TETRA TECH NUS

PHIL-21874

TO: RUSS TURNER **DATE:** FEBRUARY 17, 2008

FROM: MEGAN N. RITCHIE **COPIES:** FILE

SUBJECT: INORGANIC DATA VALIDATION – METALS
NAS JRB WILLOW GROVE SSA 12, WILLOW GROVE, PENNSYLVANIA
SDG NO. 14413

SAMPLES: 17/Solid/

SSA12-FD-02	SSA12-SS01D-000.5	SSA12-SS07E-000.5	SSA12-SS14E-000.5
SSA12-SB01D-0.51.0	SSA12-SS02D-000.5	SSA12-SS08E-000.5	SSA12-SS15E-000.5
SSA12-SB02D-2.02.5	SSA12-SS04E-000.5	SSA12-SS09E-000.5	
SSA12-SB05D-2.02.5	SSA12-SS05D-000.5	SSA12-SS10E-000.5	
SSA12-SB06D-2.02.5	SSA12-SS06D-000.5	SSA12-SS13E-000.5	

OVERVIEW

The sample set for the NAS JRB Willow Grove Site Screening Area (SSA) 12 – Willow Grove, PA, SDG 14413 consists of 17 solid environmental samples (designated SSA12-). One matrix spike sample (SSA12-SS05D-000.5) was designated for this sample set. One field duplicate pair (SSA12-SB02D-2.02.5 and SSA12-FD-02) was included in this sample set. All samples were analyzed for target analyte list (TAL) metals including mercury.

The samples were collected by Tetra Tech NUS on December 6 and 7, 2007 and analyzed by CompuChem of Cary, North Carolina.

EPA SW-846 Methods were conducted using 6010B for ICP-AES metals and 7471A for mercury.

SUMMARY

Most analytes were successfully analyzed in all samples. The findings offered in this report are based upon a general review of all available data including data completeness, holding times until analysis, calibration data, laboratory blank results, ICP interference check samples, matrix spike (MS) and matrix spike duplicate (MSD) results, laboratory control spike (LCS) results, field duplicate results, ICP serial dilution results, detection limits, and analyte quantitation.

Areas of concern with respect to data quality are listed below as follows:

MAJOR PROBLEMS

- Silver exhibited a negative concentration with an absolute value greater than the MDL in ICS solution A, which indicates the potential for negative bias to an extent that depends on the sample mineral concentrations. For non-detected silver results, when the MDL was less than the absolute value of the predicted magnitude of negative interference, such results were qualified as unusable (UR).

- Sodium exhibited a positive concentration with a value greater than the MDL in ICS solution A, which indicates the potential for positive bias to an extent that depends on the sample mineral concentrations.

For detected sodium results, when the MDL was less than the absolute value of the predicted magnitude of positive interference, such results were qualified as unusable (R).

MINOR PROBLEMS

- The following table summarizes the analytes detected as contaminants in the laboratory blanks and field quality control (QC) blanks at the maximum concentration indicated:

Analyte	Maximum Concentration	Action Level
Aluminum	75.1 ug/L	37.55 mg/kg
Antimony	0.573 mg/kg	2.86 mg/kg
Beryllium	0.7 ug/L	0.35 mg/kg
Cadmium	0.6 ug/L	0.3 mg/kg
Calcium	15.142 mg/kg	75.7 mg/kg
Chromium	0.25 mg/kg	1.25 mg/kg
Cobalt	1.6 ug/L	0.8 mg/kg
Iron	3.605 mg/kg	18 mg/kg
Lead	0.217 mg/kg	1.085 mg/kg
Magnesium	46 ug/L	23 mg/kg
Manganese	0.026 mg/kg	0.13 mg/kg
Potassium	2.424 mg/kg	12.12 mg/kg
Selenium	4.8 ug/L	2.4 mg/kg
Sodium	42.931 mg/kg	215 mg/kg
Vanadium	1 ug/L	0.5 mg/kg
Zinc*	6.3 ug/L	3.15 mg/kg

*Indicates that this analyte was detected in a field QC blank.

Samples affected: The action levels apply to all solid environmental samples.

Dilution factors, percent solids, and sample preparation weights were taken into account during application of action levels. Results reported at concentrations within the action level are qualified (B) and are considered to be false positives (artifacts of blank contamination). No action was taken for aluminum, beryllium, calcium, chromium, cobalt, iron, lead, magnesium, manganese, potassium, selenium, vanadium, and zinc because the results exceeded the action level or there were no positive results for these analytes.

- Silver exhibited a negative concentration with an absolute value greater than the MDL in ICS solution A, which indicates the potential for negative bias to an extent that depends on the sample mineral concentrations. For positive silver results, when the sample concentration was less than 10 times the absolute value of the expected interference, such results were qualified as biased low (L).

- Beryllium, sodium, and thallium exhibited positive concentrations with values greater than the MDL in ICS solution A, which indicates the potential for positive bias to an extent that depends on the sample mineral concentrations. For positive beryllium, sodium, and thallium results, when the sample

concentration was less than 10 times the absolute value of the expected interference, such results were qualified as biased high (K) except where superseded by the qualifier (B) for blank contamination or by the qualifier (J) for other QC problems.

- The CRDL standard recovery exceeded the upper QC limit of 110% for cadmium. Positive cadmium results that were less than 2 times the CRDL were qualified as biased high (K).
- The CRDL standard recovery was lower than the lower QC limit of 90% for potassium, silver, and thallium. Non-detected and detected potassium, silver, and thallium results that were less than 2 times the CRDL were qualified as biased low (UL/L) except where superseded by the qualifier for unusable non-detected results (UR) or by the qualifier (J) for other QC problems.
- The MS/MSD recoveries for selenium were below the lower QC limit of 75%. All non-detected results for selenium were qualified as biased low (L/UL).
- The MS/MSD recoveries for antimony were below the lower QC limit of 75%. Additionally, the antimony recoveries were below 30%. All positive results for antimony were qualified as extremely biased low (L), except where superseded by the qualifier (B) for blank contamination. All non-detected results for antimony were qualified as unusable (UR).
- The laboratory duplicate relative percent difference (RPD) exceeded the QC limit of 35% for chromium, cobalt, copper, iron, manganese, nickel, and thallium. The positive results for these analytes were qualified as estimated (J).
- The LCS recoveries for antimony and iron were below the lower QC limit of 80%. The positive and non-detected antimony and iron results were qualified as biased low (UL/L) except where superseded by the qualifier (J), the qualifier (B), and the qualifier (UR) for other QC problems.
- The ICP Serial Dilution percent difference (%D) exceeded the QC limit of 10% for copper. The positive copper results were qualified as estimated (J).

NOTES

Rinsate blanks associated with the data in this SDG (14413) were included in a separate SDG (14411).

The field duplicate pair (SSA12-SB02D-2.02.5 and SSA12-FD-02) exhibited duplicate precision within QC criteria.

EXECUTIVE SUMMARY

Laboratory Performance: Four analytes displayed signals with absolute values greater than the IDL in the ICP Interference Check Sample A. These analytes may have produced bias in sample analyses. Several analytes were present in the laboratory blanks. Six analytes were outside QC limits for the CRDL standard recovery. Two analyte recoveries were below the lower QC limit in the LCS. Seven analytes exceeded laboratory duplicate precision criteria. The serial dilution for copper exceeded the %D criteria.

Other Factors Affecting Data Quality: Several analytes were detected in the rinsate blanks. Two MS/MSD recoveries were outside QC criteria.

The data for these analyses were reviewed with reference to the Tetra Tech NUS Standard Operating Procedure DV-04 (8/01) "Data Validation for Non-CLP Inorganics for Solid and Aqueous Matrices" and EPA "Functional Guidelines for Inorganic Data Review", as amended for use within EPA Region 3 (4/93).

The text of this report has been formatted to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the Functional Guidelines and the Quality Assurance Project Plan (QAPP)."

Megan N. Ritchie
Megan N. Ritchie
Chemist

Russell Sloboda
Tetra Tech NUS, Inc.
Russ Sloboda
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

Qualified Analytical Results

PROJ_NO: 2192

SDG: 14413 MEDIA: SOIL DATA FRACTION: M

nsample	SSA12-FD-02	nsample	SSA12-SB01D-0.5-1.0	nsample	SSA12-SB02D-2.0-2.5
samp_date	12/7/2007	samp_date	12/7/2007	samp_date	12/7/2007
lab_id	1441314	lab_id	1441310	lab_id	1441312
qc_type	NM	qc_type	NM	qc_type	NM
units	MG/KG	units	MG/KG	units	MG/KG
Pct_Solids	82.4	Pct_Solids	79.1	Pct_Solids	83.0
DUP_OF:	SSA12-SB02D-2.02.5	DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
ALUMINUM	12400		
ANTIMONY	0.33	UR	D
ARSENIC	4.7		
BARIUM	51.5		
BERYLLIUM	0.62	K	K
CADMIUM	0.06	U	
CALCIUM	761		
CHROMIUM	20.4	J	F
COBALT	11.9	J	F
COPPER	11.3	J	FI
IRON	21200	J	EF
LEAD	8.1		
MAGNESIUM	1860		
MANGANESE	392	J	F
MERCURY	0.02	U	
NICKEL	9.9	J	F
POTASSIUM	694	L	C
SELENIUM	0.37	UL	D
SILVER	0.06	UR	K
SODIUM	141	B	A
THALLIUM	4	J	FK
VANADIUM	35.1		
ZINC	22.4		

Parameter	Result	Val Qual	Qual Code
ALUMINUM	12800		
ANTIMONY	1.3	B	A
ARSENIC	4		
BARIUM	98.3		
BERYLLIUM	0.85	K	K
CADMIUM	0.06	U	
CALCIUM	3300		
CHROMIUM	19	J	F
COBALT	6.8	J	F
COPPER	16.7	J	FI
IRON	17200	J	EF
LEAD	43.3		
MAGNESIUM	2100		
MANGANESE	484	J	F
MERCURY	0.098		
NICKEL	13.7	J	F
POTASSIUM	1330		
SELENIUM	0.41	UL	D
SILVER	0.06	UR	K
SODIUM	549	K	K
THALLIUM	2.9	J	FK
VANADIUM	27.5		
ZINC	77.2		

Parameter	Result	Val Qual	Qual Code
ALUMINUM	12100		
ANTIMONY	0.33	UR	D
ARSENIC	4.7		
BARIUM	50		
BERYLLIUM	0.66	K	K
CADMIUM	0.06	U	
CALCIUM	692		
CHROMIUM	21.4	J	F
COBALT	5.6	J	F
COPPER	11.2	J	FI
IRON	21900	J	EF
LEAD	7.5		
MAGNESIUM	1820		
MANGANESE	240	J	F
MERCURY	0.019	U	
NICKEL	8.4	J	F
POTASSIUM	664	L	C
SELENIUM	0.38	UL	D
SILVER	0.06	UR	K
SODIUM	133	B	A
THALLIUM	3.7	J	FK
VANADIUM	36.6		
ZINC	19.3		

PROJ_NO: 2192

SDG: 14413 MEDIA: SOIL DATA FRACTION: M

nsample	SSA12-SB05D-2.0-2.5	nsample	SSA12-SB06D-2.0-2.5	nsample	SSA12-SS01D-000.5
samp_date	12/7/2007	samp_date	12/7/2007	samp_date	12/7/2007
lab_id	1441315	lab_id	1441317	lab_id	1441309
qc_type	NM	qc_type	NM	qc_type	NM
units	MG/KG	units	MG/KG	units	MG/KG
Pct_Solids	78.9	Pct_Solids	79.9	Pct_Solids	72.7
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
ALUMINUM	19700		
ANTIMONY	0.35	UR	D
ARSENIC	6.9		
BARIUM	56.6		
BERYLLIUM	0.7	K	K
CADMIUM	0.06	U	
CALCIUM	750		
CHROMIUM	27.7	J	F
COBALT	6.1	J	F
COPPER	16.9	J	FI
IRON	31800	J	EF
LEAD	10.7		
MAGNESIUM	2230		
MANGANESE	206	J	F
MERCURY	0.037		
NICKEL	12.1	J	F
POTASSIUM	814	L	C
SELENIUM	0.4	UL	D
SILVER	0.06	UR	K
SODIUM	144	B	A
THALLIUM	7	J	FK
VANADIUM	45.4		
ZINC	30		

Parameter	Result	Val Qual	Qual Code
ALUMINUM	18700		
ANTIMONY	0.61	B	A
ARSENIC	7.4		
BARIUM	46.3		
BERYLLIUM	0.61	K	K
CADMIUM	0.06	U	
CALCIUM	589		
CHROMIUM	23.1	J	F
COBALT	10.6	J	F
COPPER	19.5	J	FI
IRON	31600	J	EF
LEAD	9.3		
MAGNESIUM	2010		
MANGANESE	263	J	F
MERCURY	0.034		
NICKEL	12.3	J	F
POTASSIUM	710	L	C
SELENIUM	0.4	UL	D
SILVER	0.06	UR	K
SODIUM	136	B	A
THALLIUM	5.8	J	FK
VANADIUM	41.6		
ZINC	28.1		

Parameter	Result	Val Qual	Qual Code
ALUMINUM	12500		
ANTIMONY	1.4	B	A
ARSENIC	4.2		
BARIUM	107		
BERYLLIUM	0.84	K	K
CADMIUM	0.07	U	
CALCIUM	4080		
CHROMIUM	20.6	J	F
COBALT	6.7	J	F
COPPER	19.6	J	FI
IRON	17200	J	EF
LEAD	55.6		
MAGNESIUM	2290		
MANGANESE	518	J	F
MERCURY	0.099		
NICKEL	15.1	J	F
POTASSIUM	1590		
SELENIUM	0.45	UL	D
SILVER	0.07	UR	K
SODIUM	131	B	A
THALLIUM	3	J	FK
VANADIUM	26.4		
ZINC	111		

PROJ_NO: 2192

SDG: 14413 MEDIA: SOIL DATA FRACTION: M

nsample	SSA12-SS02D-000.5	nsample	SSA12-SS04E-000.5	nsample	SSA12-SS05D-000.5
samp_date	12/7/2007	samp_date	12/6/2007	samp_date	12/7/2007
lab_id	1441311	lab_id	1441301	lab_id	1441313
qc_type	NM	qc_type	NM	qc_type	NM
units	MG/KG	units	MG/KG	units	MG/KG
Pct_Solids	63.7	Pct_Solids	82.0	Pct_Solids	73.4
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
ALUMINUM	21000		
ANTIMONY	1.7	B	A
ARSENIC	5.2		
BARIUM	139		
BERYLLIUM	1.3	K	K
CADMIUM	0.08	U	
CALCIUM	2760		
CHROMIUM	30.3	J	F
COBALT	6.7	J	F
COPPER	30.8	J	FI
IRON	21300	J	EF
LEAD	84.7		
MAGNESIUM	3070		
MANGANESE	164	J	F
MERCURY	0.16		
NICKEL	20.1	J	F
POTASSIUM	1440		
SELENIUM	0.5	UL	D
SILVER	0.08	UR	K
SODIUM	170	B	A
THALLIUM	4.2	J	FK
VANADIUM	42.8		
ZINC	104		

Parameter	Result	Val Qual	Qual Code
ALUMINUM	13700		
ANTIMONY	0.51	B	A
ARSENIC	3.3		
BARIUM	78.3		
BERYLLIUM	0.84	K	K
CADMIUM	0.06	U	
CALCIUM	980		
CHROMIUM	12.3	J	F
COBALT	5.7	J	F
COPPER	10.9	J	FI
IRON	14900	J	EF
LEAD	14.4		
MAGNESIUM	1440		
MANGANESE	462	J	F
MERCURY	0.028		
NICKEL	9.9	J	F
POTASSIUM	481	L	C
SELENIUM	0.39	UL	D
SILVER	0.06	UR	K
SODIUM	102	B	A
THALLIUM	2.4	J	FK
VANADIUM	20.7		
ZINC	27.6		

Parameter	Result	Val Qual	Qual Code
ALUMINUM	13400		
ANTIMONY	0.77	B	A
ARSENIC	6.8		
BARIUM	88.5		
BERYLLIUM	0.95	K	K
CADMIUM	0.07	U	
CALCIUM	1900		
CHROMIUM	17	J	F
COBALT	6.1	J	F
COPPER	15.1	J	FI
IRON	16600	J	EF
LEAD	35.5		
MAGNESIUM	1540		
MANGANESE	605	J	F
MERCURY	0.13		
NICKEL	11.1	J	F
POTASSIUM	659	L	C
SELENIUM	0.45	UL	D
SILVER	0.07	UR	K
SODIUM	95.5	B	A
THALLIUM	3.6	J	FK
VANADIUM	29.6		
ZINC	54.5		

PROJ_NO: 2192

SDG: 14413 MEDIA: SOIL DATA FRACTION: M

nsample	SSA12-SS06D-000.5	nsample	SSA12-SS07E-000.5	nsample	SSA12-SS08E-000.5
samp_date	12/7/2007	samp_date	12/6/2007	samp_date	12/6/2007
lab_id	1441316	lab_id	1441302	lab_id	1441303
qc_type	NM	qc_type	NM	qc_type	NM
units	MG/KG	units	MG/KG	units	MG/KG
Pct_Solids	71.0	Pct_Solids	62.8	Pct_Solids	65.2
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
ALUMINUM	14800		
ANTIMONY	0.7	B	A
ARSENIC	6.3		
BARIUM	84.6		
BERYLLIUM	1	K	K
CADMIUM	0.07	U	
CALCIUM	742		
CHROMIUM	16.8	J	F
COBALT	5.8	J	F
COPPER	16.7	J	FI
IRON	15800	J	EF
LEAD	32.5		
MAGNESIUM	1430		
MANGANESE	685	J	F
MERCURY	0.17		
NICKEL	11.2	J	F
POTASSIUM	528	L	C
SELENIUM	0.45	UL	D
SILVER	0.07	UR	K
SODIUM	88.2	B	A
THALLIUM	2.7	J	CFK
VANADIUM	27.4		
ZINC	88.2		

Parameter	Result	Val Qual	Qual Code
ALUMINUM	16600		
ANTIMONY	1.4	B	A
ARSENIC	6.2		
BARIUM	130		
BERYLLIUM	0.94	K	K
CADMIUM	0.42	B	A
CALCIUM	3720		
CHROMIUM	25.9	J	F
COBALT	5.7	J	F
COPPER	49	J	FI
IRON	20500	J	EF
LEAD	289		
MAGNESIUM	2180		
MANGANESE	276	J	F
MERCURY	0.1		
NICKEL	15.4	J	F
POTASSIUM	831	L	C
SELENIUM	0.52	UL	D
SILVER	0.08	UR	K
SODIUM	187	B	A
THALLIUM	3.8	J	FK
VANADIUM	37.3		
ZINC	214		

Parameter	Result	Val Qual	Qual Code
ALUMINUM	11500		
ANTIMONY	0.71	B	A
ARSENIC	2.8		
BARIUM	100		
BERYLLIUM	0.97	K	K
CADMIUM	0.07	U	
CALCIUM	1580		
CHROMIUM	19	J	F
COBALT	7.3	J	F
COPPER	18	J	FI
IRON	16100	J	EF
LEAD	25.7		
MAGNESIUM	1840		
MANGANESE	381	J	F
MERCURY	0.042		
NICKEL	13.9	J	F
POTASSIUM	1290		
SELENIUM	0.48	UL	D
SILVER	0.07	UR	K
SODIUM	135	B	A
THALLIUM	2.6	J	CFK
VANADIUM	25.7		
ZINC	43		

PROJ_NO: 2192

SDG: 14413 MEDIA: SOIL DATA FRACTION: M

nsample	SSA12-SS09E-000.5	nsample	SSA12-SS10E-000.5	nsample	SSA12-SS13E-000.5
samp_date	12/6/2007	samp_date	12/7/2007	samp_date	12/6/2007
lab_id	1441304	lab_id	1441308	lab_id	1441307
qc_type	NM	qc_type	NM	qc_type	NM
units	MG/KG	units	MG/KG	units	MG/KG
Pct_Solids	72.4	Pct_Solids	71.5	Pct_Solids	72.4
DUP_OF:		DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
ALUMINUM	12300		
ANTIMONY	3.1	B	A
ARSENIC	6.2		
BARIUM	171		
BERYLLIUM	0.75	K	K
CADMIUM	2	K	C
CALCIUM	6650		
CHROMIUM	18.3	J	F
COBALT	5.4	J	F
COPPER	180	J	FI
IRON	14000	J	EF
LEAD	336		
MAGNESIUM	2260		
MANGANESE	468	J	F
MERCURY	0.059		
NICKEL	13.4	J	F
POTASSIUM	1150		
SELENIUM	0.44	UL	D
SILVER	0.87	L	CK
SODIUM	168	B	A
THALLIUM	2.8	J	FK
VANADIUM	21.1		
ZINC	313		

Parameter	Result	Val Qual	Qual Code
ALUMINUM	12900		
ANTIMONY	0.68	B	A
ARSENIC	6.2		
BARIUM	82.9		
BERYLLIUM	0.85		
CADMIUM	0.07	U	
CALCIUM	1360		
CHROMIUM	14.1	J	F
COBALT	4.9	J	F
COPPER	16.9	J	FI
IRON	12500	J	EF
LEAD	35.6		
MAGNESIUM	1300		
MANGANESE	465	J	F
MERCURY	0.16		
NICKEL	9.2	J	F
POTASSIUM	552	L	C
SELENIUM	0.44	UL	D
SILVER	0.07	UR	K
SODIUM	87.1	B	A
THALLIUM	1.9	J	CFK
VANADIUM	22.9		
ZINC	48		

Parameter	Result	Val Qual	Qual Code
ALUMINUM	11900		
ANTIMONY	0.79	B	A
ARSENIC	6.9		
BARIUM	69.7		
BERYLLIUM	0.71	K	K
CADMIUM	0.07	U	
CALCIUM	2770		
CHROMIUM	15.8	J	F
COBALT	5.9	J	F
COPPER	17.3	J	FI
IRON	14500	J	EF
LEAD	46.3		
MAGNESIUM	1560		
MANGANESE	475	J	F
MERCURY	0.12		
NICKEL	11.1	J	F
POTASSIUM	942	L	C
SELENIUM	0.45	UL	D
SILVER	0.26	L	CK
SODIUM	111	B	A
THALLIUM	2.4	J	CFK
VANADIUM	25.2		
ZINC	67.9		

PROJ_NO: 2192

SDG: 14413 MEDIA: SOIL DATA FRACTION: M

nsample	SSA12-SS14E-000.5	nsample	SSA12-SS15E-000.5
samp_date	12/6/2007	samp_date	12/6/2007
lab_id	1441306	lab_id	1441305
qc_type	NM	qc_type	NM
units	MG/KG	units	MG/KG
Pct_Solids	70.2	Pct_Solids	67.9
DUP_OF:		DUP_OF:	

Parameter	Result	Val Qual	Qual Code
ALUMINUM	13400		
ANTIMONY	0.71	B	A
ARSENIC	5.5		
BARIUM	95.1		
BERYLLIUM	0.91	K	K
CADMIUM	0.07	U	
CALCIUM	2990		
CHROMIUM	16.3	J	F
COBALT	5.6	J	F
COPPER	23.5	J	FI
IRON	14300	J	EF
LEAD	36		
MAGNESIUM	1660		
MANGANESE	494	J	F
MERCURY	0.15		
NICKEL	10.8	J	F
POTASSIUM	774	L	C
SELENIUM	0.46	UL	D
SILVER	0.07	UR	K
SODIUM	114	B	A
THALLIUM	2.7	J	CFK
VANADIUM	24.8		
ZINC	62.4		

Parameter	Result	Val Qual	Qual Code
ALUMINUM	11000		
ANTIMONY	0.77	B	A
ARSENIC	9		
BARIUM	102		
BERYLLIUM	0.88	K	K
CADMIUM	0.08	B	A
CALCIUM	6040		
CHROMIUM	17	J	F
COBALT	5.3	J	F
COPPER	25.1	J	FI
IRON	15600	J	EF
LEAD	92.8		
MAGNESIUM	2910		
MANGANESE	483	J	F
MERCURY	0.14		
NICKEL	13	J	F
POTASSIUM	1050	L	C
SELENIUM	0.46	UL	D
SILVER	0.17	L	CK
SODIUM	134	B	A
THALLIUM	3.3	J	FK
VANADIUM	23.8		
ZINC	92.2		

Qualifier Codes:

a	=	Lab Blank Contamination
b	=	Field Blank Contamination
c	=	Calibration (i.e., %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
d	=	MS/MSD Noncompliance
e	=	LSC/LSCD Noncompliance
f	=	Laboratory Duplicate Imprecision
g	=	Field Duplicate Imprecision
h	=	Holding Time Exceedance
i	=	ICP Serial Dilution Noncompliance
j	=	GFAA PDS – GFAA MSA's r<0.995 (correlation coefficient)
k	=	ICP Interference – include ICSAB %Rs
l	=	Instrument Calibration Range Exceedance
m	=	Sample Preservation
n	=	Internal Standard Noncompliance
o	=	Poor Instrument Performance (i.e. baseline drifting)
p	=	Uncertainty Near Detection Limit (<2 x IDL for inorganics and < CRQL for organics)
q	=	Other Problems (can encompass of number of issues)
r	=	Surrogates Recovery Noncompliance
s	=	Pesticide/PCB Resolution
t	=	% Breakdown Noncompliance for DDT and Endrin
u	=	Pesticide/PCB % Difference Between Columns for Positive Results
v	=	Non-linear Calibrations, Tuning r <0.995 (correlation coefficient)

Data Qualifier Key:

B	- Positive result is considered to be an artifact of blank contamination and should not be considered present.
J	- Value is considered estimated due to exceedance of technical quality control or because result is less than the Contract Required Quantitation Limit (CRQL).
K	- Positive result is considered biased high due to exceedance of technical quality control criteria.
L	- Positive result is considered biased low due to exceedance of technical quality control criteria.
R	- Value is considered unusable due to exceedance of technical quality control criteria.
U	- Value is a non-detected result as reported by the laboratory.
UJ	- Non-detected result is considered estimated due to exceedances of technical quality control criteria.
UL	- Non-detected result is considered biased low due to exceedance of technical quality control criteria.
UR	- Non-detected result is considered unusable due to exceedances of technical quality control criteria.

APPENDIX B

Results as Reported by the Laboratory

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SSA12-FD-02

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441314

Level (low/med): LOW Date Received: 12/8/2007

% Solids: 82.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12400			P
7440-36-0	Antimony	0.33	U	N	P
7440-38-2	Arsenic	4.7		*	P
7440-39-3	Barium	51.5			P
7440-41-7	Beryllium	0.62			P
7440-43-9	Cadmium	0.06	U	*	P
7440-70-2	Calcium	761			P
7440-47-3	Chromium	20.4		*	P
7440-48-4	Cobalt	11.9		*	P
7440-50-8	Copper	11.3		*E	P
7439-89-6	Iron	21200		*	P
7439-92-1	Lead	8.1			P
7439-95-4	Magnesium	1860			P
7439-96-5	Manganese	392		*	P
7439-97-6	Mercury	0.020	U		CV
7440-02-0	Nickel	9.9		*	P
7440-09-7	Potassium	694			P
7782-49-2	Selenium	0.37	U	N*	P
7440-22-4	Silver	0.06	U		P
7440-23-5	Sodium	141	B		P
7440-28-0	Thallium	4.0		*	P
7440-62-2	Vanadium	35.1			P
7440-66-6	Zinc	22.4		*	P

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 - METALS

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SB01D-0.51.0

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441310

Level (low/med): LOW Date Received: 12/8/2007

% Solids: 79.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12800			P
7440-36-0	Antimony	1.3		N	P
7440-38-2	Arsenic	4.0		*	P
7440-39-3	Barium	98.3			P
7440-41-7	Beryllium	0.85			P
7440-43-9	Cadmium	0.06	U	*	P
7440-70-2	Calcium	3300			P
7440-47-3	Chromium	19.0		*	P
7440-48-4	Cobalt	6.8		*	P
7440-50-8	Copper	16.7		*E	P
7439-89-6	Iron	17200		*	P
7439-92-1	Lead	43.3			P
7439-95-4	Magnesium	2100			P
7439-96-5	Manganese	484		*	P
7439-97-6	Mercury	0.098			CV
7440-02-0	Nickel	13.7		*	P
7440-09-7	Potassium	1330			P
7782-49-2	Selenium	0.41	U	N*	P
7440-22-4	Silver	0.06	U		P
7440-23-5	Sodium	549	B		P
7440-28-0	Thallium	2.9		*	P
7440-62-2	Vanadium	27.5			P
7440-66-6	Zinc	77.2		*	P

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
SB02D-2.02.5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441312

Level (low/med): LOW Date Received: 12/8/2007

% Solids: 83.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12100			P
7440-36-0	Antimony	0.33	U	N	P
7440-38-2	Arsenic	4.7		*	P
7440-39-3	Barium	50.0			P
7440-41-7	Beryllium	0.66			P
7440-43-9	Cadmium	0.06	U	*	P
7440-70-2	Calcium	692			P
7440-47-3	Chromium	21.4		*	P
7440-48-4	Cobalt	5.6		*	P
7440-50-8	Copper	11.2		*E	P
7439-89-6	Iron	21900		*	P
7439-92-1	Lead	7.5			P
7439-95-4	Magnesium	1820			P
7439-96-5	Manganese	240		*	P
7439-97-6	Mercury	0.019	U		CV
7440-02-0	Nickel	8.4		*	P
7440-09-7	Potassium	664			P
7782-49-2	Selenium	0.38	U	N*	P
7440-22-4	Silver	0.06	U		P
7440-23-5	Sodium	133	B		P
7440-28-0	Thallium	3.7		*	P
7440-62-2	Vanadium	36.6			P
7440-66-6	Zinc	19.3		*	P

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SB05D-2.02.5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441315

Level (low/med): LOW Date Received: 12/8/2007

% Solids: 78.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	19700			P
7440-36-0	Antimony	0.35	U	N	P
7440-38-2	Arsenic	6.9		*	P
7440-39-3	Barium	56.6			P
7440-41-7	Beryllium	0.70			P
7440-43-9	Cadmium	0.06	U	*	P
7440-70-2	Calcium	750			P
7440-47-3	Chromium	27.7		*	P
7440-48-4	Cobalt	6.1		*	P
7440-50-8	Copper	16.9		*E	P
7439-89-6	Iron	31800		*	P
7439-92-1	Lead	10.7			P
7439-95-4	Magnesium	2230			P
7439-96-5	Manganese	206		*	P
7439-97-6	Mercury	0.037	B		CV
7440-02-0	Nickel	12.1		*	P
7440-09-7	Potassium	814			P
7782-49-2	Selenium	0.40	U	N*	P
7440-22-4	Silver	0.06	U		P
7440-23-5	Sodium	144	B		P
7440-28-0	Thallium	7.0		*	P
7440-62-2	Vanadium	45.4			P
7440-66-6	Zinc	30.0		*	P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 - METALS
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
SB06D-2.02.5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441317

Level (low/med): LOW Date Received: 12/8/2007

% Solids: 79.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	18700			P
7440-36-0	Antimony	0.61	B	N	P
7440-38-2	Arsenic	7.4		*	P
7440-39-3	Barium	46.3			P
7440-41-7	Beryllium	0.61	B		P
7440-43-9	Cadmium	0.06	U	*	P
7440-70-2	Calcium	589	B		P
7440-47-3	Chromium	23.1		*	P
7440-48-4	Cobalt	10.6		*	P
7440-50-8	Copper	19.5		*E	P
7439-89-6	Iron	31600		*	P
7439-92-1	Lead	9.3			P
7439-95-4	Magnesium	2010			P
7439-96-5	Manganese	263		*	P
7439-97-6	Mercury	0.034	B		CV
7440-02-0	Nickel	12.3		*	P
7440-09-7	Potassium	710			P
7782-49-2	Selenium	0.40	U	N*	P
7440-22-4	Silver	0.06	U		P
7440-23-5	Sodium	136	B		P
7440-28-0	Thallium	5.8		*	P
7440-62-2	Vanadium	41.6			P
7440-66-6	Zinc	28.1		*	P

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS01D-000.5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441309

L v l (low/med): LOW Date Received: 12/8/2007

% Solids: 72.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12500			P
7440-36-0	Antimony	1.4		N	P
7440-38-2	Arsenic	4.2		*	P
7440-39-3	Barium	107			P
7440-41-7	Beryllium	0.84			P
7440-43-9	Cadmium	0.07	U	*	P
7440-70-2	Calcium	4080			P
7440-47-3	Chromium	20.6		*	P
7440-48-4	Cobalt	6.7		*	P
7440-50-8	Copper	19.6		*E	P
7439-89-6	Iron	17200		*	P
7439-92-1	Lead	55.6			P
7439-95-4	Magnesium	2290			P
7439-96-5	Manganese	518		*	P
7439-97-6	Mercury	0.099			CV
7440-02-0	Nickel	15.1		*	P
7440-09-7	Potassium	1590			P
7782-49-2	Selenium	0.45	U	N*	P
7440-22-4	Silver	0.07	U		P
7440-23-5	Sodium	131	B		P
7440-28-0	Thallium	3.0		*	P
7440-62-2	Vanadium	26.4			P
7440-66-6	Zinc	111		*	P

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS02D-000.5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441311

Level (low/med): LOW Date Received: 12/8/2007

% Solids: 63.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	21000			P
7440-36-0	Antimony	1.7		N	P
7440-38-2	Arsenic	5.2		*	P
7440-39-3	Barium	139			P
7440-41-7	Beryllium	1.3			P
7440-43-9	Cadmium	0.08	U	*	P
7440-70-2	Calcium	2760			P
7440-47-3	Chromium	30.3		*	P
7440-48-4	Cobalt	6.7		*	P
7440-50-8	Copper	30.8		*E	P
7439-89-6	Iron	21300		*	P
7439-92-1	Lead	84.7			P
7439-95-4	Magnesium	3070			P
7439-96-5	Manganese	164		*	P
7439-97-6	Mercury	0.16			CV
7440-02-0	Nickel	20.1		*	P
7440-09-7	Potassium	1440			P
7782-49-2	Selenium	0.50	U	N*	P
7440-22-4	Silver	0.08	U		P
7440-23-5	Sodium	170	B		P
7440-28-0	Thallium	4.2		*	P
7440-62-2	Vanadium	42.8			P
7440-66-6	Zinc	104		*	P

Color B fore: BLACK Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS04E-000.5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441301

Level (low/med): LOW Date Received: 12/7/2007

% Solids: 82.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13700			P
7440-36-0	Antimony	0.51	B	N	P
7440-38-2	Arsenic	3.3		*	P
7440-39-3	Barium	78.3			P
7440-41-7	Beryllium	0.84			P
7440-43-9	Cadmium	0.06	U	*	P
7440-70-2	Calcium	980			P
7440-47-3	Chromium	12.3		*	P
7440-48-4	Cobalt	5.7		*	P
7440-50-8	Copper	10.9		*E	P
7439-89-6	Iron	14900		*	P
7439-92-1	Lead	14.4			P
7439-95-4	Magnesium	1440			P
7439-96-5	Manganese	462		*	P
7439-97-6	Mercury	0.028	B		CV
7440-02-0	Nickel	9.9		*	P
7440-09-7	Potassium	481	B		P
7782-49-2	Selenium	0.39	U	N*	P
7440-22-4	Silver	0.06	U		P
7440-23-5	Sodium	102	B		P
7440-28-0	Thallium	2.4		*	P
7440-62-2	Vanadium	20.7			P
7440-66-6	Zinc	27.6		*	P

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS05D-000.5

Lab Name: COMPUCHEM Contract:

Lab Cod : LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441313

Level (low/med): LOW Date Received: 12/8/2007

% Solids: 73.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13400			P
7440-36-0	Antimony	0.77	B	N	P
7440-38-2	Arsenic	6.8		*	P
7440-39-3	Barium	88.5			P
7440-41-7	Beryllium	0.95			P
7440-43-9	Cadmium	0.07	U	*	P
7440-70-2	Calcium	1900			P
7440-47-3	Chromium	17.0		*	P
7440-48-4	Cobalt	6.1		*	P
7440-50-8	Copper	15.1		*E	P
7439-89-6	Iron	16600		*	P
7439-92-1	Lead	35.5			P
7439-95-4	Magnesium	1540			P
7439-96-5	Manganese	605		*	P
7439-97-6	Mercury	0.13			CV
7440-02-0	Nickel	11.1		*	P
7440-09-7	Potassium	659	B		P
7782-49-2	Selenium	0.45	U	N*	P
7440-22-4	Silver	0.07	U		P
7440-23-5	Sodium	95.5	B		P
7440-28-0	Thallium	3.6		*	P
7440-62-2	Vanadium	29.6			P
7440-66-6	Zinc	54.5		*	P

Color Before: BLACK Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS06D-000.5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441316

Level (low/med): LOW Date Received: 12/8/2007

% Solids: 71.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14800			P
7440-36-0	Antimony	0.70	B	N	P
7440-38-2	Arsenic	6.3		*	P
7440-39-3	Barium	84.6			P
7440-41-7	Beryllium	1.0			P
7440-43-9	Cadmium	0.07	U	*	P
7440-70-2	Calcium	742			P
7440-47-3	Chromium	16.8		*	P
7440-48-4	Cobalt	5.8		*	P
7440-50-8	Copper	16.7		*E	P
7439-89-6	Iron	15800		*	P
7439-92-1	Lead	32.5			P
7439-95-4	Magnesium	1430			P
7439-96-5	Manganese	685		*	P
7439-97-6	Mercury	0.17			CV
7440-02-0	Nickel	11.2		*	P
7440-09-7	Potassium	528	B		P
7782-49-2	Selenium	0.45	U	N*	P
7440-22-4	Silver	0.07	U		P
7440-23-5	Sodium	88.2	B		P
7440-28-0	Thallium	2.7		*	P
7440-62-2	Vanadium	27.4			P
7440-66-6	Zinc	88.2		*	P

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS07E-000.5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441302

Level (low/med): LOW Date Received: 12/7/2007

% Solids: 62.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16600			P
7440-36-0	Antimony	1.4	B	N	P
7440-38-2	Arsenic	6.2		*	P
7440-39-3	Barium	130			P
7440-41-7	Beryllium	0.94			P
7440-43-9	Cadmium	0.42	B	*	P
7440-70-2	Calcium	3720			P
7440-47-3	Chromium	25.9		*	P
7440-48-4	Cobalt	5.7		*	P
7440-50-8	Copper	49.0		*E	P
7439-89-6	Iron	20500		*	P
7439-92-1	Lead	289			P
7439-95-4	Magnesium	2180			P
7439-96-5	Manganese	276		*	P
7439-97-6	Mercury	0.10			CV
7440-02-0	Nickel	15.4		*	P
7440-09-7	Potassium	831			P
7782-49-2	Selenium	0.52	U	N*	P
7440-22-4	Silver	0.08	U		P
7440-23-5	Sodium	187	B		P
7440-28-0	Thallium	3.8		*	P
7440-62-2	Vanadium	37.3			P
7440-66-6	Zinc	214		*	P

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS08E-000.5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441303

Level (low/med): LOW Date Received: 12/7/2007

% Solids: 65.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11500			P
7440-36-0	Antimony	0.71	B	N	P
7440-38-2	Arsenic	2.8		*	P
7440-39-3	Barium	100			P
7440-41-7	Beryllium	0.97			P
7440-43-9	Cadmium	0.07	U	*	P
7440-70-2	Calcium	1580			P
7440-47-3	Chromium	19.0		*	P
7440-48-4	Cobalt	7.3		*	P
7440-50-8	Copper	18.0		*E	P
7439-89-6	Iron	16100		*	P
7439-92-1	Lead	25.7			P
7439-95-4	Magnesium	1840			P
7439-96-5	Manganese	381		*	P
7439-97-6	Mercury	0.042	B		CV
7440-02-0	Nickel	13.9		*	P
7440-09-7	Potassium	1290			P
7782-49-2	Selenium	0.48	U	N*	P
7440-22-4	Silver	0.07	U		P
7440-23-5	Sodium	135	B		P
7440-28-0	Thallium	2.6		*	P
7440-62-2	Vanadium	25.7			P
7440-66-6	Zinc	43.0		*	P

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 - METALS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS09E-000.5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441304

Level (low/med): LOW Date Received: 12/7/2007

% Solids: 72.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12300			P
7440-36-0	Antimony	3.1		N	P
7440-38-2	Arsenic	6.2		*	P
7440-39-3	Barium	171			P
7440-41-7	Beryllium	0.75			P
7440-43-9	Cadmium	2.0		*	P
7440-70-2	Calcium	6650			P
7440-47-3	Chromium	18.3		*	P
7440-48-4	Cobalt	5.4		*	P
7440-50-8	Copper	180		*E	P
7439-89-6	Iron	14000		*	P
7439-92-1	Lead	336			P
7439-95-4	Magnesium	2260			P
7439-96-5	Manganese	468		*	P
7439-97-6	Mercury	0.059			CV
7440-02-0	Nickel	13.4		*	P
7440-09-7	Potassium	1150			P
7782-49-2	Selenium	0.44	U	N*	P
7440-22-4	Silver	0.87			P
7440-23-5	Sodium	168	B		P
7440-28-0	Thallium	2.8		*	P
7440-62-2	Vanadium	21.1			P
7440-66-6	Zinc	313		*	P

Color Before: BLACK Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 - METALS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS10E-000.5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441308

Level (low/med): LOW Date Received: 12/8/2007

% Solids: 71.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12900			P
7440-36-0	Antimony	0.68	B	N	P
7440-38-2	Arsenic	6.2		*	P
7440-39-3	Barium	82.9			P
7440-41-7	Beryllium	0.85			P
7440-43-9	Cadmium	0.07	U	*	P
7440-70-2	Calcium	1360			P
7440-47-3	Chromium	14.1		*	P
7440-48-4	Cobalt	4.9		*	P
7440-50-8	Copper	16.9		*E	P
7439-89-6	Iron	12500		*	P
7439-92-1	Lead	35.6			P
7439-95-4	Magnesium	1300			P
7439-96-5	Manganese	465		*	P
7439-97-6	Mercury	0.16			CV
7440-02-0	Nickel	9.2		*	P
7440-09-7	Potassium	552	B		P
7782-49-2	Selenium	0.44	U	N*	P
7440-22-4	Silver	0.07	U		P
7440-23-5	Sodium	87.1	B		P
7440-28-0	Thallium	1.9		*	P
7440-62-2	Vanadium	22.9			P
7440-66-6	Zinc	48.0		*	P

Color Before: BLACK Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

SW846 - METALS

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS13E-000.5

Lab Name: COMPUCHEM Contract: _____

Lab Code: LIBRTY Case No.: _____ SAS No.: _____ SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441307

Level (low/med): LOW Date Received: 12/7/2007

% Solids: 72.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11900			P
7440-36-0	Antimony	0.79	B	N	P
7440-38-2	Arsenic	6.9		*	P
7440-39-3	Barium	69.7			P
7440-41-7	Beryllium	0.71			P
7440-43-9	Cadmium	0.07	U	*	P
7440-70-2	Calcium	2770			P
7440-47-3	Chromium	15.8		*	P
7440-48-4	Cobalt	5.9		*	P
7440-50-8	Copper	17.3		*E	P
7439-89-6	Iron	14500		*	P
7439-92-1	Lead	46.3			P
7439-95-4	Magnesium	1560			P
7439-96-5	Manganese	475		*	P
7439-97-6	Mercury	0.12			CV
7440-02-0	Nickel	11.1		*	P
7440-09-7	Potassium	942			P
7782-49-2	Selenium	0.45	U	N*	P
7440-22-4	Silver	0.26	B		P
7440-23-5	Sodium	111	B		P
7440-28-0	Thallium	2.4		*	P
7440-62-2	Vanadium	25.2			P
7440-66-6	Zinc	67.9		*	P

Color Before: BLACK Clarity Before: _____ Texture: COARSE

Color After: YELLOW Clarity After: _____ Artifacts: _____

Comments: _____

SW846 - METALS

-1-

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

SS14E-000.5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441306

Level (low/med): LOW Date Received: 12/7/2007

% Solids: 70.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13400			P
7440-36-0	Antimony	0.71	B	N	P
7440-38-2	Arsenic	5.5		*	P
7440-39-3	Barium	95.1			P
7440-41-7	Beryllium	0.91			P
7440-43-9	Cadmium	0.07	U	*	P
7440-70-2	Calcium	2990			P
7440-47-3	Chromium	16.3		*	P
7440-48-4	Cobalt	5.6		*	P
7440-50-8	Copper	23.5		*E	P
7439-89-6	Iron	14300		*	P
7439-92-1	Lead	36.0			P
7439-95-4	Magnesium	1660			P
7439-96-5	Manganese	494		*	P
7439-97-6	Mercury	0.15			CV
7440-02-0	Nickel	10.8		*	P
7440-09-7	Potassium	774			P
7782-49-2	Selenium	0.46	U	N*	P
7440-22-4	Silver	0.07	U		P
7440-23-5	Sodium	114	B		P
7440-28-0	Thallium	2.7		*	P
7440-62-2	Vanadium	24.8			P
7440-66-6	Zinc	62.4		*	P

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.
SS15E-000.5

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Lab Sample ID: 1441305

Level (low/med): LOW Date Received: 12/7/2007

% Solids: 67.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11000			P
7440-36-0	Antimony	0.77	B	N	P
7440-38-2	Arsenic	9.0		*	P
7440-39-3	Barium	102			P
7440-41-7	Beryllium	0.88			P
7440-43-9	Cadmium	0.08	B	*	P
7440-70-2	Calcium	6040			P
7440-47-3	Chromium	17.0		*	P
7440-48-4	Cobalt	5.3		*	P
7440-50-8	Copper	25.1		*E	P
7439-89-6	Iron	15600		*	P
7439-92-1	Lead	92.8			P
7439-95-4	Magnesium	2910			P
7439-96-5	Manganese	483		*	P
7439-97-6	Mercury	0.14			CV
7440-02-0	Nickel	13.0		*	P
7440-09-7	Potassium	1050			P
7782-49-2	Selenium	0.46	U	N*	P
7440-22-4	Silver	0.17	B		P
7440-23-5	Sodium	134	B		P
7440-28-0	Thallium	3.3		*	P
7440-62-2	Vanadium	23.8			P
7440-66-6	Zinc	92.2		*	P

Color B fore: BLACK Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comm nts:

APPENDIX C

Support Documentation

CompuChem
a Division of Liberty Analytical Corp.
501 Madison Avenue
Cary, NC 27513

SDG NARRATIVE
SDG # 14413

The indicated Sample Delivery Group (SDG) consisting of seventeen (17) solid samples were received into the laboratory information management system (LIMS) on December 7 and 8, 2007 intact and in good condition with Chain of Custody (COC) Records in order, unless otherwise noted in any attachments or Quality Assurance Notices. The temperature of the samples upon receipt was 1.6 to 2.3°C. Sample ID's reported in this data package are noted by the receiving department on the COC if they differ from those listed by the samplers on the COC.

The samples were analyzed in accordance with SW846 methodology for the requested TAL metals and mercury.

INSTRUMENTAL QUALITY CONTROL:

All calibration verification solutions (ICV & CCV), blanks (ICB & CCB), and interference check samples (ICSA & ICSAB) associated with this data were confirmed to be within allowable limits.

SAMPLE PREPARATION QUALITY CONTROL:

The sample preparation procedure verification (PBS & LCSS) was found to be within acceptable ranges and the field samples were prepared and analyzed within the specified holding times.

MATRIX RELATED QUALITY CONTROL:

The sample matrix spikes, CCN = 1441313 ID SS05D-000.5S and SS05D-000.5SD were inside control limits for the requested analytes except antimony and selenium.

Control limits for matrix spikes recoveries are set at 75% to 125% of the analyte quantity added unless original sample concentrations exceed the true values of these "spikes" by a factor of four or more. In this case, affected analytes are not flagged even if recoveries are outside percentage recovery control limits.

The sample matrix duplicate, CCN = 1441313 ID SS05D-000.5D was inside control limits for the requested analytes except arsenic, cadmium, chromium, cobalt, copper, iron, manganese, nickel, selenium, thallium, and zinc.

CLP control limits for duplicate determinations are +/- 20% Relative Percent Difference (RPD) for concentrations greater than or equal to five times the CRDL in both the original and duplicate samples, and +/- the CRDL for concentrations less than five times the CRDL. The RPD is not calculated if both the original and duplicate values fall below the IDL.

A five-fold serial dilution of sample, CCN = 1441313 ID SS05D-000.5L was performed in accordance with requirements for ICP analysis.

The adjusted sample concentrations were inside control limits for the requested analytes except copper.

Control limits for serial dilution are defined as a deviation less than or equal to 10% in the dilution adjusted concentrations from the original values for all analyte concentrations greater than fifty (50) times their respective Instrument Detection Limit (IDL) in the original sample.

16997

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CompuChem
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CHAIN OF CUSTODY

501 Madison Ave.
Cary, NC 27513
Phone: 919-379-4100 Fax 919-379-4040

Page 1 of 2

Courier: Fed Ex
Airbill No.: 863130420895
Sampling Complete? Y or N

Client/Reporting Information

Company Name: TetraTech NVS
Address: 234 Mall Blvd. Ste. 260
City: King of Prussia State: PA Zip: 19406
Project Contact: Russ Turner
Phone #: 610-382-1534
Sampler's Name: Donald Whalen

Project Information

Project Name: SSA 12 Soil Invest.
Sampling Location: SSA 12
Turnaround time:
Batch QC or Project Specific? If Specific, which Sample ID?
Are aqueous samples field filtered for metals? Y or N
Are high concentrations expected? Y or N? If yes, which ID(s)?

Requested Analysis (include method and bottle type)

Matrices: GW - Ground water; WW - Waste water; SW - Surface water; SO - Soil/Sediment; TB - Trip Blank; RI - Rinsate; WP - Wipe; O - Other

CompuChem No (Lab Use)	Field ID	Collection Date	Collection Time	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	MEOH	Other	TCL VOC (SW846) 5g Encore	TCL SVOC, Pest/PCB (SW846) 8oz	TAL metals (SW846) 2oz Jar	pH / Sample Info (Lab Use)
1441016	SSA12-SS02E-000.5	12/6/07	0930	SO	5							3	1	1	
1441017	SSA12-SS01E-000.5		0950	SO	5							3	1	1	
1441018	SSA12-SS05E-000.5		1005	SO	5							3	1	1	
1441019	SSA12-SS06E-000.5		1021	SO	15							9	3	3	
1441020	SSA12-SS03E-000.5		1115	SO	5							3	1	1	
1441301	SSA12-SS04E-000.5		1140	SO	5							3	1	1	
1441302	SSA12-SS07E-000.5		1158	SO	5							3	1	1	
1441303	SSA12-SS08E-000.5		1215	SO	5							3	1	1	
1441304	SSA12-SS09E-000.5		1240	SO	5							3	1	1	
1441305	SSA12-SS15E-000.5	↓	1450	SO	5							3	1	1	

Lab Use Only

Sample Unpacked By:
Sample Order Entry By:
Samples Received in Good Condition? Y or N
If no, explain:
Cyanide samples checked for sulfide & chlorine? Y or NA
625 & Phenol samples checked for chlorine? Y or NA
608 samples checked for pH between 5.0-9.0? Y or NA

Comments

SSA12-SS06E-000.5 = MS/MSD

Sample Custody

Relinquished by: Donald Whalen	Date/Time: 12/6/07 1900	Received by:	Date/Time: 12.7.07 ~~1010~~ 1010
Relinquished by:	Date/Time:	Received by:	Date/Time:
Subcontact? Y or N If yes, where?	Custody Seal(s) intact? Y or N	On Ice? Y or N	Cooler Temp: 2.3 °C

Samples stored 60 days after date report mailed at no extra charge.

White & Yellow copy to lab • Pink copy for customer

16996

CHAIN OF CUSTODY

CompuChem
a division of Liberty Analytical C rp.

501 Madison Ave.
Cary, NC 27513
Phone: 919-379-4100 Fax 919-379-4040

Courier: Fed Ex
Airbill No.: 8631 3042 0845
Sampling Complete? Y or N

Client/Reporting Information

Company Name: Tetra Tech NUS
Address: 234 Mall Blvd.
City / State / Zip: King of Prussia PA 19406
Project Contact: Russ Turner
Phone #: 610-382-1574
Sampler's Name: Donald Whalen

Project Information

Project Name: SSA-12 Soil Investigation
Sampling Location: SSA 12
Turnaround time:
Batch QC or Project Specific? If Specific, which Sample ID?
Are aqueous samples field filtered for metals? Y or N
Are high concentrations expected? Y or N If yes, which ID(s)?

Requested Analysis (include method and bottle type)

Matrices: GW - Ground water; WW - Waste water; SW - Surface water; SO - Soil/Sediment; TB - Trip Blank; RI - Rinsate; WP - Wipe; O - Other

CompuChem No (Lab Use)	Field ID	Collection Date	Collection Time	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	MEOH	Other	TCL VOC (SW846) 5g Encore	TCL SVOC/Pest/PCB (SW846) 8oz Jar	TAL Metals (SW846) 2oz Jar	TCL VOC 40ml vial	pH / Sample Info (Lab Use)
1441306	SSA12-SS14E-000.5	12/6/07	1505	SO	5							3	1	1		
1-141307	SSA12-SS13E-000.5	12/6/07	1535	SO	5							3	1	1		
1441103	TB-120607	12/6/07	0520	TB	2	2									2	

Lab Use Only

Sample Unpacked By:
Sample Order Entry By:
Samples Received in Good Condition? Y or N
If no, explain:

Cyanide samples checked for sulfide & chlorine? Y or NA
625 & Phenol samples checked for chlorine? Y or NA
608 samples checked for pH between 5.0-9.0? Y or NA

Comments

Sample Custody

Relinquished by: Donald Whalen	Date/Time: 12/26/07 1900	Received by:	Date/Time: 12-7-07 1010
Relinquished by:	Date/Time:	Received by:	Date/Time:

Subcontact? Y or N If yes, where?
Custody Seal(s) intact? Y or N
On Ice? Y or N
Cooler Temp: 2-1 °C

Samples stored 60 days after date report mailed at no extra charge.

White & Yellow copy to lab • Pink copy for customer

16995

CHAIN OF CUSTODY

CompuChem
a division of Liberty Analytical Corp.
501 Madison Ave.
Cary, NC 27513
Phone: 919-379-4100 Fax 919-379-4040

Courier: FED EX
Airbill No.: 8631 3042 0900
Sampling Complete? Y or N

Client/Reporting Information

Company Name: Tetra Tech NVS
Address: 234 Mall Blvd
City: King of Prussia State: PA Zip: 19406
Project Contact: Russ Turner
Phone #: 610-382-1534
Sampler's Name: Donald Whalen

Project Information

Project Name: SSA 12 Soil Investigation
Sampling Location: SSA 12
Turnaround time:
Batch QC or Project Specific? If Specific, which Sample ID?
Are aqueous samples field filtered for metals? Y or N
Are high concentrations expected? Y or N If yes, which ID(s)?

Matrices: GW - Ground water; WW - Waste water; SW - Surface water; SO - Soil/Sediment; TB - Trip Blank; RI - Rinsate; WP - Wipe; O - Other

CompuChem No (Lab Use)	Field ID	Collection Date	Collection Time	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	MEOH	Other	TCL VOC, SW846 5g Encore	TCL SVOC/Pest/PCB SW846 8oz Jar	TAL Metals SW846 2oz Jar	TCL VOC 40ml vial	TCL SVOC 1L amber	TCL Pest 1L amber	TCL PCB 1L amber	TAL Metals 500ml poly			pH / Sample Info (Lab Use) Metals
1441105	TB-120707	12/7/07	0810	TB	2	2									2							
1441104	RB-120707		1400	RI	10	3		1							3	2	2	2	1			<2
1441308	SSA12-SS10E-000.5		0855	SO	5							3	1	1								
1441309	SSA12-SS01D-000.5		0925	SO	5							3	1	1								
1441310	SSA12-SB01D-0.5-1.0		1040	SO	5							3	1	1								
1441311	SSA12-SS02D-000.5		1055	SO	5							3	1	1								
1441312	SSA12-SB02D-2.0-2.5		1115	SO	5							3	1	1								
1441313	SSA12-SS05D-000.5		1205	SO	15							9	~~2~~ 3	3	~~2~~							
1441314	SSA12-FD-02		0000	SO	5							3	~~2~~ 1	1	~~2~~							
1441315	SSA12-SB05D-2.0-2.5	✓	1235	SO	5							3	1	1								

Lab Use Only

Sample Unpacked By: Jennifer Dorey
Sample Order Entry By:
Samples Received in Good Condition? Y or N
If no, explain:

Cyanide samples checked for sulfide & chlorine? Y or NA
625 & Phenol samples checked for chlorine? Y or NA
608 samples checked for pH between 5.0-9.0? Y or NA

Comments

MS/MSD = SSA12-SS05D-000.5

Sample Custody

Relinquished by: Donald Whalen	Date/Time: 12/7/07 1830	Received by: Jennifer Dorey	Date/Time: 12/8/07 9:30
Relinquished by:	Date/Time:	Received by:	Date/Time:
Subcontact? Y or N If yes, where?	Custody Seal(s) intact? Y or N	On Ice? Y or N	Cooler Temp: 2.2, 1.6 °C

Samples stored 60 days after date report mailed at no extra charge.

White & Yellow copy to lab • Pink copy for customer

16998

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CompuChem
a divisi n of Liberty Analytical Corp.

CHAIN OF CUSTODY

501 Madison Ave.
Cary, NC 27513
Phone: 919-379-4100 Fax 919-379-4040

Page 2 of 2

Courier: FEDEX
Airbill No.: 8631 3042 0900
Sampling Complete? Y or N

Client/Reporting Information

Company Name: Tetra Tech NUS
Address: 234 Mall Blvd. Ste. 260
City / State / Zip: King of Prussia, PA 19406
Project Contact: Russ Turner
Phone #: 610-382-1534
Sampler's Name: Donald Whalen

Project Information

Project Name: SSA 12 Soil Fuvest.
Sampling Location: SSA 12
Turnaround time:
Batch QC or Project Specific? If Specific, which Sample ID?
Are aqueous samples field filtered for metals? Y or N
Are high concentrations expected? Y or N? If yes, which ID(s)?

Requested Analysis (include method and bottle type)

Matrices: GW - Ground water; WW - Waste water; SW - Surface water; SO - Soil/Sediment; TB - Trip Blank; RI - Rinsate; WP - Wipe; O - Other

CompuChem No (Lab Use)	Field ID	Collection Date	Collection Time	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	MEOH	Other	TCL VOC (SW846) 5g Encore	TCL SVOC, Pest/PCB (SW846) 8 oz	TAL metals (SW846) 2 oz	pH / Sample Info (Lab Use)
1441316	SSA12-SS06D-000.5	12/7/07	1300	SO	5							3	1	1	
1441317	SSA12-SB06D-2.02.5	12/7/07	1315	SO	5							3	1	1	

Lab Use Only

Sample Unpacked By: Jennifer Dover
Sample Order Entry By: [illegible]
Samples Received in Good Condition? Y or N
If no, explain:

Cyanide samples checked for sulfide & chlorine? Y or NA
625 & Phenol samples checked for chlorine? Y or NA
608 samples checked for pH between 5.0-9.0? Y or NA

Comments

Sample Custody

Relinquished by: Donald Whalen	Date/Time: 12/7/07 1830	Received by: Jennifer Dover	Date/Time: 12/8/07 9:30
Relinquished by:	Date/Time:	Received by:	Date/Time:
Subcontact? Y or N If yes, where?	Custody Seal(s) intact? Y or N	On Ice? Y or N	Cooler Temp: 2.2 °C

Samples stored 60 days after date report mailed at no extra charge.

White & Yellow copy to lab • Pink copy for customer

SW846 - METALS

3

BLANKS

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum	14.7	U	14.7	U	17.5	B	28.3	B	4.499	B	P
Antimony	2.9	U	2.9	U	2.9	U	2.9	U	0.573	B	P
Arsenic	3.2	U	3.2	U	3.2	U	3.2	U	0.320	U	P
Barium	-0.9	B	-0.9	B	-0.8	B	-0.7	B	-0.028	B	P
Beryllium	0.2	U	0.2	U	0.2	U	0.3	B	0.032	B	P
Cadmium	0.5	U	0.5	U	0.5	U	0.5	U	-0.052	B	P
Calcium	12.9	B	11.1	B	32.0	B	35.7	B	15.142	B	P
Chromium	0.5	U	0.5	U	0.5	U	0.5	U	0.250	B	P
Cobalt	1.6	U	1.6	U	1.6	U	1.6	U	0.160	U	P
Copper	0.9	U	0.9	U	0.9	U	0.9	U	0.090	U	P
Iron	9.8	U	9.8	U	15.7	B	16.6	B	3.605	B	P
Lead	2.1	U	2.1	U	2.1	U	2.1	U	0.217	B	P
Magnesium	6.5	B	4.1	U	27.8	B	32.2	B	3.714	B	P
Manganese	-0.5	B	-0.7	B	-0.5	B	-0.4	B	0.026	B	P
Mercury	0.100	U	0.100	U	0.100	U	0.100	U	0.017	U	CV
Nickel	1.1	U	1.1	U	1.1	U	1.1	U	0.110	U	P
Potassium	4.0	U	4.0	U	4.0	U	6.5	B	2.424	B	P
Selenium	4.3	B	3.3	U	3.3	U	3.3	U	0.330	U	P
Silver	0.5	U	0.5	U	-1.0	B	-0.8	B	0.050	U	P
Sodium	121.5	U	121.5	U	121.5	U	121.5	U	42.931	B	P
Thallium	4.0	U	4.0	U	4.0	U	4.0	U	-0.414	B	P
Vanadium	0.4	U	0.4	U	0.4	U	0.4	U	0.040	U	P
Zinc	0.7	U	0.7	U	0.7	U	0.7	U	0.347	B	P

SW846 - METALS

3

BLANKS

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum			30.3	B	42.9	B	47.5	B			P
Antimony			2.9	U	2.9	U	2.9	U			P
Arsenic			3.2	U	3.2	U	3.2	U			P
Barium			-0.7	B	-0.6	B	-0.7	B			P
Beryllium			0.3	B	0.4	B	0.4	B			P
Cadmium			0.5	U	0.6	B	0.5	B			P
Calcium			35.0	B	40.4	B	44.5	B			P
Chromium			0.5	U	0.5	B	0.5	U			P
Cobalt			1.6	U	1.6	U	1.6	B			P
Copper			0.9	U	0.9	U	0.9	U			P
Iron			16.3	B	23.7	B	25.8	B			P
Lead			2.1	U	2.1	U	2.1	U			P
Magnesium			28.6	B	35.7	B	40.7	B			P
Manganese			-0.4	B	-0.3	B	-0.3	B			P
Mercury			0.100	U	0.100	U	0.100	U			CV
Nickel			1.1	U	1.1	U	1.1	U			P
Potassium			4.0	B	8.5	B	6.7	B			P
Selenium			3.3	U	3.3	U	3.3	U			P
Silver			0.5	U	0.5	U	0.5	U			P
Sodium			121.5	U	121.5	U	121.5	U			P
Thallium			4.0	U	4.0	U	4.0	U			P
Vanadium			0.4	U	0.4	U	0.5	B			P
Zinc			0.7	U	0.7	U	0.7	U			P

SW846 - METALS

3

BLANKS

Lab Name: COMPUCHEM Contract:

Lab Cod : LIBRTY Case No.: SAS No.: SDG No.: 14413

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum			55.3	B	29.2	B	29.6	B			P
Antimony			2.9	U	2.9	U	2.9	U			P
Arsenic			3.2	U	3.2	U	3.2	U			P
Barium			-0.5	B	-0.9	B	-0.8	B			P
Beryllium			0.5	B	0.2	B	0.3	B			P
Cadmium			0.5	U	0.5	U	0.5	U			P
Calcium			51.6	B	22.4	B	34.4	B			P
Chromium			0.6	B	0.5	U	0.5	U			P
Cobalt			1.6	U	1.6	U	1.6	U			P
Copper			0.9	U	-1.2	B	-1.2	B			P
Iron			19.5	B	9.8	U	17.6	B			P
Lead			2.1	U	2.1	U	2.1	U			P
Magnesium			46.0	B	19.3	B	22.6	B			P
Manganese			-0.2	B	-0.5	B	-0.5	B			P
Mercury			0.100	U							CV
Nickel			1.1	U	1.1	U	1.1	U			P
Potassium			8.7	B	4.0	U	4.5	B			P
Selenium			3.3	U	3.3	U	3.3	U			P
Silver			0.5	U	0.5	U	0.5	U			P
Sodium			121.5	U	121.5	U	121.5	U			P
Thallium			4.0	U	4.0	U	4.0	U			P
Vanadium			0.4	B	0.4	U	0.4	U			P
Zinc			0.7	U	0.7	U	1.9	B			P

SW846 - METALS

3

BLANKS

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum			39.4	B	42.0	B	63.0	B			P
Antimony			2.9	U	2.9	U	2.9	U			P
Arsenic			3.2	U	3.2	U	3.2	U			P
Barium			-0.8	B	-0.7	B	-0.7	B			P
Beryllium			0.5	B	0.6	B	0.6	B			P
Cadmium			0.5	U	0.5	U	0.5	U			P
Calcium			13.2	B	18.2	B	38.7	B			P
Chromium			0.5	U	0.7	B	1.0	B			P
Cobalt			1.6	U	1.6	U	-1.7	B			P
Copper			-1.8	B	-1.5	B	-1.3	B			P
Iron			14.5	B	15.0	B	24.2	B			P
Lead			2.1	U	2.1	U	2.1	U			P
Magnesium			16.9	B	19.8	B	35.7	B			P
Manganese			-0.3	B	-0.2	B	-0.2	B			P
Nickel			1.1	U	1.1	U	1.1	U			P
Potassium			4.8	B	8.8	B	8.1	B			P
Selenium			4.8	B	3.3	U	3.3	U			P
Silver			0.5	U	0.5	U	0.5	U			P
Sodium			121.5	U	121.5	U	121.5	U			P
Thallium			4.0	U	4.0	U	4.0	U			P
Vanadium			0.4	U	0.4	B	0.5	B			P
Zinc			0.7	U	0.7	U	0.9	B			P

SW846 - METALS

3

BLANKS

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Preparation Blank	C	M
Aluminum			75.1	B							P
Antimony			3.8	B							P
Arsenic			3.2	U							P
Barium			-0.5	B							P
Beryllium			0.7	B							P
Cadmium			0.5	U							P
Calcium			46.8	B							P
Chromium			1.2	B							P
Cobalt			1.6	U							P
Copper			-1.1	B							P
Iron			33.5	B							P
Lead			2.1	U							P
Magnesium			44.6	B							P
Manganese			0.1	U							P
Nickel			1.1	U							P
Potassium			14.0	B							P
Selenium			3.3	U							P
Silver			0.5	U							P
Sodium			121.5	U							P
Thallium			4.0	U							P
Vanadium			1.0	B							P
Zinc			0.9	B							P

SW846 - METALS

4

ICP INTERFERENCE CHECK SAMPLE

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

ICP ID Number: P4 ICS Source: EPA-503-203

Concentration Units: ug/L

Analyte	True		Initial Found			Final Found		
	Sol.A	Sol.AB	Sol.A	Sol.AB	%R	Sol.A	Sol.AB	%R
Aluminum	244100	241100	251000	251000	104.1			
Antimony	0	589	0.82	621	105.4			
Arsenic	0	101	2.2	103	102.0			
Barium	2	495	1.6	509	102.8			
Beryllium	0	475	0.64	504	106.1			
Cadmium	0	940	-0.46	945	100.5			
Calcium	234900	231100	255000	255000	110.3			
Chromium	43	511	43.5	524	102.5			
Cobalt	4	461	6.1	490	106.3			
Copper	23	548	23.4	526	96.0			
Iron	95600	94800	96900	97000	102.3			
Lead	10	61	9.1	56.2	92.1			
Magnesium	247500	251100	266000	265000	105.5			
Manganese	19	502	20.2	526	104.8			
Nickel	21	984	20.8	983	99.9			
Potassium	0	0	1.4	2.1				
Selenium	0	53	0.74	50.6	95.5			
Silver	0	206	-0.70	203	98.5			
Sodium	0	0	825	864				
Thallium	0	103	12.1	109	105.8			
Vanadium	1	494	0.22	499	101.0			
Zinc	28	1028	13.7	950	92.4			

INORGANIC INTERFERENCE CHECK SAMPLE VALIDATION

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	5D-000.5	6.94		Iron	95600	0.64	121805	0.82	K	na
Silver	0.5	5D-000.5		U	Iron	95600	-0.7	121805	-0.89	na	UR
Sodium	121.5	5D-000.5	701		Iron	95600	825	121805	1051.14	R	na
Thallium	4	5D-000.5	26.2		Iron	95600	12.1	121805	15.42	K	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	4E-000.5	7.08		Iron	95600	0.64	125705	0.84	K	na
Silver	0.5	4E-000.5		U	Iron	95600	-0.7	125705	-0.92	na	UR
Sodium	121.5	4E-000.5	863		Iron	95600	825	125705	1084.80	R	na
Thallium	4	4E-000.5	20.2		Iron	95600	12.1	125705	15.91	K	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	7E-000.5	6.01		Iron	95600	0.64	131510	0.88	K	na
Silver	0.5	7E-000.5		U	Iron	95600	-0.7	131510	-0.96	na	UR
Sodium	121.5	7E-000.5	1200		Iron	95600	825	131510	1134.89	K	na
Thallium	4	7E-000.5	24.1		Iron	95600	12.1	131510	16.65	K	na

(B)

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	8E-000.5	6.64		Iron	95600	0.64	109992	0.74	K	na
Silver	0.5	8E-000.5		U	Iron	95600	-0.7	109992	-0.81	na	UR
Sodium	121.5	8E-000.5	926		Iron	95600	825	109992	949.20	R	na
Thallium	4	8E-000.5	17.7		Iron	95600	12.1	109992	13.92	K	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	9E-000.5	5.58		Iron	95600	0.64	104312	0.70	K	na
Silver	0.5	9E-000.5	6.47		Iron	95600	-0.7	104312	-0.76	L	na
Sodium	121.5	9E-000.5	1250		Iron	95600	825	104312	900.18	K	na
Thallium	4	9E-000.5	20.9		Iron	95600	12.1	104312	13.20	K	na

(B)

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	15E-000.5	6.33		Iron	95600	0.64	112638	0.75	K	na
Silver	0.5	15E-000.5	1.2		Iron	95600	-0.7	112638	-0.82	L	na
Sodium	121.5	15E-000.5	963		Iron	95600	825	112638	972.03	R	na
Thallium	4	15E-000.5	24		Iron	95600	12.1	112638	14.26	K	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	14E-000.5	6.5		Iron	95600	0.64	102461	0.69	K	na
Silver	0.5	14E-000.5		U	Iron	95600	-0.7	102461	-0.75	na	UR
Sodium	121.5	14E-000.5	816		Iron	95600	825	102461	884.21	R	na
Thallium	4	14E-000.5	19.6		Iron	95600	12.1	102461	12.97	K	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	13E-000.5	5.28		Iron	95600	0.64	106875	0.72	K	na
Silver	0.5	13E-000.5	1.9		Iron	95600	-0.7	106875	-0.78	L	na
Sodium	121.5	13E-000.5	821		Iron	95600	825	106875	922.30	R	na
Thallium	4	13E-000.5	17.5		Iron	95600	12.1	106875	13.53	K	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	10E-000.5	6.46		Iron	95600	0.64	94596	0.63	na	na
Silver	0.5	10E-000.5		U	Iron	95600	-0.7	94596	-0.69	na	UR
Sodium	121.5	10E-000.5	660		Iron	95600	825	94596	816.34	R	na
Thallium	4	10E-000.5	14.4		Iron	95600	12.1	94596	11.97	K	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	1D-000.5	6.2		Iron	95600	0.64	127348	0.85	K	na
Silver	0.5	1D-000.5		U	Iron	95600	-0.7	127348	-0.93	na	UR
Sodium	121.5	1D-000.5	969		Iron	95600	825	127348	1098.98	R	na
Thallium	4	1D-000.5	22.2		Iron	95600	12.1	127348	16.12	K	na

INORGANIC INTERFERENCE CHECK SAMPLE VALIDATION

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	1D-0.51.0	6.9		Iron	95600	0.64	140147	0.94	K	na
Silver	0.5	1D-0.51.0		U	Iron	95600	-0.7	140147	-1.03	na	UR
Sodium	121.5	1D-0.51.0	4470		Iron	95600	825	140147	1209.43	K	na
Thallium	4	1D-0.51.0	23.4		Iron	95600	12.1	140147	17.74	K	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	2D-000.5	8.33		Iron	95600	0.64	139699	0.94	K	na
Silver	0.5	2D-000.5		U	Iron	95600	-0.7	139699	-1.02	na	UR
Sodium	121.5	2D-000.5	1110		Iron	95600	825	139699	1205.56	R	na
Thallium	4	2D-000.5	27.3		Iron	95600	12.1	139699	17.68	K	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	2D-2.02.5	5.84		Iron	95600	0.64	192817	1.29	K	na
Silver	0.5	2D-2.02.5		U	Iron	95600	-0.7	192817	-1.41	na	UR
Sodium	121.5	2D-2.02.5	1170		Iron	95600	825	192817	1663.95	R	na
Thallium	4	2D-2.02.5	32.5		Iron	95600	12.1	192817	24.40	K	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	FD-02	5.56		Iron	95600	0.64	186776	1.25	K	na
Silver	0.5	FD-02		U	Iron	95600	-0.7	186776	-1.37	na	UR
Sodium	121.5	FD-02	1240		Iron	95600	825	186776	1611.82	R	na
Thallium	4	FD-02	35		Iron	95600	12.1	186776	23.64	K	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	5D-2.02.5	5.7		Iron	95600	0.64	261168	1.75	K	na
Silver	0.5	5D-2.02.5		U	Iron	95600	-0.7	261168	-1.91	na	UR
Sodium	121.5	5D-2.02.5	1180		Iron	95600	825	261168	2253.80	R	na
Thallium	4	5D-2.02.5	57.7		Iron	95600	12.1	261168	33.06	K	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	6D-000.5	7.38		Iron	95600	0.64	116314	0.78	K	na
Silver	0.5	6D-000.5		U	Iron	95600	-0.7	116314	-0.85	na	UR
Sodium	121.5	6D-000.5	651		Iron	95600	825	116314	1003.76	R	na
Thallium	4	6D-000.5	20.3		Iron	95600	12.1	116314	14.72	K	na

Affected Analyte	MDL	Sample	Reported Result	Qualifier	Interferent	Interferent level in ICS	Conc. ICS	Interferent Level	Est. Interference	Validation Action	Validation Action
Beryllium	0.2	6D-2.02.5	4.98		Iron	95600	0.64	257358	1.72	K	na
Silver	0.5	6D-2.02.5		U	Iron	95600	-0.7	257358	-1.88	na	UR
Sodium	121.5	6D-2.02.5	1110		Iron	95600	825	257358	2220.92	R	na
Thallium	4	6D-2.02.5	46.9		Iron	95600	12.1	257358	32.57	K	na

SW846 - METALS

2B-IN

CRDL STANDARD FOR AA AND ICP

Lab Name: COMPUCHEM Contract: _____

Lab Code: LIBRTY Case No.: _____ SAS No.: _____ SDG No.: 14413

AA CRDL Standard Source: HP617816

ICP CRDL Standard Source: HIPUR

Concentration Units: ug/L

Analyte	True	Found	%R	CRDL Standard for ICP Initial True	Initial Found	Initial %R	Final Found	Final %R
Aluminum				200.0	200.77	100.4		
Antimony				60.0	60.01	100.0		
Arsenic				10.0	9.15	91.5		
Barium				200.0	185.81	92.9		
Beryllium				5.0	5.24	104.8		
Cadmium				5.0	5.66	113.2		
Calcium				2000.0	2119.97	106.0		
Chromium				10.0	9.72	97.2		
Cobalt				50.0	52.53	105.1		
Copper				25.0	22.97	91.9		
Iron				100.0	88.07	88.1		
Lead				3.0	3.03	101.0		
Magnesium				2000.0	2041.48	102.1		
Manganese				15.0	14.57	97.1		
Mercury	0.2	0.22	110.0					
Nickel				40.0	40.60	101.5		
Potassium				2000.0	1692.66	84.6		
Selenium				5.0	6.86	137.2		
Silver				10.0	8.63	86.3		
Sodium				2000.0	2026.55	101.3		
Thallium				10.0	7.84	78.4		
Vanadium				50.0	48.95	97.9		
Zinc				20.0	20.53	102.6		

Control Limits: no limits have been established by EPA at this time

SW846 - METALS

5A

SPIKE SAMPLE RECOVERY

SAMPLE NO.

SS05D-000.5S

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 73.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Antimony	75 - 125	18.4747		0.7714	B	68.12	26.0	N	P
Arsenic	75 - 125	11.3056		6.8398		5.45	81.9		P
Barium	75 - 125	315.4443		88.4797		272.48	83.3		P
Beryllium	75 - 125	6.7477		0.9450		6.81	85.2		P
Cadmium	75 - 125	5.1254		0.0681	U	6.81	75.3		P
Chr mium	75 - 125	41.6782		17.0491		27.25	90.4		P
Cobalt	75 - 125	63.6871		6.0587		68.12	84.6		P
Copper	75 - 125	50.6197		15.1175		34.06	104.2		P
Lead		38.2319		35.5232		2.72	99.6		P
Manganese		709.8047		604.9302		68.12	154.0		P
Mercury	75 - 125	0.3969		0.1270		0.23	117.3		CV
Nickel	75 - 125	70.5895		11.1092		68.12	87.3		P
Selenium	75 - 125	0.8303		0.4496	U	1.36	61.1	N	P
Silver	75 - 125	6.1335		0.0681	U	6.81	90.1		P
Thallium	75 - 125	8.8343		3.5769		6.81	77.2		P
Vanadium	75 - 125	87.7066		29.5607		68.12	85.4		P
Zinc	75 - 125	114.1211		54.5442		68.12	87.5		P

Comm nts:

SW846 - METALS

5A

SPIKE SAMPLE RECOVERY

SAMPLE NO.

SS05D-000.5SD

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 73.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Antimony	75 - 125	19.8120		0.7714	B	68.12	28.0	N	P
Arsenic	75 - 125	11.4357		6.8398		5.45	84.3		P
Barium	75 - 125	315.9511		88.4797		272.48	83.5		P
Beryllium	75 - 125	6.8275		0.9450		6.81	86.4		P
Cadmium	75 - 125	5.2905		0.0681	U	6.81	77.7		P
Chromium	75 - 125	41.6181		17.0491		27.25	90.2		P
Cobalt	75 - 125	63.9659		6.0587		68.12	85.0		P
Copper	75 - 125	50.3871		15.1175		34.06	103.6		P
Lead		38.2968		35.5232		2.72	102.0		P
Manganese		639.5826		604.9302		68.12	50.9		P
Mercury	75 - 125	0.3847		0.1270		0.23	112.0		CV
Nickel	75 - 125	70.9202		11.1092		68.12	87.8		P
Selenium	75 - 125	0.6054	B	0.4496	U	1.36	44.5	N	P
Silver	75 - 125	6.3391		0.0681	U	6.81	93.1		P
Thallium	75 - 125	8.8421		3.5769		6.81	77.3		P
Vanadium	75 - 125	88.3732		29.5607		68.12	86.3		P
Zinc	75 - 125	115.0835		54.5442		68.12	88.9		P

Comm nts:

SW846 - METALS

5B

POST DIGEST SPIKE SAMPLE RECOVERY

SAMPLE NO.

SS05D-000.5A

Lab Name: COMPUCHEM Contract:

Lab Cod : LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added(SA)	%R	Q	M
Antimony		97.65		5.66	B	120.0	76.7		P
Selenium		5.19		3.30	U	10.0	51.9		P

Comments:

SW846 - METALS

6

DUPLICATES

SAMPLE NO.

SS05D-000.5D

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 73.4 % Solids for Duplicate: 73.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		13443.9000		11324.7900		17.1		P
Antimony		0.7714	B	0.7051	B	9.0		P
Arsenic		6.8398		9.5285		32.9	* ok	P
Barium	27.2	88.4797		102.3063		14.5		P
Beryllium	0.7	0.9450		0.8503		10.5		P
Cadmium		0.0681	U	0.0681	U		* ok	P
Calcium	681.2	1902.1010		1714.7660		10.4		P
Chromium		17.0491		27.1729		45.8	*	P
Cobalt		6.0587		9.7338		46.5	*	P
Copper		15.1175		28.2805		60.7	*	P
Iron		16594.7000		61191.8700		114.7	*	P
Lead		35.5232		39.0387		9.4		P
Magnesium	681.2	1536.2320		1243.2630		21.1		P
Manganese		604.9302		872.5913		36.2	*	P
Mercury	0.0	0.1270		0.1288		1.4		CV
Nickel	5.4	11.1092		25.7235		79.4	*	P
Potassium		658.9428	B	538.9155	B	20.0		P
Selenium		0.4496	U	0.4496	U		* ok	P
Silver		0.0681	U	0.0681	U			P
Sodium		95.5172	B	92.4041	B	3.3		P
Thallium	1.4	3.5769		13.0258		113.8	*	P
Vanadium		29.5607		29.2920		0.9		P
Zinc		54.5442		67.1976		20.8	* ok	P

SW846 - METALS

7

LABORATORY CONTROL SAMPLE

Lab Name: COMPUCHEM Contract:

Lab Code: LIBRTY Case No.: SAS No.: SDG No.: 14413

Solid LCS Source: ERA-540

Aqueous LCS Source:

Analyte	Aqueous (ug/L) True	Aqueous (ug/L) Found	Aqueous (ug/L) %R	Solid (mg/kg) True	Solid (mg/kg) Found	C	Limits		%R
Aluminum				7590.0	6514.61		4390.0	10800.0	85.8
Antimony				77.5	41.07		0.1	173.0	53.0
Arsenic				80.9	72.84		64.5	97.3	90.0
Barium				156.0	137.74		128.0	184.0	88.3
Beryllium				143.0	128.73		117.0	169.0	90.0
Cadmium				233.0	209.68		188.0	277.0	90.0
Calcium				4320.0	4072.16		3420.0	5220.0	94.3
Chromium				60.8	53.18		47.7	73.8	87.5
Cobalt				68.6	62.36		56.1	81.1	90.9
Copper				131.0	142.30		108.0	154.0	108.6
Iron				14400.0	10391.62		7420.0	21400.0	72.2
Lead				76.8	67.56		61.9	91.8	88.0
Magnesium				2220.0	1906.06		1710.0	2730.0	85.9
Manganese				304.0	282.81		243.0	365.0	93.0
Mercury				3.6	4.0		2.5	4.8	111.1
Nickel				49.6	46.49		40.4	58.8	93.7
Potassium				2380.0	2255.19		1700.0	3060.0	94.8
Selenium				82.9	68.03		62.6	103.0	82.1
Silver				80.0	83.95		49.0	111.0	104.9
Sodium				456.0	456.28	B	254.0	658.0	100.1
Thallium				158.0	150.29		119.0	197.0	95.1
Vanadium				72.4	59.22		51.7	93.0	81.8
Zinc				116.0	101.55		90.5	141.0	87.5

SW846 - METALS

9
ICP SERIAL DILUTIONS

SAMPLE NO.

SS05D-000.5L

Lab Name: COMPUCHEM Contract:

Lab Cod : LIBRTY Case No.: SAS No.: SDG No.: 14413

Matrix (soil/water): SOIL Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	98678.26		97992.85		0.7		P
Antimony	5.66	B	14.50	U	100.0		P
Arsenic	50.20		50.46		0.5		P
Barium	649.44		624.24	B	3.9		P
Beryllium	6.94		8.08	B	16.4		P
Cadmium	0.50	U	2.50	U			P
Calcium	13961.42		13609.64	B	2.5		P
Chromium	125.14		121.02		3.3		P
Cobalt	44.47		38.40		13.6		P
Copper	110.96		90.65		18.3	E	P
Iron	121805.10		120280.30		1.3		P
Lead	260.74		264.96		1.6		P
Magnesium	11275.94		11501.67	B	2.0		P
Manganese	4440.19		4335.32		2.4		P
Mercury	0.56		0.50	U	100.0		CV
Nickel	81.54		80.79	B	0.9		P
Potassium	4836.64	B	4481.19	B	7.3		P
Selenium	3.30	U	16.50	U			P
Silver	0.50	U	2.50	U			P
Sodium	701.10	B	607.50	U	100.0		P
Thallium	26.25		31.47	B	19.9		P
Vanadium	216.98		207.45		4.4		P
Zinc	400.35		400.44		0.0		P