10V001252		0 0	A		Tin-117	SOLID	N/A	1.9022E-02			4.95E-03	ug/g			J
8	SAMPLE	S10V001252		0 0	A		Tin-126	SOLID	N/A	3.5796E-04			9.90E-05	ug/g			J
Sample Sequence 9																	
9	DUP	S1007300055	S10V001252	0 0	A		Technetium-99	SOLID	<1.4853E-04	<1.4884E-04			1.49E-04	ug/g			
9	DUP	S1007300055	S10V001252	0 0	A		Tin-117	SOLID	1.9022E-02	1.8238E-02			4.96E-03	ug/g	4.2083	% RPD	
9	DUP	S1007300055	S10V001252	0 0	A		Tin-126	SOLID	3.5796E-04	3.9196E-04			9.92E-05	ug/g	9.0676	% RPD	
Sample Sequence 10																	
10	SAMPLE	S10V001235		0 0	A		Technetium-99	SOLID	N/A	<1.4949E-04			1.49E-04	ug/g			U
10	SAMPLE	S10V001235		0 0	A		Tin-117	SOLID	N/A	1.8915E-02			4.98E-03	ug/g			J
10	SAMPLE	S10V001235		0 0	A		Tin-126	SOLID	N/A	1.5029E-03			9.97E-05	ug/g			
Sample Sequence 11																	
11	CCV	S1008270110		0 0			Technetium-99	LIQUID	.001	1.0150E-03			3.00E-07	ug/mL	101.5	% Recovery	
12	CCV	S1008270110		0 1			Tin-117	LIQUID	.001	1.0570E-03			1.00E-05	ug/mL	105.7	% Recovery	

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021705

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 13																	
13	CCB	S1008270111		0 0			Technetium-99	LIQUID		<3.0000E-07			3.00E-07	ug/mL			
13	CCB	S1008270111		0 0			Tin-117	LIQUID		<1.0000E-05			1.00E-05	ug/mL			
13	CCB	S1008270111		0 0			Tin-126	LIQUID		<2.0000E-07			2.00E-07	ug/mL			
Sample Sequence 14																	
14	SAMPLE	S10V001292		0 0	A		Technetium-99	SOLID	N/A	<1.4893E-04			1.49E-04	ug/g			U
14	SAMPLE	S10V001292		0 0	A		Tin-117	SOLID	N/A	1.9321E-02			4.96E-03	ug/g			J
14	SAMPLE	S10V001292		0 0	A		Tin-126	SOLID	N/A	4.7299E-04			9.93E-05	ug/g			J
Sample Sequence 15																	
15	SAMPLE	S10V001312		0 0	A		Technetium-99	SOLID	N/A	<1.4733E-04			1.47E-04	ug/g			U
15	SAMPLE	S10V001312		0 0	A		Tin-117	SOLID	N/A	1.2965E-02			4.91E-03	ug/g			J
15	SAMPLE	S10V001312		0 0	A		Tin-126	SOLID	N/A	3.0369E-04			9.82E-05	ug/g			J
Sample Sequence 16																	
16	SAMPLE	S10V001352		0 0	A		Technetium-99	SOLID	N/A	<1.4991E-04			1.50E-04	ug/g			U
16	SAMPLE	S10V001352		0 0	A		Tin-117	SOLID	N/A	1.2622E-02			5.00E-03	ug/g			J
16	SAMPLE	S10V001352		0 0	A		Tin-126	SOLID	N/A	3.0461E-04			9.99E-05	ug/g			J
Sample Sequence 17																	
17	SAMPLE	S10V001372		0 0	A		Technetium-99	SOLID	N/A	<1.4753E-04			1.48E-04	ug/g			U
17	SAMPLE	S10V001372		0 0	A		Tin-117	SOLID	N/A	2.1048E-02			4.92E-03	ug/g			J
17	SAMPLE	S10V001372		0 0	A		Tin-126	SOLID	N/A	2.7392E-04			9.84E-05	ug/g			J
Sample Sequence 18																	
18	SAMPLE	S10V001392		0 0	A		Technetium-99	SOLID	N/A	<1.4943E-04			1.49E-04	ug/g			U
18	SAMPLE	S10V001392		0 0	A		Tin-117	SOLID	N/A	1.1148E-02			4.98E-03	ug/g			J
18	SAMPLE	S10V001392		0 0	A		Tin-126	SOLID	N/A	3.2098E-04			9.96E-05	ug/g			J
Sample Sequence 19																	
19	SAMPLE	S10V001412		0 0	A		Technetium-99	SOLID	N/A	<1.4987E-04			1.50E-04	ug/g			U
19	SAMPLE	S10V001412		0 0	A		Tin-117	SOLID	N/A	1.2789E-02			5.00E-03	ug/g			J
19	SAMPLE	S10V001412		0 0	A		Tin-126	SOLID	N/A	3.8357E-04			9.99E-05	ug/g			J
Sample Sequence 20																	
20	SAMPLE	S10V001432		0 0	A		Technetium-99	SOLID	N/A	<1.4911E-04			1.49E-04	ug/g			U
20	SAMPLE	S10V001432		0 0	A		Tin-117	SOLID	N/A	1.4444E-02			4.97E-03	ug/g			J
20	SAMPLE	S10V001432		0 0	A		Tin-126	SOLID	N/A	2.7625E-04			9.94E-05	ug/g			J
Sample Sequence 21																	
21	SPK-PREDIG	S1007300056	S10V001252	0 0	A		Technetium-99	SOLID	.00517122451 72	5.5653E-03			1.48E-04	ug/g	107.62	% Recovery	
Sample Sequence 22																	
22	SPK-PREDIG	S1007300058	S10V001252	0 0	A		Tin-117	SOLID	.15365581	1.2502E-01			4.99E-03	ug/g	68.984	% Recovery	
Sample Sequence 23																	
23	SPK-POST	S1008270109	S10V001252	0 0			Technetium-99	SOLID	.05	4.4380E-02			3.00E-07	ug/mL	88.76	% Recovery	
24	SPK-POST	S1008270109	S10V001252	0 1			Tin-117	SOLID	.05	5.2510E-02			1.00E-05	ug/mL	101.18	% Recovery	
Sample Sequence 25																	
25	CCV	S1008270112		0 0			Technetium-99	LIQUID	.001	1.0060E-03			3.00E-07	ug/mL	100.6	% Recovery	
26	CCV	S1008270112		0 1			Tin-117	LIQUID	.001	1.0590E-03			1.00E-05	ug/mL	105.9	% Recovery	
Sample Sequence 27																	

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021705

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
27	CCB	S1008270113		0 0			Technetium-99	LIQUID		<3.0000E-07			3.00E-07	ug/mL			
27	CCB	S1008270113		0 0			Tin-117	LIQUID		<1.0000E-05			1.00E-05	ug/mL			
27	CCB	S1008270113		0 0			Tin-126	LIQUID		<2.0000E-07			2.00E-07	ug/mL			
Sample Sequence 28																	
28	STD-PREP	S1007300054		0 0	A		Technetium-99	LIQUID	.0005249	5.7730E-04			3.00E-07	ug/mL	109.98	% Recovery	
29	STD-PREP	S1007300054		0 1	A		Tin-117	LIQUID	.00308	3.2780E-03			2.00E-05	ug/mL	106.43	% Recovery	
Sample Sequence 30																	
30	CCV	S1008270115		0 0			Technetium-99	LIQUID	.001	9.8730E-04			3.00E-07	ug/mL	98.73	% Recovery	
31	CCV	S1008270115		0 1			Tin-117	LIQUID	.001	1.0570E-03			1.00E-05	ug/mL	105.7	% Recovery	
Sample Sequence 32																	
32	LLS	S1008270116		0 0			Technetium-99	LIQUID	.000001856	2.1680E-06			3.00E-07	ug/mL	116.81	% Recovery	
33	LLS	S1008270116		0 1			Tin-117	LIQUID	.000016	1.7340E-05			1.00E-05	ug/mL	108.38	% Recovery	
Sample Sequence 34																	
34	CCB	S1008270114		0 0			Technetium-99	LIQUID		<3.0000E-07			3.00E-07	ug/mL			
34	CCB	S1008270114		0 0			Tin-117	LIQUID		<1.0000E-05			1.00E-05	ug/mL			
34	CCB	S1008270114		0 0			Tin-126	LIQUID		<2.0000E-07			2.00E-07	ug/mL			

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00021705

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

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LABCORE Completed Batch Report for Batch# 00021705

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1008270105	ICV				
2	S1008270105	ICV				
3	S1008270107	LLS				
4	S1008270107	LLS				
5	S1008270106	ICB				
6	S1007300053	BLNK-PREP				
7	S1008270108	SERDIL	S10V001252			
8	S10V001252	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
9	S1007300055	DUP	S10V001252			
10	S10V001235	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
11	S1008270110	CCV				
12	S1008270110	CCV				
13	S1008270111	CCB				
14	S10V001292	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
15	S10V001312	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
16	S10V001352	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
17	S10V001372	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
18	S10V001392	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
19	S10V001412	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
20	S10V001432	SAMPLE		20100520	B26C82	C Farm WMC 2010-2
21	S1007300056	SPK-PREDIG	S10V001252			
22	S1007300058	SPK-PREDIG	S10V001252			
23	S1008270109	SPK-POST	S10V001252			
24	S1008270109	SPK-POST	S10V001252			
25	S1008270112	CCV				
26	S1008270112	CCV				
27	S1008270113	CCB				
28	S1007300054	STD-PREP				
29	S1007300054	STD-PREP				
30	S1008270115	CCV				
31	S1008270115	CCV				
32	S1008270116	LLS				
33	S1008270116	LLS				
34	S1008270114	CCB				

Units shown for QC (BLK/BKG) may not reflect the actual units.

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LABCORE Completed Batch Report for Batch# 00023804

Analyst: Mull, Bryanna **Book#:**

Instrument: ICP/MS AGILENT

Method: MS TC-99, LA-506-103 Rev/Mod B-0

Specification: C Farm WMC 2010-2

Prep Batch: 00023412

Batch Comment:

ICPMS-Agilent for C-Farm WMC 2010-1 Solids for Tc-99. LND

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	ICV	S1011040017		0 0			Technetium-99	LIQUID	.001	9.8890E-04			4.00E-07	ug/mL	98.89	% Recovery	
Sample Sequence 2																	
2	LLS	S1011040019		0 0			Technetium-99	LIQUID	.000002	2.3570E-06			4.00E-07	ug/mL	117.85	% Recovery	
Sample Sequence 3																	
3	ICB	S1011040018		0 0			Technetium-99	LIQUID		<4.0000E-07			4.00E-07	ug/mL			
Sample Sequence 4																	
4	BLNK-PREP	S1010210031		0 0	WV		Technetium-99	LIQUID		<4.0000E-06			4.00E-06	ug/mL			
Sample Sequence 5																	
5	SERDIL	S1011040020	S10V001228	0 0			Technetium-99	SOLID		<1.9653E-05			1.97E-05	ug/g	N/A		
Sample Sequence 6																	
6	SAMPLE	S10V001228		0 0	WV		Technetium-99	SOLID	N/A	<3.9305E-06			3.93E-06	ug/g			U
Sample Sequence 7																	
7	DUP	S1010210032	S10V001228	0 0	WV		Technetium-99	SOLID	<3.9305E-06	<3.8491E-06			3.85E-06	ug/g			
Sample Sequence 8																	
8	SAMPLE	S10V001245		0 0	WV		Technetium-99	SOLID	N/A	<3.9148E-06			3.91E-06	ug/g			U
Sample Sequence 9																	
9	SAMPLE	S10V001285		0 0	WV		Technetium-99	SOLID	N/A	<4.1607E-06			4.16E-06	ug/g			U
Sample Sequence 10																	
10	SAMPLE	S10V001305		0 0	WV		Technetium-99	SOLID	N/A	<4.0052E-06			4.01E-06	ug/g			U
Sample Sequence 11																	
11	SAMPLE	S10V001345		0 0	WV		Technetium-99	SOLID	N/A	<3.9737E-06			3.97E-06	ug/g			U
Sample Sequence 12																	
12	CCV	S1011040023		0 0			Technetium-99	LIQUID	.001	9.8730E-04			4.00E-07	ug/mL	98.73	% Recovery	
Sample Sequence 13																	
13	CCB	S1011040024		0 0			Technetium-99	LIQUID		<4.0000E-07			4.00E-07	ug/mL			
Sample Sequence 14																	
14	SAMPLE	S10V001365		0 0	WV		Technetium-99	SOLID	N/A	<4.0390E-06			4.04E-06	ug/g			U
Sample Sequence 15																	
15	SAMPLE	S10V001385		0 0	WV		Technetium-99	SOLID	N/A	<4.0736E-06			4.07E-06	ug/g			U
Sample Sequence 16																	
16	SAMPLE	S10V001405		0 0	WV		Technetium-99	SOLID	N/A	<4.3327E-06			4.33E-06	ug/g			U
Sample Sequence 17																	
17	SAMPLE	S10V001425		0 0	WV		Technetium-99	SOLID	N/A	<3.7955E-06			3.80E-06	ug/g			U

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00023804

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 19																	
19	STD-PREP	S1010210030		0 0	WV		Technetium-99	LIQUID	.001	1.0516E-03			8.00E-07	ug/mL	105.16	% Recovery	
Sample Sequence 20																	
20	SPK-POST	S1011040022	S10V001228	0 0			Technetium-99	SOLID	.005	4.9340E-03			4.00E-07	ug/mL	98.68	% Recovery	
Sample Sequence 21																	
21	CCV	S1011040025		0 0			Technetium-99	LIQUID	.001	9.8280E-04			4.00E-07	ug/mL	98.28	% Recovery	
Sample Sequence 22																	
22	LLS	S1011040032		0 0			Technetium-99	LIQUID	.000002	2.0800E-06			4.00E-07	ug/mL	104	% Recovery	
Sample Sequence 23																	
23	CCB	S1011040026		0 0			Technetium-99	LIQUID		<4.0000E-07			4.00E-07	ug/mL			

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00023804

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00023804

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1011040017	ICV				
2	S1011040019	LLS				
3	S1011040018	ICB				
4	S1010210031	BLNK-PREP				
5	S1011040020	SERDIL	S10V001228			
6	S10V001228	SAMPLE		20100520	B26JK2 WE	C Farm WMC 2010-2
7	S1010210032	DUP	S10V001228			
8	S10V001245	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
9	S10V001285	SAMPLE		20100520	B26C68 WE	C Farm WMC 2010-2
10	S10V001305	SAMPLE		20100520	B26C70 WE	C Farm WMC 2010-2
11	S10V001345	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
12	S1011040023	CCV				
13	S1011040024	CCB				
14	S10V001365	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
15	S10V001385	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
16	S10V001405	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
17	S10V001425	SAMPLE		20100520	B26C82	C Farm WMC 2010-2
19	S1010210030	STD-PREP				
20	S1011040022	SPK-POST	S10V001228			
21	S1011040025	CCV				
22	S1011040032	LLS				
23	S1011040026	CCB				

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020849

Analyst: Hexum, Troy

Book#: 121N, 122N11B

Instrument: Hg by FIMS

Method: HG, LA-325-110 Rev/Mod A-0

Specification: C Farm WMC 2010-2

Prep Batch:

Batch Comment:

C-FARM WMC 2010-2 HG SOLIDS TJH

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	ICV	S1007200125		0 0			Mercury	LIQUID	.01	9.7440E-03			1.00E-04	ug/mL	97.44	% Recovery	
Sample Sequence 2																	
2	ICB	S1007200126		0 0			Mercury	LIQUID		<1.0000E-04			1.00E-04	ug/mL			
Sample Sequence 3																	
3	LLS	S1007200127		0 0			Mercury	LIQUID	.001	1.0120E-03			1.00E-04	ug/mL	101.2	% Recovery	
Sample Sequence 4																	
4	SAMPLE	S10V001225		0 0			Mercury	SOLID	N/A	1.8462E-02			9.05E-03	ug/g			J
Sample Sequence 5																	
5	DUP	S1007200128	S10V001225	0 0			Mercury	SOLID	1.8462E-02	1.6214E-02			8.91E-03	ug/g	12.963	% RPD	
Sample Sequence 6																	
6	SPK-PREDIG	S1007200133	S10V001225	0 0			Mercury	SOLID	.44785	4.6872E-01			8.96E-03	ug/g	100.54	% Recovery	
Sample Sequence 7																	
7	SPKPRE-DUP	S1007200134	S10V001225	0 0			Mercury	SOLID	.45935	4.6036E-01			9.19E-03	ug/g	96.201	% Recovery	
															4.4109	% RPD	
Sample Sequence 8																	
8	SAMPLE	S10V001242		0 0			Mercury	SOLID	N/A	2.3181E-02			8.99E-03	ug/g			J
Sample Sequence 9																	
9	SAMPLE	S10V001282		0 0			Mercury	SOLID	N/A	<9.7750E-03			9.78E-03	ug/g			U
Sample Sequence 10																	
10	SAMPLE	S10V001302		0 0			Mercury	SOLID	N/A	<9.8960E-03			9.90E-03	ug/g			U
Sample Sequence 11																	
11	CCV	S1007200131		0 0			Mercury	LIQUID	.01	9.9300E-03			1.00E-04	ug/mL	99.3	% Recovery	
Sample Sequence 12																	
12	CCB	S1007200132		0 0			Mercury	LIQUID		<1.0000E-04			1.00E-04	ug/mL			
Sample Sequence 13																	
13	SAMPLE	S10V001342		0 0			Mercury	SOLID	N/A	<9.1830E-03			9.18E-03	ug/g			U
Sample Sequence 14																	
14	SAMPLE	S10V001362		0 0			Mercury	SOLID	N/A	<9.7040E-03			9.70E-03	ug/g			U
Sample Sequence 15																	
15	SAMPLE	S10V001382		0 0			Mercury	SOLID	N/A	<8.7370E-03			8.74E-03	ug/g			U
Sample Sequence 16																	
16	SAMPLE	S10V001402		0 0			Mercury	SOLID	N/A	<9.4877E-03			9.49E-03	ug/g			U
Sample Sequence 17																	

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020849

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
17	SAMPLE	S10V001606		0 0			Mercury	SOLID	N/A	<9.3940E-03			9.39E-03	ug/g			U
Sample Sequence 18																	
18	SAMPLE	S10V001623		0 0			Mercury	SOLID	N/A	2.0555E-02			9.43E-03	ug/g			J
Sample Sequence 19																	
19	CCV	S1007200136		0 0			Mercury	LIQUID	.01	9.9330E-03			1.00E-04	ug/mL	99.33	% Recovery	
Sample Sequence 20																	
20	CCB	S1007200135		0 0			Mercury	LIQUID		<1.0000E-04			1.00E-04	ug/mL			

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00020849

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020849

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1007200125	ICV				
2	S1007200126	ICB				
3	S1007200127	LLS				
4	S10V001225	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
5	S1007200128	DUP	S10V001225			
6	S1007200133	SPK-PREDIG	S10V001225			
7	S1007200134	SPKPRE-DUP	S10V001225			
8	S10V001242	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
9	S10V001282	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
10	S10V001302	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
11	S1007200131	CCV				
12	S1007200132	CCB				
13	S10V001342	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
14	S10V001362	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
15	S10V001382	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
16	S10V001402	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
17	S10V001606	SAMPLE		20100556	B26JK6	C Farm WMC 2010-2
18	S10V001623	SAMPLE		20100556	B26JK7	C Farm WMC 2010-2
19	S1007200136	CCV				
20	S1007200135	CCB				

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

Date: 23 May 2011
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: WMA C
Subject: General Chemistry - Sample Data Group (SDG) 20100520

INTRODUCTION

This memorandum presents the results of data validation for SDG 20100520 prepared by 222-S Laboratory. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B26JK3	7/07/2010	Soil	C	See note 1
B26C70	7/08/2010	Soil	C	See note 1

1 – 300.7 (ammonium), 9014 (cyanide), 9045D (pH), 9056 (anions) and 9215 (sulfide)

Data validation was conducted in accordance with the CHPRC validation statement of work and the Field Sampling and Analysis Plan for Waste Management Area C, RPP-PLAN-40564, Rev. 2 (SAP). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested By Client

DATA QUALITY OBJECTIVES

- **Holding Times and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results.

The holding time requirements for soil samples are as follows:

- All anions – analysis within 48 hours of sample preparation
- Ammonium – analysis within 7 days of sample collection
- pH – analysis as soon as possible after sample collection (24 hours is a reasonable limit)
- Sulfide – analysis within 7 days of sample collection
- Cyanide – analysis within 14 days of sample collection

Sample preservation for soil requires chilling to approximately 4 degrees Celsius.

The samples were analyzed within the prescribed holding times and properly preserved with the following exceptions. Samples B26JK3 and B26C70 were analyzed for pH 15 and 14 days, respectively, after sample collection. Based on professional judgment, these results should be qualified as estimates and flagged "J."

- **Blanks**

The blank data results are reviewed to assess the extent of contamination introduced through sampling, sample preparation, and analysis.

Laboratory Blanks

All laboratory blank results were acceptable with the following exception. The ammonium laboratory blank result was > the method detection limit (MDL). The ammonium results for samples B26JK3 and B26C70 were detects <5X the laboratory blank result and should be qualified as non-detects at the sample concentrations (2.44 ug/g and 1.55 ug/g, respectively) and flagged "U."

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

No equipment blanks were submitted for validation.

- **Accuracy**

Accuracy is evaluated by reviewing matrix spike sample results and laboratory control sample results. According to the SAP, the matrix spike sample accuracy limits are 75% to 125% and the laboratory control sample accuracy limits are 80% to 120%. The limits for reported analytes not listed in the SAP are specified by the DV procedure.

Matrix Spike (MS) Samples

All MS recoveries were acceptable

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable.

- **Precision**

Precision is evaluated by reviewing laboratory duplicate sample results, field duplicate sample results, and field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are ±30%. The limits for reported analytes not listed in the SAP are specified by the DV procedure. When soil duplicate RPDs exceed the limits and have associated results <5X the SAP required detection limits with differences <2X the required detection limits no precision infraction occurred.

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

Sample B26JK2 is the field duplicate to sample B26JK3 but was not chosen for validation.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

Reported MDLs are compared against the required detection limits (RDLs) to ensure that laboratory detection limits meet the required criteria.

All reported sample MDLs with associated non-detected sample results were below the RDLs.

- **Completeness**

SDG 20100520 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Minor deficiencies leading to qualification of several results as estimates were due to holding time and laboratory blank infractions. See the table in Appendix 2 for a listing of all affected sample results.

REFERENCES

GRP-GD-003, Rev. 0, Change 0, *Data Validation for Chemical Analyses*, August 2010.

RPP-PLAN-40564, Rev. 2, *Field Sampling and Analysis Plan for Waste Management Area C*, December 2009

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers that may be applied by data validators in compliance with the CHPRC statement of work are as follows:

- **U** — The constituent was analyzed for, but was not detected. The data should be considered usable for decision-making purposes.

- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the RL. The data should be considered usable for decision-making purposes.

- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **N** — The analysis indicates the presence of an analyte that has been tentatively identified.

- **NJ** — The analysis indicates the presence of an analyte that has been tentatively identified and the associated numerical value represents its approximate concentration.

- **NJ+** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation.

- **NJ-** — The analysis indicates the presence of an analyte that has been tentatively identified. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation.

- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

- **R** — Indicates the constituent was analyzed for and detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

Appendix 2

Summary of Data Qualification

General Chemistry Data Qualification Summary			
SDG: 20100520	Reviewer: AQA	Project: WMA C	Page 1 of 1
Analyte(s)	**DV Flag**	**Samples Affected**	**Reason**
pH	J	B26JK3, B26C70	Analysis beyond the holding time
Ammonium	2.44U	B26JK3	Lab blank contamination
Ammonium	1.55U	B26C70	Lab blank contamination

Comments: None

Appendix 3

Annotated Laboratory Reports

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26JK3
Sample Depth: Surface Dup

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
~~S10V001242~~			~~%WATERA~~	~~%WATER-APD~~	~~%~~	~~n/a~~	~~n/a~~	~~4.240~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~0.01000~~	~~n/a~~	
S10V001242			57-12-5	Cyanide	ug/g	94.1	<0.0370	<2.71	n/a	n/a	n/a	n/a	2.71	n/a	U
~~S10V001242~~			~~7439-97-6~~	~~Mercury~~	~~ug/g~~	~~97.4~~	~~<1.00E-04~~	~~0.0232~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~8.98E-03~~	~~n/a~~	~~J~~
S10V001242			PH	pH J	unitless	n/a	n/a	8.92	n/a	n/a	n/a	n/a	0.0100	n/a	
S10V001242			18496-25-8	Sulfide	ug/g	99.2	<0.180	30.1	n/a	n/a	n/a	n/a	7.08	n/a	J
~~S10V001243~~			~~13966-00-2~~	~~Potassium-40~~	~~uCi/g~~	~~n/a~~	~~n/a~~	~~9.26E-06~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~5.83E-06~~	~~40.98~~	~~J~~
S10V001243			10198-40-0	Cobalt-60	uCi/g	101	<3.07E-07	<3.08E-07	n/a	n/a	n/a	n/a	3.08E-07	n/a	U
S10V001243			14234-35-6	Antimony-125	uCi/g	n/a	<7.49E-07	<8.34E-07	n/a	n/a	n/a	n/a	8.34E-07	n/a	U
S10V001243			10045-97-3	Cesium-137	uCi/g	105	<4.16E-07	3.83E-06	n/a	n/a	n/a	n/a	3.46E-07	9.84	
S10V001243			14683-23-9	Europium-152	uCi/g	n/a	<1.56E-06	<1.51E-06	n/a	n/a	n/a	n/a	1.51E-06	n/a	U
S10V001243			15585-10-1	Europium-154	uCi/g	n/a	<9.28E-07	<9.81E-07	n/a	n/a	n/a	n/a	9.81E-07	n/a	U
S10V001243			14391-16-3	Europium-155	uCi/g	n/a	<4.74E-07	<5.04E-07	n/a	n/a	n/a	n/a	5.04E-07	n/a	U
S10V001243			15067-28-4	Lead-214	uCi/g	n/a	n/a	1.17E-06	n/a	n/a	n/a	n/a	6.81E-07	21.66	
S10V001243			14274-82-9	Thorium-228	uCi/g	n/a	<8.76E-06	<9.51E-06	n/a	n/a	n/a	n/a	9.51E-06	n/a	U
S10V001243			15065-10-8	Thorium-234	uCi/g	n/a	<2.72E-06	<3.23E-06	n/a	n/a	n/a	n/a	3.23E-06	n/a	U
S10V001243			15046-84-1	Iodine-129	uCi/g	112	<1.62E-07	<1.76E-07	n/a	n/a	n/a	n/a	1.76E-07	n/a	U
S10V001245		WV	14133-76-7	Technetium-99	ug/g	105	<4.00E-06	<3.91E-06	n/a	n/a	n/a	n/a	3.91E-06	n/a	U
S10V001246		W	14762-75-5	Carbon-14	uCi/g	93.9	<1.07E-06	<6.63E-07	n/a	n/a	n/a	n/a	6.63E-07	n/a	U
S10V001246		W	10028-17-8	Tritium	uCi/g	90.5	<2.69E-07	<1.33E-06	n/a	n/a	n/a	n/a	1.33E-06	n/a	U
S10V001247		A	7440-36-0	Antimony	ug/g	104	<2.00E-04	0.165	n/a	n/a	n/a	n/a	9.64E-03	n/a	b
S10V001248		O	120-82-1	1,2,4-Trichlorobenzene	ug/kg	66.6	<77.4	<77.1	n/a	n/a	n/a	n/a	77.1	n/a	U
S10V001248		O	95-50-1	1,2-Dichlorobenzene	ug/kg	n/a	<101	<100	n/a	n/a	n/a	n/a	100	n/a	U
S10V001248		O	121-14-2	2,4-Dinitrotoluene	ug/kg	81.3	<38.1	<38.0	n/a	n/a	n/a	n/a	38.0	n/a	U
S10V001248		O	95-95-4	2,4,5-Trichlorophenol	ug/kg	n/a	<44.0	<43.8	n/a	n/a	n/a	n/a	43.8	n/a	U
S10V001248		O	88-06-2	2,4,6-Trichlorophenol	ug/kg	n/a	<49.5	<49.3	n/a	n/a	n/a	n/a	49.3	n/a	U
S10V001248		O	95-48-7	2-Methylphenol	ug/kg	n/a	<57.5	<57.3	n/a	n/a	n/a	n/a	57.3	n/a	U
S10V001248		O	88-75-5	2-Nitrophenol	ug/kg	n/a	<53.7	<53.5	n/a	n/a	n/a	n/a	53.5	n/a	U
S10V001248		O	65794-96-9	3 &4 Methylphenol	ug/kg	n/a	<51.4	<51.2	n/a	n/a	n/a	n/a	51.2	n/a	U

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26JK3
Sample Depth: Surface Dup

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001249		W	16984-48-8	Fluoride	ug/g	101	<1.61E-03	0.995	n/a	n/a	n/a	n/a	0.0161	n/a	c
S10V001249		W	666-14-8	Glycolate	ug/g	99.3	<9.37E-03	<0.0935	n/a	n/a	n/a	n/a	0.0935	n/a	U
S10V001249		W	71-50-1	Acetate	ug/g	98.3	<6.04E-03	<0.0603	n/a	n/a	n/a	n/a	0.0603	n/a	U
S10V001249		W	12311-97-6	Formate	ug/g	102	<4.67E-03	0.124	n/a	n/a	n/a	n/a	0.0466	n/a	J
S10V001249		W	16887-00-6	Chloride	ug/g	100	<9.98E-03	0.475	n/a	n/a	n/a	n/a	0.0996	n/a	J
S10V001249		W	14797-65-0	Nitrite	ug/g	100	<0.0192	1.06	n/a	n/a	n/a	n/a	0.192	n/a	J
S10V001249		W	14808-79-8	Sulfate	ug/g	99.0	<0.0187	2.81	n/a	n/a	n/a	n/a	0.187	n/a	J
S10V001249		W	338-70-5	Oxalate	ug/g	101	<0.0231	1.05	n/a	n/a	n/a	n/a	0.231	n/a	J
S10V001249		W	24959-67-9	Bromide	ug/g	96.5	<0.0580	<0.579	n/a	n/a	n/a	n/a	0.579	n/a	U
S10V001249		W	14797-55-8	Nitrate	ug/g	98.5	<0.0208	5.02	n/a	n/a	n/a	n/a	0.208	n/a	
S10V001249		W	14265-44-2	Phosphate	ug/g	99.1	<0.0167	1.65	n/a	n/a	n/a	n/a	0.167	n/a	J
S10V001250		A	7429-90-5	Aluminum	ug/g	89.9	<0.0300	7.08E+03	n/a	n/a	n/a	n/a	2.97	n/a	
S10V001250		A	7440-42-8	Boron	ug/g	89.1	<0.0300	3.34	n/a	n/a	n/a	n/a	2.97	n/a	J
S10V001250		A	7440-39-3	Barium	ug/g	93.7	<3.00E-03	76.6	n/a	n/a	n/a	n/a	0.297	n/a	
S10V001250		A	7440-41-7	Beryllium	ug/g	95.7	<1.00E-03	0.154	n/a	n/a	n/a	n/a	0.0991	n/a	J
S10V001250		A	7440-70-2	Calcium	ug/g	82.2	0.0545	9.27E+03	n/a	n/a	n/a	n/a	4.96	n/a	
S10V001250		A	7440-43-9	Cadmium	ug/g	88.5	<5.00E-03	3.26	n/a	n/a	n/a	n/a	0.496	n/a	J
S10V001250		A	7440-45-1	Cerium	ug/g	91.9	<0.0300	22.6	n/a	n/a	n/a	n/a	2.97	n/a	J
S10V001250		A	7440-48-4	Cobalt	ug/g	87.0	<0.0100	8.82	n/a	n/a	n/a	n/a	0.991	n/a	J
S10V001250		A	7440-47-3	Chromium	ug/g	86.1	<5.00E-03	7.98	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	7440-50-8	Copper	ug/g	99.3	<5.00E-03	12.9	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	7439-89-6	Iron	ug/g	88.7	7.48E-03	2.42E+04	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	7440-09-7	Potassium	ug/g	115	<0.500	1.08E+03	n/a	n/a	n/a	n/a	49.6	n/a	
S10V001250		A	7439-91-0	Lanthanum	ug/g	93.8	<3.00E-03	10.6	n/a	n/a	n/a	n/a	0.297	n/a	
S10V001250		A	7439-93-2	Lithium	ug/g	116	<3.00E-03	7.39	n/a	n/a	n/a	n/a	0.297	n/a	
S10V001250		A	7439-95-4	Magnesium	ug/g	89.1	<0.0500	5.28E+03	n/a	n/a	n/a	n/a	4.96	n/a	
S10V001250		A	7439-96-5	Manganese	ug/g	85.5	<3.00E-03	355	n/a	n/a	n/a	n/a	0.297	n/a	c
S10V001250		A	7439-98-7	Molybdenum	ug/g	87.0	<0.0200	<1.98	n/a	n/a	n/a	n/a	1.98	n/a	U

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c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26JK3
Sample Depth: Surface Dup

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
~~S10V001250~~		~~A~~	~~7440-23-5~~	~~Sodium~~	~~ug/g~~	~~115~~	~~<0.100~~	~~299~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~9.91~~	~~n/a~~	
S10V001250		A	7440-02-0	Nickel	ug/g	87.8	<0.0200	8.64	n/a	n/a	n/a	n/a	1.98	n/a	J
S10V001250		A	7723-14-0	Phosphorus	ug/g	88.6	<0.0500	870	n/a	n/a	n/a	n/a	4.96	n/a	
S10V001250		A	7439-92-1	Lead	ug/g	87.5	<0.0500	<4.96	n/a	n/a	n/a	n/a	4.96	n/a	U
S10V001250		A	7704-34-9	Sulfur	ug/g	88.1	<0.100	70.9	n/a	n/a	n/a	n/a	9.91	n/a	J
S10V001250		A	7440-21-3	Silicon	ug/g	81.4	<0.0300	25.3	n/a	n/a	n/a	n/a	2.97	n/a	Jb
S10V001250		A	7440-24-6	Strontium	ug/g	93.4	<3.00E-03	28.9	n/a	n/a	n/a	n/a	0.297	n/a	
S10V001250		A	7440-32-6	Titanium	ug/g	86.7	<5.00E-03	1.53E+03	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	7440-62-2	Vanadium	ug/g	89.2	<5.00E-03	58.8	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	7440-65-5	Yttrium	ug/g	86.2	<2.00E-03	10.4	n/a	n/a	n/a	n/a	0.198	n/a	
S10V001250		A	7440-66-6	Zinc	ug/g	89.9	<5.00E-03	44.8	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	7440-67-7	Zirconium	ug/g	85.4	<5.00E-03	15.3	n/a	n/a	n/a	n/a	0.496	n/a	
S10V001250		A	14269-63-7	Thorium-230	ug/g	n/a	<2.80E-06	<2.78E-05	n/a	n/a	n/a	n/a	2.78E-05	n/a	U
S10V001250		A	TH-232	Thorium-232	ug/g	103	<2.00E-04	3.58	n/a	n/a	n/a	n/a	1.98E-03	n/a	
S10V001250		A	13968-55-3	Uranium-233	ug/g	n/a	<4.00E-06	2.02E-04	n/a	n/a	n/a	n/a	3.96E-05	n/a	J
S10V001250		A	13966-29-5	Uranium-234	ug/g	n/a	<2.00E-06	3.81E-05	n/a	n/a	n/a	n/a	1.98E-05	n/a	J
S10V001250		A	15117-96-1	Uranium-235	ug/g	93.0	<4.00E-06	4.81E-03	n/a	n/a	n/a	n/a	3.96E-05	n/a	
S10V001250		A	13982-70-2	Uranium-236	ug/g	n/a	<1.60E-06	<1.59E-05	n/a	n/a	n/a	n/a	1.59E-05	n/a	U
S10V001250		A	13994-20-2	Neptunium-237	ug/g	99.1	<4.00E-05	<3.96E-04	n/a	n/a	n/a	n/a	3.96E-04	n/a	U
S10V001250		A	U-238	Uranium-238	ug/g	101	<2.00E-04	0.709	n/a	n/a	n/a	n/a	1.98E-03	n/a	
S10V001250		A	7440-22-4	Silver	ug/g	106	<1.60E-03	0.0850	n/a	n/a	n/a	n/a	0.0159	n/a	J
S10V001250		A	7440-38-2	Arsenic	ug/g	105	<8.40E-03	5.20	n/a	n/a	n/a	n/a	0.0833	n/a	
S10V001250		A	7782-49-2	Selenium	ug/g	104	<0.0122	0.466	n/a	n/a	n/a	n/a	0.121	n/a	J
~~S10V001250~~		~~A~~	~~7440-28-0~~	~~Thallium~~	~~ug/g~~	~~101~~	~~<4.00E-04~~	~~0.0788~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~7.93E-03~~	~~n/a~~	~~J~~
S10V001251		S	14798-03-9	Ammonium 2.44U	ug/g	99.3	0.278	2.44	n/a	n/a	n/a	n/a	0.479	n/a	BJ
~~S10V001252~~		~~A~~	~~14133-76-7~~	~~Technetium-99~~	~~ug/g~~	~~110~~	~~<1.50E-05~~	~~<1.49E-04~~	~~<1.49E-04~~	~~n/a~~	~~n/a~~	~~108~~	~~1.49E-04~~	~~n/a~~	~~U~~
S10V001252		A	SN-117	Tin-117	ug/g	106	<5.00E-04	0.0190	0.0182	0.0186	4.21	69.0	4.95E-03	n/a	J
~~S10V001252~~		~~A~~	~~15832-50-5~~	~~Tin-126~~	~~ug/g~~	~~n/a~~	~~<1.00E-05~~	~~3.58E-04~~	~~3.92E-04~~	~~3.75E-04~~	~~9.07~~	~~n/a~~	~~9.90E-05~~	~~n/a~~	~~J~~

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C70
Sample Depth: 10-12

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001299			BULKDENSI	Bulk Density	g/mL	n/a	n/a	2.29	n/a	n/a	n/a	n/a	n/a	n/a	
S10V001300			BULKDENSI	Bulk Density	g/mL	n/a	n/a	2.18	n/a	n/a	n/a	n/a	n/a	n/a	
S10V001301			BULKDENSI	Bulk Density	g/mL	n/a	n/a	2.17	n/a	n/a	n/a	n/a	n/a	n/a	
S10V001302			%WATERA	%WATER-APD	%	n/a	n/a	5.140	4.960	5.050	3.564	n/a	0.01000	n/a	
S10V001302			57-12-5	Cyanide	ug/g	94.1	<0.0370	<2.55	n/a	n/a	n/a	n/a	2.55	n/a	U
S10V001302			7439-97-6	Mercury	ug/g	97.4	<1.00E-04	<9.90E-03	n/a	n/a	n/a	n/a	9.90E-03	n/a	U
S10V001302			PH	pH J	unitless	n/a	n/a	8.97	n/a	n/a	n/a	n/a	0.0100	n/a	
S10V001302			18496-25-8	Sulfide	ug/g	99.2	<0.180	20.2	n/a	n/a	n/a	n/a	7.24	n/a	J
S10V001303			10198-40-0	Cobalt-60	uCi/g	101	<3.07E-07	<3.42E-07	<3.46E-07	n/a	n/a	n/a	3.42E-07	n/a	U
S10V001303			14234-35-6	Antimony-125	uCi/g	n/a	<7.49E-07	<9.47E-07	<9.05E-07	n/a	n/a	n/a	9.47E-07	n/a	U
S10V001303			10045-97-3	Cesium-137	uCi/g	105	<4.16E-07	<4.57E-07	<4.26E-07	n/a	n/a	n/a	4.57E-07	n/a	U
S10V001303			14683-23-9	Europium-152	uCi/g	n/a	<1.56E-06	<1.79E-06	<1.71E-06	n/a	n/a	n/a	1.79E-06	n/a	U
S10V001303			15585-10-1	Europium-154	uCi/g	n/a	<9.28E-07	<1.08E-06	<1.03E-06	n/a	n/a	n/a	1.08E-06	n/a	U
S10V001303			14391-16-3	Europium-155	uCi/g	n/a	<4.74E-07	<6.07E-07	<5.58E-07	n/a	n/a	n/a	6.07E-07	n/a	U
S10V001303			14733-03-0	Bismuth-214	uCi/g	n/a	n/a	1.24E-06	n/a	n/a	n/a	n/a	6.30E-07	31.87	J
S10V001303			15067-28-4	Lead-214	uCi/g	n/a	n/a	1.57E-06	9.71E-07	1.27E-06	47.4	n/a	8.32E-07	19.99	
S10V001303			14274-82-9	Thorium-228	uCi/g	n/a	<8.76E-06	<1.12E-05	<1.05E-05	n/a	n/a	n/a	1.12E-05	n/a	U
S10V001303			15065-10-8	Thorium-234	uCi/g	n/a	<2.72E-06	<3.81E-06	<3.66E-06	n/a	n/a	n/a	3.81E-06	n/a	U
S10V001303			15046-84-1	Iodine-129	uCi/g	112	<1.62E-07	<1.61E-07	n/a	n/a	n/a	n/a	1.61E-07	n/a	U
S10V001305		WV	14133-76-7	Technetium-99	ug/g	105	<4.00E-06	<4.01E-06	n/a	n/a	n/a	n/a	4.01E-06	n/a	U
S10V001306		W	14762-75-5	Carbon-14	uCi/g	93.9	<1.07E-06	<6.77E-07	n/a	n/a	n/a	n/a	6.77E-07	n/a	U
S10V001306		W	10028-17-8	Tritium	uCi/g	90.5	<2.69E-07	<1.35E-06	n/a	n/a	n/a	n/a	1.35E-06	n/a	U
S10V001307		A	7440-36-0	Antimony	ug/g	104	<2.00E-04	0.0926	n/a	n/a	n/a	n/a	9.39E-03	n/a	Jb
S10V001308		O	120-82-1	1,2,4-Trichlorobenzene	ug/kg	66.6	<77.4	<76.6	n/a	n/a	n/a	70.4	76.6	n/a	U
S10V001308		O	95-50-1	1,2-Dichlorobenzene	ug/kg	n/a	<101	<99.6	n/a	n/a	n/a	n/a	99.6	n/a	U
S10V001308		O	121-14-2	2,4-Dinitrotoluene	ug/kg	81.3	<38.1	<37.7	n/a	n/a	n/a	89.8	37.7	n/a	U
S10V001308		O	95-95-4	2,4,5-Trichlorophenol	ug/kg	n/a	<44.0	<43.5	n/a	n/a	n/a	n/a	43.5	n/a	U
S10V001308		O	88-06-2	2,4,6-Trichlorophenol	ug/kg	n/a	<49.5	<49.0	n/a	n/a	n/a	n/a	49.0	n/a	U

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c - RPD Outside Range
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C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C70
Sample Depth: 10-12

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001308		O	1319-77-3	Total Methylphenols	ug/kg	n/a	<107	<105	n/a	n/a	n/a	n/a	105	n/a	U
S10V001308		O	108-94-1	Cyclohexanone	ug/kg	n/a	<558	<552	n/a	n/a	n/a	n/a	552	n/a	U
S10V001308		O	59-89-2	N-Nitrosomorpholine	ug/kg	n/a	<191	<189	n/a	n/a	n/a	n/a	189	n/a	U
S10V001309		W	16984-48-8	Fluoride	ug/g	101	<1.61E-03	1.48	n/a	n/a	n/a	n/a	0.0160	n/a	c
S10V001309		W	666-14-8	Glycolate	ug/g	99.3	<9.37E-03	<0.0931	n/a	n/a	n/a	n/a	0.0931	n/a	U
S10V001309		W	71-50-1	Acetate	ug/g	98.3	<6.04E-03	<0.0600	n/a	n/a	n/a	n/a	0.0600	n/a	U
S10V001309		W	12311-97-6	Formate	ug/g	102	<4.67E-03	0.109	n/a	n/a	n/a	n/a	0.0464	n/a	J
S10V001309		W	16887-00-6	Chloride	ug/g	100	<9.98E-03	0.355	n/a	n/a	n/a	n/a	0.0991	n/a	J
S10V001309		W	14797-65-0	Nitrite	ug/g	100	<0.0192	1.40	n/a	n/a	n/a	n/a	0.191	n/a	J
S10V001309		W	14808-79-8	Sulfate	ug/g	99.0	<0.0187	3.08	n/a	n/a	n/a	n/a	0.186	n/a	
S10V001309		W	338-70-5	Oxalate	ug/g	101	<0.0231	<0.229	n/a	n/a	n/a	n/a	0.229	n/a	U
S10V001309		W	24959-67-9	Bromide	ug/g	96.5	<0.0580	<0.576	n/a	n/a	n/a	n/a	0.576	n/a	U
S10V001309		W	14797-55-8	Nitrate	ug/g	98.5	<0.0208	2.85	n/a	n/a	n/a	n/a	0.207	n/a	
S10V001309		W	14265-44-2	Phosphate	ug/g	99.1	<0.0167	0.975	n/a	n/a	n/a	n/a	0.166	n/a	J
S10V001310		A	7429-90-5	Aluminum	ug/g	89.9	<0.0300	7.42E+03	n/a	n/a	n/a	n/a	2.99	n/a	
S10V001310		A	7440-42-8	Boron	ug/g	89.1	<0.0300	3.25	n/a	n/a	n/a	n/a	2.99	n/a	J
S10V001310		A	7440-39-3	Barium	ug/g	93.7	<3.00E-03	76.4	n/a	n/a	n/a	n/a	0.299	n/a	
S10V001310		A	7440-41-7	Beryllium	ug/g	95.7	<1.00E-03	0.158	n/a	n/a	n/a	n/a	0.0996	n/a	J
S10V001310		A	7440-70-2	Calcium	ug/g	82.2	0.0545	8.39E+03	n/a	n/a	n/a	n/a	4.98	n/a	
S10V001310		A	7440-43-9	Cadmium	ug/g	88.5	<5.00E-03	2.87	n/a	n/a	n/a	n/a	0.498	n/a	J
S10V001310		A	7440-45-1	Cerium	ug/g	91.9	<0.0300	22.2	n/a	n/a	n/a	n/a	2.99	n/a	J
S10V001310		A	7440-48-4	Cobalt	ug/g	87.6	<0.0100	7.99	n/a	n/a	n/a	n/a	0.996	n/a	J
S10V001310		A	7440-47-3	Chromium	ug/g	86.1	<5.00E-03	17.2	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7440-50-8	Copper	ug/g	99.3	<5.00E-03	16.5	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7439-89-6	Iron	ug/g	88.7	7.48E-03	2.21E+04	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7440-09-7	Potassium	ug/g	115	<0.500	1.10E+03	n/a	n/a	n/a	n/a	49.8	n/a	
S10V001310		A	7439-91-0	Lanthanum	ug/g	93.8	<3.00E-03	10.6	n/a	n/a	n/a	n/a	0.299	n/a	
S10V001310		A	7439-93-2	Lithium	ug/g	116	<3.00E-03	7.73	n/a	n/a	n/a	n/a	0.299	n/a	

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C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C70
Sample Depth: 10-12

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
~~S10V001310~~		~~A~~	~~7439-95-4~~	~~Magnesium~~	~~ug/g~~	~~89.1~~	~~<0.0500~~	~~4.68E+03~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~4.98~~	~~n/a~~	
S10V001310		A	7439-96-5	Manganese	ug/g	85.5	<3.00E-03	331	n/a	n/a	n/a	n/a	0.299	n/a	c
S10V001310		A	7439-98-7	Molybdenum	ug/g	87.0	<0.0200	<1.99	n/a	n/a	n/a	n/a	1.99	n/a	U
S10V001310		A	7440-23-5	Sodium	ug/g	115	<0.100	397	n/a	n/a	n/a	n/a	9.96	n/a	
S10V001310		A	7440-02-0	Nickel	ug/g	87.8	<0.0200	12.4	n/a	n/a	n/a	n/a	1.99	n/a	J
S10V001310		A	7723-14-0	Phosphorus	ug/g	88.6	<0.0500	786	n/a	n/a	n/a	n/a	4.98	n/a	
S10V001310		A	7439-92-1	Lead	ug/g	87.5	<0.0500	<4.98	n/a	n/a	n/a	n/a	4.98	n/a	U
S10V001310		A	7704-34-9	Sulfur	ug/g	88.1	<0.100	55.7	n/a	n/a	n/a	n/a	9.96	n/a	J
S10V001310		A	7440-21-3	Silicon	ug/g	81.4	<0.0300	34.2	n/a	n/a	n/a	n/a	2.99	n/a	b
S10V001310		A	7440-24-6	Strontium	ug/g	93.4	<3.00E-03	34.7	n/a	n/a	n/a	n/a	0.299	n/a	
S10V001310		A	7440-32-6	Titanium	ug/g	86.7	<5.00E-03	1.44E+03	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7440-62-2	Vanadium	ug/g	89.2	<5.00E-03	54.6	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7440-65-5	Yttrium	ug/g	86.2	<2.00E-03	8.88	n/a	n/a	n/a	n/a	0.199	n/a	
S10V001310		A	7440-66-6	Zinc	ug/g	89.9	<5.00E-03	39.8	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	7440-67-7	Zirconium	ug/g	85.4	<5.00E-03	15.3	n/a	n/a	n/a	n/a	0.498	n/a	
S10V001310		A	14269-63-7	Thorium-230	ug/g	n/a	<2.80E-06	3.72E-05	n/a	n/a	n/a	n/a	2.79E-05	n/a	J
S10V001310		A	TH-232	Thorium-232	ug/g	103	<2.00E-04	3.44	n/a	n/a	n/a	n/a	1.99E-03	n/a	
S10V001310		A	13968-55-3	Uranium-233	ug/g	n/a	<4.00E-06	1.78E-04	n/a	n/a	n/a	n/a	3.98E-05	n/a	J
S10V001310		A	13966-29-5	Uranium-234	ug/g	n/a	<2.00E-06	<1.99E-05	n/a	n/a	n/a	n/a	1.99E-05	n/a	U
S10V001310		A	15117-96-1	Uranium-235	ug/g	93.0	<4.00E-06	3.82E-03	n/a	n/a	n/a	n/a	3.98E-05	n/a	
S10V001310		A	13982-70-2	Uranium-236	ug/g	n/a	<1.60E-06	1.87E-05	n/a	n/a	n/a	n/a	1.59E-05	n/a	J
S10V001310		A	13994-20-2	Neptunium-237	ug/g	99.1	<4.00E-05	<3.98E-04	n/a	n/a	n/a	n/a	3.98E-04	n/a	U
S10V001310		A	U-238	Uranium-238	ug/g	101	<2.00E-04	0.565	n/a	n/a	n/a	n/a	1.99E-03	n/a	
S10V001310		A	7440-22-4	Silver	ug/g	106	<1.60E-03	0.0667	n/a	n/a	n/a	n/a	0.0159	n/a	J
S10V001310		A	7440-38-2	Arsenic	ug/g	105	<8.40E-03	3.39	n/a	n/a	n/a	n/a	0.0837	n/a	
S10V001310		A	7782-49-2	Selenium	ug/g	104	<0.0122	0.210	n/a	n/a	n/a	n/a	0.122	n/a	J
~~S10V001310~~		~~A~~	~~7440-28-0~~	~~Thallium~~	~~ug/g~~	~~101~~	~~<4.00E-04~~	~~0.0744~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~7.97E-03~~	~~n/a~~	~~J~~
S10V001311		S	14798-03-9	Ammonium 1.55U	ug/g	99.3	0.278	1.55	n/a	n/a	n/a	n/a	0.479	n/a	BJ

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B - Blank Contamination

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

222-S LABORATORY

FINAL ANALYTICAL REPORT FOR SAMPLES FROM WASTE MANAGEMENT AREA C FOR CORE HOLE C7672 IN SUPPORT OF RCRA SOIL CHARACTERIZATION

1.0 INTRODUCTION

This final report presents the results for the samples taken from Waste Management Area C between July 7, 2010 and July 16, 2010. The samples were analyzed in accordance with RPP-PLAN-40564, *Field Sampling and Analysis Plan for Sites P and L at Waste Management Area C* (FSAP); RPP-PLAN-38777, *Sampling and Analysis Plan for Phase 2 Characterization of Vadose Zone Soil in Waste Management Area C* (SAP); ATL-MP-1011, *ATL Quality Assurance Project Plan for 222-S Laboratory* (QAPP); SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*; and the additional guidance given by the client's point of contact.

Because the 222-S Laboratory facility was designed to analyze hazardous and complex tank waste samples, most SW-846 test methods performed at the 222-S Laboratory contain deviations that are listed in an appendix in the analytical procedures. All other known deviations or variances from SW-846 are documented in this narrative. The following attachments are included in this report.

Attachment 1	Data Summary Report
Attachment 2	Sample Breakdown Diagrams
Attachment 3	Holding Time Report
Attachment 4	Additional Organic Analyses QC Results
Attachment 5	Tentatively Identified Compounds (TIC) for Organic Analyses
Attachment 6	Geological Report
Attachment 7	Characterization Change Notices (CCN) and Correspondence
Attachment 8	Receipt Paperwork

2.0 SAMPLE RECEIPT AND BREAKDOWN

2.1 SAMPLE RECEIPT

A total of seven core intervals and two surface grab samples from core hole C7672 along with six field blanks, six trip blanks, and one equipment blank were received by the 222-S Laboratory between July 7, 2010 and July 16, 2010. The samples were delivered in a cooler with ice or, in the case of the volatile organic soil samples, in a freezer. The temperatures of the temperature blanks were measured and recorded on the sample receipt check list and/or the chain of custody form.

The chain of custody requested that conductivity be analyzed on the soil samples. Since this analysis was not listed in the SAP or FSAP it was not performed. The client has indicated that

this analysis may be performed later after a CCN is issued to cover the change to the FSAP (see Attachment 7).

2.2 SAMPLE BREAKDOWN

The laboratory received each core interval as a set of volatile organic analysis (VOA) samples and three liner samples when complete core recovery was obtained. The VOA samples were made from the shoe section of each core interval following SW-846 5035. The liner samples from each core interval were extruded, described, and composited by the Washington River Protection Solutions, Inc. (WRPS) geologist. The geologist's report is included in Attachment 6. Provided sufficient samples existed, the composite for each core interval was analyzed as described in the SAP and FSAP. One core interval, I001, had less than full recovery (see Attachment 2 and Attachment 8). There was no I003 for core hole C7672. All intervals were extruded and composited in the normal manner. The surface samples were received as a single grab in a 500-mL jar and a set of VOA samples.

WRPS shipped subsamples of the composites to Test America Laboratories, Inc. (TAL) in St Louis, Missouri and Knoxville, Tennessee to be analyzed for dibutyl and monobutyl phosphate, total petroleum hydrocarbons (diesel and gasoline range), ethylene glycol, chlorinated pesticides, and polychlorinated biphenyls (Aroclors and congeners). TAL subsequently subcontracted the monobutyl and dibutyl phosphate analyses to Southwest Research Institute. The results of these analyses will be released in the final WRPS report.

3.0 ANALYTICAL RESULTS SUMMARY

The Data Summary Report (Attachment 1) presents the final analytical results for those analytes requested in the SAP and FSAP. Secondary analytes are only reported if detected. The TIC from gas chromatography-mass spectrometry (GC/MS) analysis of semivolatile organic compounds (SVOC) is presented in Attachment 5. In addition to the required isotopes, all isotopes with positive gamma energy analysis (GEA) results were reported.

The "Det Limit" column in Attachment 1 contains the method detection limit (MDL) for non-radionuclide analyses, or the minimum detectable activity for radionuclides.

In Attachment 1, the column labeled "A#" indicates the aliquot class or the method used for sample preparation before analysis. For solid samples, the aliquot classes are defined as follows:

"A" indicates samples that were prepared by SW-846 3050B.

"E" indicates samples that were prepared by a strong acid digest.

"O" indicates samples that were extracted for organic analysis.

"S" indicates samples that were prepared by a distillation.

"W" indicates samples that were prepared by a standard water digest.

"WV" indicates samples that were prepared by a Vadose water digest.

Samples without a letter identifier in the "A#" column were analyzed directly with no separate preparation or with sample preparation performed as a part of the procedure steps.

The "Qual Flags" column in Attachment 1 contains data qualifier flags that are defined as follows:

> "B" is used to indicate that the analyte was detected in the method or preparation blank and in the sample, and the result for the blank was greater than 5% of the reported sample result.
>
> "J" indicates that the reported result should be considered an estimate because it is below the quantitation limit. The "J" flag is applied to sample concentrations that are greater than the MDL but less than the quantitation limit or sample activity with a counting uncertainty greater than 30%.
>
> "N" indicates a TIC which has been named.
>
> "T" indicates a TIC.
>
> "U" indicates that the reported result is less than the calculated detection limit.
>
> "b" indicates that the matrix spike (MS) recovery was outside of the specified range in the QAPP or SAP.
>
> "c" indicates that the relative percent difference (RPD) between the sample and the duplicate is greater than 30%.

Manual calculations using rounded results from the Data Summary Report (Attachment 1) or result calculation forms may differ slightly from the actual results derived from the raw data.

3.1 SAMPLE DIGESTIONS

3.1.1 Radiochemistry Strong Acid Digestion

Strong acid digestions with a hot plate for the heat source were performed using a mixture of concentrated nitric and hydrochloric acids. For each digest, approximately 1 to 10 g of sample was digested depending on the analysis being performed. The digestate was then filtered and diluted to a final volume. This digestion was used for all radiochemical analyses except ^{3}H, ^{14}C, and ^{129}I. This digestion is a leach of the acid soluble species only.

3.1.2 SW-846 3050B - Acid Digestion-Heating Block

This acid digestion follows SW-846 3050B using a heating block and nitric and hydrochloric acids. An aliquot of approximately 5 g of sample was digested. All heating-block digestions were filtered and diluted to a final volume of 50 mL. In soil, this digestion is a leach of the acid soluble species only. This digestion was used for all inductively coupled plasma/mass spectrometry (ICP/MS) and inductively coupled plasma/atomic emission spectroscopy (ICP/AES) analyses except for ^{99}Tc and isotopic tin (^{117}Sn and ^{126}Sn) analyses. The digestion is modified for the ^{99}Tc analysis by using only nitric acid. This is done to eliminate the possibility of the formation a zinc-chlorine ion pair of mass 99. The laboratory believes this ion, when

present, is responsible for low level false positives. A separate digestion for antimony was prepared using additional hydrochloric acid, as recommended in SW-846.

3.1.3 Water Digestion

A water digestion or leach was prepared for the anions by ion chromatography, ^{14}C, and ^{3}H analyses using approximately 0.25 to 4 g of sample diluted to 25 mL. Sonification was used, and the leachate was then filtered. In soil, this digestion is a leach of the water soluble species only.

3.1.4 Vadose Water Digestion

A 70-g sample of soil was leached using a ratio of one part water to one part soil. To maintain a one-to-one ratio, the amount of water added to the sample was adjusted based on the percent moisture of the soil. The slurries were placed on a shaker table for about 1 hour. They were then transferred to a centrifuge tube and centrifuged at 4,000 rpm for 30 minutes. An unfiltered aliquot was set aside for alkalinity analysis. The remainder was filtered using a disposable vacuum filtration system. The filtrates were transferred to a clean bottle and then analyzed for anions using IC nitrate analysis (intervals I005 to I010) and ^{99}Tc by ICP/MS analysis.

3.2 INORGANIC ANALYSES

3.2.1 Cyanide

The cyanide analysis by distillation and spectrophotometry was performed on the grab samples, liner composite samples, and the equipment blank. All analyses met the SW-846 holding time of 14 days. There was no required reporting limit in the SAP for cyanide. The target detection limit was 0.5 µg/g, which is lower than what the current laboratory method (lachet micro-distillation) can reach. There were no notable quality control (QC) issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.2 Sulfide

Sulfide analysis by distillation and ion selective electrode was performed on the grab samples, liner composite samples, and the equipment blank. All analyses met the SW-846 holding time of 7 days. There was no required reporting limit in the SAP for sulfide. The target detection limit was 5 µg/g. All sample results had adjusted MDLs of approximately 7 µg/g. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.3 pH Analysis

The pH analysis was performed on the grab samples, liner composite samples, and equipment blank. These analyses met all QC requirements in the FSAP, SAP, and QAPP. The FSAP lists a pH holding time requirement of “as soon as possible.” All pH measurements were taken after the water leach was performed. The sampling to analysis time varied from 6 to 15 days (see Attachment 3). There is no correlation between pH results and days to analysis, and the results

fall within an expected range for alkaline soils. This indicates that the variation in time has no apparent effect on the results.

3.2.4 Mercury

Analysis for Hg by cold-vapor graphic furnace/atomic absorption was performed on the grab samples, liner composite samples, and the equipment bank. All results met the QC requirements in the FSAP, SAP, and QAPP. All analyses met the holding time of 28 days. This analysis met the required and target detection limits.

3.2.5 Ion Chromatography – Ammonium

Analysis for ammonium was performed using a distillation preparation of the grab samples, the liner composite samples, and the equipment blank. There is no regulatory holding time limit promulgated for ammonium in soil. The SAP lists an administrative holding time of 7 days. The laboratory believes that after distillation and preservation, the holding time is 28 days based on U.S. Environmental Protection Agency drinking water and waste water holding times for preserved samples. All samples met these holding times. These analyses met the target detection limit listed in the SAP. There was no required reporting limit in the SAP or FSAP for ammonium.

Batch 20647: The RPD between the duplicate and the sample exceeded the required 30%. Since the result for this analyte was below the quantitation limit, the criterion does not apply and reanalysis is not required. Ammonium was detected in the preparation blanks at a level below the quantitation limit and above the MDL. Ammonium was also detected in the samples at a similar level; these results have been flagged with a “B”. Since all results were below the quantitation limit, reanalysis was not required.

Batch 20662: Ammonium was detected in the preparation blanks at a level below the quantitation limit and above the MDL. Since ammonium was not detected in the sample reanalysis was not required.

Batch 20716: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20930: The RPD between the sample and duplicate exceeded the required 30%. Since the result for this analyte was below the quantitation limit, the criterion does not apply and reanalysis is not required.

3.2.6 Ion Chromatography – Anions and Small Organic Acids

Ion chromatography analysis was performed on all grab samples, liner composite samples, and the equipment blank. The laboratory met all of the required and target detection limits. All analyses were within the applicable SW-846 holding times. The sample spikes used for the standard water digestions are predigestion spikes.

Batch 20596: The result for nitrate in the preparation blank was slightly below the quantitation limit. Since the sample was non-detect for nitrate, the blank is acceptable.

Batch 21046: The RPD between the sample and duplicate for fluoride exceeded the required 30% at 40%. The laboratory believes this was due to sample inhomogeneity, which is indicated by high RPDs for the other anions in this sample. All fluoride results in this batch have been flagged with a "c". The RPD for nitrite was above the required 30%, however the result was below the quantitation limit, and the criterion does not apply. The low level standard (LLS) for chloride exceeded the ±50% requirement in SW-846 at 153%. This could indicate a high bias for results near the LLS level. Since all chloride results were below the continuous calibration verification sample (CCV) level, a "J" was applied, even to the results above the laboratory's quantitation limit (the LLS level).

Batch 21073: The low level standard (LLS) for chloride exceeded the ±50% requirement in SW-846 at 153%. This could indicate a high bias for results near the LLS level. Since the result was below quantitation level, the data quality was not affected.

3.2.7 Inductively Coupled Plasma/Atomic Emission Spectroscopy

The ICP/AES analysis was performed on an acid-digest (SW-846 3050B) of all grab samples, liner composite samples, and the equipment blank. The ICP/AES analysis was unable to obtain the required detection limit for antimony, arsenic, cadmium, lead, selenium, silver, and thallium for the soil sample. These elements have been reported from separate ICP/MS analyses. Total uranium has not been reported by the ICP/AES analysis since it cannot meet the required detection limits in the SAP. The isotopic uranium analysis by ICP/MS met the required detection limit for ^{238}U, which is essentially total uranium. The overall data usability was not affected. For all other metals reported by ICP/AES, all target and required detection limits were met. SW-846 lists the holding time for ICP/AES metals as 6 months. All analyses met the holding times.

Batch 21204: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21230: The interference check standard-AB (ICSAB) had a result above the quantitation limits for neodymium. This indicates that spectral interference was occurring. Neodymium results were not reported due to the high probability that they were the result of this interference. Results slightly above the MDL for cadmium, chromium, manganese, and silver in the ICSAB indicate a possible high bias for these elements. However, the recovery of these elements in the ICSAB was within the ±20% requirement; this indicates no significant bias was present. Low levels of iron and calcium were detected in the preparation blank, but reanalysis was not required since these levels were less than 5% of the lowest sample result.

The MS recoveries for aluminum, calcium, iron, magnesium, manganese, potassium, phosphorous, sodium, and titanium exceeded the ±25% requirement in the FSAP and SAP. Since the sample results for these elements exceeded the MS level by more than four times, this criterion does not apply.

The MS recovery for silicon exceeded the ±25% requirement in the SAP and FSAP. The laboratory believes this was due to matrix interference. Reanalysis was not required since this is secondary element. It should be noted that silicon is not listed with other elements in SW-846 3050B, section 1.1, under "Scope and Application" for the method and does not perform consistently when using this digest.

The RPD between the sample and the duplicate exceeded the ±30% requirement in the SAP for manganese. The laboratory believes this was due to sample inhomogeneity and, with the client's permission, the result has been reported (see Attachment 7).

3.2.8 Inductively Coupled Plasma/Mass Spectroscopy

The ICP/MS actinide and trace metal analyses were performed on the standard SW-846 3050 acid digestion of all grab samples and liner composite samples. The ICP/MS actinide analysis was also performed on the equipment blank. The ICP/MS ^{126}Sn and ^{99}Tc analysis was performed on the sample digest without the addition of hydrochloric acid. Hydrochloric acid is not used for ^{99}Tc analysis because of the potential formation of a ZnCl ion pair with mass 99. ICP/MS trace metal analysis for antimony was perform on the SW-846 3050 digest with additional hydrochloric acid, which is required to keep antimony in the solution. In addition to these acid digests, ICP/MS ^{99}Tc analysis was performed on a vadose water digest of all solid samples.

Direct is the most accurate type of calibration; however, standard material is not commercially available for all of the isotopes of interest. Concentrations of those isotopes without available standards are estimated based on the instrument's mass-response curve, which is generated by using the intensity/concentration relationship for the available isotope standards. Results estimated in this manner are designated "semi-quantitative."

Table 1. Inductively Coupled Plasma-Mass Spectroscopy Standards and Spikes

Standard Type	Analytes Analyzed
Initial calibration verification (nondigested)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Acid digest standard (laboratory control standard)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Predigest spike (MS)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Post-digest spike	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
No standard or spike of either type	^{126}Sn, ^{230}Th, ^{233}U, ^{234}U, ^{236}U

3.2.8.1 Technetium-99 and Tin-126

The required detection limit listed in the SAP for ^{99}Tc was met. The target detection limit for ^{99}Tc was not met. There were no required or target detection limits for ^{126}Sn listed in the SAP. The SAP lists the holding time for isotopic analytes as 6 months. All samples were analyzed within the holding time.

Because there is no available source for ^{126}Sn, ^{117}Sn is used to monitor the chemical recovery for this analysis. Though not specifically requested in the SAP, ^{117}Sn is reported for the laboratory control sample (LCS) and MS in order to demonstrate method accuracy and presence of possible matrix interference.

All sample results were above the MDL and below the quantitation limit with one exception. Based on this, the laboratory suspects that a low level isobaric interference is present in these samples at mass 126. The laboratory believes the most likely suspect is ^{126}Te, but there are other possible candidates. One sample result was above the quantitation level for ^{126}Sn. Users of this data should be aware that all positive ^{126}Sn results in the report may be due to isobaric interference. The laboratory is currently evaluating how to quantify the possible isobaric interferences for ^{126}Sn.

Batch 22899: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21705: The MS for ^{117}Sn was recovered below the ±25% requirement. Similar results have been observed in other batches; this appears to be a matrix interference issue. This batch was not reanalyzed, but others have been with no improvement. Tin results should be considered biased low at these levels. All samples in the batch have been flagged with a "b". The laboratory is investigating change the acid mixture used to perform low level ^{126}Sn analysis in hopes of improving spike recoveries.

3.2.8.2 Technetium-99 (Vadose Water Digest)

The required and target detection limits listed in the SAP for ^{99}Tc were met. The SAP lists a holding time of 6 months for isotopic analytes. All analyses met this holding time.

Batch 23804: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.8.3 Actinides

The required and target detection limits were met for all isotopes and in all samples. The SAP lists the holding time for isotopic analytes as 6 months. All samples were analyzed within the holding time.

Batch 21671: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 23850: The results for ^{232}Th and ^{236}U in the preparation blank were slightly above the MDL. The sample in this batch demonstrated a similar result for ^{236}U and has been flagged with a "B". The sample result for ^{232}Th was below the MDL. Since all results were below the quantitation limit, the blank was acceptable and reanalysis was not required.

3.2.8.4 Trace Metals

Antimony, arsenic, cadmium, lead, selenium, silver, and thallium were analyzed by ICP/MS to obtain the required detection limits in the SAP. Except for the required detection limit for selenium, all required detection limits were met or the sample results were above the quantitation limit and the sample detection limit criteria do not apply. All target detection limits were met. The required detection limit for selenium was approximately an order of magnitude below the detection limit obtained by ICP/MS. The laboratory does not anticipate reaching this detection

limit for future projects. The adjusted MDL for selenium was approximately 0.12 µg/g. SW-846 lists the holding time for metals as 6 months. All samples were analyzed within the holding time.

Batch 21982: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21350: The MS recovery exceeded the required ±25% for antimony at 63%. Reanalysis was not performed due to a facility room outage. The client was informed of the outage (see Attachment 7) and these results were reported. A "b" was added to all sample results in the batch. Since an antimony-specific digestion was used, the laboratory believes the failure was due to matrix interference.

3.3 RADIOCHEMICAL ANALYSIS

The holding time listed in the SAP for radioactive isotopes is 6 months. The FSAP list the holding time as "none". SW-846 does not address holding times for radiochemical analytes. All radiochemical analyses met the 6-month holding time listed in the SAP. Holding time tables for these analytes have not been included in Attachment 3. With the exception of the ^{14}C and ^{3}H analyses, tracers and spikes are added prior to the digestion.

3.3.1 Gamma Energy Analysis

Gamma energy analysis was performed directly on the grab samples, liner composite samples, and the equipment blank. The SAP requires the reporting of all isotopes with positive results above the minimum detectable activity (MDA); therefore, isotopes additional to those required in the SAP were reported when detected. The GEA analysis met all of the required detection limits in the SAP. The laboratory was unable to meet any of the target detection limits.

Batch 21109: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21198: The RPD for ^{214}Pb was above the 30% requirement in the FSAP. Since the counting error was > 15%, this criterion does not apply.

3.3.2 Strontium-89/90

Strontium-89/90 analysis was performed on the grab samples, liner composite samples, and the equipment blank. All of the sample analyses met the required and target detection limits. The FSAP and SAP requested ^{90}Sr, not $^{89/90}Sr$, be reported. The 222-S Laboratory only performs the latter analysis. Since the half-life for ^{89}Sr is approximately 51 days and ^{89}Sr has not been produced at Hanford for years, $^{89/90}Sr$ is essentially ^{90}Sr. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.3.3 Tritium

The ^{3}H analysis by liquid scintillation counting (LSC) was performed on the equipment blank and a water leach of all grab samples and liner composite samples. This method only measured

the ^{3}H in the samples that could be dissolved in water. This analysis achieved the required and target detection limits in the FSAP.

Batches 21194 and 24544: There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21310: The laboratory failed to include an MS with this batch and did not analyze an MS for C7672 as required. This was discussed with the client (see Attachment 7), and a single sample was reanalyzed in a batch containing an MS in order to meet this requirement.

3.3.4 Selenium-79

The ^{79}Se analysis by LSC was performed on the grab samples, liner composite samples, and the equipment blank. The analysis achieved the target detection limit in the FSAP. No required detection limit was listed. No standard is currently available for ^{79}Se, and a cold carrier is used to monitor recovery and is measured gravimetrically. The ^{14}C LSC curve is used to determine the ^{79}Se results since their energies are similar. Since both ^{63}Ni and ^{79}Se use a single digestion batch that is equally split prior to the separation step, the maximum tracer/carrier recovery is 50%.

Batches 21328 and 23959: The preparation blanks demonstrated a positive result below the quantitation limit, as did the five samples in these batches. All results had very large counting uncertainties and were below the target detection limit. Because of these factors, reanalysis was not required. The associated positive results have been flagged with a “B”.

3.3.5 Carbon-14

The ^{14}C analysis by LSC was performed on a water leach of the grab samples and liner composite samples and directly on the equipment blank. The analysis achieved the required detection limit in the FSAP but exceeded the target detection limit. This analysis will only detect water soluble forms of ^{14}C.

Batch 23609: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 2130: Carbon-14 was detected in the method blank below the quantitation limit. Since ^{14}C was not detected in the sample, reanalysis was not required.

3.3.6 Nickel-63

The ^{63}Ni analysis by LSC was performed on the grab samples, liner composite samples, and equipment blank. The analysis achieved the required and target detection limits in the FSAP. Since both ^{63}Ni and ^{79}Se use a single digestion batch that is equally split prior to the separation step, the maximum trace/carrier recovery is 50%.

Batch 24148: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21112: The preparation blanks demonstrated a positive result below the quantitation limit, as did the sample. All results had very large counting uncertainties and were below the target detection limit. Because of these factors, reanalysis was not required. The associated positive results have been flagged with a “B”.

Batch 22827: This duplicate for this batch was reanalyzed in batch 24148 along with the other sample that had a positive result for ^{63}Ni. All sample results were below the MDA in the reanalysis.

3.3.7 Iodine-129

Analysis for ^{129}I by low energy GEA was performed on an iodine-specific fusion digest of all grab samples, liner composite samples, and the equipment blank. The required and target detection limits in the SAP were met. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.3.8 Americium-241, Curium-243/244, and Curium-242

Analysis for ^{241}Am, $^{243/244}$Cm, and ^{242}Cm by alpha energy analysis (AEA) was performed on the grab samples, liner composite samples, and the equipment blank. For this analysis, there were no notable issues with any batches and all QC requirements in the FSAP, SAP, and QAPP were met. The required and target detection limits in the SAP were met. The SAP and FSAP requested ^{243}Cm and ^{244}Cm be reported separately. Since it is not possible to resolve these individual isotopes when using AEA, these isotopes have been reported as $^{243/244}$Cm.

3.3.9 Plutonium-238 and Plutonium-239/240

Plutonium isotopic (^{238}Pu and $^{239/240}$Pu) analysis by AEA was performed on the grab samples, liner composite samples, and the equipment blank. For this analysis, there were no notable issues with any batches and all QC requirements in the FSAP, SAP, and QAPP were met. The required and target detection limits in the SAP were met.

3.4 ORGANIC ANALYSES

3.4.1 Volatile Organic Analysis

The VOA by GC/MS was performed on field samples by purge and trap. Field sampling methods, sample containers, and preservation methods followed SW-846 5035.The soil samples were delivered in a freezer in pre-weighed VOA vials with magnetic stir bars and approximately 5 g of sample. After receipt, the VOA samples were stored in a freezer. For each sample interval, an additional high level sample preserved in methanol was also received. These were not used because none of the results for the frozen samples were above the calibration range. The exact weight of the sample and the tare weight of the VOA vials were recorded by sampling personnel and delivered with the samples. One equipment blank, six field blanks, and six trip blanks were also received and analyzed. The samples were preserved with either HCl or H_2SO_4 to a pH < 2.The holding time for all samples is 14 days. All samples met the required holding time.

The VOA met the target and required detection limits in the SAP. The SAP and FSAP requested m-xylene and p-xylene be reported separately. Since it is not possible to resolve these individual compounds when performing VOA by SW-846 8260C, these compounds have been reported as m+p xylene. The SAP and FSAP request that methanol be reported with this analysis; however, this compound is too polar to be purged and cannot be reported (see Attachment 7). Isobutanol, another poor purger, was reported as a semivolatile organic compound.

All of the field blanks, trip blanks, and the equipment blank contained chloroform above the quantification level. Since chloroform is a common chlorination byproduct, the laboratory believes the source of chloroform was the water used by sampling personnel to make the various blanks.

The LCS, MS, and matrix spike duplicate (MSD) recoveries were compared against the laboratory's statistical process control (SPC) limits, as required by SW-846. The use of SPC limits is allowed in the FSAP, SAP, and QAPP.

Batches 20645 and 21741: There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20614: The method blank results for acetone and methylene chloride were above the MDL but below the quantitation limit. The sample results were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required.

Batch 20618: The method blank result for 2-hexanone was above the MDL and below the quantitation limit. The sample result is similar to the blank and has been flagged with "B". Since all results were below the quantitation limit and 2-hexanone is not a primary analyte, reanalysis was not required.

Batch 20731: The method blank results for toluene and 2-butanone were above the MDL but below the quantitation limit. Since the sample results were non-detect for these compounds, reanalysis was not required.

Batch 20910: The method blank result for toluene was above the MDL but below the quantitation limit. Since the sample result was non-detect for this compound, reanalysis was not required. The MS and MSD experienced low recoveries for the internal standards. Since the sample internal standard (IS) recoveries were within the required range and the MS/MSD IS recoveries were sufficient to produce MS and MSD results that met acceptance criteria, the data for this batch was considered acceptable and reported.

Batch 20912: The method blank result for toluene was above the MDL but below the quantitation limit. The sample result is similar to the blank and has been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required.

Batch 21742: The MSD experienced low recoveries for the internal standards. Since the sample and MS IS recoveries were within the required range and the MSD IS recoveries were sufficient to produce MSD results that met acceptance criteria (RPD), the data for this batch was considered acceptable and reported.

Batch 21745: The method blank results for acetone, toluene, and styrene were above the MDL but below the quantitation limit. The sample results for toluene and styrene were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit and styrene is not a primary analyte, reanalysis was not required. The internal standards were recovered low (approximately -45%) in the sample but were sufficient to produce surrogate results within acceptance criteria. Since this was the second analysis of the sample and the holding time was expiring, the results have been reported. The original analysis had similar IS recoveries. The cause for low IS recoveries in the vadose sample has typically been associated with a leaking vial cap. However, the TIC analysis indicated the presence of hydrocarbons, which could also affect IS recoveries.

Batch 23601: The method blank results for 2-butanone and toluene were above the MDL but below the quantitation limit. The sample results for 2-butanone and toluene were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required. The MS recoveries for 1-butanol, hexone, acetone, and 2-butanone were all above their upper acceptance limit. This would indicate a high bias in the sample results for these compounds. Since 2-butanone was detected below the quantitation limit and other results were below the MDL, this data was acceptable. These results have been flagged with a "b". The results were from the second analysis of the sample. A third analysis was performed past the holding time but not reported. All results were similar. The MSD failed twice with extremely low IS recoveries. Since only one MS/MSD pair is required for each core hole (see Attachment 7) and there are three MS/MSD pairs for core C7672, project quality control requirements have been met.

3.4.2 Semivolatile Organic Analysis

The semivolatile organic analysis (SVOA) by GC/MS was performed on methylene chloride extractions of all grab samples and liner composite samples. All holding times were met.

The SVOA analysis met the required and target detection limits with two exceptions:

- The adjusted MDLs for cyclohexanone were above the 0.5-mg/kg target detection limit for most samples. This compound obtained detection limits between 0.5 mg/kg and 0.6 mg/kg.
- The adjusted MDLs for di-n-butyl-phthalate were above the target detection limit of 0.33 mg/kg. The analysis achieved a detection limit of between 0.5 mg/kg and 0.6 mg/kg for this compound.

LCS, MS, and MSD recoveries were compared against the laboratory's SPC limits, as required by SW-846. The use of SPC limits is permitted in the FSAP, SAP, and QAPP.

The SAP and FSAP requested m-cresol and p-cresol be reported separately. Since it is not possible to resolve these individual compounds when performing SVOA by SW-846 8270C, these compounds have been reported as m+p cresol.

Batch 20887: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20883: Butylbenzylphthalate was detected in the method blank and samples at slightly above the MDL and below the quantitation limit. Therefore, the blank is acceptable and reanalysis was unnecessary. Sample results have been flagged with a "B".

Batch 20921: Butylbenzylphthalate, bis(2-ethylhexyl) phthalate, and di-n-octylphthalate were detected in the method blank above the MDL and below the quantitation limit. Therefore, the blank is acceptable and reanalysis was unnecessary. Only Butylbenzylphthalate was detected in the samples, and these results have been flagged with a "B".

3.4.3 Tentatively Identified Compounds

Unassigned peaks or TICs were treated as follows. Standards were obtained and analyzed for each secondary analyte identified in the SAP. This data was accumulated in the Hanford library. Following analysis, the largest TICs with instrument responses greater than 10% of the response of the nearest internal standard were evaluated and compared to the Hanford library. The estimated concentration of these TICs was calculated using measured response factors from the Hanford library compound list.

After comparison to the Hanford library, remaining unknowns were compared to the National Institute of Standards and Technology's NIST 02, *HP Mass Spectral Libraries*. The estimated concentration of compounds identified in the NIST library was calculated based on an arbitrary response factor of 1.0. If the compounds were not identified as a result of this comparison, they were reported as "unknown." Summaries of the SVOA and VOA TICs from the field samples and method blanks are provided in Attachment 5. TICs that were found in the field samples and were present in the associated batch method blank have been flagged with "B".

4.0 PROCEDURES

Table 2 lists the analytical procedures used for analysis of the Area C samples.

Table 2. Analytical Procedures

Analysis	Preparation Method	Analysis Procedure
Inorganic Analyses		
Cyanide	LA-695-103, Rev. J-0 (SW-846 9010C)	LA-695-103, Rev. J-0 (SW-846 9014)
Sulfide	LA-361-101, Rev. D-0 (SW-846 9030B)	LA-361-101, Rev. D-0 (SW-846 9215)
pH (solid)	LA-212-105, Rev. G-0 (SW-846 9045D)	LA-212-105, Rev. G-0 (SW-846 9045D)
pH (liquid)		LA-212-106, Rev. H-0-A (SW-846 9040C)
Mercury – Cold Vapor Atomic Absorption	LA-325-110, Rev. A-0 (SW-846 7470A, 7471A)	LA-325-110, Rev. A-0 (SW-846 7470A, 7471A)
Ammonia – IC	LA-544-112, Rev. E-0	LA-533-101, Rev. Q-0

Analysis	Preparation Method	Analysis Procedure
Anions & Organic Acids – IC	LA-504-101, Rev. M-0	LA-533-115, Rev. J-0
Metals – ICP /AES	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-505-161, Rev. J-0-A (SW-846 6010C)
^{99}Tc, ^{126}Sn – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1
^{99}Tc – ICP/MS	08-ATL-078 Vadose Water Digest	LA-506-102, Rev. F-1
Metals – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1 (SW-846 6020A)
Actinides – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1
Radiochemical Analyses		
GEA	Direct	LA-548-121, Rev. I-0
^{90}Sr – Separation/Beta counting (Solid)	LA-544-101, Rev. F-0	LA-220-101, Rev. J-0, I-0
^{3}H – LSC	LA-504-101, Rev. M-0	LA-218-111, Rev. G-0
^{14}C – LSC	LA-504-101, Rev. M-0	LA-348-104, Rev. H-0, I-0
^{79}Se – Separation/LSC	LA-544-101, Rev. F-0	LA-365-132, Rev. I-0
^{63}Ni – Separation/LSC	LA-544-101, Rev. F-0	LA-285-102, Rev. E-0
^{129}I – Separation/GEA	LA-378-105, Rev. C-0, D-0	LA-378-105, Rev. C-0, D-0
^{241}Am, $^{243/244,\ 242}$Cm – Separation/AEA	LA-544-101, Rev. F-0	LA-953-104, Rev. H-1
$^{239/240,\ 238}$Pu – Separation/AEA	LA-544-101, Rev. F-0	LA-953-104, Rev. H-1
Organic Analyses		
VOC – GC/MS	Direct	LA-523-118, Rev. G-O-A (SW-846 8260B)
SVOC – GC/MS	LA-523-138, Rev. G-0 (SW-846 3540C) LA-523-115, Rev. H (SW-846 3520C)	LA-523-135, Rev. D-0 (SW-846 8270C)

5.0 REFERENCES

ATL-MP-1011, 2010, *ATL Quality Assurance Project Plan for 222-S Laboratory*, Rev. 9, Advanced Technologies and Laboratories International, Inc., Richland, Washington.

NIST 02, 2002, *HP Mass Spectral Libraries*, July 2002 Release, Hewlett-Packard Company, Palo Alto, California.

SW-846, 1986, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods,* Third Edition, as amended, U.S. Environmental Protection Agency, Washington, D.C.

RPP-PLAN-40564, 2009, *Field Sampling and Analysis Plan for Sites P and L at Waste Management Area C,* Rev. 2, Washington River Protection Solutions, Inc.

RPP-PLAN-38777, 2009, *Sampling and Analysis Plan for Phase 2 Characterization of Vadose Zone Soil in Waste Management Area C*, Rev. 1, Washington River Protection Solutions, Inc.

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	V10-003-245	PAGE 1 OF 2

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8P	DATA TURNAROUND
Ekstrom / Campbell	TEMPLETON, AM	373-5589	BERLIN, PC	AIR QUALITY ☐	75 Days / 75 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
C7672 Surface Dup	WMA C Sampling for CMS		V10-003		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**ACTUAL SAMPLE DEPTH**	**COA**	**METHOD OF SHIPMENT**	
TFVS-09-003	TFVZ-09-000001	Surface Dup	N/A	Govt. Vehicle	
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
222-S Lab Operations			N/A		

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS		
A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C
		HOLDING TIME	14/40 Days
		TYPE OF CONTAINER	G/P
		NO. OF CONTAINER(S)	1
		VOLUME	500mL
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B26JK3	SOIL	7/7/10	1030	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
RR Ekstrom RR Ekstrom	7/7/10 1215	RH Steele RH Steele	7-7-10 1215	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	

GRP# 20100520
Sam# S10V001242

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V10-003-245	PAGE 2 OF 2
COLLECTOR Ekstrom / Campbell	**COMPANY CONTACT** TEMPLETON, AM	**TELEPHONE NO.** 373-5589	**PROJECT COORDINATOR** BERLIN, PC	**PRICE CODE** 8P	**DATA TURNAROUND**
SAMPLING LOCATION C7672 Surface Dup	**PROJECT DESIGNATION** WMA C Sampling for CMS		**SAF NO.** V10-003	**AIR QUALITY** ☐	**75 Days / 75 Days**
ICE CHEST NO. TFVS-09.003	**FIELD LOGBOOK NO.** TFVZ-09-00000	**ACTUAL SAMPLE DEPTH** Surface Dup	**COA** N/A	**METHOD OF SHIPMENT** Govt. Vehicle	
SHIPPED TO 222-S Lab Operations	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A		

SPECIAL INSTRUCTIONS

** After VOA bottles for the direct pushes are filled, the sampler will cap remaining liners for shipment to 222-S. Where capping is not possible, the sample shall be put into 500 mL or 250 mL glass bottles with Teflon-lined lids.

(1) Semi-VOA - 8270 Complete (TF); TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D; PCBs - 8082; Pesticides - 8081 (TF); 1668 PCB CONGENER (TCL); ICP Metals - 6010 (SW-846) (TF); Mercury - 7471 - (CV) (TF); 300.7_AMMONIUM (TF); IC Anions - 9056; Sulfide - 9215; Total Cyanide - 9014 (TF); pH (Soil) - 9045; Americium-241 (TF); C-14; CURIUM; GAMMA ENERGY ANALYSIS (TF); H3 - TRITIUM; I129_SEP_GEA (TF); Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Nickel-63 (TF); RADISO_ICPMS (TF); Selenium-79 (TF); Strontium-90; Conductivity - 9050_WE; Percent Solids (TF); Percent Water (TF);

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V10-003-182	PAGE 1 OF 2
COLLECTOR Campbell / Harris	COMPANY CONTACT TEMPLETON, AM	TELEPHONE NO. 373-5589	PROJECT COORDINATOR BERLIN, PC	PRICE CODE 8P AIR QUALITY ☐	DATA TURNAROUND 75 Days / 75 Days
SAMPLING LOCATION C7672 I002	PROJECT DESIGNATION WMA C Sampling for CMS		SAF NO. V10-003		
ICE CHEST NO. TFV2-09-003	FIELD LOGBOOK NO. TFV2-09-000001	ACTUAL SAMPLE DEPTH 10-12	COA n/A	METHOD OF SHIPMENT Govt. Vehicle	
SHIPPED TO 222-S Lab Operations	OFFSITE PROPERTY NO. n/A		BILL OF LADING/AIR BILL NO. n/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C
HOLDING TIME	14/40 Days
TYPE OF CONTAINER	Gs jar/Liners
NO. OF CONTAINER(S)	3
VOLUME	160g
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B26C70	SOIL	7-8-10	1055	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM Campbell Campbell	DATE/TIME 7-8-10 1220	RECEIVED BY/STORED IN -0° C Rahtas	DATE/TIME 7-8-10 1220
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

GRP# 2010005 20
SAM# 510V00 1299
1300
1301

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V10-003-182	PAGE 2 OF 2
COLLECTOR Campbell / Harris	COMPANY CONTACT TEMPLETON, AM	TELEPHONE NO. 373-5589	PROJECT COORDINATOR BERLIN, PC	PRICE CODE 8P AIR QUALITY ☐	DATA TURNAROUND 75 Days / 75 Days
SAMPLING LOCATION C7672 I002	PROJECT DESIGNATION WMA C Sampling for CMS		SAF NO. V10-003		
ICE CHEST NO. TFV2-09-003	FIELD LOGBOOK NO. TFV2-09-000001	ACTUAL SAMPLE DEPTH 10-12	COA n/A	METHOD OF SHIPMENT Govt. Vehicle	
SHIPPED TO 222-S Lab Operations	OFFSITE PROPERTY NO. n/A		BILL OF LADING/AIR BILL NO. n/A		

SPECIAL INSTRUCTIONS

** After VOA bottles for the direct pushes are filled, the sampler will cap remaining liners for shipment to 222-S. Where capping is not possible, the sample shall be put into 500 mL or 250 mL glass bottles with Teflon-lined lids.
(1) Semi-VOA - 8270 Complete (TF); TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D; PCBs - 8082; Pesticides - 8081 (TF); 1668 PCB CONGENER (TCL); ICP Metals - 6010 (SW-846) (TF); Mercury - 7471 - (CV) (TF); 300.7_AMMONIUM (TF); IC Anions - 9056; Sulfide - 9215; Total Cyanide - 9014 (TF); pH (Soil) - 9045; Americium-241 (TF); C-14; CURIUM; GAMMA ENERGY ANALYSIS (TF); H3 - TRITIUM; I129_SEP_GEA (TF); Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Nickel-63 (TF); RADISO_ICPMS (TF); Selenium-79 (TF); Strontium-90; Conductivity - 9050_WE; Percent Solids (TF); Percent Water (TF);

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: WMA C			DATA PACKAGE: VSR11-045		
VALIDATOR: Carl Schloesslin		LAB: 222-S Lab		DATE: 5-23-2011	
			SDG: 20100520		
ANALYSES PERFORMED					
Anions/IC X	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia X	BOD/COD	Chloride	Chromium-VI	pH X	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate	Cyanide X	Sulfide X
SAMPLES/MATRIX Soil samples B26JK3 and B26C70					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present?..... Yes (No) N/A

Comments: None

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

MB Hits: Ammonium 1.11 ug/g

4. ACCURACY (Levels C, D, and E)

Spike samples analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

Spike standards NIST traceable? (Levels D, E) ..... Yes No N/A

Spike standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments:

None

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable?..... Yes No N/A

Duplicate results acceptable?..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E)..... Yes No N/A

MS/MSD standards expired? (Levels D, E)..... Yes No N/A

Field duplicate RPD values acceptable?..... Yes No N/A

Field split RPD values acceptable?..... Yes No N/A

Transcription/calculation errors? (Levels D, E)..... Yes No N/A

Comments:

None

6. HOLDING TIMES (all levels)

Samples properly preserved?..... Yes No N/A

Sample holding times acceptable?..... Yes No N/A

Comments:

Samples B26JK3 and B26C70 analyzed for pH 15 and 14 days, respectively, after sample collection (HT = ASAP).

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses?.....(Yes) No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No (N/A)

Samples properly prepared? (Levels D, E)..... Yes No (N/A)

Detection limits meet RDL?.....(Yes) No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: None

Appendix 6

Additional Documentation Requested By Client

Holding Time Report: Cyanide

Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Analysis Date	Missed Holding Time
20100520	S10V001225	SOLID	SW846-9014	SW846-9010C	07/07/10 10:30	07/07/10 12:15	07/19/10 15:08	N
20100520	S10V001242	SOLID	SW846-9014	SW846-9010C	07/07/10 10:30	07/07/10 12:15	07/19/10 15:08	N
20100520	S10V001282	SOLID	SW846-9014	SW846-9010C	07/08/10 09:40	07/08/10 12:20	07/19/10 15:08	N
20100520	S10V001302	SOLID	SW846-9014	SW846-9010C	07/08/10 10:55	07/08/10 12:20	07/19/10 15:08	N
20100520	S10V001342	SOLID	SW846-9014	SW846-9010C	07/13/10 09:15	07/13/10 13:00	07/19/10 15:08	N
20100520	S10V001362	SOLID	SW846-9014	SW846-9010C	07/13/10 11:30	07/13/10 13:00	07/19/10 15:08	N
20100520	S10V001382	SOLID	SW846-9014	SW846-9010C	07/14/10 10:30	07/14/10 13:30	07/19/10 15:08	N
20100520	S10V001402	SOLID	SW846-9014	SW846-9010C	07/15/10 09:25	07/15/10 10:30	07/19/10 15:08	N
20100520	S10V001422	SOLID	SW846-9014	SW846-9010C	07/16/10 10:45	07/16/10 11:40	07/28/10 21:48	N
20100529	S10V001443	LIQUID	SW846-9014	SW846-9010C	07/12/10 10:20	07/12/10 13:45	07/20/10 15:45	N

Holding Time Report: Sulfide

Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Analysis Date	Missed Holding Time
20100520	S10V001225	SOLID	SW-846 9215	SW-846 9030B	07/07/10 10:30	07/07/10 12:15	07/13/10 14:45	N
20100520	S10V001242	SOLID	SW-846 9215	SW-846 9030B	07/07/10 10:30	07/07/10 12:15	07/13/10 14:45	N
20100520	S10V001282	SOLID	SW-846 9215	SW-846 9030B	07/08/10 09:40	07/08/10 12:20	07/13/10 14:45	N
20100520	S10V001302	SOLID	SW-846 9215	SW-846 9030B	07/08/10 10:55	07/08/10 12:20	07/13/10 14:45	N
20100520	S10V001342	SOLID	SW-846 9215	SW-846 9030B	07/13/10 09:15	07/13/10 13:00	07/16/10 15:40	N
20100520	S10V001362	SOLID	SW-846 9215	SW-846 9030B	07/13/10 11:30	07/13/10 13:00	07/16/10 15:40	N
20100520	S10V001382	SOLID	SW-846 9215	SW-846 9030B	07/14/10 10:30	07/14/10 13:30	07/16/10 15:40	N
20100520	S10V001402	SOLID	SW-846 9215	SW-846 9030B	07/15/10 09:25	07/15/10 10:30	07/16/10 15:40	N
20100520	S10V001422	SOLID	SW-846 9215	SW-846 9030B	07/16/10 10:45	07/16/10 11:40	07/22/10 20:45	N
20100529	S10V001442	LIQUID	SW-846 9215	SW-846 9030B	07/12/10 10:20	07/12/10 13:45	07/13/10 14:45	N

Holding Time Report: pH

Sample Group	Sample	Matrix	Method	Sample Date	Received Date	Analysis Date	Days Lapsed
20100520	S10V001225	SOLID	SW-846 9045D	07/07/10 10:30	07/07/10 12:15	07/22/10 00:00	14.6
20100520	S10V001242	SOLID	SW-846 9045D	07/07/10 10:30	07/07/10 12:15	07/22/10 15:19	15.2
20100520	S10V001282	SOLID	SW-846 9045D	07/08/10 09:40	07/08/10 12:20	07/22/10 15:19	14.2
20100520	S10V001302	SOLID	SW-846 9045D	07/08/10 10:55	07/08/10 12:20	07/22/10 15:19	14.2
20100520	S10V001342	SOLID	SW-846 9045D	07/13/10 09:15	07/13/10 13:00	07/22/10 15:19	9.3
20100520	S10V001362	SOLID	SW-846 9045D	07/13/10 11:30	07/13/10 13:00	07/22/10 15:19	9.2
20100520	S10V001382	SOLID	SW-846 9045D	07/14/10 10:30	07/14/10 13:30	07/22/10 15:19	8.2
20100520	S10V001402	SOLID	SW-846 9045D	07/15/10 09:25	07/15/10 10:30	07/22/10 15:19	7.2
20100520	S10V001422	SOLID	SW-846 9045D	07/16/10 10:45	07/16/10 11:40	07/22/10 15:19	6.2
20100529	S10V001441	LIQUID	SW-846 9040C	07/12/10 10:20	07/12/10 13:45	07/12/10 23:02	0.5

Holding Time Report: Ammonium by IC

Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Prep Date	Analysis Date	Missed Holding Time
20100520	S10V001234	SOLID	EPA-300.7	Distillation	07/07/10 10:30	07/07/10 12:15	07/13/10 01:00	07/13/10 16:19	N
20100520	S10V001251	SOLID	EPA-300.7	Distillation	07/07/10 10:30	07/07/10 12:15	07/13/10 11:00	07/13/10 17:27	N
20100520	S10V001291	SOLID	EPA-300.7	Distillation	07/08/10 09:40	07/08/10 12:20	07/13/10 11:00	07/13/10 17:45	N
20100520	S10V001311	SOLID	EPA-300.7	Distillation	07/08/10 10:55	07/08/10 12:20	07/13/10 11:00	07/13/10 18:02	N
20100520	S10V001351	SOLID	EPA-300.7	Distillation	07/13/10 09:15	07/13/10 13:00	07/16/10 11:46	07/16/10 16:04	N
20100520	S10V001371	SOLID	EPA-300.7	Distillation	07/13/10 11:30	07/13/10 13:00	07/16/10 11:46	07/16/10 17:12	N
20100520	S10V001391	SOLID	EPA-300.7	Distillation	07/14/10 10:30	07/14/10 13:30	07/16/10 11:46	07/16/10 17:29	N
20100520	S10V001411	SOLID	EPA-300.7	Distillation	07/15/10 09:25	07/15/10 10:30	07/16/10 11:46	07/16/10 17:46	N
20100520	S10V001431	SOLID	EPA-300.7	Distillation	07/16/10 10:45	07/16/10 11:40	07/22/10 10:00	07/22/10 17:44	N
20100529	S10V001444	LIQUID	EPA-300.7	Distillation	07/12/10 10:20	07/12/10 13:45	07/13/10 10:00	07/13/10 16:02	N

Holding Time Report: Anions by IC

Sample Group	Sample	Matrix	Method	Prep Method	Sample Date	Received Date	Prep Date	Analysis Date	Missed Holding Time
20100520	S10V001232	SOLID	SW-846 9056A	Water Digest	07/07/10 10:30	07/07/10 12:15	07/28/10 10:30	07/28/10 20:05	N
20100520	S10V001249	SOLID	SW-846 9056A	Water Digest	07/07/10 10:30	07/07/10 12:15	07/28/10 10:30	07/28/10 20:37	N
20100520	S10V001289	SOLID	SW-846 9056A	Water Digest	07/08/10 09:40	07/08/10 12:20	07/28/10 10:30	07/28/10 21:09	N
20100520	S10V001309	SOLID	SW-846 9056A	Water Digest	07/08/10 10:55	07/08/10 12:20	07/28/10 10:30	07/28/10 21:41	N
20100520	S10V001349	SOLID	SW-846 9056A	Water Digest	07/13/10 09:15	07/13/10 13:00	07/28/10 10:30	07/28/10 22:13	N
20100520	S10V001369	SOLID	SW-846 9056A	Water Digest	07/13/10 11:30	07/13/10 13:00	07/28/10 10:30	07/28/10 23:49	N
20100520	S10V001389	SOLID	SW-846 9056A	Water Digest	07/14/10 10:30	07/14/10 13:30	07/28/10 10:30	07/29/10 01:56	N
20100520	S10V001409	SOLID	SW-846 9056A	Water Digest	07/15/10 09:25	07/15/10 10:30	07/28/10 10:30	07/29/10 02:28	N
20100520	S10V001429	SOLID	SW-846 9056A	Water Digest	07/16/10 10:45	07/16/10 11:40	07/28/10 10:30	07/29/10 18:32	N
20100529	S10V001441	LIQUID	SW-846 9056A	N/A	07/12/10 10:20	07/12/10 13:45	N/A	07/13/10 00:55	N

LABCORE Completed Batch Report for Batch# 00020816

Analyst: Mull, Bryanna

Book#:

Instrument: CARY 50-2

Method: CN - EDTA, LA-695-103 Rev/Mod J-0

Specification: C Farm WMC 2010-2

Prep Batch:

Batch Comment:

Cyanide for C-Farm WMC 2010-2. lnd

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	LCS	S1007200029		0 0			Cyanide	LIQUID	.2008	1.8890E-01			0.037	ug/mL	94.074	% Recovery	
Sample Sequence 2																	
2	ICB	S1007200022		0 0			Cyanide	LIQUID		<3.7000E-02			0.037	ug/mL			
Sample Sequence 3																	
3	LLS	S1007200023		0 0			Cyanide	LIQUID	.04028	4.0441E-02			0.037	ug/mL	100.4	% Recovery	
Sample Sequence 4																	
4	SAMPLE	S10V001225		0 0			Cyanide	SOLID	N/A	<2.6420E+00			2.642	ug/g			U
Sample Sequence 5																	
5	DUP	S1007200024	S10V001225	0 0			Cyanide	SOLID	<2.6420E+00	<2.6480E+00			2.648	ug/g			
Sample Sequence 6																	
6	SPK	S1007200025	S10V001225	0 0			Cyanide	SOLID	7.092009	6.9476E+00			2.606	ug/g	97.964	% Recovery	
Sample Sequence 7																	
7	SAMPLE	S10V001242		0 0			Cyanide	SOLID	N/A	<2.7130E+00			2.713	ug/g			U
Sample Sequence 8																	
8	SAMPLE	S10V001282		0 0			Cyanide	SOLID	N/A	<2.6180E+00			2.618	ug/g			U
Sample Sequence 9																	
9	SAMPLE	S10V001302		0 0			Cyanide	SOLID	N/A	<2.5540E+00			2.554	ug/g			U
Sample Sequence 10																	
10	SAMPLE	S10V001342		0 0			Cyanide	SOLID	N/A	<2.6040E+00			2.604	ug/g			U
Sample Sequence 11																	
11	SAMPLE	S10V001362		0 0			Cyanide	SOLID	N/A	<2.6520E+00			2.652	ug/g			U
Sample Sequence 12																	
12	SAMPLE	S10V001382		0 0			Cyanide	SOLID	N/A	<2.5950E+00			2.595	ug/g			U
Sample Sequence 13																	
13	SAMPLE	S10V001402		0 0			Cyanide	SOLID	N/A	<2.6500E+00			2.65	ug/g			U
Sample Sequence 14																	
14	CCV	S1007200026		0 0			Cyanide	LIQUID	.2008	1.7603E-01			0.037	ug/mL	87.664	% Recovery	
Sample Sequence 15																	
15	CCB	S1007200027		0 0			Cyanide	LIQUID		<3.7000E-02			0.037	ug/mL			

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020816

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00020816

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020816

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1007200029	LCS				
2	S1007200022	ICB				
3	S1007200023	LLS				
4	S10V001225	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
5	S1007200024	DUP	S10V001225			
6	S1007200025	SPK	S10V001225			
7	S10V001242	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
8	S10V001282	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
9	S10V001302	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
10	S10V001342	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
11	S10V001362	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
12	S10V001382	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
13	S10V001402	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
14	S1007200026	CCV				
15	S1007200027	CCB				

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020593

Analyst: Dinh, Liem

Book#:

Instrument: ISE-Meter #1

Method: SULFIDE, LA-361-101 Rev/Mod D-0

Specification: C Farm WMC 2010-2

Prep Batch:

Batch Comment:

SULFIDE SOLIDS FOR C- FARM WMC 2010-2

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	ICV	S1007130076		0 0			Sulfide	LIQUID	5.01	5.0900E+00			0.18	ug/mL	101.6	% Recovery	
Sample Sequence 2																	
2	ICB	S1007130077		0 0			Sulfide	LIQUID		<1.8000E-01			0.18	ug/mL			
Sample Sequence 3																	
3	LLS	S1007130078		0 0			Sulfide	LIQUID	1.002	1.1600E+00			0.18	ug/mL	115.77	% Recovery	
Sample Sequence 4																	
4	BLNK-PREP	S1007130079		0 0			Sulfide	LIQUID		<1.8000E-01			0.18	ug/mL			
Sample Sequence 5																	
5	LCS	S1007130080		0 0			Sulfide	LIQUID	2.5	2.4800E+00			0.18	ug/mL	99.2	% Recovery	
Sample Sequence 6																	
6	SAMPLE	S10V001225		0 0			Sulfide	SOLID	N/A	3.2488E+01			7.1315	ug/g			J
Sample Sequence 7																	
7	DUP	S1007130081	S10V001225	0 0			Sulfide	SOLID	3.2488E+01	3.1852E+01			7.14	ug/g	1.9773	% RPD	
Sample Sequence 8																	
8	SPK-PREDIG	S1007130082	S10V001225	0 0			Sulfide	SOLID	102.12	1.1642E+02			7.3529	ug/g	82.191	% Recovery	
Sample Sequence 9																	
9	SAMPLE	S10V001242		0 0			Sulfide	SOLID	N/A	3.0106E+01			7.0838	ug/g			J
Sample Sequence 10																	
10	SAMPLE	S10V001282		0 0			Sulfide	SOLID	N/A	3.0596E+01			7.0066	ug/g			J
Sample Sequence 11																	
11	SAMPLE	S10V001302		0 0			Sulfide	SOLID	N/A	2.0241E+01			7.2435	ug/g			J
Sample Sequence 12																	
12	CCV	S1007130083		0 0			Sulfide	LIQUID	5.01	5.1600E+00			0.18	ug/mL	102.99	% Recovery	
Sample Sequence 13																	
13	CCB	S1007130084		0 0			Sulfide	LIQUID		<1.8000E-01			0.18	ug/mL			

Comments Section:

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020593

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00020593

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

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LABCORE Completed Batch Report for Batch# 00020593

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1007130076	ICV				
2	S1007130077	ICB				
3	S1007130078	LLS				
4	S1007130079	BLNK-PREP				
5	S1007130080	LCS				
6	S10V001225	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
7	S1007130081	DUP	S10V001225			
8	S1007130082	SPK-PREDIG	S10V001225			
9	S10V001242	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
10	S10V001282	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
11	S10V001302	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
12	S1007130083	CCV				
13	S1007130084	CCB				

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020959

Analyst: Purinton, Tony

Book#:

Instrument: PH02

Method: PH SOLID, LA-212-105 Rev/Mod G-0

Specification: C Farm WMC 2010-2

Prep Batch:

Batch Comment:

Ph for WMC 2010-2 SOLID ADP

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	ICVPH	S1007270027		0 0			pH	LIQUID	8	8.03			0.01	pH			
Sample Sequence 2																	
2	SAMPLE	S10V001225		0 0			pH	SOLID	N/A	8.68			0.01	pH			
Sample Sequence 3																	
3	DUP	S1007270029	S10V001225	0 0			pH	SOLID	8.68	8.73			0.01	pH	0.57438	% RPD	
Sample Sequence 4																	
4	SAMPLE	S10V001242		0 0			pH	SOLID	N/A	8.92			0.01	pH			
Sample Sequence 5																	
5	SAMPLE	S10V001342		0 0			pH	SOLID	N/A	9.24			0.01	pH			
Sample Sequence 6																	
6	SAMPLE	S10V001654		0 0			pH	SOLID	N/A	9.13			0.01	pH			
Sample Sequence 7																	
7	SAMPLE	S10V001422		0 0			pH	SOLID	N/A	8.92			0.01	pH			
Sample Sequence 8																	
8	SAMPLE	S10V001606		0 0			pH	SOLID	N/A	8.34			0.01	pH			
Sample Sequence 9																	
9	SAMPLE	S10V001382		0 0			pH	SOLID	N/A	8.74			0.01	pH			
Sample Sequence 10																	
10	CCVPH	S1007270104		0 0			pH	LIQUID	8	8.04			0.01	pH			
Sample Sequence 11																	
11	SAMPLE	S10V001302		0 0			pH	SOLID	N/A	8.97			0.01	pH			
Sample Sequence 12																	
12	SAMPLE	S10V001282		0 0			pH	SOLID	N/A	8.67			0.01	pH			
Sample Sequence 13																	
13	SAMPLE	S10V001623		0 0			pH	SOLID	N/A	8.74			0.01	pH			
Sample Sequence 14																	
14	SAMPLE	S10V001362		0 0			pH	SOLID	N/A	9.81			0.01	pH			
Sample Sequence 15																	
15	SAMPLE	S10V001402		0 0			pH	SOLID	N/A	8.69			0.01	pH			
Sample Sequence 16																	
16	CCVPH	S1007270030		0 0			pH	LIQUID	8	8.04			0.01	pH			

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020959

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00020959

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

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LABCORE Completed Batch Report for Batch# 00020959

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1007270027	ICVPH				
2	S10V001225	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
3	S1007270029	DUP	S10V001225			
4	S10V001242	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
5	S10V001342	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
6	S10V001654	SAMPLE		20100556	B29612	C Farm WMC 2010-2
7	S10V001422	SAMPLE		20100520	B26C82	C Farm WMC 2010-2
8	S10V001606	SAMPLE		20100556	B26JK6	C Farm WMC 2010-2
9	S10V001382	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
10	S1007270104	CCVPH				
11	S10V001302	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
12	S10V001282	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
13	S10V001623	SAMPLE		20100556	B26JK7	C Farm WMC 2010-2
14	S10V001362	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
15	S10V001402	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
16	S1007270030	CCVPH				

Units shown for QC (BLK/BKG) may not reflect the actual units.

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LABCORE Completed Batch Report for Batch# 00021046

Analyst: LaPlant, Kelsey **Book#:** 25N29E

Instrument: IC-6 (SMALL ORG ACIDS)

Method: IC - ANIONS/SMALL ORG. ACIDS, LA-533-115 Rev/Mod J-0

Specification: C Farm WMC 2010-2

Prep Batch: 00021016

Batch Comment:

C Farm WMC 2010-2 Anions/Sm. Org. Acids. KJL.

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	CCV	S1007290007		0 0			Fluoride	LIQUID	.4761906	4.7106E-01			1.61E-03	ug/mL	98.923	% Recovery	
1	CCV	S1007290007		0 0			Glycolate	LIQUID	2.96031823	2.8697E+00			9.37E-03	ug/mL	96.939	% Recovery	
1	CCV	S1007290007		0 0			Acetate	LIQUID	3.59523903	3.4974E+00			6.04E-03	ug/mL	97.28	% Recovery	
1	CCV	S1007290007		0 0			Formate	LIQUID	3.48412789	3.5088E+00			4.67E-03	ug/mL	100.71	% Recovery	
1	CCV	S1007290007		0 0			Chloride	LIQUID	.673809699	7.1026E-01			9.98E-03	ug/mL	105.41	% Recovery	
1	CCV	S1007290007		0 0			Nitrite	LIQUID	4.41269956	4.3944E+00			0.0192	ug/mL	99.585	% Recovery	
1	CCV	S1007290007		0 0			Sulfate	LIQUID	5.19047754	5.1008E+00			0.0187	ug/mL	98.272	% Recovery	
1	CCV	S1007290007		0 0			Oxalate	LIQUID	4.16666775	4.1654E+00			0.0231	ug/mL	99.969	% Recovery	
1	CCV	S1007290007		0 0			Bromide	LIQUID	4.83333459	4.5818E+00			0.058	ug/mL	94.796	% Recovery	
1	CCV	S1007290007		0 0			Nitrate	LIQUID	4.39682654	4.2638E+00			0.0208	ug/mL	96.974	% Recovery	
1	CCV	S1007290007		0 0			Phosphate	LIQUID	4.38095352	4.2265E+00			0.0167	ug/mL	96.474	% Recovery	
Sample Sequence 2																	
2	CCB	S1007290008		0 0			Fluoride	LIQUID		<1.6100E-03			1.61E-03	ug/mL			
2	CCB	S1007290008		0 0			Glycolate	LIQUID		<9.3700E-03			9.37E-03	ug/mL			
2	CCB	S1007290008		0 0			Acetate	LIQUID		<6.0400E-03			6.04E-03	ug/mL			
2	CCB	S1007290008		0 0			Formate	LIQUID		<4.6700E-03			4.67E-03	ug/mL			
2	CCB	S1007290008		0 0			Chloride	LIQUID		<9.9800E-03			9.98E-03	ug/mL			
2	CCB	S1007290008		0 0			Nitrite	LIQUID		<1.9200E-02			0.0192	ug/mL			
2	CCB	S1007290008		0 0			Sulfate	LIQUID		<1.8700E-02			0.0187	ug/mL			
2	CCB	S1007290008		0 0			Oxalate	LIQUID		<2.3100E-02			0.0231	ug/mL			
2	CCB	S1007290008		0 0			Bromide	LIQUID		<5.8000E-02			0.058	ug/mL			
2	CCB	S1007290008		0 0			Nitrate	LIQUID		<2.0800E-02			0.0208	ug/mL			
2	CCB	S1007290008		0 0			Phosphate	LIQUID		<1.6700E-02			0.0167	ug/mL			
Sample Sequence 3																	
3	LLS	S1007290009		0 0			Fluoride	LIQUID	.02985072	2.4450E-02			1.61E-03	ug/mL	81.908	% Recovery	
3	LLS	S1007290009		0 0			Glycolate	LIQUID	.185571976	1.4218E-01			9.37E-03	ug/mL	76.617	% Recovery	
3	LLS	S1007290009		0 0			Acetate	LIQUID	.225372936	1.9160E-01			6.04E-03	ug/mL	85.015	% Recovery	
3	LLS	S1007290009		0 0			Formate	LIQUID	.218407768	1.9513E-01			4.67E-03	ug/mL	89.342	% Recovery	
3	LLS	S1007290009		0 0			Chloride	LIQUID	.0422387688	6.4450E-02			9.98E-03	ug/mL	152.58	% Recovery	
3	LLS	S1007290009		0 0			Nitrite	LIQUID	.276616672	2.5018E-01			0.0192	ug/mL	90.443	% Recovery	
3	LLS	S1007290009		0 0			Sulfate	LIQUID	.325372848	3.0959E-01			0.0187	ug/mL	95.149	% Recovery	

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021046

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
3	LLS	S1007290009		0 0			Oxalate	LIQUID	.2611938	2.2954E-01			0.0231	ug/mL	87.881	% Recovery	
3	LLS	S1007290009		0 0			Bromide	LIQUID	.302984808	2.4970E-01			0.058	ug/mL	82.413	% Recovery	
3	LLS	S1007290009		0 0			Nitrate	LIQUID	.275621648	2.3592E-01			0.0208	ug/mL	85.596	% Recovery	
3	LLS	S1007290009		0 0			Phosphate	LIQUID	.274626624	2.3349E-01			0.0167	ug/mL	85.021	% Recovery	
Sample Sequence 4																	
4	BLNK-PREP	S1007280098		0 0	W		Fluoride	LIQUID		<1.6100E-03			1.61E-03	ug/mL			
4	BLNK-PREP	S1007280098		0 0	W		Glycolate	LIQUID		<9.3700E-03			9.37E-03	ug/mL			
4	BLNK-PREP	S1007280098		0 0	W		Acetate	LIQUID		<6.0400E-03			6.04E-03	ug/mL			
4	BLNK-PREP	S1007280098		0 0	W		Formate	LIQUID		<4.6700E-03			4.67E-03	ug/mL			
4	BLNK-PREP	S1007280098		0 0	W		Chloride	LIQUID		<9.9800E-03			9.98E-03	ug/mL			
4	BLNK-PREP	S1007280098		0 0	W		Nitrite	LIQUID		<1.9200E-02			0.0192	ug/mL			
4	BLNK-PREP	S1007280098		0 0	W		Sulfate	LIQUID		<1.8700E-02			0.0187	ug/mL			
4	BLNK-PREP	S1007280098		0 0	W		Oxalate	LIQUID		<2.3100E-02			0.0231	ug/mL			
4	BLNK-PREP	S1007280098		0 0	W		Bromide	LIQUID		<5.8000E-02			0.058	ug/mL			
4	BLNK-PREP	S1007280098		0 0	W		Nitrate	LIQUID		<2.0800E-02			0.0208	ug/mL			
4	BLNK-PREP	S1007280098		0 0	W		Phosphate	LIQUID		<1.6700E-02			0.0167	ug/mL			
Sample Sequence 5																	
5	STD-PREP	S1007290013		0 0			Fluoride	LIQUID	.6	6.0515E-01			1.61E-03	ug/mL	100.86	% Recovery	
5	STD-PREP	S1007290013		0 0			Glycolate	LIQUID	3.73	3.7036E+00			9.37E-03	ug/mL	99.293	% Recovery	
5	STD-PREP	S1007290013		0 0			Acetate	LIQUID	4.53	4.4531E+00			6.04E-03	ug/mL	98.303	% Recovery	
5	STD-PREP	S1007290013		0 0			Formate	LIQUID	4.39	4.4594E+00			4.67E-03	ug/mL	101.58	% Recovery	
5	STD-PREP	S1007290013		0 0			Chloride	LIQUID	.849	8.5296E-01			9.98E-03	ug/mL	100.47	% Recovery	
5	STD-PREP	S1007290013		0 0			Nitrite	LIQUID	5.56	5.5790E+00			0.0192	ug/mL	100.34	% Recovery	
5	STD-PREP	S1007290013		0 0			Sulfate	LIQUID	6.54	6.4754E+00			0.0187	ug/mL	99.012	% Recovery	
5	STD-PREP	S1007290013		0 0			Oxalate	LIQUID	5.25	5.3174E+00			0.0231	ug/mL	101.28	% Recovery	
5	STD-PREP	S1007290013		0 0			Bromide	LIQUID	6.09	5.8798E+00			0.058	ug/mL	96.548	% Recovery	
5	STD-PREP	S1007290013		0 0			Nitrate	LIQUID	5.54	5.4545E+00			0.0208	ug/mL	98.457	% Recovery	
5	STD-PREP	S1007290013		0 0			Phosphate	LIQUID	5.52	5.4699E+00			0.0167	ug/mL	99.093	% Recovery	
Sample Sequence 6																	
6	SAMPLE	S10V001232		0 0	W		Fluoride	SOLID	N/A	4.1026E-01			0.016044	ug/g			c
6	SAMPLE	S10V001232		0 0	W		Glycolate	SOLID	N/A	<9.3373E-02			0.093373	ug/g			U
6	SAMPLE	S10V001232		0 0	W		Acetate	SOLID	N/A	<6.0189E-02			0.060189	ug/g			U
6	SAMPLE	S10V001232		0 0	W		Formate	SOLID	N/A	7.0752E-02			0.046537	ug/g			J
6	SAMPLE	S10V001232		0 0	W		Chloride	SOLID	N/A	2.9885E-01			0.099452	ug/g			J
6	SAMPLE	S10V001232		0 0	W		Nitrite	SOLID	N/A	9.9741E-01			0.19133	ug/g			J
6	SAMPLE	S10V001232		0 0	W		Sulfate	SOLID	N/A	1.6758E+00			0.18635	ug/g			J
6	SAMPLE	S10V001232		0 0	W		Oxalate	SOLID	N/A	<2.3019E-01			0.23019	ug/g			U
6	SAMPLE	S10V001232		0 0	W		Bromide	SOLID	N/A	<5.7798E-01			0.57798	ug/g			U
6	SAMPLE	S10V001232		0 0	W		Nitrate	SOLID	N/A	4.0919E+00			0.20727	ug/g			
6	SAMPLE	S10V001232		0 0	W		Phosphate	SOLID	N/A	1.4624E+00			0.16642	ug/g			J
Sample Sequence 7																	
7	SAMPLE	S10V001249		0 0	W		Fluoride	SOLID	N/A	9.9535E-01			0.016073	ug/g			c

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021046

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
7	SAMPLE	S10V001249		0 0	W		Glycolate	SOLID	N/A	<9.3545E-02			0.093545	ug/g			U
7	SAMPLE	S10V001249		0 0	W		Acetate	SOLID	N/A	<6.0300E-02			0.0603	ug/g			U
7	SAMPLE	S10V001249		0 0	W		Formate	SOLID	N/A	1.2389E-01			0.046623	ug/g			J
7	SAMPLE	S10V001249		0 0	W		Chloride	SOLID	N/A	4.7501E-01			0.099635	ug/g			J
7	SAMPLE	S10V001249		0 0	W		Nitrite	SOLID	N/A	1.0647E+00			0.19168	ug/g			J
7	SAMPLE	S10V001249		0 0	W		Sulfate	SOLID	N/A	2.8062E+00			0.18669	ug/g			J
7	SAMPLE	S10V001249		0 0	W		Oxalate	SOLID	N/A	1.0542E+00			0.23062	ug/g			J
7	SAMPLE	S10V001249		0 0	W		Bromide	SOLID	N/A	<5.7904E-01			0.57904	ug/g			U
7	SAMPLE	S10V001249		0 0	W		Nitrate	SOLID	N/A	5.0194E+00			0.20766	ug/g			
7	SAMPLE	S10V001249		0 0	W		Phosphate	SOLID	N/A	1.6503E+00			0.16672	ug/g			J
Sample Sequence 8																	
8	SAMPLE	S10V001289		0 0	W		Fluoride	SOLID	N/A	1.4053E+00			0.015785	ug/g			c
8	SAMPLE	S10V001289		0 0	W		Glycolate	SOLID	N/A	<9.1866E-02			0.091866	ug/g			U
8	SAMPLE	S10V001289		0 0	W		Acetate	SOLID	N/A	<5.9218E-02			0.059218	ug/g			U
8	SAMPLE	S10V001289		0 0	W		Formate	SOLID	N/A	1.1265E-01			0.045786	ug/g			J
8	SAMPLE	S10V001289		0 0	W		Chloride	SOLID	N/A	4.7767E-01			0.097847	ug/g			J
8	SAMPLE	S10V001289		0 0	W		Nitrite	SOLID	N/A	1.0326E+00			0.18824	ug/g			J
8	SAMPLE	S10V001289		0 0	W		Sulfate	SOLID	N/A	3.0463E+01			0.18334	ug/g			
8	SAMPLE	S10V001289		0 0	W		Oxalate	SOLID	N/A	1.5750E+00			0.22648	ug/g			J
8	SAMPLE	S10V001289		0 0	W		Bromide	SOLID	N/A	<5.6865E-01			0.56865	ug/g			U
8	SAMPLE	S10V001289		0 0	W		Nitrate	SOLID	N/A	4.0591E+00			0.20393	ug/g			
8	SAMPLE	S10V001289		0 0	W		Phosphate	SOLID	N/A	1.0199E+00			0.16373	ug/g			J
Sample Sequence 9																	
9	SAMPLE	S10V001309		0 0	W		Fluoride	SOLID	N/A	1.4775E+00			0.015991	ug/g			c
9	SAMPLE	S10V001309		0 0	W		Glycolate	SOLID	N/A	<9.3065E-02			0.093065	ug/g			U
9	SAMPLE	S10V001309		0 0	W		Acetate	SOLID	N/A	<5.9991E-02			0.059991	ug/g			U
9	SAMPLE	S10V001309		0 0	W		Formate	SOLID	N/A	1.0925E-01			0.046384	ug/g			J
9	SAMPLE	S10V001309		0 0	W		Chloride	SOLID	N/A	3.5488E-01			0.099124	ug/g			J
9	SAMPLE	S10V001309		0 0	W		Nitrite	SOLID	N/A	1.3960E+00			0.1907	ug/g			J
9	SAMPLE	S10V001309		0 0	W		Sulfate	SOLID	N/A	3.0828E+00			0.18573	ug/g			
9	SAMPLE	S10V001309		0 0	W		Oxalate	SOLID	N/A	<2.2944E-01			0.22944	ug/g			U
9	SAMPLE	S10V001309		0 0	W		Bromide	SOLID	N/A	<5.7607E-01			0.57607	ug/g			U
9	SAMPLE	S10V001309		0 0	W		Nitrate	SOLID	N/A	2.8460E+00			0.20659	ug/g			
9	SAMPLE	S10V001309		0 0	W		Phosphate	SOLID	N/A	9.7535E-01			0.16587	ug/g			J
Sample Sequence 10																	
10	SAMPLE	S10V001349		0 0	W		Fluoride	SOLID	N/A	1.2337E+00			0.016052	ug/g			c
10	SAMPLE	S10V001349		0 0	W		Glycolate	SOLID	N/A	<9.3418E-02			0.093418	ug/g			U
10	SAMPLE	S10V001349		0 0	W		Acetate	SOLID	N/A	<6.0218E-02			0.060218	ug/g			U
10	SAMPLE	S10V001349		0 0	W		Formate	SOLID	N/A	1.8095E-01			0.046559	ug/g			J
10	SAMPLE	S10V001349		0 0	W		Chloride	SOLID	N/A	5.6320E-01			0.0995	ug/g			J
10	SAMPLE	S10V001349		0 0	W		Nitrite	SOLID	N/A	7.2361E-01			0.19142	ug/g			J
10	SAMPLE	S10V001349		0 0	W		Sulfate	SOLID	N/A	3.3967E+00			0.18644	ug/g			

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LABCORE Completed Batch Report for Batch# 00021046

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
10	SAMPLE	S10V001349		0 0	W		Oxalate	SOLID	N/A	4.0418E-01			0.2303	ug/g			J
10	SAMPLE	S10V001349		0 0	W		Bromide	SOLID	N/A	<5.7825E-01			0.57825	ug/g			U
10	SAMPLE	S10V001349		0 0	W		Nitrate	SOLID	N/A	3.7183E+00			0.20737	ug/g			
10	SAMPLE	S10V001349		0 0	W		Phosphate	SOLID	N/A	8.4784E-01			0.1665	ug/g			J
Sample Sequence 11																	
11	CCV	S1007290011		0 0			Fluoride	LIQUID	.4761906	4.8626E-01			1.61E-03	ug/mL	102.11	% Recovery	
11	CCV	S1007290011		0 0			Glycolate	LIQUID	2.96031823	2.9716E+00			9.37E-03	ug/mL	100.38	% Recovery	
11	CCV	S1007290011		0 0			Acetate	LIQUID	3.59523903	3.5910E+00			6.04E-03	ug/mL	99.881	% Recovery	
11	CCV	S1007290011		0 0			Formate	LIQUID	3.48412789	3.6051E+00			4.67E-03	ug/mL	103.47	% Recovery	
11	CCV	S1007290011		0 0			Chloride	LIQUID	.673809699	7.3145E-01			9.98E-03	ug/mL	108.55	% Recovery	
11	CCV	S1007290011		0 0			Nitrite	LIQUID	4.41269956	4.4971E+00			0.0192	ug/mL	101.91	% Recovery	
11	CCV	S1007290011		0 0			Sulfate	LIQUID	5.19047754	5.2614E+00			0.0187	ug/mL	101.37	% Recovery	
11	CCV	S1007290011		0 0			Oxalate	LIQUID	4.16666775	4.2979E+00			0.0231	ug/mL	103.15	% Recovery	
11	CCV	S1007290011		0 0			Bromide	LIQUID	4.83333459	4.7097E+00			0.058	ug/mL	97.441	% Recovery	
11	CCV	S1007290011		0 0			Nitrate	LIQUID	4.39682654	4.3984E+00			0.0208	ug/mL	100.04	% Recovery	
11	CCV	S1007290011		0 0			Phosphate	LIQUID	4.38095352	4.4064E+00			0.0167	ug/mL	100.58	% Recovery	
Sample Sequence 12																	
12	CCB	S1007290012		0 0			Fluoride	LIQUID		<1.6100E-03			1.61E-03	ug/mL			
12	CCB	S1007290012		0 0			Glycolate	LIQUID		<9.3700E-03			9.37E-03	ug/mL			
12	CCB	S1007290012		0 0			Acetate	LIQUID		<6.0400E-03			6.04E-03	ug/mL			
12	CCB	S1007290012		0 0			Formate	LIQUID		<4.6700E-03			4.67E-03	ug/mL			
12	CCB	S1007290012		0 0			Chloride	LIQUID		<9.9800E-03			9.98E-03	ug/mL			
12	CCB	S1007290012		0 0			Nitrite	LIQUID		<1.9200E-02			0.0192	ug/mL			
12	CCB	S1007290012		0 0			Sulfate	LIQUID		<1.8700E-02			0.0187	ug/mL			
12	CCB	S1007290012		0 0			Oxalate	LIQUID		<2.3100E-02			0.0231	ug/mL			
12	CCB	S1007290012		0 0			Bromide	LIQUID		<5.8000E-02			0.058	ug/mL			
12	CCB	S1007290012		0 0			Nitrate	LIQUID		<2.0800E-02			0.0208	ug/mL			
12	CCB	S1007290012		0 0			Phosphate	LIQUID		<1.6700E-02			0.0167	ug/mL			
Sample Sequence 13																	
13	SAMPLE	S10V001369		0 0	W		Fluoride	SOLID	N/A	2.8695E+00			0.015988	ug/g			Jc
13	SAMPLE	S10V001369		0 0	W		Glycolate	SOLID	N/A	<9.3049E-02			0.093049	ug/g			U
13	SAMPLE	S10V001369		0 0	W		Acetate	SOLID	N/A	4.5174E-01			0.05998	ug/g			J
13	SAMPLE	S10V001369		0 0	W		Formate	SOLID	N/A	1.2740E+00			0.046375	ug/g			J
13	SAMPLE	S10V001369		0 0	W		Chloride	SOLID	N/A	2.3260E+00			0.099106	ug/g			
13	SAMPLE	S10V001369		0 0	W		Nitrite	SOLID	N/A	1.4675E+00			0.19067	ug/g			J
13	SAMPLE	S10V001369		0 0	W		Sulfate	SOLID	N/A	7.5505E+01			0.1857	ug/g			
13	SAMPLE	S10V001369		0 0	W		Oxalate	SOLID	N/A	9.9523E-01			0.22939	ug/g			J
13	SAMPLE	S10V001369		0 0	W		Bromide	SOLID	N/A	<5.7597E-01			0.57597	ug/g			U
13	SAMPLE	S10V001369		0 0	W		Nitrate	SOLID	N/A	5.9783E+00			0.20655	ug/g			
13	SAMPLE	S10V001369		0 0	W		Phosphate	SOLID	N/A	<1.6584E-01			0.16584	ug/g			U
Sample Sequence 14																	
14	DUP	S1007280099	S10V001369	0 0	W		Fluoride	SOLID	2.8695E+00	1.9055E+00			0.015961	ug/g	40.377	% RPD	

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LABCORE Completed Batch Report for Batch# 00021046

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
14	DUP	S1007280099	S10V001369	0 0	W		Glycolate	SOLID	<9.3049E-02	<9.2892E-02			0.092892	ug/g			
14	DUP	S1007280099	S10V001369	0 0	W		Acetate	SOLID	4.5174E-01	3.5690E-01			0.059879	ug/g	23.456	% RPD	
14	DUP	S1007280099	S10V001369	0 0	W		Formate	SOLID	1.2740E+00	1.0630E+00			0.046297	ug/g	18.056	% RPD	
14	DUP	S1007280099	S10V001369	0 0	W		Chloride	SOLID	2.3260E+00	2.1687E+00			0.098939	ug/g	7.0001	% RPD	
14	DUP	S1007280099	S10V001369	0 0	W		Nitrite	SOLID	1.4675E+00	4.1340E-01			0.19034	ug/g	112.09	% RPD	
14	DUP	S1007280099	S10V001369	0 0	W		Sulfate	SOLID	7.5505E+01	7.3626E+01			0.18539	ug/g	2.5201	% RPD	
14	DUP	S1007280099	S10V001369	0 0	W		Oxalate	SOLID	9.9523E-01	1.0064E+00			0.22901	ug/g	1.1158	% RPD	
14	DUP	S1007280099	S10V001369	0 0	W		Bromide	SOLID	<5.7597E-01	<5.7500E-01			0.575	ug/g			
14	DUP	S1007280099	S10V001369	0 0	W		Nitrate	SOLID	5.9783E+00	4.6310E+00			0.20621	ug/g	25.398	% RPD	
14	DUP	S1007280099	S10V001369	0 0	W		Phosphate	SOLID	<1.6584E-01	4.1340E-01			0.16556	ug/g	85.478	% RPD	
Sample Sequence 15																	
15	SPK-PREDIG	S1007290016	S10V001369	0 0			Fluoride	SOLID	95.31	7.3058E+01			1.61E-03	ug/g	73.642	% Recovery	
15	SPK-PREDIG	S1007290016	S10V001369	0 0			Glycolate	SOLID	372.86	3.7735E+02			9.37E-03	ug/g	101.2	% Recovery	
15	SPK-PREDIG	S1007290016	S10V001369	0 0			Acetate	SOLID	457	4.5076E+02			6.04E-03	ug/g	98.536	% Recovery	
15	SPK-PREDIG	S1007290016	S10V001369	0 0			Formate	SOLID	450	4.6483E+02			4.67E-03	ug/g	103.01	% Recovery	
15	SPK-PREDIG	S1007290016	S10V001369	0 0			Chloride	SOLID	106.1	1.0763E+02			9.98E-03	ug/g	99.248	% Recovery	
15	SPK-PREDIG	S1007290016	S10V001369	0 0			Nitrite	SOLID	569	5.7951E+02			0.0192	ug/g	101.59	% Recovery	
15	SPK-PREDIG	S1007290016	S10V001369	0 0			Sulfate	SOLID	1518	1.2781E+03			0.0187	ug/g	79.224	% Recovery	
15	SPK-PREDIG	S1007290016	S10V001369	0 0			Oxalate	SOLID	534.9	4.9318E+02			0.0231	ug/g	92.014	% Recovery	
15	SPK-PREDIG	S1007290016	S10V001369	0 0			Bromide	SOLID	608.8	6.0939E+02			0.058	ug/g	100.1	% Recovery	
15	SPK-PREDIG	S1007290016	S10V001369	0 0			Nitrate	SOLID	608.3	6.1543E+02			0.0208	ug/g	100.19	% Recovery	
15	SPK-PREDIG	S1007290016	S10V001369	0 0			Phosphate	SOLID	552	2.6205E+02			0.0167	ug/g	47.473	% Recovery	
Sample Sequence 16																	
16	SPK-IC	S1007290010	S10V001369	0 0			Fluoride	SOLID	60	9.0495E-01			1.61E-03	ug/g	102.66	% Recovery	
16	SPK-IC	S1007290010	S10V001369	0 0			Glycolate	SOLID	373	3.7536E+00			9.37E-03	ug/g	100.63	% Recovery	
16	SPK-IC	S1007290010	S10V001369	0 0			Acetate	SOLID	453	4.5001E+00			6.04E-03	ug/g	98.336	% Recovery	
16	SPK-IC	S1007290010	S10V001369	0 0			Formate	SOLID	439	4.6378E+00			4.67E-03	ug/g	102.72	% Recovery	
16	SPK-IC	S1007290010	S10V001369	0 0			Chloride	SOLID	84.9	1.0926E+00			9.98E-03	ug/g	101.11	% Recovery	
16	SPK-IC	S1007290010	S10V001369	0 0			Nitrite	SOLID	556	5.7136E+00			0.0192	ug/g	100.11	% Recovery	
16	SPK-IC	S1007290010	S10V001369	0 0			Sulfate	SOLID	654	1.4139E+01			0.0187	ug/g	99.939	% Recovery	
16	SPK-IC	S1007290010	S10V001369	0 0			Oxalate	SOLID	525	5.5987E+00			0.0231	ug/g	104.73	% Recovery	
16	SPK-IC	S1007290010	S10V001369	0 0			Bromide	SOLID	609	6.0695E+00			0.058	ug/g	99.663	% Recovery	
16	SPK-IC	S1007290010	S10V001369	0 0			Nitrate	SOLID	554	6.2388E+00			0.0208	ug/g	101.75	% Recovery	
16	SPK-IC	S1007290010	S10V001369	0 0			Phosphate	SOLID	552	5.4504E+00			0.0167	ug/g	98.739	% Recovery	
Sample Sequence 17																	
17	SAMPLE	S10V001389		0 0	W		Fluoride	SOLID	N/A	7.7567E-01			0.015812	ug/g			c
17	SAMPLE	S10V001389		0 0	W		Glycolate	SOLID	N/A	<9.2023E-02			0.092023	ug/g			U
17	SAMPLE	S10V001389		0 0	W		Acetate	SOLID	N/A	<5.9319E-02			0.059319	ug/g			U
17	SAMPLE	S10V001389		0 0	W		Formate	SOLID	N/A	3.5945E-01			0.045864	ug/g			J
17	SAMPLE	S10V001389		0 0	W		Chloride	SOLID	N/A	8.3263E-01			0.098014	ug/g			J
17	SAMPLE	S10V001389		0 0	W		Nitrite	SOLID	N/A	1.1977E+00			0.18856	ug/g			J
17	SAMPLE	S10V001389		0 0	W		Sulfate	SOLID	N/A	8.4687E+00			0.18365	ug/g			

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LABCORE Completed Batch Report for Batch# 00021046

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
17	SAMPLE	S10V001389		0 0	W		Oxalate	SOLID	N/A	<2.2687E-01			0.22687	ug/g			U
17	SAMPLE	S10V001389		0 0	W		Bromide	SOLID	N/A	<5.6962E-01			0.56962	ug/g			U
17	SAMPLE	S10V001389		0 0	W		Nitrate	SOLID	N/A	3.6471E+00			0.20428	ug/g			
17	SAMPLE	S10V001389		0 0	W		Phosphate	SOLID	N/A	5.4340E-01			0.16401	ug/g			J
Sample Sequence 18																	
18	SAMPLE	S10V001409		0 0	W		Fluoride	SOLID	N/A	1.1878E+00			0.015956	ug/g			c
18	SAMPLE	S10V001409		0 0	W		Glycolate	SOLID	N/A	<9.2864E-02			0.092864	ug/g			U
18	SAMPLE	S10V001409		0 0	W		Acetate	SOLID	N/A	1.2775E-01			0.059861	ug/g			J
18	SAMPLE	S10V001409		0 0	W		Formate	SOLID	N/A	2.6967E-01			0.046283	ug/g			J
18	SAMPLE	S10V001409		0 0	W		Chloride	SOLID	N/A	1.3585E+00			0.09891	ug/g			J
18	SAMPLE	S10V001409		0 0	W		Nitrite	SOLID	N/A	7.2141E-01			0.19029	ug/g			J
18	SAMPLE	S10V001409		0 0	W		Sulfate	SOLID	N/A	5.3977E+01			0.18533	ug/g			
18	SAMPLE	S10V001409		0 0	W		Oxalate	SOLID	N/A	<2.2894E-01			0.22894	ug/g			U
18	SAMPLE	S10V001409		0 0	W		Bromide	SOLID	N/A	<5.7483E-01			0.57483	ug/g			U
18	SAMPLE	S10V001409		0 0	W		Nitrate	SOLID	N/A	8.9245E+00			0.20614	ug/g			
18	SAMPLE	S10V001409		0 0	W		Phosphate	SOLID	N/A	4.6947E-01			0.16551	ug/g			J
Sample Sequence 19																	
19	CCV	S1007290015		0 0			Fluoride	LIQUID	.4761906	4.7988E-01			1.61E-03	ug/mL	100.77	% Recovery	
19	CCV	S1007290015		0 0			Glycolate	LIQUID	2.96031823	2.9502E+00			9.37E-03	ug/mL	99.657	% Recovery	
19	CCV	S1007290015		0 0			Acetate	LIQUID	3.59523903	3.5548E+00			6.04E-03	ug/mL	98.876	% Recovery	
19	CCV	S1007290015		0 0			Formate	LIQUID	3.48412789	3.5639E+00			4.67E-03	ug/mL	102.29	% Recovery	
19	CCV	S1007290015		0 0			Chloride	LIQUID	.673809699	7.2170E-01			9.98E-03	ug/mL	107.11	% Recovery	
19	CCV	S1007290015		0 0			Nitrite	LIQUID	4.41269956	4.4233E+00			0.0192	ug/mL	100.24	% Recovery	
19	CCV	S1007290015		0 0			Sulfate	LIQUID	5.19047754	5.2038E+00			0.0187	ug/mL	100.26	% Recovery	
19	CCV	S1007290015		0 0			Oxalate	LIQUID	4.16666775	4.2473E+00			0.0231	ug/mL	101.94	% Recovery	
19	CCV	S1007290015		0 0			Bromide	LIQUID	4.83333459	4.6446E+00			0.058	ug/mL	96.095	% Recovery	
19	CCV	S1007290015		0 0			Nitrate	LIQUID	4.39682654	4.3514E+00			0.0208	ug/mL	98.966	% Recovery	
19	CCV	S1007290015		0 0			Phosphate	LIQUID	4.38095352	4.3359E+00			0.0167	ug/mL	98.972	% Recovery	
Sample Sequence 20																	
20	CCB	S1007290014		0 0			Fluoride	LIQUID		<1.6100E-03			1.61E-03	ug/mL			
20	CCB	S1007290014		0 0			Glycolate	LIQUID		<9.3700E-03			9.37E-03	ug/mL			
20	CCB	S1007290014		0 0			Acetate	LIQUID		<6.0400E-03			6.04E-03	ug/mL			
20	CCB	S1007290014		0 0			Formate	LIQUID		<4.6700E-03			4.67E-03	ug/mL			
20	CCB	S1007290014		0 0			Chloride	LIQUID		<9.9800E-03			9.98E-03	ug/mL			
20	CCB	S1007290014		0 0			Nitrite	LIQUID		<1.9200E-02			0.0192	ug/mL			
20	CCB	S1007290014		0 0			Sulfate	LIQUID		<1.8700E-02			0.0187	ug/mL			
20	CCB	S1007290014		0 0			Oxalate	LIQUID		<2.3100E-02			0.0231	ug/mL			
20	CCB	S1007290014		0 0			Bromide	LIQUID		<5.8000E-02			0.058	ug/mL			
20	CCB	S1007290014		0 0			Nitrate	LIQUID		<2.0800E-02			0.0208	ug/mL			
20	CCB	S1007290014		0 0			Phosphate	LIQUID		<1.6700E-02			0.0167	ug/mL			

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021046

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00021046

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021046

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1007290007	CCV				
2	S1007290008	CCB				
3	S1007290009	LLS				
4	S1007280098	BLNK-PREP				
5	S1007290013	STD-PREP				
6	S10V001232	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
7	S10V001249	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
8	S10V001289	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
9	S10V001309	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
10	S10V001349	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
11	S1007290011	CCV				
12	S1007290012	CCB				
13	S10V001369	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
14	S1007280099	DUP	S10V001369			
15	S1007290016	SPK-PREDIG	S10V001369			
16	S1007290010	SPK-IC	S10V001369			
17	S10V001389	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
18	S10V001409	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
19	S1007290015	CCV				
20	S1007290014	CCB				

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020647

Analyst: LaPlant, Kelsey **Book#:** 27N29A

Instrument: IC-5 (IC-NH4)

Method: IC - NH4, LA-533-101 Rev/Mod Q-0

Specification: C Farm WMC 2010-2

Prep Batch: 00020636

Batch Comment:

C-Farm WMC 2010-2 IC Instrument Run Batch.KJL.

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	CCV	S1007140095		0 0			Ammonium	LIQUID	2.92079205	2.8970E+00			0.012	ug/mL	99.184	% Recovery	
Sample Sequence 2																	
2	CCB	S1007140094		0 0			Ammonium	LIQUID		<1.2000E-02			0.012	ug/mL			
Sample Sequence 3																	
3	LLS	S1007140096		0 0			Ammonium	LIQUID	.11568425	1.0548E-01			0.012	ug/mL	91.179	% Recovery	
Sample Sequence 4																	
4	BLNK-PREP	S1007140063		0 0	S		Ammonium	LIQUID		2.7820E-01			0.12	ug/mL			
Sample Sequence 5																	
5	LCS	S1007140062		0 0	S		Ammonium	LIQUID	295	2.9299E+02			0.6	ug/mL	99.319	% Recovery	
Sample Sequence 6																	
6	SAMPLE	S10V001234		0 0	S		Ammonium	SOLID	N/A	3.2191E+00			0.47981	ug/g			BJ
Sample Sequence 7																	
7	DUP	S1007140064	S10V001234	0 0	S		Ammonium	SOLID	3.2191E+00	1.4871E+00			0.47752	ug/g	73.605	% RPD	
Sample Sequence 8																	
8	SPK-PREDIG	S1007140065	S10V001234	0 0	S		Ammonium	SOLID	115.48365	1.1467E+02			0.46985	ug/g	96.506	% Recovery	
Sample Sequence 9																	
9	SPK-IC	S1007140097	S10V001234	0 0			Ammonium	SOLID	297.95	2.8459E+00			0.012	ug/g	93.742	% Recovery	
Sample Sequence 10																	
10	SAMPLE	S10V001251		0 0	S		Ammonium	SOLID	N/A	2.4355E+00			0.47942	ug/g			BJ
Sample Sequence 11																	
11	SAMPLE	S10V001291		0 0	S		Ammonium	SOLID	N/A	1.7653E+00			0.4662	ug/g			BJ
Sample Sequence 12																	
12	SAMPLE	S10V001311		0 0	S		Ammonium	SOLID	N/A	1.5453E+00			0.47904	ug/g			BJ
Sample Sequence 13																	
13	CCV	S1007140099		0 0			Ammonium	LIQUID	2.92079205	2.9050E+00			0.012	ug/mL	99.458	% Recovery	
Sample Sequence 14																	
14	CCB	S1007140098		0 0			Ammonium	LIQUID		<1.2000E-02			0.012	ug/mL			

Comments Section:

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020647

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00020647

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00020647

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1007140095	CCV				
2	S1007140094	CCB				
3	S1007140096	LLS				
4	S1007140063	BLNK-PREP				
5	S1007140062	LCS				
6	S10V001234	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
7	S1007140064	DUP	S10V001234			
8	S1007140065	SPK-PREDIG	S10V001234			
9	S1007140097	SPK-IC	S10V001234			
10	S10V001251	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
11	S10V001291	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
12	S10V001311	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
13	S1007140099	CCV				
14	S1007140098	CCB				

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

Date: 23 May 2011
To: CH2M Hill (technical representative)
From: Analytical Quality Associates, Inc.
Project: WMA C
Subject: Radiochemical - Sample Data Group (SDG) 20100520

INTRODUCTION

This memorandum presents the results of data validation for SDG 20100520 prepared by 222-S Laboratory. A list of samples validated along with the analytical methods is provided in the following table.

Sample ID	Sample Date	Media	Validation Level	Analytical Methods
B26JK3	7/07/2010	Soil	C	See note 1
B26C70	7/08/2010	Soil	C	See note 1

1 – Gamma spectrometry, Sr-89/90, Tritium, Se-79, C-14, Ni-63, I-129, Isotopic-Am/Cm, Isotopic-Pu

Data validation was conducted in accordance with the CHPRC validation statement of work and the Field Sampling and Analysis Plan for Waste Management Area C, RPP-PLAN-40564, Rev. 2 (SAP). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested By Client

DATA QUALITY OBJECTIVES

- **Holding Times and Sample Preservation**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. There are no specific holding time and preservation requirements for radiochemical soil analysis.

- **Blanks**

The blank data results are reviewed to assess the extent of contamination introduced through sampling, sample preparation, and analysis.

Laboratory Blanks

All laboratory blank results were acceptable with the following exception. The Se-79

laboratory blank result was > the minimum detectable concentration. The Se-79 result for sample B26JK3 was a non-detect and should not be qualified for the blank infraction. The Se-79 result for sample B26C70 was a detect <5X the blank result and would be qualified as an estimate and flagged "J," but was further flagged "J+" due to high chemical yield.

Trip Blanks

No trip blanks were submitted for validation.

Field Blanks

No field blanks were submitted for validation.

Equipment Blanks

No equipment blanks were submitted for validation.

- **Accuracy**

Accuracy is evaluated by reviewing matrix spike sample results, laboratory control sample results, and chemical recovery factors. Chemical recovery factors are determined through use of a carrier or tracer and provide assessment of the chemical separation process that is affected by the laboratory procedure, sample matrix, and/or interference. Chemical recovery factors are used to correct sample concentration, uncertainty, and MDC results. According to the SAP, the matrix spike sample accuracy limits are 75% to 125% and the laboratory control sample accuracy limits are 80% to 120%.

Matrix Spike (MS) Samples

All MS recoveries were acceptable.

Laboratory Control Samples (LCSs)

All LCS recoveries were acceptable with the following exception. LCS analysis was not performed for Se-79. The Se-79 result for sample B26JK3 was a non-detect and should be qualified as an estimate and flagged "UJ." The Se-79 result for sample B26C70 was a detect and would be qualified as an estimate and flagged "J," but was further flagged "J+" due to high chemical yield.

Carrier/Tracer Recovery Factors

All carrier/tracer recovery factors were acceptable.

- **Precision**

Precision is evaluated by reviewing laboratory duplicate, field duplicate, and field split sample results. These QC results provide information on the laboratory reproducibility and whether sampling activities are adequate to acquire consistent sample results. According to the SAP, the relative percent difference (RPD) limits are ±30%. The RPD limits for reported analytes not listed in the SAP are specified by the DV procedure. When duplicate RPDs exceed the limits and have associated results <5X the MDCs the precision limits are ones specified by the DV procedure.

Laboratory Duplicate Samples

All laboratory duplicate results were acceptable.

Field Duplicate Samples

Sample B26JK2 is the field duplicate to sample B26JK3 but was not chosen for validation.

Field Split Samples

No field splits were submitted for validation.

- **Detection Limits**

Reported MDCs are compared against the required detection limits (RDLs) to ensure that laboratory detection limits meet the required criteria.

All reported sample MDCs were below the RDLs.

- **Completeness**

SDG 20100520 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Minor deficiencies leading to qualification of sample results as estimates were due to lack of LCS analyses for Se-79 and Se-79 laboratory blank contamination. See the table in Appendix 2 for a listing of all affected sample results.

REFERENCES

GRP-GD-002, Rev. 0, Change 0, *Data Validation for Radiochemical Analyses*, August 2010.

RPP-PLAN-40564, Rev. 2, *Field Sampling and Analysis Plan for Waste Management Area C*, December 2009

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers that may be applied by data validators in compliance with the CHPRC statement of work are as follows:

- **U** — The constituent was analyzed for and was not detected. The data should be considered usable for decision-making purposes.

- **UJ** — The constituent was analyzed for and was not detected. Due to a quality control deficiency identified during data validation the value reported may not accurately reflect the MDC. The data should be considered usable for decision-making purposes.

- **J** — Indicates the constituent was analyzed for and detected. The associated value is estimated due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J+** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected positive bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **J-** — Indicates the constituent was analyzed for and detected. The associated value is estimated with a suspected negative bias due to a quality control deficiency identified during data validation. The data should be considered usable for decision-making purposes.

- **UR** — Indicates the constituent was analyzed for and not detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

- **R** — Indicates the constituent was analyzed for and detected; however, due to an identified quality control deficiency the data should be considered unusable for decision-making purposes.

Appendix 2

Summary of Data Qualification

Radiochemical Data Qualification Summary			
SDG: 20100520	Reviewer: AQA	Project: WMA C	Page 1 of 1
Analyte(s)	**DV Flag**	**Samples Affected**	**Reason**
Se-79	UJ	B26JK3	Lack of LCS data
Se-79	J	B26C70	Lack of LCS data and lab blank contamination

Comments: None

Appendix 3

Annotated Laboratory Reports

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26JK3
Sample Depth: Surface Dup

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001242			%WATERA	%WATER-APD	%	n/a	n/a	4.240	n/a	n/a	n/a	n/a	0.01000	n/a	
S10V001242			57-12-5	Cyanide	ug/g	94.1	<0.0370	<2.71	n/a	n/a	n/a	n/a	2.71	n/a	U
S10V001242			7439-97-6	Mercury	ug/g	97.4	<1.00E-04	0.0232	n/a	n/a	n/a	n/a	8.98E-03	n/a	J
S10V001242			PH	pH	unitless	n/a	n/a	8.92	n/a	n/a	n/a	n/a	0.0100	n/a	
S10V001242			18496-25-8	Sulfide	ug/g	99.2	<0.180	30.1	n/a	n/a	n/a	n/a	7.08	n/a	J
S10V001243			13966-00-2	Potassium-40	uCi/g	n/a	n/a	9.26E-06	n/a	n/a	n/a	n/a	5.83E-06	40.98	J
S10V001243			10198-40-0	Cobalt-60	uCi/g	101	<3.07E-07	<3.08E-07	n/a	n/a	n/a	n/a	3.08E-07	n/a	U
S10V001243			14234-35-6	Antimony-125	uCi/g	n/a	<7.49E-07	<8.34E-07	n/a	n/a	n/a	n/a	8.34E-07	n/a	U
S10V001243			10045-97-3	Cesium-137	uCi/g	105	<4.16E-07	3.83E-06	n/a	n/a	n/a	n/a	3.46E-07	9.84	
S10V001243			14683-23-9	Europium-152	uCi/g	n/a	<1.56E-06	<1.51E-06	n/a	n/a	n/a	n/a	1.51E-06	n/a	U
S10V001243			15585-10-1	Europium-154	uCi/g	n/a	<9.28E-07	<9.81E-07	n/a	n/a	n/a	n/a	9.81E-07	n/a	U
S10V001243			14391-16-3	Europium-155	uCi/g	n/a	<4.74E-07	<5.04E-07	n/a	n/a	n/a	n/a	5.04E-07	n/a	U
S10V001243			15067-28-4	Lead-214	uCi/g	n/a	n/a	1.17E-06	n/a	n/a	n/a	n/a	6.81E-07	21.66	
S10V001243			14274-82-9	Thorium-228	uCi/g	n/a	<8.76E-06	<9.51E-06	n/a	n/a	n/a	n/a	9.51E-06	n/a	U
S10V001243			15065-10-8	Thorium-234	uCi/g	n/a	<2.72E-06	<3.23E-06	n/a	n/a	n/a	n/a	3.23E-06	n/a	U
S10V001243			15046-84-1	Iodine-129	uCi/g	112	<1.62E-07	<1.76E-07	n/a	n/a	n/a	n/a	1.76E-07	n/a	U
S10V001245		WV	14133-76-7	Technetium-99	ug/g	105	<4.00E-06	<3.91E-06	n/a	n/a	n/a	n/a	3.91E-06	n/a	U
S10V001246		W	14762-75-5	Carbon-14	uCi/g	93.9	<1.07E-06	<6.63E-07	n/a	n/a	n/a	n/a	6.63E-07	n/a	U
S10V001246		W	10028-17-8	Tritium	uCi/g	90.5	<2.69E-07	<1.33E-06	n/a	n/a	n/a	n/a	1.33E-06	n/a	U
S10V001247		A	7440-36-0	Antimony	ug/g	104	<2.00E-04	0.165	n/a	n/a	n/a	n/a	9.64E-03	n/a	b
S10V001248		O	120-82-1	1,2,4-Trichlorobenzene	ug/kg	66.6	<77.4	<77.1	n/a	n/a	n/a	n/a	77.1	n/a	U
S10V001248		O	95-50-1	1,2-Dichlorobenzene	ug/kg	n/a	<101	<100	n/a	n/a	n/a	n/a	100	n/a	U
S10V001248		O	121-14-2	2,4-Dinitrotoluene	ug/kg	81.3	<38.1	<38.0	n/a	n/a	n/a	n/a	38.0	n/a	U
S10V001248		O	95-95-4	2,4,5-Trichlorophenol	ug/kg	n/a	<44.0	<43.8	n/a	n/a	n/a	n/a	43.8	n/a	U
S10V001248		O	88-06-2	2,4,6-Trichlorophenol	ug/kg	n/a	<49.5	<49.3	n/a	n/a	n/a	n/a	49.3	n/a	U
S10V001248		O	95-48-7	2-Methylphenol	ug/kg	n/a	<57.5	<57.3	n/a	n/a	n/a	n/a	57.3	n/a	U
S10V001248		O	88-75-5	2-Nitrophenol	ug/kg	n/a	<53.7	<53.5	n/a	n/a	n/a	n/a	53.5	n/a	U
S10V001248		O	65794-96-9	3 &4 Methylphenol	ug/kg	n/a	<51.4	<51.2	n/a	n/a	n/a	n/a	51.2	n/a	U

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26JK3
Sample Depth: Surface Dup

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001253		E	CM-243/244	Curium-243/244	uCi/g	n/a	<2.22E-07	<2.04E-07	n/a	n/a	n/a	n/a	2.04E-07	n/a	U
S10V001253		E	14596-10-2	Americium-241	uCi/g	96.5	<5.54E-07	<5.10E-07	n/a	n/a	n/a	n/a	5.10E-07	n/a	U
S10V001253		E	15510-73-3	Curium-242	uCi/g	n/a	<2.22E-07	<2.04E-07	n/a	n/a	n/a	n/a	2.04E-07	n/a	U
S10V001253		E	PU-239/240	Plutonium-239/240	uCi/g	103	<7.86E-07	<3.22E-07	n/a	n/a	n/a	n/a	3.22E-07	n/a	U
S10V001253		E	13981-16-3	Plutonium-238	uCi/g	n/a	<7.86E-07	<3.22E-07	n/a	n/a	n/a	n/a	3.22E-07	n/a	U
S10V001254		E	SR-89/90	Strontium-89/90	uCi/g	98.6	<7.04E-07	2.34E-06	n/a	n/a	n/a	n/a	2.39E-07	21.595	
S10V001255		E	13981-37-8	Nickel-63	uCi/g	102	<5.95E-06	<5.36E-06	n/a	n/a	n/a	n/a	5.36E-06	n/a	U
S10V001255		E	15758-45-9	Selenium-79 UJ	uCi/g	n/a	2.51E-06	<3.22E-06	n/a	n/a	n/a	n/a	3.22E-06	n/a	U

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C70
Sample Depth: 10-12

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
S10V001299			BULKDENSI	Bulk Density	g/mL	n/a	n/a	2.29	n/a	n/a	n/a	n/a	n/a	n/a	
S10V001300			BULKDENSI	Bulk Density	g/mL	n/a	n/a	2.18	n/a	n/a	n/a	n/a	n/a	n/a	
S10V001301			BULKDENSI	Bulk Density	g/mL	n/a	n/a	2.17	n/a	n/a	n/a	n/a	n/a	n/a	
S10V001302			%WATERA	%WATER-APD	%	n/a	n/a	5.140	4.960	5.050	3.564	n/a	0.01000	n/a	
S10V001302			57-12-5	Cyanide	ug/g	94.1	<0.0370	<2.55	n/a	n/a	n/a	n/a	2.55	n/a	U
S10V001302			7439-97-6	Mercury	ug/g	97.4	<1.00E-04	<9.90E-03	n/a	n/a	n/a	n/a	9.90E-03	n/a	U
S10V001302			PH	pH	unitless	n/a	n/a	8.97	n/a	n/a	n/a	n/a	0.0100	n/a	
S10V001302			18496-25-8	Sulfide	ug/g	99.2	<0.180	20.2	n/a	n/a	n/a	n/a	7.24	n/a	J
S10V001303			10198-40-0	Cobalt-60	uCi/g	101	<3.07E-07	<3.42E-07	<3.46E-07	n/a	n/a	n/a	3.42E-07	n/a	U
S10V001303			14234-35-6	Antimony-125	uCi/g	n/a	<7.49E-07	<9.47E-07	<9.05E-07	n/a	n/a	n/a	9.47E-07	n/a	U
S10V001303			10045-97-3	Cesium-137	uCi/g	105	<4.16E-07	<4.57E-07	<4.26E-07	n/a	n/a	n/a	4.57E-07	n/a	U
S10V001303			14683-23-9	Europium-152	uCi/g	n/a	<1.56E-06	<1.79E-06	<1.71E-06	n/a	n/a	n/a	1.79E-06	n/a	U
S10V001303			15585-10-1	Europium-154	uCi/g	n/a	<9.28E-07	<1.08E-06	<1.03E-06	n/a	n/a	n/a	1.08E-06	n/a	U
S10V001303			14391-16-3	Europium-155	uCi/g	n/a	<4.74E-07	<6.07E-07	<5.58E-07	n/a	n/a	n/a	6.07E-07	n/a	U
S10V001303			14733-03-0	Bismuth-214	uCi/g	n/a	n/a	1.24E-06	n/a	n/a	n/a	n/a	6.30E-07	31.87	J
S10V001303			15067-28-4	Lead-214	uCi/g	n/a	n/a	1.57E-06	9.71E-07	1.27E-06	47.4	n/a	8.32E-07	19.99	
S10V001303			14274-82-9	Thorium-228	uCi/g	n/a	<8.76E-06	<1.12E-05	<1.05E-05	n/a	n/a	n/a	1.12E-05	n/a	U
S10V001303			15065-10-8	Thorium-234	uCi/g	n/a	<2.72E-06	<3.81E-06	<3.66E-06	n/a	n/a	n/a	3.81E-06	n/a	U
S10V001303			15046-84-1	Iodine-129	uCi/g	112	<1.62E-07	<1.61E-07	n/a	n/a	n/a	n/a	1.61E-07	n/a	U
S10V001305		WV	14133-76-7	Technetium-99	ug/g	105	<4.00E-06	<4.01E-06	n/a	n/a	n/a	n/a	4.01E-06	n/a	U
S10V001306		W	14762-75-5	Carbon-14	uCi/g	93.9	<1.07E-06	<6.77E-07	n/a	n/a	n/a	n/a	6.77E-07	n/a	U
S10V001306		W	10028-17-8	Tritium	uCi/g	90.5	<2.69E-07	<1.35E-06	n/a	n/a	n/a	n/a	1.35E-06	n/a	U
S10V001307		A	7440-36-0	Antimony	ug/g	104	<2.00E-04	0.0926	n/a	n/a	n/a	n/a	9.39E-03	n/a	Jb
S10V001308		O	120-82-1	1,2,4-Trichlorobenzene	ug/kg	66.6	<77.4	<76.6	n/a	n/a	n/a	70.4	76.6	n/a	U
S10V001308		O	95-50-1	1,2-Dichlorobenzene	ug/kg	n/a	<101	<99.6	n/a	n/a	n/a	n/a	99.6	n/a	U
S10V001308		O	121-14-2	2,4-Dinitrotoluene	ug/kg	81.3	<38.1	<37.7	n/a	n/a	n/a	89.8	37.7	n/a	U
S10V001308		O	95-95-4	2,4,5-Trichlorophenol	ug/kg	n/a	<44.0	<43.5	n/a	n/a	n/a	n/a	43.5	n/a	U
S10V001308		O	88-06-2	2,4,6-Trichlorophenol	ug/kg	n/a	<49.5	<49.0	n/a	n/a	n/a	n/a	49.0	n/a	U

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

C Farm WMC 2010-2
Data Summary Report

Sample Group: 20100520
Core Number: C7672
Customer Sample ID: B26C70
Sample Depth: 10-12

LS
5-23-2011

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
~~S10V001312~~		~~A~~	~~14133-76-7~~	~~Technetium-99~~	~~ug/g~~	~~110~~	~~<1.50E-05~~	~~<1.47E-04~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~1.47E-04~~	~~n/a~~	~~U~~
S10V001312		A	SN-117	Tin-117	ug/g	106	<5.00E-04	0.0130	n/a	n/a	n/a	n/a	4.91E-03	n/a	J
~~S10V001312~~		~~A~~	~~15832-50-5~~	~~Tin-126~~	~~ug/g~~	~~n/a~~	~~<1.00E-05~~	~~3.04E-04~~	~~n/a~~	~~n/a~~	~~n/a~~	~~n/a~~	~~9.82E-05~~	~~n/a~~	~~J~~
S10V001313		E	CM-243/244	Curium-243/244	uCi/g	n/a	<2.22E-07	<2.07E-07	<2.31E-07	n/a	n/a	n/a	2.07E-07	n/a	U
S10V001313		E	14596-10-2	Americium-241	uCi/g	96.5	<5.54E-07	<5.17E-07	<5.79E-07	n/a	n/a	n/a	5.17E-07	n/a	U
S10V001313		E	15510-73-3	Curium-242	uCi/g	n/a	<2.22E-07	<2.07E-07	<2.31E-07	n/a	n/a	n/a	2.07E-07	n/a	U
S10V001313		E	PU-239/240	Plutonium-239/240	uCi/g	103	<7.86E-07	<2.73E-07	<3.09E-07	n/a	n/a	n/a	2.73E-07	n/a	U
S10V001313		E	13981-16-3	Plutonium-238	uCi/g	n/a	<7.86E-07	<2.73E-07	<3.09E-07	n/a	n/a	n/a	2.73E-07	n/a	U
S10V001314		E	SR-89/90	Strontium-89/90	uCi/g	98.6	<7.04E-07	<2.17E-07	<8.82E-07	n/a	n/a	n/a	2.17E-07	n/a	U
S10V001315		E	13981-37-8	Nickel-63	uCi/g	102	<5.95E-06	<8.92E-06	<9.07E-06	n/a	n/a	n/a	8.92E-06	n/a	U
S10V001315		E	15758-45-9	Selenium-79 J	uCi/g	n/a	2.51E-06	3.77E-06	3.36E-06	3.56E-06	11.5	n/a	1.58E-06	202.816	BJ

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range
b - MS/MSD Outside Range
U - Less Than Detection Limit
J - Estimated
B - Blank Contamination

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

222-S LABORATORY

FINAL ANALYTICAL REPORT FOR SAMPLES FROM WASTE MANAGEMENT AREA C FOR CORE HOLE C7672 IN SUPPORT OF RCRA SOIL CHARACTERIZATION

1.0 INTRODUCTION

This final report presents the results for the samples taken from Waste Management Area C between July 7, 2010 and July 16, 2010. The samples were analyzed in accordance with RPP-PLAN-40564, *Field Sampling and Analysis Plan for Sites P and L at Waste Management Area C* (FSAP); RPP-PLAN-38777, *Sampling and Analysis Plan for Phase 2 Characterization of Vadose Zone Soil in Waste Management Area C* (SAP); ATL-MP-1011, *ATL Quality Assurance Project Plan for 222-S Laboratory* (QAPP); SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*; and the additional guidance given by the client's point of contact.

Because the 222-S Laboratory facility was designed to analyze hazardous and complex tank waste samples, most SW-846 test methods performed at the 222-S Laboratory contain deviations that are listed in an appendix in the analytical procedures. All other known deviations or variances from SW-846 are documented in this narrative. The following attachments are included in this report.

Attachment 1	Data Summary Report
Attachment 2	Sample Breakdown Diagrams
Attachment 3	Holding Time Report
Attachment 4	Additional Organic Analyses QC Results
Attachment 5	Tentatively Identified Compounds (TIC) for Organic Analyses
Attachment 6	Geological Report
Attachment 7	Characterization Change Notices (CCN) and Correspondence
Attachment 8	Receipt Paperwork

2.0 SAMPLE RECEIPT AND BREAKDOWN

2.1 SAMPLE RECEIPT

A total of seven core intervals and two surface grab samples from core hole C7672 along with six field blanks, six trip blanks, and one equipment blank were received by the 222-S Laboratory between July 7, 2010 and July 16, 2010. The samples were delivered in a cooler with ice or, in the case of the volatile organic soil samples, in a freezer. The temperatures of the temperature blanks were measured and recorded on the sample receipt check list and/or the chain of custody form.

The chain of custody requested that conductivity be analyzed on the soil samples. Since this analysis was not listed in the SAP or FSAP it was not performed. The client has indicated that

this analysis may be performed later after a CCN is issued to cover the change to the FSAP (see Attachment 7).

2.2 SAMPLE BREAKDOWN

The laboratory received each core interval as a set of volatile organic analysis (VOA) samples and three liner samples when complete core recovery was obtained. The VOA samples were made from the shoe section of each core interval following SW-846 5035. The liner samples from each core interval were extruded, described, and composited by the Washington River Protection Solutions, Inc. (WRPS) geologist. The geologist's report is included in Attachment 6. Provided sufficient samples existed, the composite for each core interval was analyzed as described in the SAP and FSAP. One core interval, I001, had less than full recovery (see Attachment 2 and Attachment 8). There was no I003 for core hole C7672. All intervals were extruded and composited in the normal manner. The surface samples were received as a single grab in a 500-mL jar and a set of VOA samples.

WRPS shipped subsamples of the composites to Test America Laboratories, Inc. (TAL) in St Louis, Missouri and Knoxville, Tennessee to be analyzed for dibutyl and monobutyl phosphate, total petroleum hydrocarbons (diesel and gasoline range), ethylene glycol, chlorinated pesticides, and polychlorinated biphenyls (Aroclors and congeners). TAL subsequently subcontracted the monobutyl and dibutyl phosphate analyses to Southwest Research Institute. The results of these analyses will be released in the final WRPS report.

3.0 ANALYTICAL RESULTS SUMMARY

The Data Summary Report (Attachment 1) presents the final analytical results for those analytes requested in the SAP and FSAP. Secondary analytes are only reported if detected. The TIC from gas chromatography-mass spectrometry (GC/MS) analysis of semivolatile organic compounds (SVOC) is presented in Attachment 5. In addition to the required isotopes, all isotopes with positive gamma energy analysis (GEA) results were reported.

The "Det Limit" column in Attachment 1 contains the method detection limit (MDL) for non-radionuclide analyses, or the minimum detectable activity for radionuclides.

In Attachment 1, the column labeled "A#" indicates the aliquot class or the method used for sample preparation before analysis. For solid samples, the aliquot classes are defined as follows:

"A" indicates samples that were prepared by SW-846 3050B.

"E" indicates samples that were prepared by a strong acid digest.

"O" indicates samples that were extracted for organic analysis.

"S" indicates samples that were prepared by a distillation.

"W" indicates samples that were prepared by a standard water digest.

"WV" indicates samples that were prepared by a Vadose water digest.

Samples without a letter identifier in the "A#" column were analyzed directly with no separate preparation or with sample preparation performed as a part of the procedure steps.

The "Qual Flags" column in Attachment 1 contains data qualifier flags that are defined as follows:

> "B" is used to indicate that the analyte was detected in the method or preparation blank and in the sample, and the result for the blank was greater than 5% of the reported sample result.
>
> "J" indicates that the reported result should be considered an estimate because it is below the quantitation limit. The "J" flag is applied to sample concentrations that are greater than the MDL but less than the quantitation limit or sample activity with a counting uncertainty greater than 30%.
>
> "N" indicates a TIC which has been named.
>
> "T" indicates a TIC.
>
> "U" indicates that the reported result is less than the calculated detection limit.
>
> "b" indicates that the matrix spike (MS) recovery was outside of the specified range in the QAPP or SAP.
>
> "c" indicates that the relative percent difference (RPD) between the sample and the duplicate is greater than 30%.

Manual calculations using rounded results from the Data Summary Report (Attachment 1) or result calculation forms may differ slightly from the actual results derived from the raw data.

3.1 SAMPLE DIGESTIONS

3.1.1 Radiochemistry Strong Acid Digestion

Strong acid digestions with a hot plate for the heat source were performed using a mixture of concentrated nitric and hydrochloric acids. For each digest, approximately 1 to 10 g of sample was digested depending on the analysis being performed. The digestate was then filtered and diluted to a final volume. This digestion was used for all radiochemical analyses except ^{3}H, ^{14}C, and ^{129}I. This digestion is a leach of the acid soluble species only.

3.1.2 SW-846 3050B - Acid Digestion-Heating Block

This acid digestion follows SW-846 3050B using a heating block and nitric and hydrochloric acids. An aliquot of approximately 5 g of sample was digested. All heating-block digestions were filtered and diluted to a final volume of 50 mL. In soil, this digestion is a leach of the acid soluble species only. This digestion was used for all inductively coupled plasma/mass spectrometry (ICP/MS) and inductively coupled plasma/atomic emission spectroscopy (ICP/AES) analyses except for ^{99}Tc and isotopic tin (^{117}Sn and ^{126}Sn) analyses. The digestion is modified for the ^{99}Tc analysis by using only nitric acid. This is done to eliminate the possibility of the formation a zinc-chlorine ion pair of mass 99. The laboratory believes this ion, when

present, is responsible for low level false positives. A separate digestion for antimony was prepared using additional hydrochloric acid, as recommended in SW-846.

3.1.3 Water Digestion

A water digestion or leach was prepared for the anions by ion chromatography, ^{14}C, and ^{3}H analyses using approximately 0.25 to 4 g of sample diluted to 25 mL. Sonification was used, and the leachate was then filtered. In soil, this digestion is a leach of the water soluble species only.

3.1.4 Vadose Water Digestion

A 70-g sample of soil was leached using a ratio of one part water to one part soil. To maintain a one-to-one ratio, the amount of water added to the sample was adjusted based on the percent moisture of the soil. The slurries were placed on a shaker table for about 1 hour. They were then transferred to a centrifuge tube and centrifuged at 4,000 rpm for 30 minutes. An unfiltered aliquot was set aside for alkalinity analysis. The remainder was filtered using a disposable vacuum filtration system. The filtrates were transferred to a clean bottle and then analyzed for anions using IC nitrate analysis (intervals I005 to I010) and ^{99}Tc by ICP/MS analysis.

3.2 INORGANIC ANALYSES

3.2.1 Cyanide

The cyanide analysis by distillation and spectrophotometry was performed on the grab samples, liner composite samples, and the equipment blank. All analyses met the SW-846 holding time of 14 days. There was no required reporting limit in the SAP for cyanide. The target detection limit was 0.5 µg/g, which is lower than what the current laboratory method (lachet micro-distillation) can reach. There were no notable quality control (QC) issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.2 Sulfide

Sulfide analysis by distillation and ion selective electrode was performed on the grab samples, liner composite samples, and the equipment blank. All analyses met the SW-846 holding time of 7 days. There was no required reporting limit in the SAP for sulfide. The target detection limit was 5 µg/g. All sample results had adjusted MDLs of approximately 7 µg/g. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.3 pH Analysis

The pH analysis was performed on the grab samples, liner composite samples, and equipment blank. These analyses met all QC requirements in the FSAP, SAP, and QAPP. The FSAP lists a pH holding time requirement of “as soon as possible.” All pH measurements were taken after the water leach was performed. The sampling to analysis time varied from 6 to 15 days (see Attachment 3). There is no correlation between pH results and days to analysis, and the results

fall within an expected range for alkaline soils. This indicates that the variation in time has no apparent effect on the results.

3.2.4 Mercury

Analysis for Hg by cold-vapor graphic furnace/atomic absorption was performed on the grab samples, liner composite samples, and the equipment bank. All results met the QC requirements in the FSAP, SAP, and QAPP. All analyses met the holding time of 28 days. This analysis met the required and target detection limits.

3.2.5 Ion Chromatography – Ammonium

Analysis for ammonium was performed using a distillation preparation of the grab samples, the liner composite samples, and the equipment blank. There is no regulatory holding time limit promulgated for ammonium in soil. The SAP lists an administrative holding time of 7 days. The laboratory believes that after distillation and preservation, the holding time is 28 days based on U.S. Environmental Protection Agency drinking water and waste water holding times for preserved samples. All samples met these holding times. These analyses met the target detection limit listed in the SAP. There was no required reporting limit in the SAP or FSAP for ammonium.

Batch 20647: The RPD between the duplicate and the sample exceeded the required 30%. Since the result for this analyte was below the quantitation limit, the criterion does not apply and reanalysis is not required. Ammonium was detected in the preparation blanks at a level below the quantitation limit and above the MDL. Ammonium was also detected in the samples at a similar level; these results have been flagged with a “B”. Since all results were below the quantitation limit, reanalysis was not required.

Batch 20662: Ammonium was detected in the preparation blanks at a level below the quantitation limit and above the MDL. Since ammonium was not detected in the sample reanalysis was not required.

Batch 20716: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20930: The RPD between the sample and duplicate exceeded the required 30%. Since the result for this analyte was below the quantitation limit, the criterion does not apply and reanalysis is not required.

3.2.6 Ion Chromatography – Anions and Small Organic Acids

Ion chromatography analysis was performed on all grab samples, liner composite samples, and the equipment blank. The laboratory met all of the required and target detection limits. All analyses were within the applicable SW-846 holding times. The sample spikes used for the standard water digestions are predigestion spikes.

Batch 20596: The result for nitrate in the preparation blank was slightly below the quantitation limit. Since the sample was non-detect for nitrate, the blank is acceptable.

Batch 21046: The RPD between the sample and duplicate for fluoride exceeded the required 30% at 40%. The laboratory believes this was due to sample inhomogeneity, which is indicated by high RPDs for the other anions in this sample. All fluoride results in this batch have been flagged with a "c". The RPD for nitrite was above the required 30%, however the result was below the quantitation limit, and the criterion does not apply. The low level standard (LLS) for chloride exceeded the ±50% requirement in SW-846 at 153%. This could indicate a high bias for results near the LLS level. Since all chloride results were below the continuous calibration verification sample (CCV) level, a "J" was applied, even to the results above the laboratory's quantitation limit (the LLS level).

Batch 21073: The low level standard (LLS) for chloride exceeded the ±50% requirement in SW-846 at 153%. This could indicate a high bias for results near the LLS level. Since the result was below quantitation level, the data quality was not affected.

3.2.7 Inductively Coupled Plasma/Atomic Emission Spectroscopy

The ICP/AES analysis was performed on an acid-digest (SW-846 3050B) of all grab samples, liner composite samples, and the equipment blank. The ICP/AES analysis was unable to obtain the required detection limit for antimony, arsenic, cadmium, lead, selenium, silver, and thallium for the soil sample. These elements have been reported from separate ICP/MS analyses. Total uranium has not been reported by the ICP/AES analysis since it cannot meet the required detection limits in the SAP. The isotopic uranium analysis by ICP/MS met the required detection limit for ^{238}U, which is essentially total uranium. The overall data usability was not affected. For all other metals reported by ICP/AES, all target and required detection limits were met. SW-846 lists the holding time for ICP/AES metals as 6 months. All analyses met the holding times.

Batch 21204: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21230: The interference check standard-AB (ICSAB) had a result above the quantitation limits for neodymium. This indicates that spectral interference was occurring. Neodymium results were not reported due to the high probability that they were the result of this interference. Results slightly above the MDL for cadmium, chromium, manganese, and silver in the ICSAB indicate a possible high bias for these elements. However, the recovery of these elements in the ICSAB was within the ±20% requirement; this indicates no significant bias was present. Low levels of iron and calcium were detected in the preparation blank, but reanalysis was not required since these levels were less than 5% of the lowest sample result.

The MS recoveries for aluminum, calcium, iron, magnesium, manganese, potassium, phosphorous, sodium, and titanium exceeded the ±25% requirement in the FSAP and SAP. Since the sample results for these elements exceeded the MS level by more than four times, this criterion does not apply.

The MS recovery for silicon exceeded the ±25% requirement in the SAP and FSAP. The laboratory believes this was due to matrix interference. Reanalysis was not required since this is secondary element. It should be noted that silicon is not listed with other elements in SW-846 3050B, section 1.1, under "Scope and Application" for the method and does not perform consistently when using this digest.

The RPD between the sample and the duplicate exceeded the ±30% requirement in the SAP for manganese. The laboratory believes this was due to sample inhomogeneity and, with the client's permission, the result has been reported (see Attachment 7).

3.2.8 Inductively Coupled Plasma/Mass Spectroscopy

The ICP/MS actinide and trace metal analyses were performed on the standard SW-846 3050 acid digestion of all grab samples and liner composite samples. The ICP/MS actinide analysis was also performed on the equipment blank. The ICP/MS ^{126}Sn and ^{99}Tc analysis was performed on the sample digest without the addition of hydrochloric acid. Hydrochloric acid is not used for ^{99}Tc analysis because of the potential formation of a ZnCl ion pair with mass 99. ICP/MS trace metal analysis for antimony was perform on the SW-846 3050 digest with additional hydrochloric acid, which is required to keep antimony in the solution. In addition to these acid digests, ICP/MS ^{99}Tc analysis was performed on a vadose water digest of all solid samples.

Direct is the most accurate type of calibration; however, standard material is not commercially available for all of the isotopes of interest. Concentrations of those isotopes without available standards are estimated based on the instrument's mass-response curve, which is generated by using the intensity/concentration relationship for the available isotope standards. Results estimated in this manner are designated "semi-quantitative."

Table 1. Inductively Coupled Plasma-Mass Spectroscopy Standards and Spikes

Standard Type	Analytes Analyzed
Initial calibration verification (nondigested)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Acid digest standard (laboratory control standard)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Predigest spike (MS)	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
Post-digest spike	^{232}Th, ^{235}U, ^{238}U, ^{237}Np, ^{99}Tc, ^{117}Sn
No standard or spike of either type	^{126}Sn, ^{230}Th, ^{233}U, ^{234}U, ^{236}U

3.2.8.1 Technetium-99 and Tin-126

The required detection limit listed in the SAP for ^{99}Tc was met. The target detection limit for ^{99}Tc was not met. There were no required or target detection limits for ^{126}Sn listed in the SAP. The SAP lists the holding time for isotopic analytes as 6 months. All samples were analyzed within the holding time.

Because there is no available source for ^{126}Sn, ^{117}Sn is used to monitor the chemical recovery for this analysis. Though not specifically requested in the SAP, ^{117}Sn is reported for the laboratory control sample (LCS) and MS in order to demonstrate method accuracy and presence of possible matrix interference.

All sample results were above the MDL and below the quantitation limit with one exception. Based on this, the laboratory suspects that a low level isobaric interference is present in these samples at mass 126. The laboratory believes the most likely suspect is ^{126}Te, but there are other possible candidates. One sample result was above the quantitation level for ^{126}Sn. Users of this data should be aware that all positive ^{126}Sn results in the report may be due to isobaric interference. The laboratory is currently evaluating how to quantify the possible isobaric interferences for ^{126}Sn.

Batch 22899: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21705: The MS for ^{117}Sn was recovered below the ±25% requirement. Similar results have been observed in other batches; this appears to be a matrix interference issue. This batch was not reanalyzed, but others have been with no improvement. Tin results should be considered biased low at these levels. All samples in the batch have been flagged with a "b". The laboratory is investigating change the acid mixture used to perform low level ^{126}Sn analysis in hopes of improving spike recoveries.

3.2.8.2 Technetium-99 (Vadose Water Digest)

The required and target detection limits listed in the SAP for ^{99}Tc were met. The SAP lists a holding time of 6 months for isotopic analytes. All analyses met this holding time.

Batch 23804: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.2.8.3 Actinides

The required and target detection limits were met for all isotopes and in all samples. The SAP lists the holding time for isotopic analytes as 6 months. All samples were analyzed within the holding time.

Batch 21671: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 23850: The results for ^{232}Th and ^{236}U in the preparation blank were slightly above the MDL. The sample in this batch demonstrated a similar result for ^{236}U and has been flagged with a "B". The sample result for ^{232}Th was below the MDL. Since all results were below the quantitation limit, the blank was acceptable and reanalysis was not required.

3.2.8.4 Trace Metals

Antimony, arsenic, cadmium, lead, selenium, silver, and thallium were analyzed by ICP/MS to obtain the required detection limits in the SAP. Except for the required detection limit for selenium, all required detection limits were met or the sample results were above the quantitation limit and the sample detection limit criteria do not apply. All target detection limits were met. The required detection limit for selenium was approximately an order of magnitude below the detection limit obtained by ICP/MS. The laboratory does not anticipate reaching this detection

limit for future projects. The adjusted MDL for selenium was approximately 0.12 µg/g. SW-846 lists the holding time for metals as 6 months. All samples were analyzed within the holding time.

Batch 21982: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21350: The MS recovery exceeded the required ±25% for antimony at 63%. Reanalysis was not performed due to a facility room outage. The client was informed of the outage (see Attachment 7) and these results were reported. A "b" was added to all sample results in the batch. Since an antimony-specific digestion was used, the laboratory believes the failure was due to matrix interference.

3.3 RADIOCHEMICAL ANALYSIS

The holding time listed in the SAP for radioactive isotopes is 6 months. The FSAP list the holding time as "none". SW-846 does not address holding times for radiochemical analytes. All radiochemical analyses met the 6-month holding time listed in the SAP. Holding time tables for these analytes have not been included in Attachment 3. With the exception of the ^{14}C and ^{3}H analyses, tracers and spikes are added prior to the digestion.

3.3.1 Gamma Energy Analysis

Gamma energy analysis was performed directly on the grab samples, liner composite samples, and the equipment blank. The SAP requires the reporting of all isotopes with positive results above the minimum detectable activity (MDA); therefore, isotopes additional to those required in the SAP were reported when detected. The GEA analysis met all of the required detection limits in the SAP. The laboratory was unable to meet any of the target detection limits.

Batch 21109: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21198: The RPD for ^{214}Pb was above the 30% requirement in the FSAP. Since the counting error was > 15%, this criterion does not apply.

3.3.2 Strontium-89/90

Strontium-89/90 analysis was performed on the grab samples, liner composite samples, and the equipment blank. All of the sample analyses met the required and target detection limits. The FSAP and SAP requested ^{90}Sr, not $^{89/90}Sr$, be reported. The 222-S Laboratory only performs the latter analysis. Since the half-life for ^{89}Sr is approximately 51 days and ^{89}Sr has not been produced at Hanford for years, $^{89/90}Sr$ is essentially ^{90}Sr. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.3.3 Tritium

The ^{3}H analysis by liquid scintillation counting (LSC) was performed on the equipment blank and a water leach of all grab samples and liner composite samples. This method only measured

the ^{3}H in the samples that could be dissolved in water. This analysis achieved the required and target detection limits in the FSAP.

Batches 21194 and 24544: There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21310: The laboratory failed to include an MS with this batch and did not analyze an MS for C7672 as required. This was discussed with the client (see Attachment 7), and a single sample was reanalyzed in a batch containing an MS in order to meet this requirement.

3.3.4 Selenium-79

The ^{79}Se analysis by LSC was performed on the grab samples, liner composite samples, and the equipment blank. The analysis achieved the target detection limit in the FSAP. No required detection limit was listed. No standard is currently available for ^{79}Se, and a cold carrier is used to monitor recovery and is measured gravimetrically. The ^{14}C LSC curve is used to determine the ^{79}Se results since their energies are similar. Since both ^{63}Ni and ^{79}Se use a single digestion batch that is equally split prior to the separation step, the maximum tracer/carrier recovery is 50%.

Batches 21328 and 23959: The preparation blanks demonstrated a positive result below the quantitation limit, as did the five samples in these batches. All results had very large counting uncertainties and were below the target detection limit. Because of these factors, reanalysis was not required. The associated positive results have been flagged with a “B”.

3.3.5 Carbon-14

The ^{14}C analysis by LSC was performed on a water leach of the grab samples and liner composite samples and directly on the equipment blank. The analysis achieved the required detection limit in the FSAP but exceeded the target detection limit. This analysis will only detect water soluble forms of ^{14}C.

Batch 23609: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 2130: Carbon-14 was detected in the method blank below the quantitation limit. Since ^{14}C was not detected in the sample, reanalysis was not required.

3.3.6 Nickel-63

The ^{63}Ni analysis by LSC was performed on the grab samples, liner composite samples, and equipment blank. The analysis achieved the required and target detection limits in the FSAP. Since both ^{63}Ni and ^{79}Se use a single digestion batch that is equally split prior to the separation step, the maximum trace/carrier recovery is 50%.

Batch 24148: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 21112: The preparation blanks demonstrated a positive result below the quantitation limit, as did the sample. All results had very large counting uncertainties and were below the target detection limit. Because of these factors, reanalysis was not required. The associated positive results have been flagged with a “B”.

Batch 22827: This duplicate for this batch was reanalyzed in batch 24148 along with the other sample that had a positive result for ^{63}Ni. All sample results were below the MDA in the reanalysis.

3.3.7 Iodine-129

Analysis for ^{129}I by low energy GEA was performed on an iodine-specific fusion digest of all grab samples, liner composite samples, and the equipment blank. The required and target detection limits in the SAP were met. There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

3.3.8 Americium-241, Curium-243/244, and Curium-242

Analysis for ^{241}Am, $^{243/244}$Cm, and ^{242}Cm by alpha energy analysis (AEA) was performed on the grab samples, liner composite samples, and the equipment blank. For this analysis, there were no notable issues with any batches and all QC requirements in the FSAP, SAP, and QAPP were met. The required and target detection limits in the SAP were met. The SAP and FSAP requested ^{243}Cm and ^{244}Cm be reported separately. Since it is not possible to resolve these individual isotopes when using AEA, these isotopes have been reported as $^{243/244}$Cm.

3.3.9 Plutonium-238 and Plutonium-239/240

Plutonium isotopic (^{238}Pu and $^{239/240}$Pu) analysis by AEA was performed on the grab samples, liner composite samples, and the equipment blank. For this analysis, there were no notable issues with any batches and all QC requirements in the FSAP, SAP, and QAPP were met. The required and target detection limits in the SAP were met.

3.4 ORGANIC ANALYSES

3.4.1 Volatile Organic Analysis

The VOA by GC/MS was performed on field samples by purge and trap. Field sampling methods, sample containers, and preservation methods followed SW-846 5035.The soil samples were delivered in a freezer in pre-weighed VOA vials with magnetic stir bars and approximately 5 g of sample. After receipt, the VOA samples were stored in a freezer. For each sample interval, an additional high level sample preserved in methanol was also received. These were not used because none of the results for the frozen samples were above the calibration range. The exact weight of the sample and the tare weight of the VOA vials were recorded by sampling personnel and delivered with the samples. One equipment blank, six field blanks, and six trip blanks were also received and analyzed. The samples were preserved with either HCl or H_2SO_4 to a pH < 2.The holding time for all samples is 14 days. All samples met the required holding time.

The VOA met the target and required detection limits in the SAP. The SAP and FSAP requested m-xylene and p-xylene be reported separately. Since it is not possible to resolve these individual compounds when performing VOA by SW-846 8260C, these compounds have been reported as m+p xylene. The SAP and FSAP request that methanol be reported with this analysis; however, this compound is too polar to be purged and cannot be reported (see Attachment 7). Isobutanol, another poor purger, was reported as a semivolatile organic compound.

All of the field blanks, trip blanks, and the equipment blank contained chloroform above the quantification level. Since chloroform is a common chlorination byproduct, the laboratory believes the source of chloroform was the water used by sampling personnel to make the various blanks.

The LCS, MS, and matrix spike duplicate (MSD) recoveries were compared against the laboratory's statistical process control (SPC) limits, as required by SW-846. The use of SPC limits is allowed in the FSAP, SAP, and QAPP.

Batches 20645 and 21741: There were no notable issues with these batches, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20614: The method blank results for acetone and methylene chloride were above the MDL but below the quantitation limit. The sample results were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required.

Batch 20618: The method blank result for 2-hexanone was above the MDL and below the quantitation limit. The sample result is similar to the blank and has been flagged with "B". Since all results were below the quantitation limit and 2-hexanone is not a primary analyte, reanalysis was not required.

Batch 20731: The method blank results for toluene and 2-butanone were above the MDL but below the quantitation limit. Since the sample results were non-detect for these compounds, reanalysis was not required.

Batch 20910: The method blank result for toluene was above the MDL but below the quantitation limit. Since the sample result was non-detect for this compound, reanalysis was not required. The MS and MSD experienced low recoveries for the internal standards. Since the sample internal standard (IS) recoveries were within the required range and the MS/MSD IS recoveries were sufficient to produce MS and MSD results that met acceptance criteria, the data for this batch was considered acceptable and reported.

Batch 20912: The method blank result for toluene was above the MDL but below the quantitation limit. The sample result is similar to the blank and has been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required.

Batch 21742: The MSD experienced low recoveries for the internal standards. Since the sample and MS IS recoveries were within the required range and the MSD IS recoveries were sufficient to produce MSD results that met acceptance criteria (RPD), the data for this batch was considered acceptable and reported.

Batch 21745: The method blank results for acetone, toluene, and styrene were above the MDL but below the quantitation limit. The sample results for toluene and styrene were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit and styrene is not a primary analyte, reanalysis was not required. The internal standards were recovered low (approximately -45%) in the sample but were sufficient to produce surrogate results within acceptance criteria. Since this was the second analysis of the sample and the holding time was expiring, the results have been reported. The original analysis had similar IS recoveries. The cause for low IS recoveries in the vadose sample has typically been associated with a leaking vial cap. However, the TIC analysis indicated the presence of hydrocarbons, which could also affect IS recoveries.

Batch 23601: The method blank results for 2-butanone and toluene were above the MDL but below the quantitation limit. The sample results for 2-butanone and toluene were similar to the blank and have been flagged with "B". Since all results were below the quantitation limit, reanalysis was not required. The MS recoveries for 1-butanol, hexone, acetone, and 2-butanone were all above their upper acceptance limit. This would indicate a high bias in the sample results for these compounds. Since 2-butanone was detected below the quantitation limit and other results were below the MDL, this data was acceptable. These results have been flagged with a "b". The results were from the second analysis of the sample. A third analysis was performed past the holding time but not reported. All results were similar. The MSD failed twice with extremely low IS recoveries. Since only one MS/MSD pair is required for each core hole (see Attachment 7) and there are three MS/MSD pairs for core C7672, project quality control requirements have been met.

3.4.2 Semivolatile Organic Analysis

The semivolatile organic analysis (SVOA) by GC/MS was performed on methylene chloride extractions of all grab samples and liner composite samples. All holding times were met.

The SVOA analysis met the required and target detection limits with two exceptions:

- The adjusted MDLs for cyclohexanone were above the 0.5-mg/kg target detection limit for most samples. This compound obtained detection limits between 0.5 mg/kg and 0.6 mg/kg.
- The adjusted MDLs for di-n-butyl-phthalate were above the target detection limit of 0.33 mg/kg. The analysis achieved a detection limit of between 0.5 mg/kg and 0.6 mg/kg for this compound.

LCS, MS, and MSD recoveries were compared against the laboratory's SPC limits, as required by SW-846. The use of SPC limits is permitted in the FSAP, SAP, and QAPP.

The SAP and FSAP requested m-cresol and p-cresol be reported separately. Since it is not possible to resolve these individual compounds when performing SVOA by SW-846 8270C, these compounds have been reported as m+p cresol.

Batch 20887: There were no notable issues with this batch, and all QC requirements in the FSAP, SAP, and QAPP were met.

Batch 20883: Butylbenzylphthalate was detected in the method blank and samples at slightly above the MDL and below the quantitation limit. Therefore, the blank is acceptable and reanalysis was unnecessary. Sample results have been flagged with a "B".

Batch 20921: Butylbenzylphthalate, bis(2-ethylhexyl) phthalate, and di-n-octylphthalate were detected in the method blank above the MDL and below the quantitation limit. Therefore, the blank is acceptable and reanalysis was unnecessary. Only Butylbenzylphthalate was detected in the samples, and these results have been flagged with a "B".

3.4.3 Tentatively Identified Compounds

Unassigned peaks or TICs were treated as follows. Standards were obtained and analyzed for each secondary analyte identified in the SAP. This data was accumulated in the Hanford library. Following analysis, the largest TICs with instrument responses greater than 10% of the response of the nearest internal standard were evaluated and compared to the Hanford library. The estimated concentration of these TICs was calculated using measured response factors from the Hanford library compound list.

After comparison to the Hanford library, remaining unknowns were compared to the National Institute of Standards and Technology's NIST 02, *HP Mass Spectral Libraries*. The estimated concentration of compounds identified in the NIST library was calculated based on an arbitrary response factor of 1.0. If the compounds were not identified as a result of this comparison, they were reported as "unknown." Summaries of the SVOA and VOA TICs from the field samples and method blanks are provided in Attachment 5. TICs that were found in the field samples and were present in the associated batch method blank have been flagged with "B".

4.0 PROCEDURES

Table 2 lists the analytical procedures used for analysis of the Area C samples.

Table 2. Analytical Procedures

Analysis	Preparation Method	Analysis Procedure
Inorganic Analyses		
Cyanide	LA-695-103, Rev. J-0 (SW-846 9010C)	LA-695-103, Rev. J-0 (SW-846 9014)
Sulfide	LA-361-101, Rev. D-0 (SW-846 9030B)	LA-361-101, Rev. D-0 (SW-846 9215)
pH (solid)	LA-212-105, Rev. G-0 (SW-846 9045D)	LA-212-105, Rev. G-0 (SW-846 9045D)
pH (liquid)		LA-212-106, Rev. H-0-A (SW-846 9040C)
Mercury – Cold Vapor Atomic Absorption	LA-325-110, Rev. A-0 (SW-846 7470A, 7471A)	LA-325-110, Rev. A-0 (SW-846 7470A, 7471A)
Ammonia – IC	LA-544-112, Rev. E-0	LA-533-101, Rev. Q-0

Analysis	Preparation Method	Analysis Procedure
Anions & Organic Acids – IC	LA-504-101, Rev. M-0	LA-533-115, Rev. J-0
Metals – ICP /AES	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-505-161, Rev. J-0-A (SW-846 6010C)
^{99}Tc, ^{126}Sn – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1
^{99}Tc – ICP/MS	08-ATL-078 Vadose Water Digest	LA-506-102, Rev. F-1
Metals – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1 (SW-846 6020A)
Actinides – ICP/MS	LA-505-163, Rev. G-0 (SW-846 3050B)	LA-506-102, Rev. F-1
Radiochemical Analyses		
GEA	Direct	LA-548-121, Rev. I-0
^{90}Sr – Separation/Beta counting (Solid)	LA-544-101, Rev. F-0	LA-220-101, Rev. J-0, I-0
^{3}H – LSC	LA-504-101, Rev. M-0	LA-218-111, Rev. G-0
^{14}C – LSC	LA-504-101, Rev. M-0	LA-348-104, Rev. H-0, I-0
^{79}Se – Separation/LSC	LA-544-101, Rev. F-0	LA-365-132, Rev. I-0
^{63}Ni – Separation/LSC	LA-544-101, Rev. F-0	LA-285-102, Rev. E-0
^{129}I – Separation/GEA	LA-378-105, Rev. C-0, D-0	LA-378-105, Rev. C-0, D-0
^{241}Am, $^{243/244,\ 242}$Cm – Separation/AEA	LA-544-101, Rev. F-0	LA-953-104, Rev. H-1
$^{239/240,\ 238}$Pu – Separation/AEA	LA-544-101, Rev. F-0	LA-953-104, Rev. H-1
Organic Analyses		
VOC – GC/MS	Direct	LA-523-118, Rev. G-O-A (SW-846 8260B)
SVOC – GC/MS	LA-523-138, Rev. G-0 (SW-846 3540C) LA-523-115, Rev. H (SW-846 3520C)	LA-523-135, Rev. D-0 (SW-846 8270C)

5.0 REFERENCES

ATL-MP-1011, 2010, *ATL Quality Assurance Project Plan for 222-S Laboratory*, Rev. 9, Advanced Technologies and Laboratories International, Inc., Richland, Washington.

NIST 02, 2002, *HP Mass Spectral Libraries*, July 2002 Release, Hewlett-Packard Company, Palo Alto, California.

SW-846, 1986, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods,* Third Edition, as amended, U.S. Environmental Protection Agency, Washington, D.C.

RPP-PLAN-40564, 2009, *Field Sampling and Analysis Plan for Sites P and L at Waste Management Area C,* Rev. 2, Washington River Protection Solutions, Inc.

RPP-PLAN-38777, 2009, *Sampling and Analysis Plan for Phase 2 Characterization of Vadose Zone Soil in Waste Management Area C*, Rev. 1, Washington River Protection Solutions, Inc.

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	V10-003-245	PAGE 1 OF 2

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8P	DATA TURNAROUND
Ekstrom / Campbell	TEMPLETON, AM	373-5589	BERLIN, PC	AIR QUALITY ☐	75 Days / 75 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
C7672 Surface Dup	WMA C Sampling for CMS		V10-003		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**ACTUAL SAMPLE DEPTH**	**COA**	**METHOD OF SHIPMENT**	
TFVS-09-003	TFVZ-09-000001	Surface Dup	N/A	Govt. Vehicle	
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
222-S Lab Operations			N/A		

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

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C
HOLDING TIME	14/40 Days
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B26JK3	SOIL	7/7/10	1030	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RR Ekstrom RR Ekstrom	7/7/10 1215	RH Steele RH Steele	7-7-10 1215
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

O ✓

GRP# 20100520
Sam# S10V001242

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V10-003-245	PAGE 2 OF 2
COLLECTOR Ekstrom / Campbell	**COMPANY CONTACT** TEMPLETON, AM	**TELEPHONE NO.** 373-5589	**PROJECT COORDINATOR** BERLIN, PC	**PRICE CODE** 8P	**DATA TURNAROUND**
SAMPLING LOCATION C7672 Surface Dup	**PROJECT DESIGNATION** WMA C Sampling for CMS		**SAF NO.** V10-003	**AIR QUALITY** ☐	**75 Days / 75 Days**
ICE CHEST NO. TFVS-09.003	**FIELD LOGBOOK NO.** TFVZ-09-00000	**ACTUAL SAMPLE DEPTH** Surface Dup	**COA** N/A	**METHOD OF SHIPMENT** Govt. Vehicle	
SHIPPED TO 222-S Lab Operations	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A		

SPECIAL INSTRUCTIONS

** After VOA bottles for the direct pushes are filled, the sampler will cap remaining liners for shipment to 222-S. Where capping is not possible, the sample shall be put into 500 mL or 250 mL glass bottles with Teflon-lined lids.

(1) Semi-VOA - 8270 Complete (TF); TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D; PCBs - 8082; Pesticides - 8081 (TF); 1668 PCB CONGENER (TCL); ICP Metals - 6010 (SW-846) (TF); Mercury - 7471 - (CV) (TF); 300.7_AMMONIUM (TF); IC Anions - 9056; Sulfide - 9215; Total Cyanide - 9014 (TF); pH (Soil) - 9045; Americium-241 (TF); C-14; CURIUM; GAMMA ENERGY ANALYSIS (TF); H3 - TRITIUM; I129_SEP_GEA (TF); Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Nickel-63 (TF); RADISO_ICPMS (TF); Selenium-79 (TF); Strontium-90; Conductivity - 9050_WE; Percent Solids (TF); Percent Water (TF);

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V10-003-182	PAGE 1 OF 2
COLLECTOR Campbell / Harris	COMPANY CONTACT TEMPLETON, AM	TELEPHONE NO. 373-5589	PROJECT COORDINATOR BERLIN, PC	PRICE CODE 8P AIR QUALITY ☐	DATA TURNAROUND 75 Days / 75 Days
SAMPLING LOCATION C7672 I002	PROJECT DESIGNATION WMA C Sampling for CMS		SAF NO. V10-003		
ICE CHEST NO. TFV2-09-003	FIELD LOGBOOK NO. TFV2-09-000001	ACTUAL SAMPLE DEPTH 10-12	COA n/A	METHOD OF SHIPMENT Govt. Vehicle	
SHIPPED TO 222-S Lab Operations	OFFSITE PROPERTY NO. n/A		BILL OF LADING/AIR BILL NO. n/A		

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS		
A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)	PRESERVATION	Cool~4C
		HOLDING TIME	14/40 Days
		TYPE OF CONTAINER	Gs jar/Liners
		NO. OF CONTAINER(S)	3
		VOLUME	160g
	SPECIAL HANDLING AND/OR STORAGE	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B26C70	SOIL	7-8-10	1055	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM Campbell Campbell	DATE/TIME 7-8-10 1220	RECEIVED BY/STORED IN	DATE/TIME 7-8-10 1220	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS -0° C Rehtad GRP# 2010005 20 SAM# 510V00 1299 1300 1301
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

Washington River Protection Solutions	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V10-003-182	PAGE 2 OF 2
COLLECTOR Campbell / Harris	COMPANY CONTACT TEMPLETON, AM	TELEPHONE NO. 373-5589	PROJECT COORDINATOR BERLIN, PC	PRICE CODE 8P AIR QUALITY ☐	DATA TURNAROUND 75 Days / 75 Days
SAMPLING LOCATION C7672 I002	PROJECT DESIGNATION WMA C Sampling for CMS		SAF NO. V10-003		
ICE CHEST NO. TFV2-09-003	FIELD LOGBOOK NO. TFV2-09-000001	ACTUAL SAMPLE DEPTH 10-12	COA n/A	METHOD OF SHIPMENT Govt. Vehicle	
SHIPPED TO 222-S Lab Operations	OFFSITE PROPERTY NO. n/A		BILL OF LADING/AIR BILL NO. n/A		

SPECIAL INSTRUCTIONS

** After VOA bottles for the direct pushes are filled, the sampler will cap remaining liners for shipment to 222-S. Where capping is not possible, the sample shall be put into 500 mL or 250 mL glass bottles with Teflon-lined lids.

(1) Semi-VOA - 8270 Complete (TF); TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D; PCBs - 8082; Pesticides - 8081 (TF); 1668 PCB CONGENER (TCL); ICP Metals - 6010 (SW-846) (TF); Mercury - 7471 - (CV) (TF); 300.7_AMMONIUM (TF); IC Anions - 9056; Sulfide - 9215; Total Cyanide - 9014 (TF); pH (Soil) - 9045; Americium-241 (TF); C-14; CURIUM; GAMMA ENERGY ANALYSIS (TF); H3 - TRITIUM; I129_SEP_GEA (TF); Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Nickel-63 (TF); RADISO_ICPMS (TF); Selenium-79 (TF); Strontium-90; Conductivity - 9050_WE; Percent Solids (TF); Percent Water (TF);

Appendix 5

Data Validation Supporting Documentation

Appendix B - Radiochemical Data Validation Checklist

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	(C)	D	E
PROJECT: WMA C			DATA PACKAGE: VSR11-045		
VALIDATOR: Carl Schloesslin		LAB: 222-S Lab		DATE: 5-23-2011	
			SDG: 20100520		
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90 X	Technetium-99	Alpha Spectroscopy X	Gamma Spectroscopy X	Se-79 X
Total Uranium	Radium-22	Tritium X	C-14 X	I-129 X	Ni-63 X
SAMPLES/MATRIX Soil samples B26JK3 and B26C70					

1. Completeness ..... ☐ N/A

Technical verification forms present? ..... Yes (No) N/A

Comments:

None

2. Initial Calibration (Levels D, E) ..... ☒ N/A

Instruments/detectors calibrated? ..... Yes No N/A

Initial calibration acceptable? ..... Yes No N/A

Standards NIST traceable? ..... Yes No N/A

Standards Expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

3. Continuing Calibration (Levels D, E)..... ☒ N/A

Calibration checked within required frequency? ..... Yes No N/A

Calibration check acceptable? ..... Yes No N/A

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

Calculation check acceptable?..... Yes No N/A

Comments:

4. Background Counts (Levels D, E) ..... ☒ N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

Calculation check acceptable?..... Yes No N/A

Comments:

5. Blanks (Levels B, C, D, E) ☐ N/A

Method blank analyzed within required frequency? (Yes) No N/A

Method blank results acceptable? (Yes) No N/A

Analytes detected in method blank? (Yes) No N/A

Field blank(s) analyzed? Yes No (N/A)

Field blank results acceptable? Yes No (N/A)

Analytes detected in field blank(s)? Yes No (N/A)

Transcription/Calculation Errors? (Levels D, E) Yes No (N/A)

Comments:

MB Hit: Se-79 2.51E-06 uCi/g

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ☐ N/A

LCS /BSS analyzed within required frequency? Yes (No) N/A

LCS/BSS recoveries acceptable? (Yes) No N/A

LCS/BSS traceable? (Levels D,E) Yes No (N/A)

LCS/BSS expired? (Levels D,E) Yes No (N/A)

LCS/BSS levels correct? (Levels D,E) Yes No (N/A)

Transcription/Calculation Errors? (Levels D, E) Yes No (N/A)

Comments:

No LCS performed for Se-79.

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☐ N/A

Chemical carrier added? ..... (Yes) No N/A

Chemical recovery acceptable? ..... (Yes) No N/A

Chemical carrier traceable? (Levels D, E) ..... Yes No (N/A)

Chemical carrier expired? (Levels D, E) ..... Yes No (N/A)

Transcription/Calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments:

Note - For the Se-79 and Ni-63 soil analyses the lab narrative states that the maximum chemical recoveries are 50%. This is incorrect. The LABCORE recoveries have already been adjusted for the sample analysis split and the maximum chemical recoveries are actually 100%.

8. Tracer Recovery (Levels C, D, E) ..... ☐ N/A

Tracer added? ..... (Yes) No N/A

Tracer recovery acceptable? ..... (Yes) No N/A

Tracer traceable? (Levels D, E) ..... Yes No (N/A)

Tracer expired? (Levels D, E) ..... Yes No (N/A)

Transcription/Calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: None

9. Matrix Spikes (Levels C, D, E)..... ☐ N/A

Matrix spike analyzed?..... (Yes) No N/A

Spike recoveries acceptable? ..... (Yes) No N/A

Spike source traceable? (Levels D, E) ..... Yes No (N/A)

Spike source expired? Levels D, E) ..... Yes No (N/A)

Transcription/Calculation Errors? (Levels D, E)..... Yes No (N/A)

Comments:

None

10. Duplicates (Levels C, D, E) ..... ☐ N/A

Duplicates Analyzed at required frequency? ..... (Yes) No N/A

RPD Values Acceptable?..... (Yes) No N/A

Transcription/Calculation Errors? (Levels D, E)..... Yes No (N/A)

Comments:

None

11. Field QC Samples (Levels C, D E) ..... ☐ N/A

Field duplicate sample(s) analyzed? ..... Yes No (N/A)

Field duplicate RPD values acceptable? ..... Yes No (N/A)

Field split sample(s) analyzed? ..... Yes No (N/A)

Field split RPD values acceptable? ..... Yes No (N/A)

Performance audit sample(s) analyzed? ..... Yes No (N/A)

Performance audit sample results acceptable? ..... Yes No (N/A)

Comments:

None

12. Holding Times (All levels)

Are sample holding times acceptable? ..... (Yes) No N/A

Comments: None

13. Results and Detection Limits (All Levels) ..... ☐ N/A

Results reported for all required sample analyses? ..... (Yes) No N/A

Results supported in raw data?(Levels D, E) ..... Yes No (N/A)

Results Acceptable? (Levels D, E) ..... Yes No (N/A)

Transcription/Calculation errors? (Levels D, E) ..... Yes No (N/A)

MDA's meet required detection limits? ..... (Yes) No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No (N/A)

Comments: None

Appendix 6

Additional Documentation Requested By Client

LABCORE Completed Batch Report for Batch# 00021168

Analyst: Lai, Sue

Book#: 31B64

Instrument: GEA03 B-1A

Method: GEA, LA-548-121 Rev/Mod I-0

Specification: C Farm WMC 2010-2

Prep Batch:

Batch Comment:

C Farm WMC 2010-2 for GEA scl

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	STD	S1008030060		0 0			Cobalt-60	SOLID	.00444	4.4670E-03		4.25	8.58E-05	uCi/mL	100.61	% Recovery	
1	STD	S1008030060		0 0			Cesium-137	SOLID	.00483	5.0900E-03		5.33	8.86E-05	uCi/mL	105.38	% Recovery	
Sample Sequence 2																	
2	BLNK	S1008030061		0 0			Cobalt-60	SOLID		<3.0700E-07			3.07E-07	uCi/g			
2	BLNK	S1008030061		0 0			Antimony-125	SOLID		<7.4900E-07			7.49E-07	uCi/g			
2	BLNK	S1008030061		0 0			Cesium-137	SOLID		<4.1600E-07			4.16E-07	uCi/g			
2	BLNK	S1008030061		0 0			Europium-152	SOLID		<1.5600E-06			1.56E-06	uCi/g			
2	BLNK	S1008030061		0 0			Europium-154	SOLID		<9.2800E-07			9.28E-07	uCi/g			
2	BLNK	S1008030061		0 0			Europium-155	SOLID		<4.7400E-07			4.74E-07	uCi/g			
2	BLNK	S1008030061		0 0			Thorium-228	SOLID		<8.7600E-06			8.76E-06	uCi/g			
2	BLNK	S1008030061		0 0			Thorium-234	SOLID		<2.7200E-06			2.72E-06	uCi/g			
Sample Sequence 3																	
3	SAMPLE	S10V001226		0 0			Cobalt-60	SOLID	N/A	<3.6600E-07			3.66E-07	uCi/g			U
3	SAMPLE	S10V001226		0 0			Antimony-125	SOLID	N/A	<9.6300E-07			9.63E-07	uCi/g			U
3	SAMPLE	S10V001226		0 0			Cesium-137	SOLID	N/A	5.1290E-06		9.15	4.08E-07	uCi/g			
3	SAMPLE	S10V001226		0 0			Europium-152	SOLID	N/A	<1.6500E-06			1.65E-06	uCi/g			U
3	SAMPLE	S10V001226		0 0			Europium-154	SOLID	N/A	<1.1000E-06			1.10E-06	uCi/g			U
3	SAMPLE	S10V001226		0 0			Europium-155	SOLID	N/A	<5.8200E-07			5.82E-07	uCi/g			U
3	SAMPLE	S10V001226		0 0			Thorium-228	SOLID	N/A	<1.1300E-05			1.13E-05	uCi/g			U
3	SAMPLE	S10V001226		0 0			Thorium-234	SOLID	N/A	<3.7800E-06			3.78E-06	uCi/g			U
3	SAMPLE	S10V001226		0 0			Lead-214	SOLID	N/A	1.1390E-06		26.37	8.37E-07	uCi/g			
3	SAMPLE	S10V001226		0 0			Potassium-40	SOLID	N/A	1.2780E-05		33.70	6.45E-06	uCi/g			J
Sample Sequence 4																	
4	SAMPLE	S10V001243		0 0			Cobalt-60	SOLID	N/A	<3.0800E-07			3.08E-07	uCi/g			U
4	SAMPLE	S10V001243		0 0			Antimony-125	SOLID	N/A	<8.3400E-07			8.34E-07	uCi/g			U
4	SAMPLE	S10V001243		0 0			Cesium-137	SOLID	N/A	3.8320E-06		9.84	3.46E-07	uCi/g			
4	SAMPLE	S10V001243		0 0			Europium-152	SOLID	N/A	<1.5100E-06			1.51E-06	uCi/g			U
4	SAMPLE	S10V001243		0 0			Europium-154	SOLID	N/A	<9.8100E-07			9.81E-07	uCi/g			U
4	SAMPLE	S10V001243		0 0			Europium-155	SOLID	N/A	<5.0400E-07			5.04E-07	uCi/g			U
4	SAMPLE	S10V001243		0 0			Thorium-228	SOLID	N/A	<9.5100E-06			9.51E-06	uCi/g			U
4	SAMPLE	S10V001243		0 0			Thorium-234	SOLID	N/A	<3.2300E-06			3.23E-06	uCi/g			U

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021168

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
4	SAMPLE	S10V001243		0 0			Lead-214	SOLID	N/A	1.1670E-06		21.66	6.81E-07	uCi/g			
4	SAMPLE	S10V001243		0 0			Potassium-40	SOLID	N/A	9.2630E-06		40.98	5.83E-06	uCi/g			J
Sample Sequence 5																	
5	SAMPLE	S10V001283		0 0			Cobalt-60	SOLID	N/A	<3.8400E-07			3.84E-07	uCi/g			U
5	SAMPLE	S10V001283		0 0			Antimony-125	SOLID	N/A	<9.5900E-07			9.59E-07	uCi/g			U
5	SAMPLE	S10V001283		0 0			Cesium-137	SOLID	N/A	<4.9000E-07			4.90E-07	uCi/g			U
5	SAMPLE	S10V001283		0 0			Europium-152	SOLID	N/A	<1.9000E-06			1.90E-06	uCi/g			U
5	SAMPLE	S10V001283		0 0			Europium-154	SOLID	N/A	<1.2400E-06			1.24E-06	uCi/g			U
5	SAMPLE	S10V001283		0 0			Europium-155	SOLID	N/A	<6.3800E-07			6.38E-07	uCi/g			U
5	SAMPLE	S10V001283		0 0			Thorium-228	SOLID	N/A	<1.2400E-05			1.24E-05	uCi/g			U
5	SAMPLE	S10V001283		0 0			Thorium-234	SOLID	N/A	<4.0600E-06			4.06E-06	uCi/g			U
5	SAMPLE	S10V001283		0 0			Bismuth-214	SOLID	N/A	1.0960E-06		48.52	9.07E-07	uCi/g			J
5	SAMPLE	S10V001283		0 0			Lead-212	SOLID	N/A	7.8150E-07		37.57	6.99E-07	uCi/g			J
Sample Sequence 6																	
6	SAMPLE	S10V001303		0 0			Cobalt-60	SOLID	N/A	<3.4200E-07			3.42E-07	uCi/g			U
6	SAMPLE	S10V001303		0 0			Antimony-125	SOLID	N/A	<9.4700E-07			9.47E-07	uCi/g			U
6	SAMPLE	S10V001303		0 0			Cesium-137	SOLID	N/A	<4.5700E-07			4.57E-07	uCi/g			U
6	SAMPLE	S10V001303		0 0			Europium-152	SOLID	N/A	<1.7900E-06			1.79E-06	uCi/g			U
6	SAMPLE	S10V001303		0 0			Europium-154	SOLID	N/A	<1.0800E-06			1.08E-06	uCi/g			U
6	SAMPLE	S10V001303		0 0			Europium-155	SOLID	N/A	<6.0700E-07			6.07E-07	uCi/g			U
6	SAMPLE	S10V001303		0 0			Thorium-228	SOLID	N/A	<1.1200E-05			1.12E-05	uCi/g			U
6	SAMPLE	S10V001303		0 0			Thorium-234	SOLID	N/A	<3.8100E-06			3.81E-06	uCi/g			U
6	SAMPLE	S10V001303		0 0			Bismuth-214	SOLID	N/A	1.2380E-06		31.87	6.30E-07	uCi/g			J
6	SAMPLE	S10V001303		0 0			Lead-214	SOLID	N/A	1.5740E-06		19.99	8.32E-07	uCi/g			
Sample Sequence 7																	
7	DUP	S1008030062	S10V001303	0 0			Cobalt-60	SOLID	<3.4200E-07	<3.4600E-07			3.46E-07	uCi/g			
7	DUP	S1008030062	S10V001303	0 0			Antimony-125	SOLID	<9.4700E-07	<9.0500E-07			9.05E-07	uCi/g			
7	DUP	S1008030062	S10V001303	0 0			Cesium-137	SOLID	<4.5700E-07	<4.2600E-07			4.26E-07	uCi/g			
7	DUP	S1008030062	S10V001303	0 0			Europium-152	SOLID	<1.7900E-06	<1.7100E-06			1.71E-06	uCi/g			
7	DUP	S1008030062	S10V001303	0 0			Europium-154	SOLID	<1.0800E-06	<1.0300E-06			1.03E-06	uCi/g			
7	DUP	S1008030062	S10V001303	0 0			Europium-155	SOLID	<6.0700E-07	<5.5800E-07			5.58E-07	uCi/g			
7	DUP	S1008030062	S10V001303	0 0			Thorium-228	SOLID	<1.1200E-05	<1.0500E-05			1.05E-05	uCi/g			
7	DUP	S1008030062	S10V001303	0 0			Thorium-234	SOLID	<3.8100E-06	<3.6600E-06			3.66E-06	uCi/g			
7	DUP	S1008030062	S10V001303	0 0			Lead-214	SOLID	1.5740E-06	9.7070E-07		31.77	6.94E-07	uCi/g	47.416	% RPD	
7	DUP	S1008030062	S10V001303	0 0			Potassium-40	SOLID		9.9300E-06		44.86	6.91E-06	uCi/g			
Sample Sequence 8																	
8	SAMPLE	S10V001343		0 0			Cobalt-60	SOLID	N/A	<3.2200E-07			3.22E-07	uCi/g			U
8	SAMPLE	S10V001343		0 0			Antimony-125	SOLID	N/A	<8.2300E-07			8.23E-07	uCi/g			U
8	SAMPLE	S10V001343		0 0			Cesium-137	SOLID	N/A	<4.1400E-07			4.14E-07	uCi/g			U
8	SAMPLE	S10V001343		0 0			Europium-152	SOLID	N/A	<1.5600E-06			1.56E-06	uCi/g			U
8	SAMPLE	S10V001343		0 0			Europium-154	SOLID	N/A	<9.8900E-07			9.89E-07	uCi/g			U
8	SAMPLE	S10V001343		0 0			Europium-155	SOLID	N/A	<5.2900E-07			5.29E-07	uCi/g			U

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021168

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
8	SAMPLE	S10V001343		0 0			Thorium-228	SOLID	N/A	<9.5300E-06			9.53E-06	uCi/g			U
8	SAMPLE	S10V001343		0 0			Thorium-234	SOLID	N/A	<3.3300E-06			3.33E-06	uCi/g			U
8	SAMPLE	S10V001343		0 0			Lead-212	SOLID	N/A	5.6500E-07		41.67	5.83E-07	uCi/g			J
8	SAMPLE	S10V001343		0 0			Potassium-40	SOLID	N/A	1.1290E-05		36.68	6.28E-06	uCi/g			J
Sample Sequence 9																	
9	SAMPLE	S10V001363		0 0			Cobalt-60	SOLID	N/A	<3.0400E-07			3.04E-07	uCi/g			U
9	SAMPLE	S10V001363		0 0			Antimony-125	SOLID	N/A	<7.5300E-07			7.53E-07	uCi/g			U
9	SAMPLE	S10V001363		0 0			Cesium-137	SOLID	N/A	<3.7400E-07			3.74E-07	uCi/g			U
9	SAMPLE	S10V001363		0 0			Europium-152	SOLID	N/A	<1.3500E-06			1.35E-06	uCi/g			U
9	SAMPLE	S10V001363		0 0			Europium-154	SOLID	N/A	<9.5300E-07			9.53E-07	uCi/g			U
9	SAMPLE	S10V001363		0 0			Europium-155	SOLID	N/A	<4.8400E-07			4.84E-07	uCi/g			U
9	SAMPLE	S10V001363		0 0			Thorium-228	SOLID	N/A	<9.0600E-06			9.06E-06	uCi/g			U
9	SAMPLE	S10V001363		0 0			Thorium-234	SOLID	N/A	<2.9300E-06			2.93E-06	uCi/g			U
9	SAMPLE	S10V001363		0 0			Lead-214	SOLID	N/A	9.7940E-07		25.98	6.17E-07	uCi/g			
9	SAMPLE	S10V001363		0 0			Potassium-40	SOLID	N/A	7.6180E-06		49.06	5.84E-06	uCi/g			J
Sample Sequence 10																	
10	SAMPLE	S10V001383		0 0			Cobalt-60	SOLID	N/A	<3.4900E-07			3.49E-07	uCi/g			U
10	SAMPLE	S10V001383		0 0			Antimony-125	SOLID	N/A	<8.5900E-07			8.59E-07	uCi/g			U
10	SAMPLE	S10V001383		0 0			Cesium-137	SOLID	N/A	<4.0700E-07			4.07E-07	uCi/g			U
10	SAMPLE	S10V001383		0 0			Europium-152	SOLID	N/A	<1.6000E-06			1.60E-06	uCi/g			U
10	SAMPLE	S10V001383		0 0			Europium-154	SOLID	N/A	<1.1100E-06			1.11E-06	uCi/g			U
10	SAMPLE	S10V001383		0 0			Europium-155	SOLID	N/A	<5.6000E-07			5.60E-07	uCi/g			U
10	SAMPLE	S10V001383		0 0			Thorium-228	SOLID	N/A	<1.0700E-05			1.07E-05	uCi/g			U
10	SAMPLE	S10V001383		0 0			Thorium-234	SOLID	N/A	<3.5300E-06			3.53E-06	uCi/g			U
10	SAMPLE	S10V001383		0 0			Lead-214	SOLID	N/A	9.9450E-07		33.89	8.02E-07	uCi/g			J
10	SAMPLE	S10V001383		0 0			Potassium-40	SOLID	N/A	1.1970E-05		36.81	6.69E-06	uCi/g			J
Sample Sequence 11																	
11	SAMPLE	S10V001403		0 0			Cobalt-60	SOLID	N/A	<3.2600E-07			3.26E-07	uCi/g			U
11	SAMPLE	S10V001403		0 0			Antimony-125	SOLID	N/A	<8.7000E-07			8.70E-07	uCi/g			U
11	SAMPLE	S10V001403		0 0			Cesium-137	SOLID	N/A	<4.0800E-07			4.08E-07	uCi/g			U
11	SAMPLE	S10V001403		0 0			Europium-152	SOLID	N/A	<1.5700E-06			1.57E-06	uCi/g			U
11	SAMPLE	S10V001403		0 0			Europium-154	SOLID	N/A	<9.8100E-07			9.81E-07	uCi/g			U
11	SAMPLE	S10V001403		0 0			Europium-155	SOLID	N/A	<5.5400E-07			5.54E-07	uCi/g			U
11	SAMPLE	S10V001403		0 0			Thorium-228	SOLID	N/A	<1.0500E-05			1.05E-05	uCi/g			U
11	SAMPLE	S10V001403		0 0			Thorium-234	SOLID	N/A	<3.5600E-06			3.56E-06	uCi/g			U
11	SAMPLE	S10V001403		0 0			Lead-212	SOLID	N/A	7.1580E-07		38.21	6.92E-07	uCi/g			J
11	SAMPLE	S10V001403		0 0			Potassium-40	SOLID	N/A	1.7550E-05		25.65	6.46E-06	uCi/g			
Sample Sequence 12																	
12	SAMPLE	S10V001423		0 0			Cobalt-60	SOLID	N/A	<3.0500E-07			3.05E-07	uCi/g			U
12	SAMPLE	S10V001423		0 0			Antimony-125	SOLID	N/A	<8.0200E-07			8.02E-07	uCi/g			U
12	SAMPLE	S10V001423		0 0			Cesium-137	SOLID	N/A	<3.9000E-07			3.90E-07	uCi/g			U
12	SAMPLE	S10V001423		0 0			Europium-152	SOLID	N/A	<1.3700E-06			1.37E-06	uCi/g			U

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021168

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
12	SAMPLE	S10V001423		0 0			Europium-154	SOLID	N/A	<9.5000E-07			9.50E-07	uCi/g			U
12	SAMPLE	S10V001423		0 0			Europium-155	SOLID	N/A	<4.9500E-07			4.95E-07	uCi/g			U
12	SAMPLE	S10V001423		0 0			Thorium-228	SOLID	N/A	<9.2100E-06			9.21E-06	uCi/g			U
12	SAMPLE	S10V001423		0 0			Thorium-234	SOLID	N/A	<3.2400E-06			3.24E-06	uCi/g			U
12	SAMPLE	S10V001423		0 0			Lead-214	SOLID	N/A	5.1800E-07		49.82	5.66E-07	uCi/g			J
12	SAMPLE	S10V001423		0 0			Potassium-40	SOLID	N/A	1.0490E-05		38.00	6.08E-06	uCi/g			J

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00021168

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021168

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1008030060	STD				
2	S1008030061	BLNK				
3	S10V001226	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
4	S10V001243	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
5	S10V001283	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
6	S10V001303	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
7	S1008030062	DUP	S10V001303			
8	S10V001343	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
9	S10V001363	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
10	S10V001383	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
11	S10V001403	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
12	S10V001423	SAMPLE		20100520	B26C82	C Farm WMC 2010-2

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00022160

Analyst: Fabre, Martha **Book#:** 120B64

Instrument: A/B Detector 18 B-1A

Method: STRONTIUM-90, LA-220-101 Rev/Mod I-0

Specification: C Farm WMC 2010-2

Prep Batch: 00021951

Batch Comment:

C Farm WMC 2010-2 Gp 20100520. ACC

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	STD	S1009140001		0 0			Strontium-89/90	SOLID	.0006945491	6.8478E-04		2.711	2.03E-06	uCi/mL	98.593	% Recovery	
1	STD	S1009140001		0 0			Strontium-C	SOLID		80.919				% Recovery	N/A		
Sample Sequence 2																	
2	BLNK-PREP	S1009070041		0 0	E		Strontium-89/90	SOLID		<7.0382E-07			7.04E-07	uCi/g			
2	BLNK-PREP	S1009070041		0 0	E		Strontium-C	SOLID		80.519				% Recovery			
Sample Sequence 3																	
3	SAMPLE	S10V001237		0 0	E	*	Strontium-89/90	SOLID	N/A	2.7771E-06		35.257	5.33E-07	uCi/g			J
3	SAMPLE	S10V001237		0 0	E	*	Strontium-C	SOLID		30.37				% Recovery			
Sample Sequence 4																	
4	SAMPLE	S10V001254		0 0	E		Strontium-89/90	SOLID	N/A	2.3440E-06		21.595	2.39E-07	uCi/g			
4	SAMPLE	S10V001254		0 0	E		Strontium-C	SOLID		68.132				% Recovery			
Sample Sequence 5																	
5	SAMPLE	S10V001294		0 0	E		Strontium-89/90	SOLID	N/A	<6.6922E-07			6.69E-07	uCi/g			U
5	SAMPLE	S10V001294		0 0	E		Strontium-C	SOLID		71.828				% Recovery			
Sample Sequence 6																	
6	SAMPLE	S10V001314		0 0	E		Strontium-89/90	SOLID	N/A	<2.1680E-07			2.17E-07	uCi/g			U
6	SAMPLE	S10V001314		0 0	E		Strontium-C	SOLID		74.226				% Recovery			
Sample Sequence 7																	
7	DUP	S1009070042	S10V001314	0 0	E		Strontium-89/90	SOLID	<2.1680E-07	<8.8249E-07			8.82E-07	uCi/g			
7	DUP	S1009070042	S10V001314	0 0	E		Strontium-C	SOLID	74.226	53.546				% Recovery			
Sample Sequence 8																	
8	SAMPLE	S10V001354		0 0	E		Strontium-89/90	SOLID	N/A	<2.4586E-07			2.46E-07	uCi/g			U
8	SAMPLE	S10V001354		0 0	E		Strontium-C	SOLID		65.834				% Recovery			
Sample Sequence 9																	
9	SAMPLE	S10V001374		0 0	E	*	Strontium-89/90	SOLID	N/A	<4.9854E-07			4.99E-07	uCi/g			U
9	SAMPLE	S10V001374		0 0	E	*	Strontium-C	SOLID		32.168				% Recovery			
Sample Sequence 10																	
10	SAMPLE	S10V001394		0 0	E		Strontium-89/90	SOLID	N/A	<2.2572E-07			2.26E-07	uCi/g			U
10	SAMPLE	S10V001394		0 0	E		Strontium-C	SOLID		71.429				% Recovery			
Sample Sequence 11																	
11	SAMPLE	S10V001414		0 0	E		Strontium-89/90	SOLID	N/A	<8.7926E-07			8.79E-07	uCi/g			U
11	SAMPLE	S10V001414		0 0	E		Strontium-C	SOLID		66.234				% Recovery			

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00022160

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 12																	
12	SAMPLE	S10V001434		0 0	E	*	Strontium-89/90	SOLID	N/A	<3.8663E-07			3.87E-07	uCi/g			U
12	SAMPLE	S10V001434		0 0	E	*	Strontium-C	SOLID		41.558				% Recovery			

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00022160

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00022160

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1009140001	STD				
2	S1009070041	BLNK-PREP				
3	S10V001237	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
4	S10V001254	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
5	S10V001294	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
6	S10V001314	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
7	S1009070042	DUP	S10V001314			
8	S10V001354	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
9	S10V001374	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
10	S10V001394	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
11	S10V001414	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
12	S10V001434	SAMPLE		20100520	B26C82	C Farm WMC 2010-2

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021310

Analyst: Casey, Adam **Book#:** 111B64

Instrument: LSC3 LS6500 B-1A

Method: TRITIUM-LARGE VOLUME, LA-218-111 Rev/Mod G-0

Specification: C Farm WMC 2010-2

Prep Batch: 00021182

Batch Comment:

Large Volume H3 for C-Farm. ACC

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	STD	S1008160011		0 0			Tritium	LIQUID	.00002611322 20816321	2.3638E-05		2.64	2.68E-07	uCi/mL	90.519	% Recovery	
Sample Sequence 2																	
2	BLNK-PREP	S1008040058		0 0	W		Tritium	LIQUID		<2.6900E-07			2.69E-07	uCi/mL			
Sample Sequence 3																	
3	SAMPLE	S10V001229		0 0	W	*	Tritium	SOLID	N/A	<1.3400E-06			1.34E-06	uCi/g			U
Sample Sequence 4																	
4	SAMPLE	S10V001246		0 0	W		Tritium	SOLID	N/A	<1.3300E-06			1.33E-06	uCi/g			U
Sample Sequence 5																	
5	SAMPLE	S10V001286		0 0	W		Tritium	SOLID	N/A	<1.3400E-06			1.34E-06	uCi/g			U
Sample Sequence 6																	
6	SAMPLE	S10V001306		0 0	W		Tritium	SOLID	N/A	<1.3500E-06			1.35E-06	uCi/g			U
Sample Sequence 7																	
7	SAMPLE	S10V001346		0 0	W		Tritium	SOLID	N/A	<1.3600E-06			1.36E-06	uCi/g			U
Sample Sequence 8																	
8	DUP	S1008040059	S10V001346	0 0	W		Tritium	SOLID	<1.3600E-06	<1.3600E-06			1.36E-06	uCi/g			
Sample Sequence 9																	
9	SAMPLE	S10V001366		0 0	W		Tritium	SOLID	N/A	<1.3600E-06			1.36E-06	uCi/g			U
Sample Sequence 10																	
10	SAMPLE	S10V001386		0 0	W		Tritium	SOLID	N/A	<1.3400E-06			1.34E-06	uCi/g			U
Sample Sequence 11																	
11	SAMPLE	S10V001406		0 0	W		Tritium	SOLID	N/A	<1.3900E-06			1.39E-06	uCi/g			U
Sample Sequence 12																	
12	SAMPLE	S10V001426		0 0	W		Tritium	SOLID	N/A	<2.5300E-06			2.53E-06	uCi/g			U

Comments Section:

Data Flagger Status:
Flagging Completed

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021310

Final Page for Batch# 00021310

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

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LABCORE Completed Batch Report for Batch# 00021310

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1008160011	STD				
2	S1008040058	BLNK-PREP				
3	S10V001229	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
4	S10V001246	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
5	S10V001286	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
6	S10V001306	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
7	S10V001346	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
8	S1008040059	DUP	S10V001346			
9	S10V001366	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
10	S10V001386	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
11	S10V001406	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
12	S10V001426	SAMPLE		20100520	B26C82	C Farm WMC 2010-2

Units shown for QC (BLK/BKG) may not reflect the actual units.

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LABCORE Completed Batch Report for Batch# 00023959

Analyst: LaPlant, Gary

Book#:

Instrument: LSC3 LS6500 B-1A

Method: SELENIUM-79, LA-365-132 Rev/Mod I-0

Specification: C Farm WMC 2010-2

Prep Batch: 00023930

Batch Comment:

C Farm WMC 2010-2 Grp 520 for Se-79. ACC

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	BLNK-PREP	S1011090030		0 0	E		Selenium-79	SOLID		2.5100E-06		187.794	2.19E-06	uCi/g			
1	BLNK-PREP	S1011090030		0 0	E		Selenium-C	SOLID		33.352				% Recovery			
Sample Sequence 2																	
2	SAMPLE	S10V001238		0 1	E		Selenium-79	SOLID	N/A	2.1500E-06		165.736	1.36E-06	uCi/g			BJ
2	SAMPLE	S10V001238		0 1	E		Selenium-C	SOLID		54.259				% Recovery			
Sample Sequence 3																	
3	SAMPLE	S10V001255		0 1	E		Selenium-79	SOLID	N/A	<3.2200E-06			3.22E-06	uCi/g			U
3	SAMPLE	S10V001255		0 1	E		Selenium-C	SOLID		55.254				% Recovery			
Sample Sequence 4																	
4	SAMPLE	S10V001295		0 1	E		Selenium-79	SOLID	N/A	1.6400E-06		256.219	1.51E-06	uCi/g			BJ
4	SAMPLE	S10V001295		0 1	E		Selenium-C	SOLID		68.197				% Recovery			
Sample Sequence 5																	
5	SAMPLE	S10V001315		0 1	E		Selenium-79	SOLID	N/A	3.7700E-06		202.816	1.58E-06	uCi/g			BJ
5	SAMPLE	S10V001315		0 1	E		Selenium-C	SOLID		62.721				% Recovery			
Sample Sequence 6																	
6	DUP	S1011090031	S10V001315	0 0	E		Selenium-79	SOLID	3.7700E-06	3.3600E-06		122.69	1.46E-06	uCi/g	11.501	% RPD	
6	DUP	S1011090031	S10V001315	0 0	E		Selenium-C	SOLID	62.721	65.708				% Recovery			
Sample Sequence 7																	
7	SAMPLE	S10V001355		0 1	E		Selenium-79	SOLID	N/A	1.5800E-06		291.757	1.40E-06	uCi/g			BJ
7	SAMPLE	S10V001355		0 1	E		Selenium-C	SOLID		72.179				% Recovery			
Sample Sequence 8																	
8	SAMPLE	S10V001375		0 1	E		Selenium-79	SOLID	N/A	<1.3400E-06			1.34E-06	uCi/g			U
8	SAMPLE	S10V001375		0 1	E		Selenium-C	SOLID		61.228				% Recovery			
Sample Sequence 9																	
9	SAMPLE	S10V001395		0 1	E		Selenium-79	SOLID	N/A	7.1000E-06		83.627	2.30E-06	uCi/g			BJ
9	SAMPLE	S10V001395		0 1	E		Selenium-C	SOLID		43.307				% Recovery			
Sample Sequence 10																	
10	SAMPLE	S10V001415		0 1	E		Selenium-79	SOLID	N/A	<1.8200E-06			1.82E-06	uCi/g			U
10	SAMPLE	S10V001415		0 1	E		Selenium-C	SOLID		56.25				% Recovery			
Sample Sequence 11																	
11	SAMPLE	S10V001435		0 1	E		Selenium-79	SOLID	N/A	<3.2500E-06			3.25E-06	uCi/g			U
11	SAMPLE	S10V001435		0 1	E		Selenium-C	SOLID		45.796				% Recovery			

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00023959

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00023959

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

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LABCORE Completed Batch Report for Batch# 00023959

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1011090030	BLNK-PREP				
2	S10V001238	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
3	S10V001255	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
4	S10V001295	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
5	S10V001315	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
6	S1011090031	DUP	S10V001315			
7	S10V001355	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
8	S10V001375	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
9	S10V001395	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
10	S10V001415	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
11	S10V001435	SAMPLE		20100520	B26C82	C Farm WMC 2010-2

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00023609

Analyst: Fabre, Martha **Book#:** 40B64B

Instrument: LSC3 LS6500 B-1A

Method: CARBON-14, LA-348-104 Rev/Mod I-0

Specification: C Farm WMC 2010-2

Prep Batch: 00021182

Batch Comment:

C-Farm WMC 2010-2 for C-14. gll

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	STD	S1010280042		0 0			Carbon-14	LIQUID	.00120817354 598816	1.1350E-03		0.639	1.34E-06	uCi/mL	93.943	% Recovery	
Sample Sequence 2																	
2	BLNK-PREP	S1008040058		0 1	W		Carbon-14	LIQUID		<1.0700E-06			1.07E-06	uCi/g			
Sample Sequence 3																	
3	SAMPLE	S10V001229		0 1	W		Carbon-14	SOLID	N/A	<6.7800E-07			6.78E-07	uCi/g			U
Sample Sequence 4																	
4	SAMPLE	S10V001246		0 1	W		Carbon-14	SOLID	N/A	<6.6300E-07			6.63E-07	uCi/g			U
Sample Sequence 5																	
5	SAMPLE	S10V001286		0 1	W		Carbon-14	SOLID	N/A	<1.1200E-06			1.12E-06	uCi/g			U
Sample Sequence 6																	
6	SAMPLE	S10V001306		0 1	W		Carbon-14	SOLID	N/A	<6.7700E-07			6.77E-07	uCi/g			U
Sample Sequence 7																	
7	SAMPLE	S10V001346		0 1	W		Carbon-14	SOLID	N/A	<6.7200E-07			6.72E-07	uCi/g			U
Sample Sequence 8																	
8	DUP	S1008040059	S10V001346	0 1	W		Carbon-14	SOLID	<6.7200E-07	<6.7700E-07			6.77E-07	uCi/g			
Sample Sequence 9																	
9	SPK	S1010280043	S10V001346	0 0			Carbon-14	SOLID	.00120817354 598816	1.1443E-03		0.645	6.78E-06	uCi/g	94.71	% Recovery	
Sample Sequence 10																	
10	SAMPLE	S10V001366		0 1	W		Carbon-14	SOLID	N/A	<6.8100E-07			6.81E-07	uCi/g			U
Sample Sequence 11																	
11	SAMPLE	S10V001386		0 1	W		Carbon-14	SOLID	N/A	<6.7900E-07			6.79E-07	uCi/g			U
Sample Sequence 12																	
12	SAMPLE	S10V001406		0 1	W		Carbon-14	SOLID	N/A	<6.7600E-07			6.76E-07	uCi/g			U
Sample Sequence 13																	
13	SAMPLE	S10V001426		0 1	W		Carbon-14	SOLID	N/A	<6.7400E-07			6.74E-07	uCi/g			U

Comments Section:

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00023609

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00023609

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00023609

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1010280042	STD				
2	S1008040058	BLNK-PREP				
3	S10V001229	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
4	S10V001246	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
5	S10V001286	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
6	S10V001306	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
7	S10V001346	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
8	S1008040059	DUP	S10V001346			
9	S1010280043	SPK	S10V001346			
10	S10V001366	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
11	S10V001386	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
12	S10V001406	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
13	S10V001426	SAMPLE		20100520	B26C82	C Farm WMC 2010-2

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00024148

Analyst: Fabre, Martha **Book#:** 51B64

Instrument: LSC3 LS6500 B-1A

Method: NICKEL-63, LA-285-102 Rev/Mod E-0

Specification: C Farm WMC 2010-2

Prep Batch: 00024112

Batch Comment:

C Farm WMC 2010-2 Grp 520 for Ni-63. ACC

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	STD	S1011170127		0 0			Nickel-63	LIQUID	.0035131013138278	3.5876E-03		1.012	6.36E-06	uCi/mL	102.12	% Recovery	
1	STD	S1011170127		0 0			Nickel-C	LIQUID		81.207				% Recovery	N/A		
Sample Sequence 2																	
2	BLNK-PREP	S1011160228		0 0	E		Nickel-63	SOLID		<5.9500E-06			5.95E-06	uCi/g			
2	BLNK-PREP	S1011160228		0 0	E		Nickel-C	SOLID		76.133				% Recovery			
Sample Sequence 3																	
3	SAMPLE	S10V001255		0 1	E		Nickel-63	SOLID	N/A	<5.3600E-06			5.36E-06	uCi/g			U
3	SAMPLE	S10V001255		0 1	E		Nickel-C	SOLID		84.691				% Recovery			
Sample Sequence 4																	
4	SAMPLE	S10V001315		0 1	E		Nickel-63	SOLID	N/A	<8.9200E-06			8.92E-06	uCi/g			U
4	SAMPLE	S10V001315		0 1	E		Nickel-C	SOLID		88.287				% Recovery			
Sample Sequence 5																	
5	DUP	S1011160229	S10V001315	0 0	E		Nickel-63	SOLID	<8.9200E-06	<9.0700E-06			9.07E-06	uCi/g			
5	DUP	S1011160229	S10V001315	0 0	E		Nickel-C	SOLID	88.287	86.725				% Recovery			
Sample Sequence 6																	
6	SAMPLE	S10V001395		0 1	E		Nickel-63	SOLID	N/A	<5.4700E-06			5.47E-06	uCi/g			U
6	SAMPLE	S10V001395		0 1	E		Nickel-C	SOLID		82.116				% Recovery			
Sample Sequence 7																	
7	SAMPLE	S10V001435		0 1	E		Nickel-63	SOLID	N/A	<6.9800E-06			6.98E-06	uCi/g			U
7	SAMPLE	S10V001435		0 1	E		Nickel-C	SOLID		65.502				% Recovery			

Comments Section:

Data Flagger Status:
Flagging Completed

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00024148

Final Page for Batch# 00024148

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00024148

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1011170127	STD				
2	S1011160228	BLNK-PREP				
3	S10V001255	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
4	S10V001315	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
5	S1011160229	DUP	S10V001315			
6	S10V001395	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
7	S10V001435	SAMPLE		20100520	B26C82	C Farm WMC 2010-2

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00023558

Analyst: LaPlant, Gary **Book#:** 82B64

Instrument: GEA06 B-1F

Method: IODINE-129 in SOIL, LA-378-105 Rev/Mod D-0

Specification: C Farm WMC 2010-2

Prep Batch:

Batch Comment:

C-Farm WMC 2010-2 for I129 in Soil gr520. gll

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	STD	S1010260150		0 0			Iodine-129	LIQUID	.00319699978 630058	3.5831E-03		4.54	8.24E-06	uCi/mL	112.08	% Recovery	
1	STD	S1010260150		0 0			Iodine-C	LIQUID		80.097				% Recovery	N/A		
Sample Sequence 2																	
2	BLNK	S1010260151		0 0			Iodine-129	SOLID		<1.6160E-07			1.62E-07	uCi/g			
2	BLNK	S1010260151		0 0			Iodine-C	SOLID		80.097				% Recovery			
Sample Sequence 3																	
3	SAMPLE	S10V001226		0 0			Iodine-129	SOLID	N/A	<1.5188E-07			1.52E-07	uCi/g			U
3	SAMPLE	S10V001226		0 0			Iodine-C	SOLID		82.067				% Recovery			
Sample Sequence 4																	
4	SAMPLE	S10V001243		0 0			Iodine-129	SOLID	N/A	<1.7619E-07			1.76E-07	uCi/g			U
4	SAMPLE	S10V001243		0 0			Iodine-C	SOLID		77.471				% Recovery			
Sample Sequence 5																	
5	SAMPLE	S10V001283		0 0			Iodine-129	SOLID	N/A	<3.1708E-07			3.17E-07	uCi/g			U
5	SAMPLE	S10V001283		0 0			Iodine-C	SOLID		58.103				% Recovery			
Sample Sequence 6																	
6	DUP	S1010260152	S10V001283	0 0			Iodine-129	SOLID	<3.1708E-07	<1.5234E-07			1.52E-07	uCi/g			
6	DUP	S1010260152	S10V001283	0 0			Iodine-C	SOLID	58.103	99.793				% Recovery			
Sample Sequence 7																	
7	SAMPLE	S10V001303		0 0			Iodine-129	SOLID	N/A	<1.6079E-07			1.61E-07	uCi/g			U
7	SAMPLE	S10V001303		0 0			Iodine-C	SOLID		82.395				% Recovery			
Sample Sequence 8																	
8	SAMPLE	S10V001343		0 0			Iodine-129	SOLID	N/A	<1.5593E-07			1.56E-07	uCi/g			U
8	SAMPLE	S10V001343		0 0			Iodine-C	SOLID		82.395				% Recovery			
Sample Sequence 9																	
9	SAMPLE	S10V001363		0 0			Iodine-129	SOLID	N/A	<1.5103E-07			1.51E-07	uCi/g			U
9	SAMPLE	S10V001363		0 0			Iodine-C	SOLID		81.41				% Recovery			
Sample Sequence 10																	
10	SAMPLE	S10V001383		0 0			Iodine-129	SOLID	N/A	<1.5543E-07			1.55E-07	uCi/g			U
10	SAMPLE	S10V001383		0 0			Iodine-C	SOLID		82.067				% Recovery			
Sample Sequence 11																	
11	SAMPLE	S10V001403		0 0			Iodine-129	SOLID	N/A	<1.4470E-07			1.45E-07	uCi/g			U
11	SAMPLE	S10V001403		0 0			Iodine-C	SOLID		83.708				% Recovery			

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00023558

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 12																	
12	SAMPLE	S10V001423		0 0			Iodine-129	SOLID	N/A	<1.4889E-07			1.49E-07	uCi/g			U
12	SAMPLE	S10V001423		0 0			Iodine-C	SOLID		85.35				% Recovery			

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00023558

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00023558

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1010260150	STD				
2	S1010260151	BLNK				
3	S10V001226	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
4	S10V001243	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
5	S10V001283	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
6	S1010260152	DUP	S10V001283			
7	S10V001303	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
8	S10V001343	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
9	S10V001363	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
10	S10V001383	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
11	S10V001403	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
12	S10V001423	SAMPLE		20100520	B26C82	C Farm WMC 2010-2

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021875

Analyst: Lai, Sue **Book#:** 31B64

Instrument: A/B Detector 13 B-1A

Method: AMERICIUM, LA-953-104 Rev/Mod H-1

Specification: C Farm WMC 2010-2

Prep Batch: 00021814

Batch Comment:

C Farm WMC 2010-2 GRP 20100520. ACC

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	STD	S1009010233		0 0			Americium-241	SOLID	.000075073952970926	7.2419E-05		6.51	9.29E-06	uCi/g	96.464	% Recovery	
1	STD	S1009010233		0 0			Americium-243T	SOLID		89.371				% Recovery	N/A		
Sample Sequence 2																	
2	BLNK-PREP	S1009010001		0 0	E		Curium-243/244	SOLID		<2.2152E-07			2.22E-07	uCi/g			
2	BLNK-PREP	S1009010001		0 0	E		Americium-241	SOLID		<5.5380E-07			5.54E-07	uCi/g			
2	BLNK-PREP	S1009010001		0 0	E		Americium-243T	SOLID		73.699				% Recovery			
2	BLNK-PREP	S1009010001		0 0	E		Curium-242	SOLID		<2.2152E-07			2.22E-07	uCi/g			
Sample Sequence 3																	
3	SAMPLE	S10V001236		0 0	E		Curium-243/244	SOLID	N/A	<1.6243E-07			1.62E-07	uCi/g			U
3	SAMPLE	S10V001236		0 0	E		Americium-241	SOLID	N/A	<4.0609E-07			4.06E-07	uCi/g			U
3	SAMPLE	S10V001236		0 0	E		Americium-243T	SOLID		95.602				% Recovery			
3	SAMPLE	S10V001236		0 0	E		Curium-242	SOLID	N/A	<1.6243E-07			1.62E-07	uCi/g			U
Sample Sequence 4																	
4	SAMPLE	S10V001253		0 0	E		Curium-243/244	SOLID	N/A	<2.0386E-07			2.04E-07	uCi/g			U
4	SAMPLE	S10V001253		0 0	E		Americium-241	SOLID	N/A	<5.0964E-07			5.10E-07	uCi/g			U
4	SAMPLE	S10V001253		0 0	E		Americium-243T	SOLID		72.687				% Recovery			
4	SAMPLE	S10V001253		0 0	E		Curium-242	SOLID	N/A	<2.0386E-07			2.04E-07	uCi/g			U
Sample Sequence 5																	
5	SAMPLE	S10V001293		0 0	E		Curium-243/244	SOLID	N/A	<2.4876E-07			2.49E-07	uCi/g			U
5	SAMPLE	S10V001293		0 0	E		Americium-241	SOLID	N/A	<6.2191E-07			6.22E-07	uCi/g			U
5	SAMPLE	S10V001293		0 0	E		Americium-243T	SOLID		73.087				% Recovery			
5	SAMPLE	S10V001293		0 0	E		Curium-242	SOLID	N/A	<2.4876E-07			2.49E-07	uCi/g			U
Sample Sequence 6																	
6	SAMPLE	S10V001313		0 0	E		Curium-243/244	SOLID	N/A	<2.0671E-07			2.07E-07	uCi/g			U
6	SAMPLE	S10V001313		0 0	E		Americium-241	SOLID	N/A	<5.1676E-07			5.17E-07	uCi/g			U
6	SAMPLE	S10V001313		0 0	E		Americium-243T	SOLID		85.103				% Recovery			
6	SAMPLE	S10V001313		0 0	E		Curium-242	SOLID	N/A	<2.0671E-07			2.07E-07	uCi/g			U
Sample Sequence 7																	
7	DUP	S1009010002	S10V001313	0 0	E		Curium-243/244	SOLID	<2.0671E-07	<2.3149E-07			2.31E-07	uCi/g			
7	DUP	S1009010002	S10V001313	0 0	E		Americium-241	SOLID	<5.1676E-07	<5.7871E-07			5.79E-07	uCi/g			
7	DUP	S1009010002	S10V001313	0 0	E		Americium-243T	SOLID	85.103	77.889				% Recovery			

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021875

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
7	DUP	S1009010002	S10V001313	0 0	E		Curium-242	SOLID	<2.0671E-07	<2.3149E-07			2.31E-07	uCi/g			
Sample Sequence 8																	
8	SAMPLE	S10V001353		0 0	E		Curium-243/244	SOLID	N/A	<2.0273E-07			2.03E-07	uCi/g			U
8	SAMPLE	S10V001353		0 0	E		Americium-241	SOLID	N/A	<5.0683E-07			5.07E-07	uCi/g			U
8	SAMPLE	S10V001353		0 0	E		Americium-243T	SOLID		82.938				% Recovery			
8	SAMPLE	S10V001353		0 0	E		Curium-242	SOLID	N/A	<2.0273E-07			2.03E-07	uCi/g			U
Sample Sequence 9																	
9	SAMPLE	S10V001373		0 0	E		Curium-243/244	SOLID	N/A	<1.9531E-07			1.95E-07	uCi/g			U
9	SAMPLE	S10V001373		0 0	E		Americium-241	SOLID	N/A	<4.8827E-07			4.88E-07	uCi/g			U
9	SAMPLE	S10V001373		0 0	E		Americium-243T	SOLID		84.429				% Recovery			
9	SAMPLE	S10V001373		0 0	E		Curium-242	SOLID	N/A	<1.9531E-07			1.95E-07	uCi/g			U
Sample Sequence 10																	
10	SAMPLE	S10V001393		0 0	E		Curium-243/244	SOLID	N/A	<1.9544E-07			1.95E-07	uCi/g			U
10	SAMPLE	S10V001393		0 0	E		Americium-241	SOLID	N/A	<4.8861E-07			4.89E-07	uCi/g			U
10	SAMPLE	S10V001393		0 0	E		Americium-243T	SOLID		87.671				% Recovery			
10	SAMPLE	S10V001393		0 0	E		Curium-242	SOLID	N/A	<1.9544E-07			1.95E-07	uCi/g			U
Sample Sequence 11																	
11	SAMPLE	S10V001413		0 0	E		Curium-243/244	SOLID	N/A	<2.8930E-07			2.89E-07	uCi/g			U
11	SAMPLE	S10V001413		0 0	E		Americium-241	SOLID	N/A	<7.2326E-07			7.23E-07	uCi/g			U
11	SAMPLE	S10V001413		0 0	E		Americium-243T	SOLID		62.376				% Recovery			
11	SAMPLE	S10V001413		0 0	E		Curium-242	SOLID	N/A	<2.8930E-07			2.89E-07	uCi/g			U
Sample Sequence 12																	
12	SAMPLE	S10V001433		0 0	E		Curium-243/244	SOLID	N/A	<2.1199E-07			2.12E-07	uCi/g			U
12	SAMPLE	S10V001433		0 0	E		Americium-241	SOLID	N/A	<5.2998E-07			5.30E-07	uCi/g			U
12	SAMPLE	S10V001433		0 0	E		Americium-243T	SOLID		81.84				% Recovery			
12	SAMPLE	S10V001433		0 0	E		Curium-242	SOLID	N/A	<2.1199E-07			2.12E-07	uCi/g			U

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00021875

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00021875

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1009010233	STD				
2	S1009010001	BLNK-PREP				
3	S10V001236	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
4	S10V001253	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
5	S10V001293	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
6	S10V001313	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
7	S1009010002	DUP	S10V001313			
8	S10V001353	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
9	S10V001373	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
10	S10V001393	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
11	S10V001413	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
12	S10V001433	SAMPLE		20100520	B26C82	C Farm WMC 2010-2

Units shown for QC (BLK/BKG) may not reflect the actual units.

* = Rejected Analyte
N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00023442

Analyst: LaPlant, Gary

Book#: 120B64

Instrument: A/B Detector 23 B-1A

Method: PLUTONIUM, LA-953-104 Rev/Mod H-1

Specification: C Farm WMC 2010-2

Prep Batch: 00023381

Batch Comment:

C Farm WMC 2010-2. Grp 520. ACC

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
Sample Sequence 1																	
1	STD	S1010220029		0 0			Pu-239/240	LIQUID	.00014199869 2786849	1.4687E-04		5.45	9.01E-06	uCi/mL	103.43	% Recovery	
1	STD	S1010220029		0 0			Plutonium-236T	LIQUID		81.66				% Recovery	N/A		
Sample Sequence 2																	
2	BLNK-PREP	S1010200117		0 0	E		Pu-239/240	SOLID		<7.8638E-07			7.86E-07	uCi/g			
2	BLNK-PREP	S1010200117		0 0	E		Plutonium-236T	SOLID		36.897				% Recovery			
2	BLNK-PREP	S1010200117		0 0	E		Plutonium-238	SOLID		<7.8638E-07			7.86E-07	uCi/g			
Sample Sequence 3																	
3	SAMPLE	S10V001236		0 1	E		Pu-239/240	SOLID	N/A	<3.4539E-07			3.45E-07	uCi/g			U
3	SAMPLE	S10V001236		0 1	E		Plutonium-236T	SOLID		81.207				% Recovery			
3	SAMPLE	S10V001236		0 1	E		Plutonium-238	SOLID	N/A	<3.4539E-07			3.45E-07	uCi/g			U
Sample Sequence 4																	
4	SAMPLE	S10V001253		0 1	E		Pu-239/240	SOLID	N/A	<3.2209E-07			3.22E-07	uCi/g			U
4	SAMPLE	S10V001253		0 1	E		Plutonium-236T	SOLID		87.911				% Recovery			
4	SAMPLE	S10V001253		0 1	E		Plutonium-238	SOLID	N/A	<3.2209E-07			3.22E-07	uCi/g			U
Sample Sequence 5																	
5	SAMPLE	S10V001293		0 1	E		Pu-239/240	SOLID	N/A	<3.9676E-07			3.97E-07	uCi/g			U
5	SAMPLE	S10V001293		0 1	E		Plutonium-236T	SOLID		72.091				% Recovery			
5	SAMPLE	S10V001293		0 1	E		Plutonium-238	SOLID	N/A	<3.9676E-07			3.97E-07	uCi/g			U
Sample Sequence 6																	
6	SAMPLE	S10V001313		0 1	E		Pu-239/240	SOLID	N/A	<2.7333E-07			2.73E-07	uCi/g			U
6	SAMPLE	S10V001313		0 1	E		Plutonium-236T	SOLID		87.492				% Recovery			
6	SAMPLE	S10V001313		0 1	E		Plutonium-238	SOLID	N/A	<2.7333E-07			2.73E-07	uCi/g			U
Sample Sequence 7																	
7	DUP	S1010200118	S10V001313	0 0	E		Pu-239/240	SOLID	<2.7333E-07	<3.0853E-07			3.09E-07	uCi/g			
7	DUP	S1010200118	S10V001313	0 0	E		Plutonium-236T	SOLID	87.492	77.619				% Recovery			
7	DUP	S1010200118	S10V001313	0 0	E		Plutonium-238	SOLID	<2.7333E-07	<3.0853E-07			3.09E-07	uCi/g			
Sample Sequence 8																	
8	SAMPLE	S10V001353		0 1	E		Pu-239/240	SOLID	N/A	<3.7250E-07			3.73E-07	uCi/g			U
8	SAMPLE	S10V001353		0 1	E		Plutonium-236T	SOLID		72.538				% Recovery			
8	SAMPLE	S10V001353		0 1	E		Plutonium-238	SOLID	N/A	<3.7250E-07			3.73E-07	uCi/g			U
Sample Sequence 9																	

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00023442

Seq	Type	Sample#	Assoc. Sample	RepR	A	*	Test	Matrix	Actual	Found	Blank	CTR	Limit (DL/RL/UL)	Unit	Yield	Yield Unit	Flags
9	SAMPLE	S10V001373		0 1	E		Pu-239/240	SOLID	N/A	<3.3594E-07			3.36E-07	uCi/g			U
9	SAMPLE	S10V001373		0 1	E		Plutonium-236T	SOLID		84.857				% Recovery			
9	SAMPLE	S10V001373		0 1	E		Plutonium-238	SOLID	N/A	<3.3594E-07			3.36E-07	uCi/g			U
Sample Sequence 10																	
10	SAMPLE	S10V001393		0 1	E		Pu-239/240	SOLID	N/A	<3.2402E-07			3.24E-07	uCi/g			U
10	SAMPLE	S10V001393		0 1	E		Plutonium-236T	SOLID		83.257				% Recovery			
10	SAMPLE	S10V001393		0 1	E		Plutonium-238	SOLID	N/A	<3.2402E-07			3.24E-07	uCi/g			U
Sample Sequence 11																	
11	SAMPLE	S10V001413		0 1	E		Pu-239/240	SOLID	N/A	<3.0507E-07			3.05E-07	uCi/g			U
11	SAMPLE	S10V001413		0 1	E		Plutonium-236T	SOLID		77.891				% Recovery			
11	SAMPLE	S10V001413		0 1	E		Plutonium-238	SOLID	N/A	<3.0507E-07			3.05E-07	uCi/g			U
Sample Sequence 12																	
12	SAMPLE	S10V001433		0 1	E		Pu-239/240	SOLID	N/A	<3.1622E-07			3.16E-07	uCi/g			U
12	SAMPLE	S10V001433		0 1	E		Plutonium-236T	SOLID		86.802				% Recovery			
12	SAMPLE	S10V001433		0 1	E		Plutonium-238	SOLID	N/A	<3.1622E-07			3.16E-07	uCi/g			U

Comments Section:

Data Flagger Status:
Flagging Completed

Final Page for Batch# 00023442

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte

LABCORE Completed Batch Report for Batch# 00023442

Seq	Sample#	QC Type	Assoc. Sample	Sample Group	Customer Id	Specification
1	S1010220029	STD				
2	S1010200117	BLNK-PREP				
3	S10V001236	SAMPLE		20100520	B26JK2	C Farm WMC 2010-2
4	S10V001253	SAMPLE		20100520	B26JK3	C Farm WMC 2010-2
5	S10V001293	SAMPLE		20100520	B26C68	C Farm WMC 2010-2
6	S10V001313	SAMPLE		20100520	B26C70	C Farm WMC 2010-2
7	S1010200118	DUP	S10V001313			
8	S10V001353	SAMPLE		20100520	B26C74	C Farm WMC 2010-2
9	S10V001373	SAMPLE		20100520	B26C76	C Farm WMC 2010-2
10	S10V001393	SAMPLE		20100520	B26C78	C Farm WMC 2010-2
11	S10V001413	SAMPLE		20100520	B26C80	C Farm WMC 2010-2
12	S10V001433	SAMPLE		20100520	B26C82	C Farm WMC 2010-2

Units shown for QC (BLK/BKG) may not reflect the actual units.

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N, A = Non-reported Analyte