TLF-06.01	SOP: QAQ-04.00	Eff. Date: 1/17/2007

ESAT Region 8

Analytical Data Review Form

Analyst / Bench Review – Level I

LIMS:	C110805	Project:	Rio-Argentine SW Aug 2011		
TDF:	DG-264	Matrix:	water	Analysis:	Dissolved / Tot Rec Metals

Method / Instrument QC Parameters				Analytical Batch / Sample Parameters	
☒ Yes ☐ No	Corr. Coef. ≥ 0.995	☒ Yes ☐ No	ICV 90% - 110%	☒ Yes ☐ No	Mth. Blk. (MB) / Prep. BLK (PB) ≤ ± PQL
☐ Yes ☒ No	ICB ≤ ± PQL	☒ Yes ☐ No	CRI 70% - 130%	☒ Yes ☐ No	Blk. Spike (BS) / LCS (SRM) In Control
☒ Yes ☐ No	ICSA Spiked Analytes 80% - 120%			☒ Yes ☐ No	Laboratory Duplicate Analyzed
☒ Yes ☐ No	ICSA Non-Spiked Analytes ≤ ± PQL			☒ Yes ☐ No	MS / MSD Analyzed
☒ Yes ☐ No	ICSAB Spiked Analytes 80% - 120%			☒ Yes ☐ No	Serial Dilution Analyzed
☐ Yes ☒ No	CCBs ≤ ± PQL	☒ Yes ☐ No	CCVs 90% - 110%	☒ Yes ☐ No	Post-Digest Spike Analyzed for Tot. / Tot. Rec.
☒ Yes ☐ No	QA QC Samples Internal Stds. 60% - 125%			☒ Yes ☐ No	Samples Internal Stds. 60% - 125%

Other obvious data quality issues are identified ☒ Yes ☐ No

Describe any anomaly or deficiency not indicated above in the space provided

Molybdenum was detected in CCB1. As a result the reporting limit for molybdenum was raised to 0.30 mg/L. Silver was detected in the ICB, CCB2, & CCB3. The reporting limit for silver was raised to 2 µg/L.

LIMS Electronic Data Transfer

☒ Yes ☐ No	The instrument data file is uploaded to the X: drive	☒ Yes ☐ No	Instrument data are uploaded into the LIMS
☒ Yes ☐ No	All samples and QC data are present in LIMS	☒ Yes ☐ No	The analyte list for the sequence is complete
Analyst:	[signature]	Date:	09/15/11

Peer Review of Analytical Analysis – Level II

Method / Instrument QC Parameters				Analytical Batch / Sample Parameters	
☒ Yes ☐ No	Corr. Coef. ≥ 0.995	☒ Yes ☐ No	ICV 90% - 110%	☒ Yes ☐ No	Mth. Blk. (MB) / Prep. BLK (PB) ≤ ± PQL
☐ Yes ☒ No	ICB ≤ ± PQL	☒ Yes ☐ No	CRI 70% - 130%	☒ Yes ☐ No	Blk. Spike (BS) / LCS (SRM) In Control
☒ Yes ☐ No	ICSA Spiked Analytes 80% - 120%			☒ Yes ☐ No	Laboratory Duplicate Analyzed
☒ Yes ☐ No	ICSA Non-Spiked Analytes ≤ ± PQL			☒ Yes ☐ No	MS / MSD Analyzed
☒ Yes ☐ No	ICSAB Spiked Analytes 80% - 120%			☒ Yes ☐ No	Serial Dilution Analyzed
☐ Yes ☒ No	CCBs ≤ ± PQL	☒ Yes ☐ No	CCVs 90% - 110%	☒ Yes ☐ No	Post-Digest Spike Analyzed for Tot. / Tot. Rec.
☒ Yes ☐ No	QA QC Samples Internal Stds. 60% - 125%			☒ Yes ☐ No	Samples Internal Stds. 60% - 125%

Other obvious data quality issues are identified ☒ Yes ☐ No

Describe any anomaly or deficiency not indicated above in the space provided

See analyst notes above.

LIMS Electronic Data Transfer

☒ Yes ☐ No	The instrument data file is uploaded to the X: drive	☒ Yes ☐ No	Instrument data are uploaded into the LIMS
☒ Yes ☐ No	All samples and QC data are present in LIMS	☒ Yes ☐ No	The analyte list for the sequence is complete
Peer Reviewer:	[signature]	Date:	9/28/11

PREPARATION BENCH SHEET

1109037

AV 09/15/11

TechLaw, Inc. - ESAT Region 8

Printed: 9/15/2011 8:18:43AM

Matrix: Water

Date Prepared: 09/13/11 12:06 By: SV

Prepared using: METALS - 200.2 - TR Metals

Lab Number	Analysis	EPA Tag ID	Initial (mL)	Final (mL)	Spike1 ID	ul Spike1	Spike2 ID	ul Spike2	Source ID	QC Code	Extraction Comments
C110805-04 A	CP-MS Tot. Rec. Metals-201	Io Tag Prefix-	50	50						BlaineTunnel	
C110806-02 A	CP-MS Tot. Rec. Metals-201	Io Tag Prefix-	50	50						R-MS063-NAD-001	
C110805-04 A	CPOE Tot. Rec Metals-201(	Io Tag Prefix-	50	50						BlaineTunnel	
C110806-02 A	CPOE Tot. Rec Metals-201(	Io Tag Prefix-	50	50						R-MS063-NAD-001	
1109037-BLK1	QC		50	50						Blank	
1109037-BLK2	QC		50	50						Blank	
1109037-DUP1	QC		50	50					C110806-02	Duplicate	
1109037-DUP2	QC		50	50					C110806-02	Duplicate	
1109037-MS1	QC		50	50	1040736	500	1040737	500	C110806-02	Matrix Spike	
1109037-MS2	QC		50	50	1040736	500	1040737	500	C110806-02	Matrix Spike	
1109037-MSD1	QC		50	50	1040736	500	1040737	500	C110806-02	Matrix Spike Dup	
1109037-MSD2	QC		50	50	1040736	500	1040737	500	C110806-02	Matrix Spike Dup	
1109037-PS1	QC		10	10	1050201	100			C110806-02	Post Spike	
1109037-PS2	QC		10	10	1050201	100			C110806-02	Post Spike	
1109037-SRM1	QC		50	50	1040747	500	1040748	500		Reference	
1109037-SRM2	QC		50	50	1040747	500	1040748	500		Reference	

PREPARATION BENCH SHEET

1109044

TechLaw, Inc. - ESAT Region 8

Av 09/15/11

Printed: 9/15/2011 8:17:29AM

Matrix: Water

Date Prepared: 09/14/11 14:51 By: SV **Prepared using: METALS - No Lab Prep Reqd**

Lab Number	Analysis	EPA Tag ID	Initial (mL)	Final (mL)	Spike1 ID	ul Spike1	Spike2 ID	ul Spike2	Source ID	QC Code	Extraction Comments
C110805-01 A	ICPMS Diss. Metals-2010	lo Tag Prefix-	50	50						ArgentineShaft	
C110805-03 A	ICPMS Diss. Metals-2010	lo Tag Prefix-	50	50						BlaineTunnel	
C110806-01 A	ICPMS Diss. Metals-2010	lo Tag Prefix-	50	50						R-MS063-NAD-001	
1109044-BLK1	QC		50	50						Blank	
1109044-BS1	QC		10	10	1050201	100				LCS	
1109044-DUP1	QC		50	50					C110806-01	Duplicate	
1109044-MS1	QC		10	10	1050201	100			C110806-01	Matrix Spike	
1109044-MSD1	QC		10	10	1050201	100			C110806-01	Matrix Spike Dup	

ANALYSIS SEQUENCE

1109045 9/15/11

Instrument: ICPMS-PE DRC-II Sequence Date: 09/15/11 00:00 Printed: 9/15/2011 12:12:12PM

Lab Number	Dilut. Factor	Analysis	STD ID	Sample/Std Name	EPA Tag ID	Source Sple	Comments
1109045-ICV1		QC	1040807	Initial Cal Check		-	
1109045-ICB1		QC		Initial Cal Blank		-	
1109045-CRL1		QC	1041103	MRL Check		-	
1109045-IFA1		QC	1040809	Interference Check A		-	
1109045-IFB1		QC	1040810	Interference Check B		-	
1109045-CCV1		QC	1040808	Calibration Check		-	
1109045-CCB1		QC		Calibration Blank		-	
1109044-BLK1		QC		Blank		-	
C110806-01 A		ICPMS Diss. Metals-2010		TR-MS063-NAD-001-(	No Tag Prefix-A		
1109044-DUP1		QC		Duplicate		C110806-01	
1109045-SRD1		QC		Serial Dilution		C110806-01	
1109044-BS1		QC		LCS		-	
1109044-MS1		QC		Matrix Spike		C110806-01	
1109044-MSD1		QC		Matrix Spike Dup		C110806-01	
C110805-01 A		ICPMS Diss. Metals-2010		ArgentineShaft	No Tag Prefix-A		
C110805-03 A		ICPMS Diss. Metals-2010		BlaineTunnel	No Tag Prefix-A		
1109045-CCV2		QC	1040808	Calibration Check		-	
1109045-CCB2		QC		Calibration Blank		-	

ANALYSIS SEQUENCE

1109046

Instrument: ICPMS-PE DRC-II Sequence Date: 09/15/11 00:00 Printed: 9/15/2011 12:50:10PM

Lab Number	Dilut. Factor	Analysis	STD ID	Sample/Std Name	EPA Tag ID	Source Sple	Comments
1109046-ICV1		QC	1040807	Initial Cal Check		-	
1109046-ICB1		QC		Initial Cal Blank		-	
1109046-CRL1		QC	1041103	MRL Check		-	
1109046-IFA1		QC	1040809	Interference Check A		-	
1109046-IFB1		QC	1040810	Interference Check B		-	
1109046-CCV1		QC	1040808	Calibration Check		-	
1109046-CCB1		QC		Calibration Blank		-	
1109046-CCV2		QC	1040808	Calibration Check		-	
1109046-CCB2		QC		Calibration Blank		-	
1109037-BLK2		QC		Blank		-	
C110806-02 A		CP-MS Tot. Rec. Metals-201		TR-MS063-NAD-001-(	No Tag Prefix-B		
1109037-DUP2		QC		Duplicate		C110806-02	
1109046-SRD1		QC		Serial Dilution		C110806-02	
1109037-SRM2		QC		Reference		-	
1109037-MS2		QC		Matrix Spike		C110806-02	
1109037-MSD2		QC		Matrix Spike Dup		C110806-02	
1109037-PS2		QC		Post Spike		C110806-02	
C110805-04 A		CP-MS Tot. Rec. Metals-201		BlaineTunnel	No Tag Prefix-B		
1109046-CCV3		QC	1040808	Calibration Check		-	
1109046-CCB3		QC		Calibration Blank		-	

Run List

Sample File Name: 1109041_DISSA_TRA_091511.sam

AS Loc.	Sample ID	Batch Index	Sample Type	Method
1	Blank		Blank	esat2010.mth
2	Standard 1		Standard	esat2010.mth
3	Standard 2		Standard	esat2010.mth
4	Standard 3		Standard	esat2010.mth
5	SEQ-ICV		QC Std	esat2010.mth
1	SEQ-ICB		QC Std	esat2010.mth
26	SEQ-CRL		QC Std	esat2010.mth
7	SEQ-IFA		QC Std	esat2010.mth
8	SEQ-IFB		QC Std	esat2010.mth
6	SEQ-CCV		QC Std	esat2010.mth
1	SEQ-CCB		QC Std	esat2010.mth
27	1109044-BLK1	1	Sample	esat2010.mth
28	C110806-01	2	Sample	esat2010.mth
29	1109044-DUP1	3	Duplicate of 2	esat2010.mth
30	SEQ-SRD1 @5X	4	Dilution - DF:5 of 2	esat2010.mth
31	1109044-BS1	5	Spike - 3 of 1	esat2010.mth
32	1109044-MS1	6	Spike - 3 of 2	esat2010.mth
33	1109044-MSD1	7	Spike - 3 of 2	esat2010.mth
34	C110805-01 @5X	8	Sample	esat2010.mth
35	C110805-03 @5X	9	Sample	esat2010.mth
36	Blank	10	Sample	esat2010.mth
6	SEQ-CCV		QC Std	esat2010.mth
1	SEQ-CCB		QC Std	esat2010.mth
37	1109037-BLK1 @5X	11	Sample	esat2010.mth
38	C110806-02 @5X	12	Sample	esat2010.mth
39	1109037-DUP1 @5X	13	Duplicate of 12	esat2010.mth
40	SEQ-SRD1 @25X	14	Dilution - DF:5 of 12	esat2010.mth
41	1109037-SRM2 @20X	15	Spike - 1 of 11	esat2010.mth
42	1109037-MS2 @5X	16	Spike - 2 of 12	esat2010.mth
43	1109037-MSD2 @5X	17	Spike - 2 of 12	esat2010.mth
44	1109037-PS2 @5X	18	Spike - 3 of 12	esat2010.mth
45	C110805-04 @5X	19	Sample	esat2010.mth
46	Blank	20	Sample	esat2010.mth
6	SEQ-CCV		QC Std	esat2010.mth
1	SEQ-CCB		QC Std	esat2010.mth

Instrument Tuning Report

lw 9/15/11

File Name: ESAT tuning 2010.tun
File Path: C:\Elandata\Tuning\ESAT tuning 2010.tun

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
C	12.000	12.025	2740	2073	0.706	
Mg	23.985	24.025	5635	2068	0.733	
In	114.904	114.925	27736	2019	0.734	
Ce	139.905	139.875	33812	2009	0.736	
Pb	207.977	208.025	50385	1988	0.740	
U	238.050	238.075	57689	1973	0.733	
Be	9.012	9.075	1995	2080	0.694	
Zn	65.926	65.925	15822	2047	0.714	

Daily Performance Report

Sample ID: Daily Performance Check
Sample Date/Time: Thursday, September 15, 2011 09:32:01
Sample Description:
Method File: C:\Elandata\Method\ESAT Daily Performance 2010.mth
Dataset File: C:\Elandata\DataSet\Default\Daily Performance Check.9153
Tuning File: C:\Elandata\Tuning\ESAT tuning 2010.tun
Optimization File: C:\Elandata\Optimize\ESAT optimization 2010.dac
Dual Detector Mode: Pulse

Acq. Dead Time(ns): 80
Current Dead Time (ns): 80

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	28336.1	28336.098	358.106	1.3
	In	114.9	105175.4	105175.377	439.375	0.4
	U	238.1	70832.6	70832.594	371.306	0.5
⌈>	Ce	139.9	125941.9	125941.887	754.583	0.6
⌊	CeO	155.9	3713.4	0.029	0.000	1.6
⌈>	Ba	137.9	96193.0	96193.018	378.581	0.4
⌊	Ba++	69.0	1716.3	0.018	0.000	1.1
	Bkgd	220.0	6.8	6.800	1.277	18.8
	Bkgd	8.5	9.4	9.400	0.969	10.3

Current Optimization File Data

Current Value	Description
0.77	Nebulizer Gas Flow [NEB]
1.20	Auxiliary Gas Flow
17.00	Plasma Gas Flow
8.75	Lens Voltage
1200.00	ICP RF Power
-1550.00	Analog Stage Voltage
950.00	Pulse Stage Voltage
0.00	Quadrupole Rod Offset Std [QRO]
-15.00	Cell Rod Offset Std [CRO]
20.00	Discriminator Threshold
-19.00	Cell Path Voltage Std [CPV]
0.00	RPa
0.25	RPq
0.82	DRC Mode NEB
-8.50	DRC Mode QRO
0.50	DRC Mode CRO
-17.00	DRC Mode CPV
0.00	Cell Gas A
0.00	Cell Gas B

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
Be	9	41	7.0	1763.2
Co	59	41	8.0	92117.9
In	115	41	8.5	102432.6

SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\Elandata\Wizard\SmartTune\ESAT Smart Tune 2010.swz

Start Time: 9/15/2011 9:11:33 AM
End Time: 9/15/2011 9:35:43 AM

Mass Calibration and Resolution - [Passed] Optimum value(s): N/A
Target/Obtained mass (12/12.025), Target/Obtained resolution (0.75/0.706)
Target/Obtained mass (23.985/24.025), Target/Obtained resolution (0.75/0.733)
Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.75/0.734)
Target/Obtained mass (139.905/139.875), Target/Obtained resolution (0.75/0.736)
Target/Obtained mass (207.977/208.025), Target/Obtained resolution (0.75/0.740)
Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.75/0.733)
Target/Obtained mass (9.0122/9.075), Target/Obtained resolution (0.75/0.694)
Target/Obtained mass (65.926/65.925), Target/Obtained resolution (0.75/0.714)

Nebulizer Gas Flow [NEB] - [Passed] Optimum value(s): 0.77
Obtained Intensity (Rh 102.905): 114334
Obtained Formula (CeO 155.9 / Ce 139.905): 0.027 (=3497 / 129594)

Lens Voltage - [Passed] Optimum value(s): 8.75
Obtained Intensity (Rh 102.905): 112391

AutoLens - [Passed] Optimum value(s): y = 0.014 x + 6.976

Daily Performance Check - [Failed]
Obtained Intensity (Mg 23.985): 28336
Obtained Intensity (In 114.904): 105175 - <Target not achieved>
Obtained Intensity (Bkgd 220): 7
Obtained Formula (CeO 155.9 / Ce 139.905): 0.029 (=3713 / 125942)
Obtained Formula (Ba++ 68.9525 / Ba 137.905): 0.018 (=1716 / 96549)

SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\Elandata\Wizard\SmartTune\ESAT Smart Tune 2010.swz

Optimization Status

Start Time: 9/15/2011 9:11:33 AM

Mass Calibration and Resolution
    Optimization Settings:
        Method: C:\Elandata\Method\ESAT Tuning 2010.mth.
        Tuning File: C:\Elandata\Tuning\ESAT tuning 2010.tun
        Iterations: 6
        Target accuracy (+/- amu): 0.1 for Mass Cal. and 0.1 for Resolution
        Peak height (%) for Res. Opt.: 10

    Optimization Results:
    Initial Try
        Target/Obtained mass (12/12.025), Target/Obtained resolution (0.75/0.706)
        Target/Obtained mass (23.985/24.025), Target/Obtained resolution (0.75/0.733)
        Target/Obtained mass (114.904/114.925), Target/Obtained resolution (0.75/0.734)
        Target/Obtained mass (139.905/139.875), Target/Obtained resolution (0.75/0.736)
        Target/Obtained mass (207.977/208.025), Target/Obtained resolution (0.75/0.740)
        Target/Obtained mass (238.05/238.075), Target/Obtained resolution (0.75/0.733)
        Target/Obtained mass (9.0122/9.075), Target/Obtained resolution (0.75/0.694)
        Target/Obtained mass (65.926/65.925), Target/Obtained resolution (0.75/0.714)
[Passed] Optimum value(s): N/A

Nebulizer Gas Flow [NEB]
    Optimization Settings:
        Method: C:\Elandata\Method\ESAT Optimize 2010.mth.
        Initial Try - Start/End/Step: 0.7/1/0.01.
        Intensity Criterion: Rh 102.905 Maximum
        Formula Criterion: CeO 155.9 / Ce 139.905 <= 0.027

    Optimization Results:
    Initial Try
        Obtained Intensity (Rh 102.905): 114334
        Obtained Formula (CeO 155.9 / Ce 139.905): 0.027 (=3497 / 129594)
[Passed] Optimum value(s): 0.77

Lens Voltage
    Optimization Settings:
        Method: C:\Elandata\Method\ESAT Optimize 2010.mth.
        Initial Try - Start/End/Step: 4/12/0.25.
        Intensity Criterion: Rh 102.905 Maximum

    Optimization Results:
    Initial Try
        Obtained Intensity (Rh 102.905): 112391
[Passed] Optimum value(s): 8.75

AutoLens
    Optimization Settings:
        Method: C:\Elandata\Method\ESAT AutoLens Calibration 2010.mth.
        Initial Try - Start/End/Step: 2/12/0.25.

    Optimization Results:

Initial Try
[Passed] Optimum value(s): y = 0.014 x + 6.976

Analyte	Mass	Points	DAC	MaxIntensity
Be	9.012	41	7	1763.25
Co	58.933	41	8	92117.9
In	114.904	41	8.5	102433

Daily Performance Check
Optimization Settings:
Method: C:\Elandata\Method\ESAT Daily Performance 2010.mth.
Intensity Criterion: Mg 23.985 > 20000
Intensity Criterion: In 114.904 > 150000
Intensity Criterion: Bkgd 220 <= 30
Formula Criterion: CeO 155.9 / Ce 139.905 <= 0.03
Formula Criterion: Ba++ 68.9525 / Ba 137.905 <= 0.03

Optimization Results:
Initial Try
Obtained Intensity (Mg 23.985): 28336
Obtained Intensity (In 114.904): 105175 - <Target not achieved>
Obtained Intensity (Bkgd 220): 7
Obtained Formula (CeO 155.9 / Ce 139.905): 0.029 (=3713 / 125942)
Obtained Formula (Ba++ 68.9525 / Ba 137.905): 0.018 (=1716 / 96549)
[Failed]
[Failed]

End Time: 9/15/2011 9:35:43 AM

Method 200.8 - Summary Report

Sample ID: Blank

Sample Date/Time: Thursday, September 15, 2011 10:26:10
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\Blank.9168
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

lw 9/15/11

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	12627.418	3.060				ug/L
	Be	9	15.333	61.641				ug/L
	Al	27	9908.538	6.601				ug/L
>	Sc	45	210259.151	1.112				ug/L
	V	51	3196.549	15.302				ug/L
	Cr	52	10277.777	0.851				ug/L
	Mn	55	694.841	12.994				ug/L
	Co	59	56.960	23.811				ug/L
	Ni	60	24.960	28.809				ug/L
	Cu	65	126.148	17.905				ug/L
	Zn	66	254.672	2.525				ug/L
>	Ge	72	198562.249	0.625				ug/L
	As	75	-312.976	13.873				ug/L
	Se	82	70.000	14.286				ug/L
	Y	89	322482.764	0.871				ug/L
	Mo	98	147.947	18.738				ug/L
	Ag	107	1195.449	12.407				ug/L
	Cd	111	147.128	10.652				ug/L
	Cd	114	48.724	39.349				mg/L
>	In	115	233494.351	0.278				ug/L
	Sb	121	65.334	21.501				ug/L
	Ba	135	17.333	24.019				ug/L
>	Tb	159	295037.972	0.455				ug/L
	Ho	165	265076.707	1.555				ug/L
	Tl	205	100.001	22.271				ug/L
	Pb	208	154.001	12.524				ug/L
	Bi	209	125638.295	0.873				ug/L
	Th	232	148.668	13.542				ug/L
	U	238	23.333	60.204				ug/L
	Na	23	9787.800	16.684				mg/L
	Mg	24	1736.243	10.001				mg/L
	K	39	2165245.357	0.462				mg/L
	Ca	44	27381.184	0.918				mg/L
	Fe	54	37151.068	1.761				mg/L
>	Sc-1	45	210259.151	1.112				mg/L
	Kr	83	70.000	15.119				mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6					
	Be	9					
	Al	27					
>	Sc	45					
	V	51					
	Cr	52					
	Mn	55					
	Co	59					
	Ni	60					
	Cu	65					
	Zn	66					
>	Ge	72					
	As	75					
	Se	82					
	Y	89					
	Mo	98					
	Ag	107					
	Cd	111					
	Cd	114					
>	In	115					
	Sb	121					
	Ba	135					
>	Tb	159					
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23					
	Mg	24					
	K	39					
	Ca	44					
	Fe	54					
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: Standard 1

Sample Date/Time: Thursday, September 15, 2011 10:28:57
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\Standard 1.9169
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	12863.229	2.465	12863.229			ug/L
	Be	9	1051.422	3.163	0.081	10.00000	4.59	ug/L
	Al	27	142170.418	1.623	0.634	50.00000	2.76	ug/L
>	Sc	45	208784.755	1.852	208784.755			ug/L
	V	51	64109.513	0.887	0.292	10.00000	1.05	ug/L
	Cr	52	61821.039	2.543	0.247	10.00000	0.88	ug/L
	Mn	55	74797.829	0.361	0.355	10.00000	2.25	ug/L
	Co	59	57096.851	1.223	0.273	10.00000	2.88	ug/L
	Ni	60	12331.925	1.846	0.059	10.00000	0.75	ug/L
	Cu	65	12889.831	1.424	0.061	10.00000	1.08	ug/L
	Zn	66	6967.883	1.569	0.034	10.00000	1.11	ug/L
>	Ge	72	194856.987	0.607	194856.987			ug/L
	As	75	6953.261	3.827	0.037	10.00000	4.10	ug/L
	Se	82	693.372	11.373	0.003	10.00000	12.94	ug/L
	Y	89	319284.949	1.130	-3197.814			ug/L
	Mo	98	19585.475	0.911	0.085	10.00000	1.60	ug/L
	Ag	107	24922.347	5.219	0.104	10.00000	6.50	ug/L
	Cd	111	5933.976	0.877	0.025	10.00000	1.72	ug/L
	Cd	114	13058.496	1.365	0.057	10.00000	0.83	mg/L
>	In	115	227776.198	0.999	227776.198			ug/L
	Sb	121	19618.746	1.168	0.086	10.00000	2.03	ug/L
	Ba	135	5352.292	2.560	0.018	10.00000	1.34	ug/L
>	Tb	159	291899.974	1.590	291899.974			ug/L
	Ho	165	261420.917	0.952	-0.003			ug/L
	Tl	205	31674.067	1.349	0.108	10.00000	0.87	ug/L
	Pb	208	42654.638	1.699	0.146	10.00000	1.11	ug/L
	Bi	209	125350.995	2.340	0.004			ug/L
	Th	232	45820.070	2.295	0.157	10.00000	3.78	ug/L
	U	238	46824.203	3.267	0.160	10.00000	4.60	ug/L
	Na	23	252288.764	3.625	1.162	0.10000	2.92	mg/L
	Mg	24	155394.953	1.268	0.736	0.10000	0.89	mg/L
	K	39	2708192.417	1.275	2.675	0.10000	6.12	mg/L
	Ca	44	44369.630	1.617	0.082	0.10000	3.20	mg/L
	Fe	54	95955.475	1.096	0.283	0.10000	2.03	mg/L
>	Sc-1	45	208784.755	1.852	208784.755			mg/L
	Kr	83	76.000	15.790	6.000			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6					
	Be	9					
	Al	27					
>	Sc	45					
	V	51					
	Cr	52					
	Mn	55					
	Co	59					
	Ni	60					
	Cu	65					
	Zn	66					
>	Ge	72					
	As	75					
	Se	82					
	Y	89					
	Mo	98					
	Ag	107					
	Cd	111					
	Cd	114					
>	In	115					
	Sb	121					
	Ba	135					
>	Tb	159					
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23					
	Mg	24					
	K	39					
	Ca	44					
	Fe	54					
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: Standard 2

Sample Date/Time: Thursday, September 15, 2011 10:31:44
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\Standard 2.9170
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	12764.355	1.083	12764.355			ug/L
	Be	9	2093.017	3.533	0.163	20.04116	4.55	ug/L
	Al	27	284330.270	1.234	1.309	100.62534	3.07	ug/L
>	Sc	45	209791.554	1.736	209791.554			ug/L
	V	51	128193.374	1.515	0.596	20.08265	3.13	ug/L
	Cr	52	115817.874	2.993	0.503	20.07179	4.52	ug/L
	Mn	55	154036.584	2.432	0.731	20.11658	4.17	ug/L
	Co	59	115967.143	2.307	0.553	20.04465	3.92	ug/L
	Ni	60	25053.538	0.645	0.119	20.04780	1.13	ug/L
	Cu	65	25583.973	0.697	0.121	19.96969	1.07	ug/L
	Zn	66	13729.739	2.812	0.069	19.98787	3.27	ug/L
>	Ge	72	196087.206	0.406	196087.206			ug/L
	As	75	14526.864	1.614	0.076	20.05992	1.56	ug/L
	Se	82	1355.481	5.624	0.007	20.09035	6.25	ug/L
	Y	89	315126.366	0.181	-7356.398			ug/L
	Mo	98	40347.558	1.534	0.174	20.08189	2.30	ug/L
	Ag	107	52521.790	1.436	0.223	20.25275	2.42	ug/L
	Cd	111	12214.115	0.956	0.052	20.11250	0.51	ug/L
	Cd	114	26594.374	0.822	0.115	20.02878	1.20	mg/L
>	In	115	230709.993	0.938	230709.993			ug/L
	Sb	121	39880.834	0.122	0.173	20.02009	0.89	ug/L
	Ba	135	11117.882	1.887	0.039	20.21303	2.30	ug/L
>	Tb	159	287719.724	0.538	287719.724			ug/L
	Ho	165	260853.688	0.414	0.008			ug/L
	Tl	205	65430.788	1.847	0.227	20.19064	1.77	ug/L
	Pb	208	87963.978	0.849	0.305	20.18508	1.05	ug/L
	Bi	209	123968.073	0.640	0.005			ug/L
	Th	232	93274.503	2.631	0.324	20.13191	2.12	ug/L
	U	238	94635.814	1.098	0.329	20.09817	0.71	ug/L
	Na	23	2186678.251	0.545	10.378	0.99882	1.51	mg/L
	Mg	24	1615101.281	0.475	7.692	1.00043	2.13	mg/L
	K	39	7037940.897	1.971	23.262	0.99852	5.04	mg/L
	Ca	44	178778.793	1.861	0.722	0.99862	0.94	mg/L
	Fe	54	438060.679	1.692	1.912	0.99527	3.52	mg/L
>	Sc-1	45	209791.554	1.736	209791.554			mg/L
	Kr	83	68.000	23.530	-2.000			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6					
	Be	9					
	Al	27					
>	Sc	45					
	V	51					
	Cr	52					
	Mn	55					
	Co	59					
	Ni	60					
	Cu	65					
	Zn	66					
>	Ge	72					
	As	75					
	Se	82					
	Y	89					
	Mo	98					
	Ag	107					
	Cd	111					
	Cd	114					
>	In	115					
	Sb	121					
	Ba	135					
>	Tb	159					
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23					
	Mg	24					
	K	39					
	Ca	44					
	Fe	54					
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: Standard 3

Sample Date/Time: Thursday, September 15, 2011 10:34:33
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\Standard 3.9171
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13195.251	1.990	13195.251			ug/L
	Be	9	10780.624	1.284	0.816	100.02204	3.26	ug/L
	Al	27	1367075.698	1.361	6.772	500.94905	2.41	ug/L
>	Sc	45	200536.016	2.180	200536.016			ug/L
	V	51	606524.267	1.553	3.010	100.06688	2.67	ug/L
	Cr	52	506509.910	1.570	2.477	99.94123	1.79	ug/L
	Mn	55	730823.749	1.173	3.642	100.00834	1.13	ug/L
	Co	59	563516.203	1.482	2.811	100.09008	2.69	ug/L
	Ni	60	118283.018	1.481	0.590	99.95777	2.92	ug/L
	Cu	65	115905.789	0.986	0.578	99.75230	2.96	ug/L
	Zn	66	60802.338	0.885	0.315	99.56020	0.67	ug/L
>	Ge	72	192414.515	1.070	192414.515			ug/L
	As	75	70131.698	1.639	0.366	99.85660	2.71	ug/L
	Se	82	6399.280	5.233	0.033	100.03762	6.14	ug/L
	Y	89	308455.910	0.767	-14026.853			ug/L
	Mo	98	193254.737	1.007	0.865	99.98438	0.90	ug/L
	Ag	107	256179.551	0.514	1.142	100.18125	0.68	ug/L
	Cd	111	57489.568	2.339	0.257	99.94071	2.83	ug/L
	Cd	114	127952.224	0.504	0.573	99.98686	1.42	mg/L
>	In	115	223264.043	0.913	223264.043			ug/L
	Sb	121	194468.481	1.937	0.871	100.04765	2.18	ug/L
	Ba	135	52285.124	0.465	0.184	99.83515	0.67	ug/L
>	Tb	159	283319.083	1.114	283319.083			ug/L
	Ho	165	254600.492	0.949	0.000			ug/L
	Tl	205	312143.131	1.463	1.102	99.90030	2.28	ug/L
	Pb	208	427862.371	1.068	1.510	99.99295	1.86	ug/L
	Bi	209	119763.966	0.817	-0.003			ug/L
	Th	232	454048.369	1.924	1.602	99.98440	2.94	ug/L
	U	238	472495.072	3.728	1.668	100.09068	4.11	ug/L
	Na	23	21712992.580	1.020	108.251	10.00402	1.66	mg/L
	Mg	24	15347023.572	0.594	76.540	9.99954	1.70	mg/L
	K	39	50459715.534	1.517	241.421	10.00350	3.11	mg/L
	Ca	44	1502844.926	0.545	7.366	10.00186	2.31	mg/L
	Fe	54	3551405.838	1.825	17.542	9.99049	3.76	mg/L
>	Sc-1	45	200536.016	2.180	200536.016			mg/L
	Kr	83	68.000	21.209	-2.000			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6					
	Be	9					
	Al	27					
>	Sc	45					
	V	51					
	Cr	52					
	Mn	55					
	Co	59					
	Ni	60					
	Cu	65					
	Zn	66					
>	Ge	72					
	As	75					
	Se	82					
	Y	89					
	Mo	98					
	Ag	107					
	Cd	111					
	Cd	114					
>	In	115					
	Sb	121					
	Ba	135					
>	Tb	159					
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23					
	Mg	24					
	K	39					
	Ca	44					
	Fe	54					
>	Sc-1	45					
	Kr	83					

Calibration

Analyte	Mass	Correlation Coefficient
Li	6	
Be	9	0.999999
Al	27	0.999961
Sc	45	
V	51	0.999994
Cr	52	0.999995
Mn	55	0.999997
Co	59	0.999991
Ni	60	0.999998
Cu	65	0.999938
Zn	66	0.999807
Ge	72	
As	75	0.999979
Se	82	0.999997
Y	89	
Mo	98	0.999998
Ag	107	0.999953
Cd	111	0.999993
Cd	114	1.000000
In	115	
Sb	121	0.999998
Ba	135	0.999961
Tb	159	
Ho	165	
Tl	205	0.999981
Pb	208	0.999992
Bi	209	
Th	232	0.999996
U	238	0.999990
Na	23	0.999991
Mg	24	1.000000
K	39	0.999993
Ca	44	0.999997
Fe	54	0.999942
Sc-1	45	
Kr	83	

Method 200.8 - Summary Report

Sample ID: SEQ-ICV

Sample Date/Time: Thursday, September 15, 2011 10:37:22
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\SEQ-ICV.9172
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	12994.162	1.283	12994.162			ug/L
	Be	9	5245.534	0.831	0.402	49.32615	0.45	ug/L
	Al	27	143224.691	1.430	0.653	48.31210	3.84	ug/L
>	Sc	45	204674.474	2.909	204674.474			ug/L
	V	51	302490.380	3.227	1.463	48.62803	2.28	ug/L
	Cr	52	259434.918	1.275	1.219	49.18717	2.76	ug/L
	Mn	55	362509.743	0.454	1.769	48.57272	2.43	ug/L
	Co	59	283462.956	1.100	1.386	49.34601	3.90	ug/L
	Ni	60	59956.934	1.967	0.293	49.65899	4.65	ug/L
	Cu	65	59109.204	1.682	0.288	49.80818	4.15	ug/L
	Zn	66	31625.154	1.428	0.162	51.24311	1.02	ug/L
>	Ge	72	193714.139	1.779	193714.139			ug/L
	As	75	35544.006	1.549	0.185	50.47472	0.23	ug/L
	Se	82	16063.288	2.039	0.083	250.92852	0.27	ug/L
	Y	89	312862.258	0.600	-9620.506			ug/L
	Mo	98	98465.612	1.323	0.433	50.08882	1.43	ug/L
	Ag	107	131128.927	1.807	0.573	50.23756	2.60	ug/L
	Cd	111	29508.668	1.928	0.129	50.34834	1.96	ug/L
	Cd	114	64813.961	1.595	0.285	49.81424	1.82	mg/L
>	In	115	226910.735	0.905	226910.735			ug/L
	Sb	121	97339.590	1.518	0.429	49.25922	2.20	ug/L
	Ba	135	26639.324	1.240	0.093	50.40648	0.89	ug/L
>	Tb	159	285816.948	1.619	285816.948			ug/L
	Ho	165	258759.039	1.870	0.007			ug/L
	Tl	205	162562.548	1.299	0.568	51.55399	1.03	ug/L
	Pb	208	214314.737	0.597	0.749	49.63079	1.10	ug/L
	Bi	209	122321.436	3.006	0.002			ug/L
	Th	232	225551.168	3.283	0.789	49.19913	1.72	ug/L
	U	238	225188.785	3.086	0.788	47.27693	2.68	ug/L
	Na	23	11083534.478	1.659	54.151	5.00438	4.43	mg/L
	Mg	24	7776415.288	1.685	38.017	4.96664	4.32	mg/L
	K	39	27262305.667	1.139	122.947	5.09441	1.97	mg/L
	Ca	44	778299.777	2.347	3.673	4.98732	1.80	mg/L
	Fe	54	1939115.861	0.884	9.301	5.29723	2.09	mg/L
>	Sc-1	45	204674.474	2.909	204674.474			mg/L
	Kr	83	86.001	10.137	16.000			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		102.904			
	Be	9	98.652				
	Al	27	96.624				
>	Sc	45		97.344			
	V	51	97.256				
	Cr	52	98.374				
	Mn	55	97.145				
	Co	59	98.692				
	Ni	60	99.318				
	Cu	65	99.616				
	Zn	66	102.486				
>	Ge	72		97.558			
	As	75	100.949				
	Se	82	100.371				
	Y	89					
	Mo	98	100.178				
	Ag	107	100.475				
	Cd	111	100.697				
	Cd	114					
>	In	115		97.180			
	Sb	121	98.518				
	Ba	135	100.813				
>	Tb	159		96.875			
	Ho	165					
	Tl	205	103.108				
	Pb	208	99.262				
	Bi	209					
	Th	232	98.398				
	U	238	94.554				
	Na	23	100.088				
	Mg	24	99.333				
	K	39	101.888				
	Ca	44	99.746				
	Fe	54	105.945				
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: SEQ-ICB

Sample Date/Time: Thursday, September 15, 2011 10:40:25
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\SEQ-ICB.9173
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13108.410	3.476	13108.410			ug/L
	Be	9	9.333	12.372	-0.001	-0.06135	20.61	ug/L
	Al	27	9592.691	1.851	-0.000	-0.03287	160.28	ug/L
>	Sc	45	205524.379	2.318	205524.379			ug/L
	V	51	2978.993	2.700	-0.001	-0.02357	16.13	ug/L
	Cr	52	9773.636	0.587	-0.001	-0.05288	82.15	ug/L
	Mn	55	911.643	40.476	0.001	0.03086	157.27	ug/L
	Co	59	92.447	24.951	0.000	0.00633	58.08	ug/L
	Ni	60	39.780	9.970	0.000	0.01269	25.71	ug/L
	Cu	65	184.226	8.110	0.000	0.05117	22.54	ug/L
	Zn	66	242.005	7.970	-0.000	-0.01934	144.36	ug/L
>	Ge	72	198054.620	0.951	198054.620			ug/L
	As	75	-249.852	13.767	0.000	0.08599	52.46	ug/L
	Se	82	78.667	24.164	0.000	0.13765	220.46	ug/L
	Y	89	320270.462	1.778	-2212.302			ug/L
	Mo	98	477.580	13.886	0.001	0.16627	19.04	ug/L
	Ag	107	2533.857	17.153	0.006	0.51493	30.76	ug/L
	Cd	111	140.656	2.074	-0.000	-0.00756	86.73	ug/L
	Cd	114	35.984	35.020	-0.000	-0.00920	101.44	mg/L
>	In	115	230355.068	0.694	230355.068			ug/L
	Sb	121	114.001	10.956	0.000	0.02470	24.55	ug/L
	Ba	135	28.000	18.898	0.000	0.01978	51.18	ug/L
>	Tb	159	294082.619	0.713	294082.619			ug/L
	Ho	165	263425.548	0.219	-0.003			ug/L
	Tl	205	110.668	13.074	0.000	0.00337	126.59	ug/L
	Pb	208	182.668	8.218	0.000	0.00658	55.60	ug/L
	Bi	209	124268.150	1.728	-0.003			ug/L
	Th	232	124.668	6.484	-0.000	-0.00499	32.01	ug/L
	U	238	40.000	52.202	0.000	0.00342	124.59	ug/L
	Na	23	12260.074	8.728	0.013	0.00121	29.56	mg/L
	Mg	24	2691.258	17.544	0.005	0.00063	41.80	mg/L
	K	39	2255273.937	1.029	0.678	0.02809	28.23	mg/L
	Ca	44	26496.714	0.331	-0.001	-0.00170	274.94	mg/L
	Fe	54	36818.614	2.988	0.002	0.00139	82.17	mg/L
>	Sc-1	45	205524.379	2.318	205524.379			mg/L
	Kr	83	72.000	7.349	2.000			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		103.809			
	Be	9					
	Al	27					
>	Sc	45		97.748			
	V	51					
	Cr	52					
	Mn	55					
	Co	59					
	Ni	60					
	Cu	65					
	Zn	66					
>	Ge	72		99.744			
	As	75					
	Se	82					
	Y	89					
	Mo	98					
	Ag	107					
	Cd	111					
	Cd	114					
>	In	115		98.656			
	Sb	121					
	Ba	135					
>	Tb	159		99.676			
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23					
	Mg	24					
	K	39					
	Ca	44					
	Fe	54					
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: SEQ-CRL

Sample Date/Time: Thursday, September 15, 2011 10:43:26
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\SEQ-CRL.9174
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13213.956	1.350	13213.956			ug/L
	Be	9	35.333	31.175	0.001	0.17980	58.99	ug/L
	Al	27	60064.694	2.515	0.247	18.28081	6.00	ug/L
>	Sc	45	204302.193	2.575	204302.193			ug/L
	V	51	15343.332	1.249	0.060	1.99232	3.79	ug/L
	Cr	52	14987.950	0.431	0.025	0.98891	7.90	ug/L
	Mn	55	2240.977	6.013	0.008	0.21064	9.54	ug/L
	Co	59	1313.586	10.452	0.006	0.21920	9.61	ug/L
	Ni	60	1254.240	2.521	0.006	1.02011	0.15	ug/L
	Cu	65	1429.888	4.283	0.006	1.10575	5.85	ug/L
	Zn	66	3404.928	3.272	0.016	5.05206	4.29	ug/L
>	Ge	72	197392.064	0.704	197392.064			ug/L
	As	75	1186.668	11.027	0.008	2.06873	8.20	ug/L
	Se	82	140.002	10.786	0.000	1.08311	20.11	ug/L
	Y	89	323152.142	0.973	669.378			ug/L
	Mo	98	575.972	1.930	0.002	0.21748	3.51	ug/L
	Ag	107	2253.740	3.688	0.005	0.41402	8.16	ug/L
	Cd	111	268.484	2.071	0.001	0.21096	5.98	ug/L
	Cd	114	328.077	2.958	0.001	0.21354	2.63	mg/L
>	In	115	229038.008	0.723	229038.008			ug/L
	Sb	121	2067.009	4.008	0.009	1.00459	3.55	ug/L
	Ba	135	319.342	5.101	0.001	0.56021	5.79	ug/L
>	Tb	159	291951.017	1.062	291951.017			ug/L
	Ho	165	261962.854	0.852	-0.001			ug/L
	Tl	205	692.038	6.152	0.002	0.18420	6.68	ug/L
	Pb	208	976.697	5.534	0.003	0.18693	5.49	ug/L
	Bi	209	122478.477	0.747	-0.006			ug/L
	Th	232	4286.803	1.854	0.014	0.88490	2.93	ug/L
	U	238	860.726	7.004	0.003	0.17217	7.02	ug/L
	Na	23	20448.735	1.428	0.054	0.00495	3.16	mg/L
	Mg	24	1703.567	8.206	0.000	0.00001	763.39	mg/L
	K	39	2225235.303	1.740	0.596	0.02468	17.60	mg/L
	Ca	44	26205.498	1.461	-0.002	-0.00258	199.41	mg/L
	Fe	54	37032.971	4.063	0.005	0.00258	71.67	mg/L
>	Sc-1	45	204302.193	2.575	204302.193			mg/L
	Kr	83	92.667	17.311	22.667			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		104.645			
	Be	9	89.902				
	Al	27	91.404				
>	Sc	45		97.167			
	V	51	99.616				
	Cr	52	98.891				
	Mn	55	105.320				
	Co	59	109.598				
	Ni	60	102.011				
	Cu	65	110.575				
	Zn	66	101.041				
>	Ge	72		99.411			
	As	75	103.436				
	Se	82	108.311				
	Y	89					
	Mo	98	108.740				
	Ag	107	82.804				
	Cd	111	105.479				
	Cd	114					
>	In	115		98.091			
	Sb	121	100.459				
	Ba	135	112.041				
>	Tb	159		98.954			
	Ho	165					
	Tl	205	92.101				
	Pb	208	93.467				
	Bi	209					
	Th	232	88.490				
	U	238	86.084				
	Na	23					
	Mg	24					
	K	39					
	Ca	44					
	Fe	54					
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: SEQ-IFA

Sample Date/Time: Thursday, September 15, 2011 10:46:28
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\SEQ-IFA.9175
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13258.716	1.104	13258.716			ug/L
	Be	9	10.667	21.651	-0.000	-0.05007	44.39	ug/L
	Al	27	26580236.317	1.604	129.235	9560.09636	1.66	ug/L
>	Sc	45	205606.069	1.014	205606.069			ug/L
	V	51	3151.431	15.079	0.000	0.00456	1772.00	ug/L
	Cr	52	12920.678	1.703	0.014	0.56362	11.79	ug/L
	Mn	55	-1223.456	16.006	-0.009	-0.25436	10.86	ug/L
	Co	59	-580.848	33.271	-0.003	-0.11017	30.20	ug/L
	Ni	60	-89.473	38.229	-0.001	-0.09375	29.76	ug/L
	Cu	65	821.033	2.894	0.003	0.58591	2.20	ug/L
	Zn	66	1248.792	3.272	0.005	1.63834	5.05	ug/L
>	Ge	72	193309.575	1.216	193309.575			ug/L
	As	75	-293.879	21.020	0.000	0.01542	554.13	ug/L
	Se	82	96.667	23.255	0.000	0.45039	81.39	ug/L
	Y	89	306434.066	0.852	-16048.697			ug/L
	Mo	98	394576.912	0.991	1.774	205.04395	2.02	ug/L
	Ag	107	421.348	10.618	-0.003	-0.28293	5.70	ug/L
	Cd	111	155.272	15.393	0.000	0.02687	167.69	ug/L
	Cd	114	529.556	11.611	0.002	0.37920	12.84	mg/L
>	In	115	222400.826	1.476	222400.826			ug/L
	Sb	121	136.001	6.739	0.000	0.03810	11.70	ug/L
	Ba	135	163.335	3.082	0.001	0.27859	3.23	ug/L
>	Tb	159	284752.257	0.257	284752.257			ug/L
	Ho	165	254876.695	0.859	-0.003			ug/L
	Tl	205	175.336	29.753	0.000	0.02512	66.48	ug/L
	Pb	208	397.338	6.492	0.001	0.05785	10.39	ug/L
	Bi	209	123492.462	3.616	0.008			ug/L
	Th	232	206.003	8.295	0.000	0.01370	27.87	ug/L
	U	238	55.334	92.458	0.000	0.00691	155.91	ug/L
	Na	23	22707542.688	0.697	110.403	10.20290	1.28	mg/L
	Mg	24	15735798.433	1.462	76.538	9.99927	2.46	mg/L
	K	39	59444560.339	1.639	278.867	11.55510	2.62	mg/L
	Ca	44	1534590.147	0.683	7.334	9.95830	1.57	mg/L
	Fe	54	3501371.249	0.283	16.854	9.59886	1.27	mg/L
>	Sc-1	45	205606.069	1.014	205606.069			mg/L
	Kr	83	90.667	12.736	20.667			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		104.999			
	Be	9					
	Al	27	95.601				
>	Sc	45		97.787			
	V	51					
	Cr	52					
	Mn	55					
	Co	59					
	Ni	60					
	Cu	65					
	Zn	66					
>	Ge	72		97.355			
	As	75					
	Se	82					
	Y	89					
	Mo	98	102.522				
	Ag	107					
	Cd	111					
	Cd	114					
>	In	115		95.249			
	Sb	121					
	Ba	135					
>	Tb	159		96.514			
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23	102.029				
	Mg	24	99.993				
	K	39	115.551				
	Ca	44	99.583				
	Fe	54	95.989				
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: SEQ-IFB

Sample Date/Time: Thursday, September 15, 2011 10:49:31
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\SEQ-IFB.9176
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13326.197	2.327	13326.197			ug/L
	Be	9	12.000	16.667	-0.000	-0.03868	41.83	ug/L
	Al	27	27133104.590	0.579	135.735	10040.90453	2.66	ug/L
>	Sc	45	199902.821	2.125	199902.821			ug/L
	V	51	2176.549	19.265	-0.004	-0.14259	53.66	ug/L
	Cr	52	114134.875	1.551	0.522	21.07145	3.60	ug/L
	Mn	55	143869.155	2.310	0.716	19.67351	0.24	ug/L
	Co	59	111469.449	1.562	0.557	19.84898	0.57	ug/L
	Ni	60	24033.089	4.159	0.120	20.34667	2.62	ug/L
	Cu	65	24501.755	1.972	0.122	21.06706	2.19	ug/L
	Zn	66	13277.424	1.612	0.069	21.75106	1.15	ug/L
>	Ge	72	189566.068	1.021	189566.068			ug/L
	As	75	14274.999	0.962	0.077	20.96942	1.44	ug/L
	Se	82	86.001	17.558	0.000	0.30863	81.34	ug/L
	Y	89	301997.637	0.688	-20485.127			ug/L
	Mo	98	395202.463	0.901	1.794	207.35984	0.75	ug/L
	Ag	107	43732.100	5.451	0.193	16.96516	5.48	ug/L
	Cd	111	11586.642	0.670	0.052	20.22288	0.63	ug/L
	Cd	114	25770.825	1.240	0.117	20.38569	1.39	mg/L
>	In	115	220225.742	0.147	220225.742			ug/L
	Sb	121	96.001	11.600	0.000	0.01794	32.62	ug/L
	Ba	135	247.338	3.646	0.001	0.44141	3.15	ug/L
>	Tb	159	282808.630	1.001	282808.630			ug/L
	Ho	165	255430.685	1.708	0.005			ug/L
	Tl	205	140.668	7.831	0.000	0.01438	25.10	ug/L
	Pb	208	372.004	9.557	0.001	0.05253	15.03	ug/L
	Bi	209	122627.853	2.616	0.008			ug/L
	Th	232	152.669	15.297	0.000	0.00221	219.30	ug/L
	U	238	28.000	24.744	0.000	0.00119	121.54	ug/L
	Na	23	22457583.090	2.644	112.369	10.38455	4.68	mg/L
	Mg	24	15306794.454	0.941	76.580	10.00478	1.79	mg/L
	K	39	61345476.945	2.294	296.771	12.29697	4.57	mg/L
	Ca	44	1533001.617	0.661	7.540	10.23821	1.85	mg/L
	Fe	54	3522977.036	1.137	17.449	9.93770	1.00	mg/L
>	Sc-1	45	199902.821	2.125	199902.821			mg/L
	Kr	83	80.667	3.787	10.667			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		105.534			
	Be	9					
	Al	27	100.409				
>	Sc	45		95.074			
	V	51					
	Cr	52	105.357				
	Mn	55	98.368				
	Co	59	99.245				
	Ni	60	101.733				
	Cu	65	105.335				
	Zn	66	108.755				
>	Ge	72		95.469			
	As	75	104.847				
	Se	82					
	Y	89					
	Mo	98	103.680				
	Ag	107	84.826				
	Cd	111	101.114				
	Cd	114					
>	In	115		94.317			
	Sb	121					
	Ba	135					
>	Tb	159		95.855			
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23	103.846				
	Mg	24	100.048				
	K	39	122.970				
	Ca	44	102.382				
	Fe	54	99.377				
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: SEQ-CCV

Sample Date/Time: Thursday, September 15, 2011 10:52:32
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\SEQ-CCV.9177
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13321.517	1.210	13321.517			ug/L
	Be	9	5617.190	1.560	0.420	51.52623	0.38	ug/L
	Al	27	689118.941	0.913	3.312	244.97147	1.67	ug/L
>	Sc	45	205190.639	0.732	205190.639			ug/L
	V	51	302497.313	1.798	1.459	48.50679	2.55	ug/L
	Cr	52	263306.334	0.987	1.234	49.79977	1.67	ug/L
	Mn	55	369105.324	1.654	1.796	49.30988	1.41	ug/L
	Co	59	280883.700	0.830	1.369	48.74056	1.49	ug/L
	Ni	60	61186.236	0.110	0.298	50.50729	0.80	ug/L
	Cu	65	58668.776	1.335	0.285	49.27249	0.68	ug/L
	Zn	66	31983.648	1.963	0.162	51.26090	2.55	ug/L
>	Ge	72	195848.642	0.748	195848.642			ug/L
	As	75	35465.457	0.330	0.183	49.81977	0.54	ug/L
	Se	82	3284.196	0.127	0.016	49.89251	0.64	ug/L
	Y	89	314596.051	0.467	-7886.713			ug/L
	Mo	98	97945.237	1.757	0.434	50.11805	0.94	ug/L
	Ag	107	129537.608	1.892	0.569	49.91868	2.28	ug/L
	Cd	111	29639.165	2.249	0.131	50.86779	0.51	ug/L
	Cd	114	65165.474	0.465	0.289	50.38578	1.33	mg/L
>	In	115	225577.950	1.741	225577.950			ug/L
	Sb	121	97513.528	0.881	0.432	49.63934	1.11	ug/L
	Ba	135	25827.927	1.065	0.090	48.76752	0.73	ug/L
>	Tb	159	286397.697	0.534	286397.697			ug/L
	Ho	165	259286.625	0.814	0.007			ug/L
	Tl	205	163445.676	2.366	0.570	51.72956	2.76	ug/L
	Pb	208	217929.886	0.941	0.760	50.36254	1.38	ug/L
	Bi	209	124695.418	2.377	0.010			ug/L
	Th	232	227060.277	0.267	0.792	49.43784	0.79	ug/L
	U	238	231455.479	1.102	0.808	48.49323	0.69	ug/L
	Na	23	11062904.659	0.992	53.870	4.97839	1.13	mg/L
	Mg	24	7874216.112	1.968	38.372	5.01302	2.65	mg/L
	K	39	2290483.258	0.958	0.865	0.03585	15.18	mg/L
	Ca	44	777646.690	1.006	3.660	4.96921	1.34	mg/L
	Fe	54	1871998.725	1.864	8.948	5.09585	2.61	mg/L
>	Sc-1	45	205190.639	0.732	205190.639			mg/L
	Kr	83	68.000	25.130	-2.000			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		105.497			
	Be	9	103.052				
	Al	27	97.989				
>	Sc	45		97.589			
	V	51	97.014				
	Cr	52	99.600				
	Mn	55	98.620				
	Co	59	97.481				
	Ni	60	101.015				
	Cu	65	98.545				
	Zn	66	102.522				
>	Ge	72		98.633			
	As	75	99.640				
	Se	82	99.785				
	Y	89					
	Mo	98	100.236				
	Ag	107	99.837				
	Cd	111	101.736				
	Cd	114					
>	In	115		96.610			
	Sb	121	99.279				
	Ba	135	97.535				
>	Tb	159		97.071			
	Ho	165					
	Tl	205	103.459				
	Pb	208	100.725				
	Bi	209					
	Th	232	98.876				
	U	238	96.986				
	Na	23	99.568				
	Mg	24	100.260				
	K	39	0.717				
	Ca	44	99.384				
	Fe	54	101.917				
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: SEQ-CCB

Sample Date/Time: Thursday, September 15, 2011 10:55:34
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\SEQ-CCB.9178
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	12667.500	3.197	12667.500			ug/L
	Be	9	9.333	12.372	-0.000	-0.05826	23.25	ug/L
	Al	27	9708.870	1.558	0.000	0.00183	2704.96	ug/L
>	Sc	45	205917.371	0.936	205917.371			ug/L
	V	51	3079.011	5.123	-0.000	-0.00835	290.83	ug/L
	Cr	52	10108.168	1.358	0.000	0.00838	281.44	ug/L
	Mn	55	786.520	22.529	0.001	0.01401	161.41	ug/L
	Co	59	74.760	10.697	0.000	0.00329	44.14	ug/L
	Ni	60	26.760	40.874	0.000	0.00189	475.81	ug/L
	Cu	65	193.716	5.448	0.000	0.05883	13.75	ug/L
	Zn	66	233.338	13.398	-0.000	-0.02414	223.18	ug/L
>	Ge	72	193577.524	0.814	193577.524			ug/L
	As	75	-246.340	14.862	0.000	0.08307	58.59	ug/L
	Se	82	89.334	4.660	0.000	0.33083	16.31	ug/L
	Y	89	316121.844	0.897	-6360.920			ug/L
	Mo	98	694.349	11.064	0.002	0.27969	15.17	ug/L
	Ag	107	2245.074	12.568	0.005	0.41698	28.44	ug/L
	Cd	111	131.099	12.875	-0.000	-0.02083	149.50	ug/L
	Cd	114	39.058	44.961	-0.000	-0.00655	200.72	mg/L
>	In	115	227579.866	1.140	227579.866			ug/L
	Sb	121	156.669	9.057	0.000	0.04700	16.95	ug/L
	Ba	135	24.000	33.333	0.000	0.01364	110.94	ug/L
>	Tb	159	285886.312	0.274	285886.312			ug/L
	Ho	165	258890.516	0.336	0.007			ug/L
	Tl	205	102.001	6.792	0.000	0.00161	130.86	ug/L
	Pb	208	178.668	12.279	0.000	0.00682	74.75	ug/L
	Bi	209	122828.591	0.821	0.004			ug/L
	Th	232	99.334	12.302	-0.000	-0.00976	27.47	ug/L
	U	238	17.333	58.076	-0.000	-0.00110	192.48	ug/L
	Na	23	11979.486	4.578	0.012	0.00107	24.51	mg/L
	Mg	24	2188.384	7.414	0.002	0.00031	32.13	mg/L
	K	39	2218131.066	0.540	0.474	0.01965	13.14	mg/L
	Ca	44	26052.197	1.861	-0.004	-0.00501	95.61	mg/L
	Fe	54	36619.345	1.769	0.001	0.00067	403.32	mg/L
>	Sc-1	45	205917.371	0.936	205917.371			mg/L
	Kr	83	68.667	37.451	-1.333			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		100.317			
	Be	9					
	Al	27					
>	Sc	45		97.935			
	V	51					
	Cr	52					
	Mn	55					
	Co	59					
	Ni	60					
	Cu	65					
	Zn	66					
>	Ge	72		97.490			
	As	75					
	Se	82					
	Y	89					
	Mo	98					
	Ag	107					
	Cd	111					
	Cd	114					
>	In	115		97.467			
	Sb	121					
	Ba	135					
>	Tb	159		96.898			
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23					
	Mg	24					
	K	39					
	Ca	44					
	Fe	54					
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: 1109044-BLK1

Sample Date/Time: Thursday, September 15, 2011 10:58:36
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID: 1109041
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\1109044-BLK1.9179
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	12656.137	1.758	12656.137			ug/L
	Be	9	12.000	60.093	-0.000	-0.03209	219.42	ug/L
	Al	27	11024.403	5.797	0.007	0.48877	46.96	ug/L
>	Sc	45	205169.174	0.131	205169.174			ug/L
	V	51	3283.974	6.970	0.001	0.02674	141.22	ug/L
	Cr	52	10349.228	0.443	0.002	0.06297	10.19	ug/L
	Mn	55	716.710	3.083	0.000	0.00518	54.80	ug/L
	Co	59	108.268	19.380	0.000	0.00914	39.83	ug/L
	Ni	60	52.933	8.219	0.000	0.02360	15.27	ug/L
	Cu	65	155.135	9.238	0.000	0.02697	44.63	ug/L
	Zn	66	221.337	4.458	-0.000	-0.04349	31.82	ug/L
>	Ge	72	193260.559	0.652	193260.559			ug/L
	As	75	-261.218	35.439	0.000	0.06165	209.38	ug/L
	Se	82	78.667	7.767	0.000	0.16575	58.45	ug/L
	Y	89	317833.771	1.181	-4648.993			ug/L
	Mo	98	301.651	8.325	0.001	0.08048	15.32	ug/L
	Ag	107	1117.434	9.502	-0.000	-0.01690	241.96	ug/L
	Cd	111	117.650	13.913	-0.000	-0.04330	65.20	ug/L
	Cd	114	63.870	33.826	0.000	0.01271	129.80	mg/L
>	In	115	226790.701	0.383	226790.701			ug/L
	Sb	121	308.008	3.436	0.001	0.12388	3.85	ug/L
	Ba	135	20.667	40.290	0.000	0.00720	218.99	ug/L
>	Tb	159	286935.439	0.207	286935.439			ug/L
	Ho	165	256938.347	0.062	-0.003			ug/L
	Tl	205	170.669	10.504	0.000	0.02320	24.23	ug/L
	Pb	208	234.002	17.285	0.000	0.01944	47.82	ug/L
	Bi	209	122127.371	2.203	-0.000			ug/L
	Th	232	84.667	23.896	-0.000	-0.01304	33.42	ug/L
	U	238	62.667	109.740	0.000	0.00837	172.13	ug/L
	Na	23	12555.934	0.998	0.015	0.00135	4.71	mg/L
	Mg	24	2869.999	12.139	0.006	0.00075	29.74	mg/L
	K	39	2202849.785	0.893	0.439	0.01818	22.61	mg/L
	Ca	44	26577.724	0.375	-0.001	-0.00093	48.00	mg/L
	Fe	54	38823.409	4.654	0.013	0.00713	68.36	mg/L
>	Sc-1	45	205169.174	0.131	205169.174			mg/L
	Kr	83	85.334	7.534	15.334			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		100.227			
	Be	9					
	Al	27					
>	Sc	45		97.579			
	V	51					
	Cr	52					
	Mn	55					
	Co	59					
	Ni	60					
	Cu	65					
	Zn	66					
>	Ge	72		97.330			
	As	75					
	Se	82					
	Y	89					
	Mo	98					
	Ag	107					
	Cd	111					
	Cd	114					
>	In	115		97.129			
	Sb	121					
	Ba	135					
>	Tb	159		97.254			
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23					
	Mg	24					
	K	39					
	Ca	44					
	Fe	54					
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: C110806-01

Sample Date/Time: Thursday, September 15, 2011 11:01:23
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID: 1109041
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\C110806-01 .9180
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13721.049	2.032	13721.049			ug/L
	Be	9	78.001	39.474	0.004	0.54576	48.74	ug/L
	Al	27	6055233.800	2.018	26.992	1996.68168	4.57	ug/L
>	Sc	45	224123.523	2.659	224123.523			ug/L
	V	51	13245.442	0.902	0.044	1.46021	4.11	ug/L
	Cr	52	15654.255	2.602	0.021	0.84580	0.30	ug/L
	Mn	55	4192513.870	0.339	18.712	513.87071	2.62	ug/L
	Co	59	200276.274	1.591	0.894	31.82065	1.93	ug/L
	Ni	60	16511.379	2.594	0.074	12.46511	2.34	ug/L
	Cu	65	775559.533	2.318	3.460	597.58686	1.73	ug/L
	Zn	66	1400180.521	0.945	7.027	2222.88805	0.78	ug/L
>	Ge	72	199234.033	1.252	199234.033			ug/L
	As	75	1456116.240	1.330	7.311	1993.88938	1.57	ug/L
	Se	82	140.002	16.099	0.000	1.06174	29.85	ug/L
	Y	89	382012.146	1.201	59529.382			ug/L
	Mo	98	718.507	2.876	0.002	0.28667	5.56	ug/L
	Ag	107	734.710	10.535	-0.002	-0.16997	16.43	ug/L
	Cd	111	18370.262	0.803	0.079	30.71771	2.23	ug/L
	Cd	114	40110.841	1.105	0.174	30.28806	1.61	mg/L
>	In	115	230864.122	1.520	230864.122			ug/L
	Sb	121	41483.246	1.890	0.179	20.61269	1.30	ug/L
	Ba	135	3276.860	3.665	0.011	6.16224	3.05	ug/L
>	Tb	159	286240.931	0.847	286240.931			ug/L
	Ho	165	262219.099	0.475	0.018			ug/L
	Tl	205	994.746	5.057	0.003	0.28453	6.57	ug/L
	Pb	208	4406125.038	1.754	15.394	1019.51840	2.34	ug/L
	Bi	209	132027.006	2.169	0.035			ug/L
	Th	232	11627.475	2.001	0.040	2.50335	2.44	ug/L
	U	238	49879.686	2.837	0.174	10.45281	2.77	ug/L
	Na	23	5842513.653	0.431	26.035	2.40603	2.94	mg/L
	Mg	24	2533688.143	2.037	11.301	1.47640	2.88	mg/L
	K	39	11669111.101	2.229	41.804	1.73219	5.42	mg/L
	Ca	44	1546655.844	0.856	6.775	9.19871	3.48	mg/L
	Fe	54	5199131.150	0.835	23.031	13.11636	2.47	mg/L
>	Sc-1	45	224123.523	2.659	224123.523			mg/L
	Kr	83	109.334	10.402	39.334			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
⌈>	Li	6		108.661			
⌊	Be	9					
⌈	Al	27					
|>	Sc	45		106.594			
|	V	51					
|	Cr	52					
|	Mn	55					
|	Co	59					
|	Ni	60					
⌊	Cu	65					
⌈	Zn	66					
|>	Ge	72		100.338			
|	As	75					
⌊	Se	82					
	Y	89					
⌈	Mo	98					
|	Ag	107					
|	Cd	111					
|	Cd	114					
|>	In	115		98.874			
⌊	Sb	121					
⌈	Ba	135					
|>	Tb	159		97.018			
|	Ho	165					
|	Tl	205					
|	Pb	208					
|	Bi	209					
|	Th	232					
⌊	U	238					
⌈	Na	23					
|	Mg	24					
|	K	39					
|	Ca	44					
|	Fe	54					
⌊>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: 1109044-DUP1

Sample Date/Time: Thursday, September 15, 2011 11:04:10
Sample Type: Duplicate of 2
Sample Description:
Number of Replicates: 3
Batch ID: 1109041
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\1109044-DUP1.9181
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	15241.896	0.674	15241.896			ug/L
	Be	9	86.001	12.948	0.004	0.54304	17.27	ug/L
	Al	27	6292772.429	1.158	29.041	2148.29333	1.03	ug/L
>	Sc	45	216339.434	1.020	216339.434			ug/L
	V	51	12846.419	3.701	0.044	1.46831	4.02	ug/L
	Cr	52	14695.266	2.947	0.019	0.76817	8.67	ug/L
	Mn	55	4048293.787	1.424	18.710	513.83577	1.57	ug/L
	Co	59	195887.373	0.551	0.905	32.23543	0.55	ug/L
	Ni	60	16241.128	0.923	0.075	12.70057	0.96	ug/L
	Cu	65	753756.316	2.992	3.483	601.57978	2.75	ug/L
	Zn	66	1364225.695	1.317	7.135	2257.02108	0.79	ug/L
>	Ge	72	191175.355	1.096	191175.355			ug/L
	As	75	1406692.548	2.379	7.359	2007.09534	1.44	ug/L
	Se	82	140.668	14.523	0.000	1.16396	26.93	ug/L
	Y	89	358863.717	1.411	36380.954			ug/L
	Mo	98	682.348	3.312	0.002	0.28176	5.38	ug/L
	Ag	107	638.033	11.962	-0.002	-0.19716	15.57	ug/L
	Cd	111	18066.540	3.621	0.081	31.38903	4.52	ug/L
	Cd	114	40010.042	2.325	0.180	31.38531	2.75	mg/L
>	In	115	222240.322	1.140	222240.322			ug/L
	Sb	121	41035.613	0.856	0.184	21.18459	1.74	ug/L
	Ba	135	3206.823	1.946	0.012	6.23517	3.34	ug/L
>	Tb	159	276981.960	1.466	276981.960			ug/L
	Ho	165	256452.931	1.338	0.027			ug/L
	Tl	205	946.072	3.705	0.003	0.27902	3.69	ug/L
	Pb	208	4653023.682	1.118	16.802	1112.75059	2.29	ug/L
	Bi	209	133938.714	1.015	0.058			ug/L
	Th	232	12740.320	4.139	0.046	2.83900	4.50	ug/L
	U	238	54566.664	3.239	0.197	11.81620	2.15	ug/L
	Na	23	6033536.418	0.928	27.846	2.57341	1.95	mg/L
	Mg	24	2635528.463	1.144	12.176	1.59071	2.16	mg/L
	K	39	11655064.796	1.677	43.574	1.80555	1.19	mg/L
	Ca	44	1546907.064	1.949	7.020	9.53130	1.09	mg/L
	Fe	54	5052655.744	0.849	23.180	13.20177	1.48	mg/L
>	Sc-1	45	216339.434	1.020	216339.434			mg/L
	Kr	83	114.668	24.063	44.667			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		120.705			
	Be	9					0.500
	Al	27					7.315
>	Sc	45		102.892			
	V	51					0.553
	Cr	52					9.621
	Mn	55					0.007
	Co	59					1.295
	Ni	60					1.871
	Cu	65					0.666
	Zn	66					1.524
>	Ge	72		96.280			
	As	75					0.660
	Se	82					9.185
	Y	89					
	Mo	98					1.728
	Ag	107					14.811
	Cd	111					2.162
	Cd	114					3.558
>	In	115		95.180			
	Sb	121					2.737
	Ba	135					1.177
>	Tb	159		93.880			
	Ho	165					
	Tl	205					1.957
	Pb	208					8.745
	Bi	209					
	Th	232					12.566
	U	238					12.245
	Na	23					6.723
	Mg	24					7.454
	K	39					4.147
	Ca	44					3.551
	Fe	54					0.649
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: SEQ-SRD1 @5X

Sample Date/Time: Thursday, September 15, 2011 11:06:57
Sample Type: Dilution - DF:5 of 2
Sample Description:
Number of Replicates: 3
Batch ID: 1109041
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\SEQ-SRD1 @5X.9182
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	14772.784	3.304	14772.784			ug/L
	Be	9	28.000	18.898	0.001	0.08325	50.72	ug/L
	Al	27	1296117.475	2.624	6.261	463.11664	3.94	ug/L
>	Sc	45	205552.509	1.332	205552.509			ug/L
	V	51	4781.200	2.646	0.008	0.26775	3.82	ug/L
	Cr	52	10221.685	0.423	0.001	0.03442	93.08	ug/L
	Mn	55	832761.622	0.532	4.048	111.18221	1.37	ug/L
	Co	59	38763.401	1.824	0.188	6.70617	1.74	ug/L
	Ni	60	3196.021	3.920	0.015	2.61462	4.01	ug/L
	Cu	65	146398.549	1.358	0.712	122.91818	2.51	ug/L
	Zn	66	253724.306	0.210	1.355	428.60891	2.53	ug/L
>	Ge	72	187163.407	2.370	187163.407			ug/L
	As	75	268437.791	1.294	1.437	391.80273	3.40	ug/L
	Se	82	90.001	21.886	0.000	0.38983	80.74	ug/L
	Y	89	301683.233	1.993	-20799.531			ug/L
	Mo	98	212.899	13.754	0.000	0.04069	42.35	ug/L
	Ag	107	211.337	4.763	-0.004	-0.36332	1.14	ug/L
	Cd	111	3645.087	0.484	0.016	6.31159	2.46	ug/L
	Cd	114	7539.714	4.239	0.035	6.04557	3.77	mg/L
>	In	115	216341.626	1.936	216341.626			ug/L
	Sb	121	7993.111	2.819	0.037	4.21427	3.95	ug/L
	Ba	135	684.037	2.924	0.002	1.28804	1.87	ug/L
>	Tb	159	280460.299	2.481	280460.299			ug/L
	Ho	165	254830.433	2.756	0.010			ug/L
	Tl	205	258.672	7.589	0.001	0.05288	10.23	ug/L
	Pb	208	902035.777	4.289	3.218	213.12794	5.89	ug/L
	Bi	209	133525.450	1.477	0.050			ug/L
	Th	232	2573.864	3.687	0.009	0.54117	2.82	ug/L
	U	238	10838.724	0.923	0.039	2.31527	2.30	ug/L
	Na	23	1286352.610	2.084	6.212	0.57406	2.04	mg/L
	Mg	24	544990.170	1.773	2.644	0.34538	2.77	mg/L
	K	39	3964232.694	0.932	8.991	0.37255	4.33	mg/L
	Ca	44	322000.650	1.304	1.437	1.95063	2.80	mg/L
	Fe	54	1102363.919	1.435	5.187	2.95438	2.78	mg/L
>	Sc-1	45	205552.509	1.332	205552.509			mg/L
	Kr	83	78.000	13.568	8.000			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		116.990			
	Be	9				23.726	
	Al	27				15.972	
>	Sc	45		97.762			
	V	51				8.318	
	Cr	52				79.651	
	Mn	55				8.181	
	Co	59				5.374	
	Ni	60				4.877	
	Cu	65				2.845	
	Zn	66				3.592	
>	Ge	72		94.259			
	As	75				1.749	
	Se	82				83.582	
	Y	89					
	Mo	98				29.023	
	Ag	107				-968.742	
	Cd	111				2.735	
	Cd	114				0.199	
>	In	115		92.654			
	Sb	121				2.225	
	Ba	135				4.511	
>	Tb	159		95.059			
	Ho	165					
	Tl	205				7.083	
	Pb	208				4.524	
	Bi	209					
	Th	232				8.089	
	U	238				10.749	
	Na	23				19.296	
	Mg	24				16.966	
	K	39				7.537	
	Ca	44				6.028	
	Fe	54				12.622	
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: 1109044-BS1

Sample Date/Time: Thursday, September 15, 2011 11:09:45
Sample Type: Spike - 3 of 1
Sample Description:
Number of Replicates: 3
Batch ID: 1109041
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\1109044-BS1 .9183
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13073.660	0.701	13073.660			ug/L
	Be	9	10990.990	1.142	0.840	102.89079	1.85	ug/L
	Al	27	26231732.569	0.828	129.816	9603.02189	1.31	ug/L
>	Sc	45	202023.102	1.746	202023.102			ug/L
	V	51	593301.528	1.003	2.922	97.12824	0.76	ug/L
	Cr	52	500482.539	1.503	2.429	97.97247	0.28	ug/L
	Mn	55	722288.214	0.977	3.573	98.12502	2.61	ug/L
	Co	59	556929.993	0.612	2.757	98.17498	1.38	ug/L
	Ni	60	117735.164	1.068	0.583	98.75377	2.58	ug/L
	Cu	65	111508.762	0.755	0.551	95.23647	1.92	ug/L
	Zn	66	62408.033	0.034	0.327	103.52244	0.28	ug/L
>	Ge	72	189962.324	0.307	189962.324			ug/L
	As	75	71601.581	1.134	0.379	103.23387	1.43	ug/L
	Se	82	31828.171	0.384	0.167	508.12670	0.43	ug/L
	Y	89	299179.325	0.310	-23303.439			ug/L
	Mo	98	187002.886	0.907	0.860	99.36334	1.28	ug/L
	Ag	107	248692.897	0.861	1.139	99.88098	1.54	ug/L
	Cd	111	57889.236	1.952	0.266	103.34302	1.30	ug/L
	Cd	114	125916.568	2.466	0.579	101.03575	1.79	mg/L
>	In	115	217403.841	1.281	217403.841			ug/L
	Sb	121	193611.578	1.590	0.890	102.28660	1.03	ug/L
	Ba	135	51081.924	1.333	0.184	99.58267	0.83	ug/L
>	Tb	159	277482.140	0.722	277482.140			ug/L
	Ho	165	253941.862	1.754	0.017			ug/L
	Tl	205	330163.533	2.480	1.189	107.86917	1.84	ug/L
	Pb	208	443265.960	2.304	1.597	105.75775	1.93	ug/L
	Bi	209	123563.651	1.463	0.019			ug/L
	Th	232	491567.708	2.755	1.771	110.49354	2.08	ug/L
	U	238	484592.578	4.885	1.746	104.78208	4.31	ug/L
	Na	23	21473256.999	3.116	106.276	9.82147	3.93	mg/L
	Mg	24	15169907.653	2.370	75.103	9.81174	3.29	mg/L
	K	39	50908398.916	1.900	241.702	10.01513	1.23	mg/L
	Ca	44	1594912.269	1.314	7.766	10.54437	2.05	mg/L
	Fe	54	3516543.361	0.891	17.234	9.81510	2.18	mg/L
>	Sc-1	45	202023.102	1.746	202023.102			mg/L
	Kr	83	98.667	11.877	28.667			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		103.534			
	Be	9			102.923		
	Al	27			96.025		
>	Sc	45		96.083			
	V	51			97.102		
	Cr	52			97.910		
	Mn	55			98.120		
	Co	59			98.166		
	Ni	60			98.730		
	Cu	65			95.210		
	Zn	66			103.566		
>	Ge	72		95.669			
	As	75			103.172		
	Se	82			101.592		
	Y	89					
	Mo	98			99.283		
	Ag	107			99.898		
	Cd	111			103.386		
	Cd	114					
>	In	115		93.109			
	Sb	121			102.163		
	Ba	135			99.575		
>	Tb	159		94.050			
	Ho	165					
	Tl	205			107.846		
	Pb	208			105.738		
	Bi	209					
	Th	232			110.507		
	U	238			104.774		
	Na	23			98.201		
	Mg	24			98.110		
	K	39			99.970		
	Ca	44			105.453		
	Fe	54			98.080		
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: 1109044-MS1

Sample Date/Time: Thursday, September 15, 2011 11:12:32
Sample Type: Spike - 3 of 2
Sample Description:
Number of Replicates: 3
Batch ID: 1109041
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\1109044-MS1 .9184
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13590.764	1.968	13590.764			ug/L
	Be	9	11813.822	0.700	0.868	106.41843	2.64	ug/L
	Al	27	32251050.759	0.156	147.398	10903.65817	1.75	ug/L
>	Sc	45	218778.731	1.817	218778.731			ug/L
	V	51	626934.578	0.702	2.851	94.76629	1.15	ug/L
	Cr	52	520259.400	0.540	2.330	93.98308	1.92	ug/L
	Mn	55	4723157.205	1.869	21.588	592.86976	2.02	ug/L
	Co	59	768283.224	1.958	3.511	125.04221	0.50	ug/L
	Ni	60	135290.583	0.754	0.618	104.78039	1.82	ug/L
	Cu	65	847783.347	1.161	3.875	669.15620	0.75	ug/L
	Zn	66	1386924.249	0.568	7.112	2249.81210	1.36	ug/L
>	Ge	72	194996.765	1.152	194996.765			ug/L
	As	75	1456550.711	1.264	7.471	2037.65133	0.34	ug/L
	Se	82	32986.832	1.369	0.169	513.07339	1.65	ug/L
	Y	89	360993.504	1.840	38510.740			ug/L
	Mo	98	193675.899	0.832	0.871	100.63358	2.34	ug/L
	Ag	107	162863.053	5.234	0.728	63.83752	7.08	ug/L
	Cd	111	78484.918	1.573	0.352	137.12030	3.29	ug/L
	Cd	114	174951.593	0.526	0.787	137.29180	1.38	mg/L
>	In	115	222366.356	1.916	222366.356			ug/L
	Sb	121	245231.911	2.141	1.103	126.71092	3.12	ug/L
	Ba	135	56384.535	0.643	0.204	110.49421	2.24	ug/L
>	Tb	159	276125.696	1.794	276125.696			ug/L
	Ho	165	251605.995	0.671	0.013			ug/L
	Tl	205	351635.215	0.361	1.273	115.48955	2.17	ug/L
	Pb	208	4786636.008	0.940	17.337	1148.16730	1.21	ug/L
	Bi	209	126319.305	3.272	0.032			ug/L
	Th	232	542633.395	4.281	1.965	122.62276	4.91	ug/L
	U	238	595460.944	3.386	2.157	129.46979	4.76	ug/L
	Na	23	27853396.421	2.283	127.261	11.76079	0.81	mg/L
	Mg	24	17851629.711	0.895	81.602	10.66081	1.56	mg/L
	K	39	62160611.701	1.454	273.897	11.34919	2.60	mg/L
	Ca	44	3012749.636	1.111	13.642	18.52352	1.50	mg/L
	Fe	54	8542063.336	0.584	38.878	22.14176	2.23	mg/L
>	Sc-1	45	218778.731	1.817	218778.731			mg/L
	Kr	83	138.668	15.557	68.668			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		107.629			
	Be	9			105.873		
	Al	27			89.070		
>	Sc	45		104.052			
	V	51			93.306		
	Cr	52			93.137		
	Mn	55			78.999		
	Co	59			93.222		
	Ni	60			92.315		
	Cu	65			71.569		
	Zn	66			26.924		
>	Ge	72		98.204			
	As	75			43.762		
	Se	82			102.402		
	Y	89					
	Mo	98			100.347		
	Ag	107			64.007		
	Cd	111			106.403		
	Cd	114					
>	In	115		95.234			
	Sb	121			106.098		
	Ba	135			104.332		
>	Tb	159		93.590			
	Ho	165					
	Tl	205			115.205		
	Pb	208			128.649		
	Bi	209					
	Th	232			120.119		
	U	238			119.017		
	Na	23			93.548		
	Mg	24			91.844		
	K	39			96.170		
	Ca	44			93.248		
	Fe	54			90.254		
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: 1109044-MSD1

Sample Date/Time: Thursday, September 15, 2011 11:15:20
Sample Type: Spike - 3 of 2
Sample Description:
Number of Replicates: 3
Batch ID: 1109041
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\1109044-MSD1 .9185
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13917.487	2.919	13917.487			ug/L
	Be	9	11680.916	3.781	0.838	102.74545	3.96	ug/L
	Al	27	32544950.233	4.258	148.124	10957.35714	4.06	ug/L
>	Sc	45	219638.827	0.836	219638.827			ug/L
	V	51	623019.718	1.960	2.822	93.80156	2.77	ug/L
	Cr	52	522479.550	0.479	2.330	94.00130	1.35	ug/L
	Mn	55	4723209.924	1.382	21.504	590.55238	2.23	ug/L
	Co	59	764095.980	1.860	3.479	123.89338	2.70	ug/L
	Ni	60	136377.837	0.536	0.621	105.19562	1.35	ug/L
	Cu	65	837514.937	1.023	3.813	658.46916	1.80	ug/L
	Zn	66	1365260.961	1.742	7.039	2226.82583	1.21	ug/L
>	Ge	72	193905.387	0.549	193905.387			ug/L
	As	75	1453265.684	3.764	7.496	2044.29191	3.27	ug/L
	Se	82	33075.296	1.244	0.170	517.30322	0.71	ug/L
	Y	89	355242.180	2.104	32759.416			ug/L
	Mo	98	191912.720	2.124	0.878	101.45964	1.86	ug/L
	Ag	107	186226.562	6.228	0.848	74.33131	7.16	ug/L
	Cd	111	76451.155	0.740	0.349	135.88423	0.25	ug/L
	Cd	114	172181.177	2.314	0.788	137.48520	1.66	mg/L
>	In	115	218486.787	0.950	218486.787			ug/L
	Sb	121	240953.605	2.203	1.102	126.66366	1.26	ug/L
	Ba	135	55856.559	2.114	0.202	109.23192	3.32	ug/L
>	Tb	159	276719.895	1.862	276719.895			ug/L
	Ho	165	253628.289	1.175	0.018			ug/L
	Tl	205	356962.572	2.871	1.290	117.02298	4.67	ug/L
	Pb	208	4793204.953	1.134	17.325	1147.37565	2.07	ug/L
	Bi	209	124866.381	0.831	0.026			ug/L
	Th	232	543423.252	1.729	1.964	122.54650	3.27	ug/L
	U	238	605621.152	3.674	2.190	131.42019	5.45	ug/L
	Na	23	28123451.502	5.269	128.036	11.83244	6.04	mg/L
	Mg	24	17804263.359	1.795	81.060	10.59005	2.26	mg/L
	K	39	62038860.427	3.372	272.176	11.27785	3.63	mg/L
	Ca	44	2998794.666	1.888	13.524	18.36330	2.47	mg/L
	Fe	54	8477473.399	0.141	38.422	21.88227	0.75	mg/L
>	Sc-1	45	219638.827	0.836	219638.827			mg/L
	Kr	83	130.668	9.841	60.668			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		110.216			
	Be	9			102.200		
	Al	27			89.607		
>	Sc	45		104.461			
	V	51			92.341		
	Cr	52			93.155		
	Mn	55			76.682		
	Co	59			92.073		
	Ni	60			92.731		
	Cu	65			60.882		
	Zn	66			3.938		
>	Ge	72		97.655			
	As	75			50.403		
	Se	82			103.248		
	Y	89					
	Mo	98			101.173		
	Ag	107			74.501		
	Cd	111			105.167		
	Cd	114					
>	In	115		93.573			
	Sb	121			106.051		
	Ba	135			103.070		
>	Tb	159		93.791			
	Ho	165					
	Tl	205			116.738		
	Pb	208			127.857		
	Bi	209					
	Th	232			120.043		
	U	238			120.967		
	Na	23			94.264		
	Mg	24			91.137		
	K	39			95.457		
	Ca	44			91.646		
	Fe	54			87.659		
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: C110805-01 @5X

Sample Date/Time: Thursday, September 15, 2011 11:18:08
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID: 1109041
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\C110805-01 @5X.9186
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13552.678	0.632	13552.678			ug/L
	Be	9	96.667	7.266	0.006	0.72510	8.06	ug/L
	Al	27	11565861.487	2.359	55.244	4086.66728	0.79	ug/L
>	Sc	45	209169.314	1.870	209169.314			ug/L
	V	51	4381.778	6.913	0.006	0.19065	19.86	ug/L
	Cr	52	27572.056	3.113	0.083	3.34568	3.79	ug/L
	Mn	55	25926462.971	0.678	123.965	3404.40145	1.18	ug/L
	Co	59	32043.370	2.267	0.153	5.44551	0.96	ug/L
	Ni	60	12290.822	4.431	0.059	9.93348	2.84	ug/L
	Cu	65	544040.152	1.927	2.601	449.10426	1.66	ug/L
	Zn	66	5661391.711	2.092	30.108	9524.40905	1.24	ug/L
>	Ge	72	188015.547	0.855	188015.547			ug/L
	As	75	484.603	7.235	0.004	1.13272	4.22	ug/L
	Se	82	188.670	7.814	0.001	1.97705	10.78	ug/L
	Y	89	368517.329	0.280	46034.565			ug/L
	Mo	98	2189.516	18.967	0.009	1.05988	19.59	ug/L
	Ag	107	25476.211	10.699	0.109	9.55813	10.54	ug/L
	Cd	111	32808.050	2.143	0.146	56.94388	1.39	ug/L
	Cd	114	72511.673	0.273	0.325	56.66989	0.62	mg/L
>	In	115	223164.799	0.838	223164.799			ug/L
	Sb	121	596.695	3.023	0.002	0.27506	3.52	ug/L
	Ba	135	7814.883	0.538	0.027	14.80425	1.92	ug/L
>	Tb	159	285087.776	1.367	285087.776			ug/L
	Ho	165	261047.512	1.435	0.017			ug/L
	Tl	205	344.010	18.632	0.001	0.07888	27.76	ug/L
	Pb	208	195744.799	0.780	0.686	45.44336	1.47	ug/L
	Bi	209	127896.198	1.498	0.023			ug/L
	Th	232	8127.290	5.234	0.028	1.74793	6.08	ug/L
	U	238	33314.565	1.468	0.117	7.00896	2.10	ug/L
	Na	23	2939300.344	1.370	14.007	1.29444	0.96	mg/L
	Mg	24	15861182.738	1.684	75.823	9.90587	0.43	mg/L
	K	39	4757038.067	2.242	12.444	0.51564	1.93	mg/L
	Ca	44	9535747.381	1.578	45.460	61.72490	0.32	mg/L
	Fe	54	3031866.730	1.283	14.320	8.15548	1.40	mg/L
>	Sc-1	45	209169.314	1.870	209169.314			mg/L
	Kr	83	101.334	10.128	31.334			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
⌈>	Li	6		107.327			
⌊	Be	9					
⌈	Al	27					
|>	Sc	45		99.482			
|	V	51					
|	Cr	52					
|	Mn	55					
|	Co	59					
|	Ni	60					
⌊	Cu	65					
⌈	Zn	66					
|>	Ge	72		94.688			
|	As	75					
⌊	Se	82					
	Y	89					
⌈	Mo	98					
|	Ag	107					
|	Cd	111					
|	Cd	114					
|>	In	115		95.576			
⌊	Sb	121					
⌈	Ba	135					
|>	Tb	159		96.627			
|	Ho	165					
|	Tl	205					
|	Pb	208					
|	Bi	209					
|	Th	232					
⌊	U	238					
⌈	Na	23					
|	Mg	24					
|	K	39					
|	Ca	44					
|	Fe	54					
⌊>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: C110805-03 @5X

Sample Date/Time: Thursday, September 15, 2011 11:20:57
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID: 1109041
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\C110805-03 @5X.9187
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13936.855	0.742	13936.855			ug/L
	Be	9	253.339	11.825	0.017	2.07976	13.16	ug/L
	Al	27	20063639.061	1.538	98.486	7285.46300	1.54	ug/L
>	Sc	45	203622.475	0.168	203622.475			ug/L
	V	51	63770.069	2.391	0.298	9.90529	2.51	ug/L
	Cr	52	39387.744	1.654	0.145	5.83150	2.04	ug/L
	Mn	55	41878562.363	0.465	205.665	5648.10998	0.50	ug/L
	Co	59	53556.008	0.905	0.263	9.35641	0.75	ug/L
	Ni	60	19588.575	1.281	0.096	16.28023	1.42	ug/L
	Cu	65	977194.451	0.480	4.798	828.66421	0.36	ug/L
	Zn	66	6633091.049	0.392	34.739	10989.40223	0.74	ug/L
>	Ge	72	190940.917	0.821	190940.917			ug/L
	As	75	2410.673	4.424	0.014	3.87418	4.61	ug/L
	Se	82	204.670	12.716	0.001	2.18586	18.81	ug/L
	Y	89	393461.591	0.873	70978.828			ug/L
	Mo	98	1455.220	2.337	0.006	0.67432	2.31	ug/L
	Ag	107	349.343	8.224	-0.004	-0.31285	3.49	ug/L
	Cd	111	39362.472	1.224	0.174	67.81508	1.68	ug/L
	Cd	114	87390.752	0.508	0.388	67.74556	0.94	mg/L
>	In	115	225007.796	0.447	225007.796			ug/L
	Sb	121	345.343	10.137	0.001	0.14414	11.91	ug/L
	Ba	135	4792.504	1.253	0.017	9.02954	1.71	ug/L
>	Tb	159	286217.139	0.735	286217.139			ug/L
	Ho	165	262608.443	1.621	0.019			ug/L
	Tl	205	846.057	0.852	0.003	0.23734	0.49	ug/L
	Pb	208	154758.116	1.122	0.540	35.77750	1.71	ug/L
	Bi	209	137347.504	0.972	0.054			ug/L
	Th	232	13767.157	3.228	0.048	2.97003	3.53	ug/L
	U	238	47039.767	2.580	0.164	9.85798	2.42	ug/L
	Na	23	1930884.366	2.122	9.436	0.87205	2.24	mg/L
	Mg	24	24084779.738	1.592	118.275	15.45189	1.68	mg/L
	K	39	7692921.583	1.158	27.483	1.13878	1.80	mg/L
	Ca	44	8985521.036	1.574	43.998	59.73903	1.43	mg/L
	Fe	54	20397833.174	0.991	99.998	56.95079	0.92	mg/L
>	Sc-1	45	203622.475	0.168	203622.475			mg/L
	Kr	83	118.668	16.019	48.667			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
⌈>	Li	6		110.370			
⌊	Be	9					
⌈	Al	27					
|>	Sc	45		96.844			
|	V	51					
|	Cr	52					
|	Mn	55					
|	Co	59					
|	Ni	60					
⌊	Cu	65					
⌈	Zn	66					
|>	Ge	72		96.162			
|	As	75					
⌊	Se	82					
	Y	89					
⌈	Mo	98					
|	Ag	107					
|	Cd	111					
|	Cd	114					
|>	In	115		96.365			
⌊	Sb	121					
⌈	Ba	135					
|>	Tb	159		97.010			
|	Ho	165					
|	Tl	205					
|	Pb	208					
|	Bi	209					
|	Th	232					
⌊	U	238					
⌈	Na	23					
|	Mg	24					
|	K	39					
|	Ca	44					
|	Fe	54					
⌊>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: Blank

Sample Date/Time: Thursday, September 15, 2011 11:39:03
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID: 1109041
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\Blank.9193
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13783.184	1.565	13783.184			ug/L
	Be	9	6.000	33.333	-0.001	-0.09564	17.72	ug/L
	Al	27	5260.884	5.230	-0.022	-1.64860	5.37	ug/L
>	Sc	45	211768.616	0.428	211768.616			ug/L
	V	51	2996.994	1.183	-0.001	-0.03491	20.74	ug/L
	Cr	52	9434.449	0.751	-0.004	-0.17471	6.81	ug/L
	Mn	55	1907.806	22.101	0.006	0.15679	35.53	ug/L
	Co	59	83.234	9.120	0.000	0.00435	28.18	ug/L
	Ni	60	31.900	36.462	0.000	0.00539	171.04	ug/L
	Cu	65	275.290	17.743	0.001	0.12087	32.74	ug/L
	Zn	66	394.013	24.191	0.001	0.24489	64.67	ug/L
>	Ge	72	191621.917	0.673	191621.917			ug/L
	As	75	-190.140	24.344	0.001	0.15927	41.41	ug/L
	Se	82	80.001	11.457	0.000	0.19809	77.53	ug/L
	Y	89	310794.834	0.586	-11687.930			ug/L
	Mo	98	157.271	6.207	0.000	0.00812	72.35	ug/L
	Ag	107	4189.405	3.293	0.014	1.19509	6.34	ug/L
	Cd	111	138.548	11.855	-0.000	-0.00393	750.48	ug/L
	Cd	114	37.512	48.118	-0.000	-0.00717	193.73	mg/L
>	In	115	223557.828	1.319	223557.828			ug/L
	Sb	121	92.667	14.691	0.000	0.01549	45.36	ug/L
	Ba	135	14.667	28.386	-0.000	-0.00408	184.07	ug/L
>	Tb	159	285540.783	2.088	285540.783			ug/L
	Ho	165	257892.299	2.351	0.005			ug/L
	Tl	205	55.334	15.048	-0.000	-0.01314	21.52	ug/L
	Pb	208	202.001	12.985	0.000	0.01228	48.03	ug/L
	Bi	209	128744.500	3.953	0.025			ug/L
	Th	232	80.667	33.479	-0.000	-0.01386	41.34	ug/L
	U	238	34.000	41.177	0.000	0.00237	120.38	ug/L
	Na	23	8340.935	10.334	-0.007	-0.00066	59.40	mg/L
	Mg	24	1537.525	13.522	-0.001	-0.00013	96.94	mg/L
	K	39	2246049.032	0.620	0.308	0.01277	9.29	mg/L
	Ca	44	22198.026	1.845	-0.025	-0.03450	6.26	mg/L
	Fe	54	36565.934	1.697	-0.004	-0.00229	89.94	mg/L
>	Sc-1	45	211768.616	0.428	211768.616			mg/L
	Kr	83	58.000	22.612	-12.000			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
⌈>	Li	6		109.153			
⌊	Be	9					
⌈	Al	27					
|>	Sc	45		100.718			
|	V	51					
|	Cr	52					
|	Mn	55					
|	Co	59					
|	Ni	60					
⌊	Cu	65					
⌈	Zn	66					
|>	Ge	72		96.505			
|	As	75					
⌊	Se	82					
	Y	89					
⌈	Mo	98					
|	Ag	107					
|	Cd	111					
|	Cd	114					
|>	In	115		95.744			
⌊	Sb	121					
⌈	Ba	135					
|>	Tb	159		96.781			
|	Ho	165					
|	Tl	205					
|	Pb	208					
|	Bi	209					
|	Th	232					
⌊	U	238					
⌈	Na	23					
|	Mg	24					
|	K	39					
|	Ca	44					
|	Fe	54					
⌊>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: SEQ-CCV

Sample Date/Time: Thursday, September 15, 2011 11:41:51
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\SEQ-CCV.9194
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13824.613	2.631	13824.613			ug/L
	Be	9	5583.827	2.077	0.403	49.36353	2.17	ug/L
	Al	27	670676.915	1.406	3.294	243.66552	0.59	ug/L
>	Sc	45	200749.052	1.800	200749.052			ug/L
	V	51	301425.596	1.855	1.486	49.40761	0.46	ug/L
	Cr	52	260696.111	0.746	1.250	50.43168	2.49	ug/L
	Mn	55	369167.267	1.016	1.836	50.42860	2.79	ug/L
	Co	59	283464.290	1.575	1.412	50.29351	3.33	ug/L
	Ni	60	60368.712	0.221	0.301	50.94426	1.83	ug/L
	Cu	65	57915.669	1.636	0.288	49.72302	1.51	ug/L
	Zn	66	31747.098	1.010	0.166	52.42469	1.02	ug/L
>	Ge	72	190098.360	0.231	190098.360			ug/L
	As	75	35029.337	1.254	0.186	50.68619	1.06	ug/L
	Se	82	3194.149	0.704	0.016	49.99346	0.89	ug/L
	Y	89	301117.721	1.677	-21365.042			ug/L
	Mo	98	95388.217	1.347	0.434	50.16142	1.38	ug/L
	Ag	107	126477.723	1.327	0.571	50.08386	1.17	ug/L
	Cd	111	29220.650	2.085	0.133	51.55183	2.79	ug/L
	Cd	114	64467.075	1.962	0.294	51.22607	2.68	mg/L
>	In	115	219497.416	0.730	219497.416			ug/L
	Sb	121	95357.331	1.159	0.434	49.88134	1.07	ug/L
	Ba	135	25673.290	0.799	0.091	49.44662	0.99	ug/L
>	Tb	159	280788.412	0.842	280788.412			ug/L
	Ho	165	252895.836	1.573	0.002			ug/L
	Tl	205	165965.832	1.819	0.591	53.57732	2.17	ug/L
	Pb	208	224135.775	1.643	0.798	52.83580	2.20	ug/L
	Bi	209	125463.847	2.216	0.021			ug/L
	Th	232	241378.409	2.797	0.859	53.60981	3.01	ug/L
	U	238	248036.628	1.412	0.883	53.01128	1.98	ug/L
	Na	23	11064017.402	0.989	55.081	5.09028	2.30	mg/L
	Mg	24	7794598.944	0.551	38.825	5.07231	1.32	mg/L
	K	39	2322137.341	1.217	1.273	0.05276	26.51	mg/L
	Ca	44	785401.596	1.691	3.783	5.13601	1.98	mg/L
	Fe	54	1916383.715	2.709	9.371	5.33688	2.97	mg/L
>	Sc-1	45	200749.052	1.800	200749.052			mg/L
	Kr	83	80.667	10.322	10.667			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		109.481			
	Be	9	98.727				
	Al	27	97.466				
>	Sc	45		95.477			
	V	51	98.815				
	Cr	52	100.863				
	Mn	55	100.857				
	Co	59	100.587				
	Ni	60	101.889				
	Cu	65	99.446				
	Zn	66	104.849				
>	Ge	72		95.737			
	As	75	101.372				
	Se	82	99.987				
	Y	89					
	Mo	98	100.323				
	Ag	107	100.168				
	Cd	111	103.104				
	Cd	114					
>	In	115		94.005			
	Sb	121	99.763				
	Ba	135	98.893				
>	Tb	159		95.170			
	Ho	165					
	Tl	205	107.155				
	Pb	208	105.672				
	Bi	209					
	Th	232	107.220				
	U	238	106.023				
	Na	23	101.806				
	Mg	24	101.446				
	K	39	1.055				
	Ca	44	102.720				
	Fe	54	106.738				
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: SEQ-CCB

Sample Date/Time: Thursday, September 15, 2011 11:44:52
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\SEQ-CCB.9195
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13907.462	2.433	13907.462			ug/L
	Be	9	12.000	16.667	-0.000	-0.04299	41.67	ug/L
	Al	27	10231.126	12.835	0.003	0.23046	189.84	ug/L
>	Sc	45	203498.392	1.594	203498.392			ug/L
	V	51	3051.278	4.512	-0.000	-0.00667	441.02	ug/L
	Cr	52	9539.274	0.410	-0.002	-0.08059	35.99	ug/L
	Mn	55	1248.973	36.176	0.003	0.07739	75.86	ug/L
	Co	59	89.234	19.349	0.000	0.00595	47.60	ug/L
	Ni	60	25.900	51.021	0.000	0.00134	801.67	ug/L
	Cu	65	240.955	10.670	0.001	0.10078	19.83	ug/L
	Zn	66	342.010	18.977	0.000	0.15400	72.02	ug/L
>	Ge	72	193517.774	0.985	193517.774			ug/L
	As	75	-225.797	18.847	0.000	0.11203	50.89	ug/L
	Se	82	66.000	18.924	-0.000	-0.03423	588.30	ug/L
	Y	89	308641.295	0.602	-13841.469			ug/L
	Mo	98	434.993	18.600	0.001	0.15383	28.24	ug/L
	Ag	107	3875.870	4.522	0.012	1.08534	7.54	ug/L
	Cd	111	170.726	12.312	0.000	0.05446	64.44	ug/L
	Cd	114	58.519	17.227	0.000	0.00969	83.13	mg/L
>	In	115	221596.387	0.900	221596.387			ug/L
	Sb	121	184.669	7.835	0.001	0.06362	12.35	ug/L
	Ba	135	21.333	21.651	0.000	0.00901	99.22	ug/L
>	Tb	159	283082.532	2.028	283082.532			ug/L
	Ho	165	255722.587	1.363	0.005			ug/L
	Tl	205	85.334	16.955	-0.000	-0.00345	119.70	ug/L
	Pb	208	190.001	9.648	0.000	0.00995	51.79	ug/L
	Bi	209	126977.169	3.376	0.023			ug/L
	Th	232	124.668	10.682	-0.000	-0.00392	88.40	ug/L
	U	238	41.333	31.109	0.000	0.00405	71.80	ug/L
	Na	23	12379.722	13.136	0.014	0.00133	62.21	mg/L
	Mg	24	3384.336	37.767	0.008	0.00110	77.81	mg/L
	K	39	2270205.932	0.966	0.860	0.03564	27.02	mg/L
	Ca	44	23024.332	0.553	-0.017	-0.02317	12.62	mg/L
	Fe	54	35994.417	3.923	0.000	0.00009	3119.73	mg/L
>	Sc-1	45	203498.392	1.594	203498.392			mg/L
	Kr	83	72.667	11.123	2.667			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		110.137			
	Be	9					
	Al	27					
>	Sc	45		96.785			
	V	51					
	Cr	52					
	Mn	55					
	Co	59					
	Ni	60					
	Cu	65					
	Zn	66					
>	Ge	72		97.459			
	As	75					
	Se	82					
	Y	89					
	Mo	98					
	Ag	107					
	Cd	111					
	Cd	114					
>	In	115		94.904			
	Sb	121					
	Ba	135					
>	Tb	159		95.948			
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23					
	Mg	24					
	K	39					
	Ca	44					
	Fe	54					
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: 1109037-BLK1 @5X

Sample Date/Time: Thursday, September 15, 2011 11:47:55
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID: 1109037
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\1109037-BLK1 @5X.9196
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13737.080	0.676	13737.080			ug/L
	Be	9	13.333	17.321	-0.000	-0.02992	66.83	ug/L
	Al	27	8875.652	7.067	-0.003	-0.24845	106.53	ug/L
>	Sc	45	202912.155	1.063	202912.155			ug/L
	V	51	-1018.004	119.618	-0.020	-0.67080	29.62	ug/L
	Cr	52	12709.583	2.853	0.014	0.55470	10.02	ug/L
	Mn	55	1638.890	15.675	0.005	0.13132	28.41	ug/L
	Co	59	60.667	19.283	0.000	0.00101	209.45	ug/L
	Ni	60	48.000	21.819	0.000	0.02003	45.92	ug/L
	Cu	65	484.352	7.043	0.002	0.30879	10.43	ug/L
	Zn	66	1014.749	2.676	0.004	1.33947	4.53	ug/L
>	Ge	72	183971.836	0.849	183971.836			ug/L
	As	75	-458.022	54.341	-0.001	-0.25119	149.69	ug/L
	Se	82	68.667	7.330	0.000	0.06275	125.62	ug/L
	Y	89	298165.886	0.205	-24316.878			ug/L
	Mo	98	123.051	16.751	-0.000	-0.00823	118.68	ug/L
	Ag	107	992.746	10.795	-0.001	-0.05080	71.18	ug/L
	Cd	111	187.318	8.119	0.000	0.08822	23.19	ug/L
	Cd	114	120.316	9.030	0.000	0.05962	11.30	mg/L
>	In	115	218431.622	1.964	218431.622			ug/L
	Sb	121	110.001	6.298	0.000	0.02576	17.47	ug/L
	Ba	135	116.668	23.338	0.000	0.19781	27.28	ug/L
>	Tb	159	275040.176	0.297	275040.176			ug/L
	Ho	165	250968.001	1.097	0.014			ug/L
	Tl	205	124.001	8.381	0.000	0.01014	32.66	ug/L
	Pb	208	390.005	12.572	0.001	0.05936	20.33	ug/L
	Bi	209	122417.136	2.670	0.019			ug/L
	Th	232	86.667	15.708	-0.000	-0.01178	26.11	ug/L
	U	238	40.000	73.655	0.000	0.00397	161.18	ug/L
	Na	23	90700.446	9.317	0.400	0.03698	9.35	mg/L
	Mg	24	2232.403	12.110	0.003	0.00036	52.93	mg/L
	K	39	2293159.041	0.545	1.004	0.04160	9.53	mg/L
	Ca	44	24265.014	0.769	-0.011	-0.01444	10.82	mg/L
	Fe	54	41014.558	4.042	0.026	0.01453	40.39	mg/L
>	Sc-1	45	202912.155	1.063	202912.155			mg/L
	Kr	83	73.334	43.323	3.333			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		108.788			
	Be	9					
	Al	27					
>	Sc	45		96.506			
	V	51					
	Cr	52					
	Mn	55					
	Co	59					
	Ni	60					
	Cu	65					
	Zn	66					
>	Ge	72		92.652			
	As	75					
	Se	82					
	Y	89					
	Mo	98					
	Ag	107					
	Cd	111					
	Cd	114					
>	In	115		93.549			
	Sb	121					
	Ba	135					
>	Tb	159		93.222			
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23					
	Mg	24					
	K	39					
	Ca	44					
	Fe	54					
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: C110806-02 @5X

Sample Date/Time: Thursday, September 15, 2011 11:50:44
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID: 1109037
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\C110806-02 @5X.9197
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	14395.230	2.053	14395.230			ug/L
	Be	9	30.667	9.962	0.001	0.11267	27.78	ug/L
	Al	27	1339883.675	1.622	6.330	468.27683	2.70	ug/L
>	Sc	45	210143.498	1.366	210143.498			ug/L
	V	51	-1302.876	150.140	-0.021	-0.71237	43.72	ug/L
	Cr	52	16461.653	1.463	0.029	1.18849	4.39	ug/L
	Mn	55	860564.781	1.071	4.093	112.39748	2.44	ug/L
	Co	59	39948.035	0.706	0.190	6.76071	1.54	ug/L
	Ni	60	3347.961	2.413	0.016	2.67943	2.19	ug/L
	Cu	65	150285.690	0.556	0.715	123.40950	0.84	ug/L
	Zn	66	258803.104	0.638	1.388	438.93731	1.32	ug/L
>	Ge	72	186359.694	0.798	186359.694			ug/L
	As	75	1265049.002	0.695	6.790	1851.86368	0.76	ug/L
	Se	82	90.001	2.222	0.000	0.39620	5.29	ug/L
	Y	89	308395.891	1.537	-14086.873			ug/L
	Mo	98	348.612	12.071	0.001	0.11460	19.65	ug/L
	Ag	107	1224.787	0.660	0.001	0.05173	8.42	ug/L
	Cd	111	3658.983	2.871	0.016	6.39065	3.01	ug/L
	Cd	114	7791.337	2.747	0.036	6.30234	2.95	mg/L
>	In	115	214515.029	0.252	214515.029			ug/L
	Sb	121	15615.484	0.726	0.073	8.33144	0.95	ug/L
	Ba	135	646.700	5.887	0.002	1.25159	6.39	ug/L
>	Tb	159	272713.507	0.415	272713.507			ug/L
	Ho	165	247141.817	0.860	0.008			ug/L
	Tl	205	288.673	8.607	0.001	0.06527	13.03	ug/L
	Pb	208	1043370.490	0.939	3.825	253.34929	1.11	ug/L
	Bi	209	127125.274	1.040	0.040			ug/L
	Th	232	3557.013	4.647	0.013	0.78245	5.06	ug/L
	U	238	10434.709	3.240	0.038	2.29163	3.61	ug/L
	Na	23	1310598.208	0.918	6.191	0.57212	1.47	mg/L
	Mg	24	549957.865	0.945	2.609	0.34086	1.47	mg/L
	K	39	4090992.486	1.066	9.173	0.38008	4.20	mg/L
	Ca	44	316637.757	0.991	1.377	1.86948	2.57	mg/L
	Fe	54	1751405.637	1.790	8.160	4.64713	3.04	mg/L
>	Sc-1	45	210143.498	1.366	210143.498			mg/L
	Kr	83	80.001	13.919	10.000			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
⌈>	Li	6		114.000			
⌊	Be	9					
⌈	Al	27					
|>	Sc	45		99.945			
|	V	51					
|	Cr	52					
|	Mn	55					
|	Co	59					
|	Ni	60					
⌊	Cu	65					
⌈	Zn	66					
|>	Ge	72		93.855			
|	As	75					
⌊	Se	82					
	Y	89					
⌈	Mo	98					
|	Ag	107					
|	Cd	111					
|	Cd	114					
|>	In	115		91.872			
⌊	Sb	121					
⌈	Ba	135					
|>	Tb	159		92.433			
|	Ho	165					
|	Tl	205					
|	Pb	208					
|	Bi	209					
|	Th	232					
⌊	U	238					
⌈	Na	23					
|	Mg	24					
|	K	39					
|	Ca	44					
|	Fe	54					
⌊>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: 1109037-DUP1 @5X

Sample Date/Time: Thursday, September 15, 2011 11:53:32
Sample Type: Duplicate of 12
Sample Description:
Number of Replicates: 3
Batch ID: 1109037
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\1109037-DUP1 @5X.9198
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	14388.545	1.128	14388.545			ug/L
	Be	9	22.667	5.094	0.000	0.04421	18.92	ug/L
	Al	27	1297195.692	1.112	6.276	464.24611	2.73	ug/L
>	Sc	45	205233.633	2.230	205233.633			ug/L
	V	51	-2229.944	37.051	-0.026	-0.86750	15.75	ug/L
	Cr	52	17411.557	1.577	0.036	1.45246	8.88	ug/L
	Mn	55	825991.737	0.823	4.022	110.46246	1.64	ug/L
	Co	59	38467.546	1.741	0.187	6.66615	1.90	ug/L
	Ni	60	3084.622	3.501	0.015	2.52792	4.95	ug/L
	Cu	65	145747.757	0.826	0.710	122.57381	2.22	ug/L
	Zn	66	250656.419	0.925	1.344	425.01291	0.74	ug/L
>	Ge	72	186387.755	0.357	186387.755			ug/L
	As	75	1247564.279	1.633	6.695	1825.91509	1.37	ug/L
	Se	82	81.334	10.238	0.000	0.25469	52.74	ug/L
	Y	89	306034.174	0.134	-16448.590			ug/L
	Mo	98	356.759	4.151	0.001	0.11633	6.68	ug/L
	Ag	107	1200.782	3.189	0.000	0.03510	44.65	ug/L
	Cd	111	3587.813	1.897	0.016	6.17137	2.16	ug/L
	Cd	114	7747.326	1.012	0.035	6.17898	1.33	mg/L
>	In	115	217538.019	0.700	217538.019			ug/L
	Sb	121	15703.712	2.576	0.072	8.26101	1.92	ug/L
	Ba	135	650.701	4.372	0.002	1.26013	6.44	ug/L
>	Tb	159	272777.052	2.068	272777.052			ug/L
	Ho	165	250711.290	1.034	0.021			ug/L
	Tl	205	242.005	1.653	0.001	0.04975	5.24	ug/L
	Pb	208	1047102.697	1.318	3.840	254.29735	3.13	ug/L
	Bi	209	129131.923	1.618	0.048			ug/L
	Th	232	3452.955	5.103	0.012	0.75898	6.86	ug/L
	U	238	10289.797	0.798	0.038	2.25991	2.87	ug/L
	Na	23	1286147.959	0.674	6.222	0.57498	1.66	mg/L
	Mg	24	523328.873	0.778	2.542	0.33213	1.55	mg/L
	K	39	3986898.890	0.630	9.134	0.37847	4.46	mg/L
	Ca	44	310458.694	1.749	1.383	1.87726	0.54	mg/L
	Fe	54	1699370.605	0.435	8.106	4.61675	2.43	mg/L
>	Sc-1	45	205233.633	2.230	205233.633			mg/L
	Kr	83	83.334	15.980	13.334			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		113.947			
	Be	9					87.274
	Al	27					0.864
>	Sc	45		97.610			
	V	51					19.638
	Cr	52					19.990
	Mn	55					1.737
	Co	59					1.408
	Ni	60					5.819
	Cu	65					0.679
	Zn	66					3.223
>	Ge	72		93.869			
	As	75					1.411
	Se	82					43.482
	Y	89					
	Mo	98					1.502
	Ag	107					38.303
	Cd	111					3.491
	Cd	114					1.977
>	In	115		93.166			
	Sb	121					0.849
	Ba	135					0.680
>	Tb	159		92.455			
	Ho	165					
	Tl	205					26.988
	Pb	208					0.374
	Bi	209					
	Th	232					3.045
	U	238					1.394
	Na	23					0.498
	Mg	24					2.595
	K	39					0.423
	Ca	44					0.415
	Fe	54					0.656
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: SEQ-SRD1 @25X

Sample Date/Time: Thursday, September 15, 2011 11:56:20
Sample Type: Dilution - DF:5 of 12
Sample Description:
Number of Replicates: 3
Batch ID: 1109037
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\SEQ-SRD1 @25X.9199
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13961.577	0.710	13961.577			ug/L
	Be	9	12.667	45.580	-0.000	-0.03752	135.78	ug/L
	Al	27	265709.281	1.987	1.252	92.64692	2.42	ug/L
>	Sc	45	204474.316	0.413	204474.316			ug/L
	V	51	2279.836	50.540	-0.004	-0.13500	137.87	ug/L
	Cr	52	11335.608	2.514	0.007	0.26468	24.78	ug/L
	Mn	55	168434.215	0.907	0.820	22.53189	1.12	ug/L
	Co	59	7999.471	3.236	0.039	1.38354	3.32	ug/L
	Ni	60	683.010	4.384	0.003	0.54587	4.55	ug/L
	Cu	65	30395.659	1.764	0.148	25.56944	2.19	ug/L
	Zn	66	51880.461	1.324	0.276	87.34051	1.38	ug/L
>	Ge	72	187041.539	0.460	187041.539			ug/L
	As	75	250219.792	0.947	1.339	365.28775	0.73	ug/L
	Se	82	78.000	11.177	0.000	0.19613	73.21	ug/L
	Y	89	304518.872	0.453	-17963.892			ug/L
	Mo	98	102.603	11.420	-0.000	-0.01927	28.80	ug/L
	Ag	107	530.023	7.433	-0.003	-0.23723	7.11	ug/L
	Cd	111	791.738	3.852	0.003	1.15762	4.36	ug/L
	Cd	114	1598.250	2.805	0.007	1.23399	3.13	mg/L
>	In	115	219584.180	1.731	219584.180			ug/L
	Sb	121	3131.451	1.640	0.014	1.60673	2.80	ug/L
	Ba	135	220.671	6.863	0.001	0.39919	9.06	ug/L
>	Tb	159	277294.929	1.637	277294.929			ug/L
	Ho	165	252614.177	2.179	0.012			ug/L
	Tl	205	116.668	28.394	0.000	0.00734	143.06	ug/L
	Pb	208	209950.909	1.729	0.757	50.11333	1.70	ug/L
	Bi	209	125939.905	2.093	0.028			ug/L
	Th	232	695.372	4.747	0.002	0.12509	6.94	ug/L
	U	238	1977.646	1.635	0.007	0.42338	3.09	ug/L
	Na	23	334095.184	0.356	1.587	0.14670	0.68	mg/L
	Mg	24	109817.239	1.733	0.529	0.06909	2.01	mg/L
	K	39	2581956.555	0.835	2.329	0.09651	3.42	mg/L
	Ca	44	84170.338	0.801	0.281	0.38210	1.07	mg/L
	Fe	54	369649.011	0.619	1.631	0.92895	0.37	mg/L
>	Sc-1	45	204474.316	0.413	204474.316			mg/L
	Kr	83	61.334	4.981	-8.667			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		110.566			
	Be	9				266.506	
	Al	27				1.077	
>	Sc	45		97.249			
	V	51				-5.243	
	Cr	52				11.350	
	Mn	55				0.233	
	Co	59				2.322	
	Ni	60				1.864	
	Cu	65				3.596	
	Zn	66				0.509	
>	Ge	72		94.198			
	As	75				1.373	
	Se	82				147.515	
	Y	89					
	Mo	98				184.093	
	Ag	107				2393.176	
	Cd	111				9.428	
	Cd	114				2.101	
>	In	115		94.043			
	Sb	121				3.574	
	Ba	135				59.475	
>	Tb	159		93.986			
	Ho	165					
	Tl	205				43.749	
	Pb	208				1.098	
	Bi	209					
	Th	232				20.066	
	U	238				7.625	
	Na	23				28.206	
	Mg	24				1.345	
	K	39				26.968	
	Ca	44				2.195	
	Fe	54				0.051	
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: 1109037-SRM2 @20X

Sample Date/Time: Thursday, September 15, 2011 11:59:08
Sample Type: Spike - 1 of 11
Sample Description:
Number of Replicates: 3
Batch ID: 1109037
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\1109037-SRM2 @20X.9200
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	14820.909	4.485	14820.909			ug/L
	Be	9	5505.761	4.584	0.370	45.39161	3.08	ug/L
	Al	27	142342.638	2.477	0.646	47.75635	4.16	ug/L
>	Sc	45	205564.301	1.465	205564.301			ug/L
	V	51	299911.630	1.646	1.444	48.00446	2.73	ug/L
	Cr	52	258676.815	2.590	1.210	48.80978	3.91	ug/L
	Mn	55	362489.738	1.121	1.760	48.34446	1.99	ug/L
	Co	59	282595.970	1.144	1.375	48.94696	0.48	ug/L
	Ni	60	59647.452	1.560	0.290	49.15480	2.49	ug/L
	Cu	65	60382.053	1.484	0.293	50.63488	2.62	ug/L
	Zn	66	31576.232	0.585	0.170	53.67189	1.37	ug/L
>	Ge	72	184727.636	0.810	184727.636			ug/L
	As	75	69883.641	1.305	0.380	103.60515	0.58	ug/L
	Se	82	3156.131	3.897	0.017	50.84837	3.60	ug/L
	Y	89	301160.463	0.213	-21322.300			ug/L
	Mo	98	94747.657	0.943	0.431	49.80684	2.15	ug/L
	Ag	107	25674.220	8.647	0.112	9.79733	7.77	ug/L
	Cd	111	29149.953	0.737	0.132	51.40170	1.89	ug/L
	Cd	114	64506.910	1.798	0.294	51.23475	2.66	mg/L
>	In	115	219607.506	1.257	219607.506			ug/L
	Sb	121	194459.506	0.327	0.885	101.71145	1.02	ug/L
	Ba	135	25955.786	0.520	0.093	50.12744	1.13	ug/L
>	Tb	159	280027.942	0.611	280027.942			ug/L
	Ho	165	254966.715	0.311	0.012			ug/L
	Tl	205	806956.103	1.948	2.882	261.33284	2.43	ug/L
	Pb	208	445340.658	1.316	1.590	105.29352	1.52	ug/L
	Bi	209	124771.269	1.355	0.020			ug/L
	Th	232	71.334	8.566	-0.000	-0.01554	9.24	ug/L
	U	238	26.667	33.819	0.000	0.00097	201.32	ug/L
	Na	23	163969.061	0.551	0.751	0.06942	1.45	mg/L
	Mg	24	81310.161	0.388	0.387	0.05061	1.87	mg/L
	K	39	3396642.229	1.545	6.230	0.25815	7.66	mg/L
	Ca	44	34773.837	2.321	0.039	0.05292	13.91	mg/L
	Fe	54	56287.132	6.161	0.097	0.05539	20.00	mg/L
>	Sc-1	45	205564.301	1.465	205564.301			mg/L
	Kr	83	72.000	16.897	2.000			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
⌈>	Li	6		117.371			
⌊	Be	9			90.843		
⌈	Al	27			96.010		
|>	Sc	45		97.767			
|	V	51			97.351		
|	Cr	52			96.510		
|	Mn	55			96.426		
|	Co	59			97.892		
|	Ni	60			98.270		
⌊	Cu	65			100.652		
⌈	Zn	66			104.665		
|>	Ge	72		93.033			
|	As	75			103.856		
⌊	Se	82			101.571		
	Y	89					
⌈	Mo	98			99.630		
|	Ag	107			78.785		
|	Cd	111			102.627		
|	Cd	114					
|>	In	115		94.053			
⌊	Sb	121			101.686		
⌈	Ba	135			99.859		
|>	Tb	159		94.913			
|	Ho	165					
|	Tl	205			104.529		
|	Pb	208			105.234		
|	Bi	209					
|	Th	232					
⌊	U	238					
⌈	Na	23			64.876		
|	Mg	24			100.493		
|	K	39			86.620		
|	Ca	44			134.726		
|	Fe	54			81.726		
⌊>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: 1109037-MS2 @5X

Sample Date/Time: Thursday, September 15, 2011 12:01:55
Sample Type: Spike - 2 of 12
Sample Description:
Number of Replicates: 3
Batch ID: 1109037
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\1109037-MS2 @5X.9201
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	15201.799	0.775	15201.799			ug/L
	Be	9	4490.947	2.591	0.294	36.06110	3.18	ug/L
	Al	27	2275638.133	2.943	11.017	814.96673	2.72	ug/L
>	Sc	45	205674.888	0.874	205674.888			ug/L
	V	51	353974.268	2.335	1.706	56.70915	2.62	ug/L
	Cr	52	402310.844	1.934	1.907	76.95111	2.80	ug/L
	Mn	55	1110673.106	2.018	5.396	148.20238	1.19	ug/L
	Co	59	256559.543	0.614	1.247	44.41233	0.73	ug/L
	Ni	60	120150.132	1.386	0.584	98.97279	2.10	ug/L
	Cu	65	217450.686	0.561	1.057	182.49214	1.34	ug/L
	Zn	66	275965.974	0.934	1.462	462.58939	1.50	ug/L
>	Ge	72	188566.405	0.727	188566.405			ug/L
	As	75	1361942.840	0.909	7.225	1970.38844	1.30	ug/L
	Se	82	24045.503	1.029	0.127	386.47994	1.36	ug/L
	Y	89	310819.991	1.740	-11662.773			ug/L
	Mo	98	149544.842	1.562	0.693	80.15933	2.24	ug/L
	Ag	107	33224.246	5.427	0.149	13.07376	5.66	ug/L
	Cd	111	26208.082	1.410	0.121	47.07968	2.42	ug/L
	Cd	114	56412.671	1.397	0.262	45.65937	2.37	mg/L
>	In	115	215479.312	1.120	215479.312			ug/L
	Sb	121	322653.829	1.364	1.497	172.01187	1.40	ug/L
	Ba	135	21030.659	1.023	0.075	40.50818	1.81	ug/L
>	Tb	159	280794.845	2.486	280794.845			ug/L
	Ho	165	255708.201	2.547	0.012			ug/L
	Tl	205	1311541.314	1.837	4.671	423.63641	1.47	ug/L
	Pb	208	1927935.461	0.698	6.868	454.88123	2.69	ug/L
	Bi	209	127226.240	2.091	0.027			ug/L
	Th	232	3589.697	1.307	0.012	0.76667	3.65	ug/L
	U	238	10132.223	5.599	0.036	2.16248	7.15	ug/L
	Na	23	2572530.245	1.505	12.461	1.15156	0.64	mg/L
	Mg	24	1169876.358	1.219	5.680	0.74203	1.05	mg/L
	K	39	13542951.770	0.824	55.552	2.30184	1.45	mg/L
	Ca	44	343879.132	0.571	1.542	2.09349	1.39	mg/L
	Fe	54	1908369.604	0.725	9.102	5.18402	1.25	mg/L
>	Sc-1	45	205674.888	0.874	205674.888			mg/L
	Kr	83	94.667	8.538	24.667			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		120.387			
	Be	9			89.871		
	Al	27			86.672		
>	Sc	45		97.820			
	V	51			95.703		
	Cr	52			94.703		
	Mn	55			89.512		
	Co	59			75.303		
	Ni	60			96.293		
	Cu	65			98.471		
	Zn	66			59.130		
>	Ge	72		94.966			
	As	75			74.078		
	Se	82			96.521		
	Y	89					
	Mo	98			100.056		
	Ag	107			86.814		
	Cd	111			101.723		
	Cd	114					
>	In	115		92.285			
	Sb	121			102.300		
	Ba	135			98.141		
>	Tb	159		95.172			
	Ho	165					
	Tl	205			105.893		
	Pb	208			100.766		
	Bi	209					
	Th	232					
	U	238					
	Na	23			96.573		
	Mg	24			100.293		
	K	39			96.088		
	Ca	44			112.003		
	Fe	54			89.482		
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: 1109037-MSD2 @5X

Sample Date/Time: Thursday, September 15, 2011 12:04:43
Sample Type: Spike - 2 of 12
Sample Description:
Number of Replicates: 3
Batch ID: 1109037
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\1109037-MSD2 @5X.9202
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	15801.953	1.259	15801.953			ug/L
	Be	9	4586.350	2.762	0.289	35.42079	2.40	ug/L
	Al	27	2307156.041	2.145	11.206	828.94438	3.67	ug/L
>	Sc	45	205111.462	1.943	205111.462			ug/L
	V	51	356045.045	2.978	1.720	57.19036	1.07	ug/L
	Cr	52	399384.425	1.066	1.899	76.60730	2.84	ug/L
	Mn	55	1119417.966	0.760	5.456	149.84284	2.73	ug/L
	Co	59	258018.150	2.015	1.258	44.80462	3.55	ug/L
	Ni	60	119651.475	2.591	0.584	98.88067	4.58	ug/L
	Cu	65	216036.390	0.477	1.053	181.84455	2.37	ug/L
	Zn	66	275804.180	0.555	1.504	475.82931	0.76	ug/L
>	Ge	72	183207.785	0.431	183207.785			ug/L
	As	75	1378218.473	0.267	7.524	2052.16608	0.49	ug/L
	Se	82	24172.656	0.573	0.132	399.91580	0.89	ug/L
	Y	89	305266.088	1.792	-17216.676			ug/L
	Mo	98	148174.950	1.084	0.688	79.48938	1.21	ug/L
	Ag	107	33966.750	2.355	0.153	13.39353	4.29	ug/L
	Cd	111	26234.496	1.729	0.121	47.16326	1.65	ug/L
	Cd	114	58048.854	0.904	0.269	47.03173	2.75	mg/L
>	In	115	215302.898	1.871	215302.898			ug/L
	Sb	121	325059.829	0.760	1.510	173.47208	2.14	ug/L
	Ba	135	21075.483	1.913	0.076	41.01426	1.35	ug/L
>	Tb	159	277847.059	1.409	277847.059			ug/L
	Ho	165	252518.655	1.137	0.010			ug/L
	Tl	205	1333440.161	1.264	4.800	435.30598	2.52	ug/L
	Pb	208	1962040.095	1.104	7.062	467.73290	2.30	ug/L
	Bi	209	127690.792	1.734	0.034			ug/L
	Th	232	3719.774	3.738	0.013	0.80428	5.27	ug/L
	U	238	10643.730	3.629	0.038	2.29523	5.02	ug/L
	Na	23	2567820.366	1.071	12.477	1.15308	2.92	mg/L
	Mg	24	1189552.683	1.400	5.794	0.75690	3.22	mg/L
	K	39	13356588.742	0.913	54.835	2.27214	2.27	mg/L
	Ca	44	347599.797	1.007	1.565	2.12458	1.63	mg/L
	Fe	54	1914168.463	0.987	9.159	5.21632	2.97	mg/L
>	Sc-1	45	205111.462	1.943	205111.462			mg/L
	Kr	83	94.001	4.255	24.000			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		125.140			
	Be	9			88.270		
	Al	27			90.167		
>	Sc	45		97.552			
	V	51			96.505		
	Cr	52			94.274		
	Mn	55			93.613		
	Co	59			76.088		
	Ni	60			96.201		
	Cu	65			97.392		
	Zn	66			92.230		
>	Ge	72		92.267			
	As	75			125.189		
	Se	82			99.880		
	Y	89					
	Mo	98			99.218		
	Ag	107			88.945		
	Cd	111			101.932		
	Cd	114					
>	In	115		92.209			
	Sb	121			103.213		
	Ba	135			99.407		
>	Tb	159		94.173			
	Ho	165					
	Tl	205			108.810		
	Pb	208			107.192		
	Bi	209					
	Th	232					
	U	238					
	Na	23			96.826		
	Mg	24			104.011		
	K	39			94.603		
	Ca	44			127.551		
	Fe	54			94.866		
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: 1109037-PS2 @5X

Sample Date/Time: Thursday, September 15, 2011 12:07:31
Sample Type: Spike - 3 of 12
Sample Description:
Number of Replicates: 3
Batch ID: 1109037
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\1109037-PS2 @5X.9203
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	14645.142	1.783	14645.142			ug/L
	Be	9	2350.442	0.812	0.159	19.52390	1.77	ug/L
	Al	27	6480844.756	1.250	31.203	2308.23966	1.99	ug/L
>	Sc	45	207408.887	1.068	207408.887			ug/L
	V	51	117058.130	2.153	0.549	18.25656	2.22	ug/L
	Cr	52	116047.330	2.801	0.511	20.60255	3.54	ug/L
	Mn	55	970486.592	1.585	4.676	128.41852	1.85	ug/L
	Co	59	147740.546	1.289	0.712	25.36042	2.33	ug/L
	Ni	60	26528.004	1.146	0.128	21.65489	2.21	ug/L
	Cu	65	167917.583	1.375	0.809	139.73351	2.43	ug/L
	Zn	66	261743.125	1.505	1.399	442.42719	1.87	ug/L
>	Ge	72	186991.506	0.870	186991.506			ug/L
	As	75	1259386.408	1.064	6.736	1837.28341	0.20	ug/L
	Se	82	6166.375	2.687	0.033	99.15000	2.71	ug/L
	Y	89	303909.285	1.005	-18573.479			ug/L
	Mo	98	37743.090	2.249	0.174	20.11624	1.05	ug/L
	Ag	107	45643.563	3.922	0.206	18.09244	6.50	ug/L
	Cd	111	15063.699	0.858	0.069	26.88460	2.93	ug/L
	Cd	114	32658.164	1.119	0.151	26.34301	1.69	mg/L
>	In	115	216121.134	2.785	216121.134			ug/L
	Sb	121	54224.209	0.473	0.251	28.81015	3.08	ug/L
	Ba	135	10797.321	2.137	0.039	21.02698	2.05	ug/L
>	Tb	159	277444.318	0.092	277444.318			ug/L
	Ho	165	248061.814	0.730	-0.004			ug/L
	Tl	205	79210.817	0.943	0.285	25.86162	1.03	ug/L
	Pb	208	1147076.598	0.707	4.134	273.77989	0.72	ug/L
	Bi	209	125192.228	1.346	0.025			ug/L
	Th	232	104838.530	3.114	0.377	23.54586	3.09	ug/L
	U	238	114617.388	3.045	0.413	24.78681	3.01	ug/L
	Na	23	5545113.732	0.113	26.690	2.46659	0.98	mg/L
	Mg	24	3579692.598	1.067	17.252	2.25386	1.33	mg/L
	K	39	13658902.394	1.337	55.567	2.30247	2.72	mg/L
	Ca	44	621769.754	0.661	2.868	3.89367	0.57	mg/L
	Fe	54	2244725.200	1.262	10.647	6.06364	1.76	mg/L
>	Sc-1	45	207408.887	1.068	207408.887			mg/L
	Kr	83	89.334	24.661	19.334			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
⌈>	Li	6		115.979			
⌊	Be	9			19.411		
⌈	Al	27			18.400		
|>	Sc	45		98.644			
|	V	51			18.969		
|	Cr	52			19.414		
|	Mn	55			16.021		
|	Co	59			18.600		
|	Ni	60			18.975		
⌊	Cu	65			16.324		
⌈	Zn	66			3.490		
|>	Ge	72		94.173			
|	As	75			-14.580		
⌊	Se	82			19.751		
	Y	89					
⌈	Mo	98			20.002		
|	Ag	107			18.041		
|	Cd	111			20.494		
|	Cd	114					
|>	In	115		92.559			
⌊	Sb	121			20.479		
⌈	Ba	135			19.775		
|>	Tb	159		94.037			
|	Ho	165					
|	Tl	205			25.796		
|	Pb	208			20.431		
|	Bi	209					
|	Th	232			22.763		
⌊	U	238			22.495		
⌈	Na	23			18.945		
|	Mg	24			19.130		
|	K	39			19.224		
|	Ca	44			20.242		
|	Fe	54			14.165		
⌊>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: C110805-04 @5X

Sample Date/Time: Thursday, September 15, 2011 12:10:19
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID: 1109037
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\C110805-04 @5X.9204
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	14321.057	1.307	14321.057			ug/L
	Be	9	244.005	0.820	0.016	1.93941	0.99	ug/L
	Al	27	26428468.555	3.001	128.759	9524.83716	3.23	ug/L
>	Sc	45	205194.102	0.790	205194.102			ug/L
	V	51	84418.673	0.590	0.396	13.17086	0.39	ug/L
	Cr	52	52889.518	0.835	0.209	8.42663	1.19	ug/L
	Mn	55	46950960.392	1.583	228.800	6283.47337	0.85	ug/L
	Co	59	65509.663	2.473	0.319	11.35846	1.84	ug/L
	Ni	60	23173.269	1.799	0.113	19.11446	1.19	ug/L
	Cu	65	1276422.035	1.849	6.220	1074.15317	1.68	ug/L
	Zn	66	7093207.155	0.761	37.300	11799.72239	1.96	ug/L
>	Ge	72	190191.507	1.447	190191.507			ug/L
	As	75	4984.077	3.113	0.028	7.57777	3.06	ug/L
	Se	82	222.004	2.384	0.001	2.47572	1.47	ug/L
	Y	89	417267.013	0.903	94784.249			ug/L
	Mo	98	1930.838	4.496	0.008	0.93923	3.56	ug/L
	Ag	107	1608.209	11.395	0.002	0.19056	35.32	ug/L
	Cd	111	43988.333	2.233	0.199	77.39936	1.01	ug/L
	Cd	114	96699.161	0.815	0.439	76.55020	2.06	mg/L
>	In	115	220382.892	1.236	220382.892			ug/L
	Sb	121	555.358	10.938	0.002	0.25741	12.37	ug/L
	Ba	135	1346.145	3.163	0.005	2.57319	1.92	ug/L
>	Tb	159	279587.413	1.335	279587.413			ug/L
	Ho	165	256334.024	1.123	0.019			ug/L
	Tl	205	6470.681	0.761	0.023	2.06828	0.71	ug/L
	Pb	208	199948.303	1.680	0.715	47.32860	1.07	ug/L
	Bi	209	136380.083	1.370	0.062			ug/L
	Th	232	18245.929	0.886	0.065	4.04092	1.50	ug/L
	U	238	59950.242	2.203	0.214	12.86346	1.99	ug/L
	Na	23	1854450.774	0.645	8.992	0.83096	1.35	mg/L
	Mg	24	25810319.863	1.362	125.779	16.43229	1.34	mg/L
	K	39	8245137.208	1.300	29.886	1.23836	2.13	mg/L
	Ca	44	8946376.588	1.297	43.471	59.02450	1.55	mg/L
	Fe	54	26861979.734	1.278	130.733	74.45492	0.90	mg/L
>	Sc-1	45	205194.102	0.790	205194.102			mg/L
	Kr	83	125.335	13.572	55.334			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		113.412			
	Be	9					
	Al	27					
>	Sc	45		97.591			
	V	51					
	Cr	52					
	Mn	55					
	Co	59					
	Ni	60					
	Cu	65					
	Zn	66					
>	Ge	72		95.784			
	As	75					
	Se	82					
	Y	89					
	Mo	98					
	Ag	107					
	Cd	111					
	Cd	114					
>	In	115		94.385			
	Sb	121					
	Ba	135					
>	Tb	159		94.763			
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23					
	Mg	24					
	K	39					
	Ca	44					
	Fe	54					
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: Blank

Sample Date/Time: Thursday, September 15, 2011 12:19:21
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID: 1109037
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\Blank.9207
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13397.010	0.341	13397.010			ug/L
	Be	9	15.333	27.152	-0.000	-0.00857	441.83	ug/L
	Al	27	7731.518	15.013	-0.009	-0.68266	65.05	ug/L
>	Sc	45	204185.256	0.970	204185.256			ug/L
	V	51	2875.024	8.131	-0.001	-0.03750	90.40	ug/L
	Cr	52	9117.983	2.674	-0.004	-0.17011	37.38	ug/L
	Mn	55	2394.067	7.810	0.008	0.23142	12.16	ug/L
	Co	59	98.587	20.667	0.000	0.00756	47.77	ug/L
	Ni	60	35.253	17.092	0.000	0.00911	51.62	ug/L
	Cu	65	283.300	8.792	0.001	0.13611	16.83	ug/L
	Zn	66	554.692	12.555	0.002	0.50907	21.75	ug/L
>	Ge	72	191737.390	0.717	191737.390			ug/L
	As	75	-152.760	27.246	0.001	0.21280	27.17	ug/L
	Se	82	80.667	13.655	0.000	0.20798	87.61	ug/L
	Y	89	308415.256	0.689	-14067.508			ug/L
	Mo	98	310.099	11.648	0.001	0.08665	21.59	ug/L
	Ag	107	2921.350	4.911	0.008	0.69396	9.00	ug/L
	Cd	111	174.280	2.319	0.000	0.05732	16.02	ug/L
	Cd	114	37.828	20.303	-0.000	-0.00696	87.16	mg/L
>	In	115	224197.352	0.755	224197.352			ug/L
	Sb	121	141.335	6.381	0.000	0.04031	12.81	ug/L
	Ba	135	18.667	22.304	0.000	0.00353	223.88	ug/L
>	Tb	159	285997.893	0.154	285997.893			ug/L
	Ho	165	257094.646	0.446	0.000			ug/L
	Tl	205	1542.191	6.284	0.005	0.45832	6.87	ug/L
	Pb	208	222.668	16.076	0.000	0.01700	48.91	ug/L
	Bi	209	125952.320	2.537	0.015			ug/L
	Th	232	88.667	32.006	-0.000	-0.01209	51.32	ug/L
	U	238	36.667	30.041	0.000	0.00295	78.67	ug/L
	Na	23	9787.699	9.026	0.001	0.00013	330.13	mg/L
	Mg	24	2798.673	33.344	0.005	0.00072	85.80	mg/L
	K	39	2214426.135	0.468	0.548	0.02271	25.68	mg/L
	Ca	44	23246.498	2.164	-0.016	-0.02223	14.13	mg/L
	Fe	54	37732.661	5.745	0.008	0.00463	137.47	mg/L
>	Sc-1	45	204185.256	0.970	204185.256			mg/L
	Kr	83	72.667	19.911	2.667			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		106.095			
	Be	9					
	Al	27					
>	Sc	45		97.111			
	V	51					
	Cr	52					
	Mn	55					
	Co	59					
	Ni	60					
	Cu	65					
	Zn	66					
>	Ge	72		96.563			
	As	75					
	Se	82					
	Y	89					
	Mo	98					
	Ag	107					
	Cd	111					
	Cd	114					
>	In	115		96.018			
	Sb	121					
	Ba	135					
>	Tb	159		96.936			
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23					
	Mg	24					
	K	39					
	Ca	44					
	Fe	54					
>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: SEQ-CCV

Sample Date/Time: Thursday, September 15, 2011 12:22:08
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\SEQ-CCV.9208
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13494.565	3.550	13494.565			ug/L
	Be	9	5570.483	2.702	0.412	50.51538	6.31	ug/L
	Al	27	657894.259	0.345	3.223	238.43111	0.85	ug/L
>	Sc	45	201185.695	1.132	201185.695			ug/L
	V	51	299389.581	2.049	1.473	48.95974	1.03	ug/L
	Cr	52	259033.341	1.165	1.239	49.97229	1.27	ug/L
	Mn	55	365564.623	0.730	1.814	49.81603	1.63	ug/L
	Co	59	277515.978	0.820	1.379	49.11279	0.41	ug/L
	Ni	60	59936.444	0.802	0.298	50.46131	1.00	ug/L
	Cu	65	58569.354	1.673	0.291	50.18164	2.77	ug/L
	Zn	66	31853.005	2.810	0.164	51.73689	1.77	ug/L
>	Ge	72	193227.799	1.278	193227.799			ug/L
	As	75	35567.604	0.955	0.186	50.63518	0.89	ug/L
	Se	82	3298.870	1.390	0.017	50.81339	0.76	ug/L
	Y	89	303718.923	0.888	-18763.841			ug/L
	Mo	98	95582.667	1.599	0.434	50.12208	1.17	ug/L
	Ag	107	125162.058	2.656	0.563	49.41236	1.55	ug/L
	Cd	111	29582.830	2.282	0.134	52.03777	1.61	ug/L
	Cd	114	64440.876	1.390	0.293	51.05758	1.44	mg/L
>	In	115	220113.426	1.128	220113.426			ug/L
	Sb	121	96248.155	1.065	0.437	50.20740	0.79	ug/L
	Ba	135	25714.124	0.695	0.092	49.89637	1.32	ug/L
>	Tb	159	278707.529	0.654	278707.529			ug/L
	Ho	165	255548.508	0.568	0.018			ug/L
	Tl	205	166877.297	2.375	0.598	54.26852	2.04	ug/L
	Pb	208	228150.537	2.084	0.818	54.18038	2.09	ug/L
	Bi	209	125902.436	1.915	0.026			ug/L
	Th	232	241620.026	1.689	0.866	54.06248	1.81	ug/L
	U	238	250666.047	1.647	0.899	53.96702	1.19	ug/L
	Na	23	10761764.379	1.539	53.443	4.93896	0.41	mg/L
	Mg	24	7519617.048	1.645	37.369	4.88198	1.29	mg/L
	K	39	2293458.430	0.895	1.103	0.04571	18.67	mg/L
	Ca	44	781648.897	1.128	3.755	5.09847	0.33	mg/L
	Fe	54	1956137.419	0.926	9.548	5.43759	1.93	mg/L
>	Sc-1	45	201185.695	1.132	201185.695			mg/L
	Kr	83	76.667	22.792	6.667			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
⌈>	Li	6		106.867			
⌊	Be	9	101.031				
⌈	Al	27	95.372				
|>	Sc	45		95.685			
|	V	51	97.919				
|	Cr	52	99.945				
|	Mn	55	99.632				
|	Co	59	98.226				
|	Ni	60	100.923				
⌊	Cu	65	100.363				
⌈	Zn	66	103.474				
|>	Ge	72		97.313			
|	As	75	101.270				
⌊	Se	82	101.627				
	Y	89					
⌈	Mo	98	100.244				
|	Ag	107	98.825				
|	Cd	111	104.076				
|	Cd	114					
|>	In	115		94.269			
⌊	Sb	121	100.415				
⌈	Ba	135	99.793				
|>	Tb	159		94.465			
|	Ho	165					
|	Tl	205	108.537				
|	Pb	208	108.361				
|	Bi	209					
|	Th	232	108.125				
⌊	U	238	107.934				
⌈	Na	23	98.779				
|	Mg	24	97.640				
|	K	39	0.914				
|	Ca	44	101.969				
|	Fe	54	108.752				
⌊>	Sc-1	45					
	Kr	83					

Method 200.8 - Summary Report

Sample ID: SEQ-CCB

Sample Date/Time: Thursday, September 15, 2011 12:25:10
Sample Type: Sample
Sample Description:
Number of Replicates: 3
Batch ID:
Method File: C:\Elandata\Method\esat2010.mth
Dataset File: C:\Elandata\Dataset\Default\SEQ-CCB.9209
Sample Prep Volume (mL):
Initial Sample Quantity (mg):
Aliquot Volume (mL):
Diluted To Volume (mL):

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Meas. Intens. RSD	Net Intens. Mean	Conc. Mean	Conc. RSD	Sample Unit
>	Li	6	13121.761	0.845	13121.761			ug/L
	Be	9	10.667	54.127	-0.000	-0.04912	110.07	ug/L
	Al	27	10536.950	11.265	0.005	0.34256	123.55	ug/L
>	Sc	45	203573.588	1.788	203573.588			ug/L
	V	51	2787.737	10.505	-0.002	-0.05003	98.00	ug/L
	Cr	52	9250.175	1.759	-0.003	-0.13817	45.13	ug/L
	Mn	55	1533.531	19.828	0.004	0.11630	36.06	ug/L
	Co	59	89.467	21.651	0.000	0.00599	54.35	ug/L
	Ni	60	37.467	6.546	0.000	0.01105	13.42	ug/L
	Cu	65	239.071	17.101	0.001	0.09965	38.50	ug/L
	Zn	66	346.010	12.505	0.001	0.16538	42.97	ug/L
>	Ge	72	191641.205	0.829	191641.205			ug/L
	As	75	-208.792	10.656	0.000	0.13260	25.27	ug/L
	Se	82	76.667	15.939	0.000	0.14532	138.88	ug/L
	Y	89	309750.651	1.643	-12732.113			ug/L
	Mo	98	416.553	21.706	0.001	0.14381	32.72	ug/L
	Ag	107	2735.936	9.848	0.007	0.63261	16.86	ug/L
	Cd	111	170.804	2.793	0.000	0.05440	15.18	ug/L
	Cd	114	86.405	22.978	0.000	0.03157	49.68	mg/L
>	In	115	221836.086	0.145	221836.086			ug/L
	Sb	121	176.669	15.370	0.001	0.05935	23.70	ug/L
	Ba	135	20.000	10.000	0.000	0.00649	67.54	ug/L
>	Tb	159	283049.653	1.476	283049.653			ug/L
	Ho	165	253170.658	2.148	-0.004			ug/L
	Tl	205	850.725	8.281	0.003	0.24167	7.87	ug/L
	Pb	208	192.001	15.415	0.000	0.01039	69.44	ug/L
	Bi	209	123813.253	1.729	0.012			ug/L
	Th	232	112.001	12.372	-0.000	-0.00678	40.19	ug/L
	U	238	40.667	5.679	0.000	0.00387	9.55	ug/L
	Na	23	12014.884	4.197	0.012	0.00115	12.53	mg/L
	Mg	24	2878.672	14.458	0.006	0.00077	30.58	mg/L
	K	39	2239630.894	0.799	0.707	0.02929	40.26	mg/L
	Ca	44	23037.059	2.258	-0.017	-0.02312	22.91	mg/L
	Fe	54	35523.091	2.398	-0.002	-0.00121	306.48	mg/L
>	Sc-1	45	203573.588	1.788	203573.588			mg/L
	Kr	83	75.334	12.546	5.333			mg/L

QC Calculated Values

	Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
>	Li	6		103.915			
	Be	9					
	Al	27					
>	Sc	45		96.820			
	V	51					
	Cr	52					
	Mn	55					
	Co	59					
	Ni	60					
	Cu	65					
	Zn	66					
>	Ge	72		96.514			
	As	75					
	Se	82					
	Y	89					
	Mo	98					
	Ag	107					
	Cd	111					
	Cd	114					
>	In	115		95.007			
	Sb	121					
	Ba	135					
>	Tb	159		95.937			
	Ho	165					
	Tl	205					
	Pb	208					
	Bi	209					
	Th	232					
	U	238					
	Na	23					
	Mg	24					
	K	39					
	Ca	44					
	Fe	54					
>	Sc-1	45					
	Kr	83					

TechLaw, Inc.
Environmental Services Assistance Team
16194 W. 45th Drive, Golden, CO 80403
303-312-7720

Task Order: 40
Contract: EP-W-06-33

Certificates of Analysis

Valid through March 2012

Alkalinity

Anions by Ion Chromatography

Dissolved Organic Carbon

TSS / TDS

Perkin Elmer Optima ICP-OE

Perkin Elmer ELAN 6000 ICP-MS

NIPPON NIC MA2000

Perkin Elmer FIMS 100

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ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** **1000 µg/mL Arsenic in 2% (v/v) HNO3**

Catalog Number:	CGAS1-1, CGAS1-2, and CGAS1-5
Lot Number:	**D2-AS02071**
Starting Material:	As pieces
Starting Material Purity (%):	99.999697
Starting Material Lot No:	1554
Matrix:	2% (v/v) HNO3

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 997 ± 5 µg/mL

Certified Density: 1.013 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **997 ± 5 µg/mL (avg. of 2 assays)**
ICP Assay NIST SRM 3103a Lot Number: 010713

Assay Method #2 **1,002 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Chromium (+3) in 2% (v/v) HNO3**

Catalog Number:	CGCR(3)1-1, CGCR(3)1-2, and CGCR(3)1-5
Lot Number:	**D2-CR03042**
Starting Material:	Cr pieces
Starting Material Purity (%):	99.993508
Starting Material Lot No:	R800A
Matrix:	2% (v/v) HNO3

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,000 ± 3 µg/mL

Certified Density: 1.014 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\overline{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\overline{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **1,000 ± 3 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3112a Lot Number: 030730

Assay Method #2 **1,001 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** Custom Solution

Catalog No.: WW-LFS-1

Lot Number: **D2-MEB324015**

Matrix: 5% HNO3(v/v)

1,000.00 µg/mL ea:
K,

600.00 µg/mL ea:
P,

300.00 µg/mL ea:
Fe, Na,

200.00 µg/mL ea:
Al, Ce, Mg, Se, Tl,

100.00 µg/mL ea:
Ca, Pb,

80.00 µg/mL ea:
As,

70.00 µg/mL ea:
Hg,

50.00 µg/mL ea:
Ni,

40.00 µg/mL ea:
Cr3,

30.00 µg/mL ea:
B, Cu, V,

20.00 µg/mL ea:
Ba, Be, Cd, Co, Li, Mn, Sr, Zn,

7.50 µg/mL ea:
Ag

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Aluminum, Al	200.0 ± 0.7 µg/mL	Arsenic, As	80.0 ± 0.3 µg/mL	Barium, Ba	20.07 ± 0.03 µg/mL
Beryllium, Be	19.98 ± 0.08 µg/mL	Boron, B	29.99 ± 0.12 µg/mL	Cadmium, Cd	20.02 ± 0.04 µg/mL
Calcium, Ca	100.0 ± 0.3 µg/mL	Cerium, Ce	200.0 ± 0.3 µg/mL	Chromium+3, Cr3	39.84 ± 0.15 mL
Cobalt, Co	20.07 ± 0.04 µg/mL	Copper, Cu	29.97 ± 0.06 µg/mL	Iron, Fe	300.0 ± 0 mL
Lead, Pb	100.0 ± 0.2 µg/mL	Lithium, Li	20.02 ± 0.08 µg/mL	Magnesium, Mg	200.0 ± g/mL
Manganese, Mn	19.94 ± 0.11 µg/mL	Mercury, Hg	70.0 ± 0.2 µg/mL	Nickel, Ni	49.90 µg/mL

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Zinc in 2% (v/v) HNO3**

Catalog Number:	CGZN1-1, CGZN1-2, and CGZN1-5
Lot Number:	**D2-ZN02065**
Starting Material:	Zn shot
Starting Material Purity (%):	99.999897
Starting Material Lot No:	1560
Matrix:	2% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 998 ± 4 µg/mL (avg. of 2 methods)

Certified Density: 1.012 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements

Uncertainty (±) $= \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **997 ± 4 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3168a Lot Number: 080123

Assay Method #2 **999 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Vanadium in 2% (v/v) HNO3**

Catalog Number:	CGV1-1, CGV1-2, and CGV1-5
Lot Number:	**D2-V02065**
Starting Material:	V2O5
Starting Material Purity (%):	99.990563
Starting Material Lot No:	46
Matrix:	2% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,007 ± 3 µg/mL

Certified Density: 1.019 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

($\bar{x}$) = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **1,007 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #2 **1,003 ± 4 µg/mL**
ICP Assay NIST SRM 3165 Lot Number: 992706

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Uranium in 2% (v/v) HNO3**

Catalog Number:	CGU1-1, CGU1-2, and CGU1-5
Lot Number:	**D2-U01084**
Starting Material:	UO2(NO3)2.6H2O
Starting Material Purity (%):	99.999942
Starting Material Lot No:	N55947
Matrix:	2% (v/v) HNO3

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,015 ± 4 µg/mL

Certified Density: 1.009 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

Certified Abundance: The 235U in this standard is depleted. The Certified abundances in Atom % are as follows:

IV's Certified Abundance

Isotope	Atom%
Uranium 238U	99.7 ± 0.1
235U	0.29 ± 0.05

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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ACCREDITED Reference Material Producer Certificate 863.02

2.0 DESCRIPTION OF CRM — 1000 µg/mL Titanium in 2% (v/v) HNO3 / tr. HF

Catalog Number:	CGTI1-1, CGTI1-2, and CGTI1-5
Lot Number:	**D2-TI02070**
Starting Material:	Ti turnings
Starting Material Purity (%):	99.996450
Starting Material Lot No:	R404TIA1
Matrix:	2% (v/v) HNO3 / tr. HF

EXPIRES
MAR 01 2012

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,001 ± 4 µg/mL

Certified Density: 1.017 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

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4.1 **Assay Method #1** **1,001 ± 4 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3162a Lot Number: 060808

Assay Method #2 **1,007 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Thorium in 4% (v/v) HNO3**

Catalog Number:	CGTH1-1, CGTH1-2, and CGTH1-5
Lot Number:	**C2-TH01079**
Starting Material:	Th(NO3)4x4H2O
Starting Material Purity (%):	99.999912
Starting Material Lot No:	X0033369-8
Matrix:	4% (v/v) HNO3

EXPIRES
MAR 01 2012

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 993 ± 3 µg/mL

Certified Density: 1.022 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

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4.1 **Assay Method #1** **993 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #2 **993 ± 3 µg/mL**
ICP Assay NIST SRM 3159 Lot Number: 992912

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Thallium in 0.7% (v/v) HNO3**

Catalog Number:	CGTL1-1, CGTL1-2, and CGTL1-5
Lot Number:	**D2-TL01114**
Starting Material:	TINO3
Starting Material Purity (%):	99.999671
Starting Material Lot No:	1479
Matrix:	0.7% (v/v) HNO3

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,005 ± 4 µg/mL

Certified Density: 1.004 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\overline{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **1,005 ± 4 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3158 Lot Number: 993012

Assay Method #2 **1,000 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Strontium in 0.1% (v/v) HNO3**

Catalog Number:	CGSR1-1, CGSR1-2, and CGSR1-5
Lot Number:	**D2-SR02027**
Starting Material:	SrCO3
Starting Material Purity (%):	99.998364
Starting Material Lot No:	W999A
Matrix:	0.1% (v/v) HNO3

EXPIRES
MAR 01 2012

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 997 ± 5 µg/mL - weighted mean

Certified Density: 1.001 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **996 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #2 **997 ± 3 µg/mL**
ICP Assay NIST SRM 3153a Lot Number: 990906

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Tin in tr. (v/v) HNO3 / tr. (v/v) HF**

Catalog Number:	CGSN1-1, CGSN1-2, and CGSN1-5
Lot Number:	**C2-SN02024**
Starting Material:	Sn Shot
Starting Material Purity (%):	99.991456
Starting Material Lot No:	F27N16
Matrix:	tr. (v/v) HNO3 / tr. (v/v) HF

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 993 ± 4 µg/mL

Certified Density: 0.999 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **993 ± 4 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3161a Lot Number: 070330

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Selenium(+4) in 2% (v/v) HNO3**

Catalog Number:	CGSE(4)1-1, CGSE(4)1-2, and CGSE(4)1-5
Lot Number:	**D2-SE02020**
Starting Material:	Se shot
Starting Material Purity (%):	99.999203
Starting Material Lot No:	1505
Matrix:	2% (v/v) HNO3

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,004 ± 3 µg/mL

Certified Density: 1.011 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **1,004 ± 3 µg/mL**
ICP Assay NIST SRM 3149 Lot Number: 992106

Assay Method #2 **1,007 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Silica in 1% (v/v) HNO3 / tr. HF**

Catalog Number:	CGSIO1-1, CGSIO1-2, and CGSIO1-5
Lot Number:	**C2-SI02130**
Starting Material:	SiO2
Starting Material Purity (%):	99.999846
Starting Material Lot No:	1015122300.00
Matrix:	1% (v/v) HNO3 / tr. HF

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 999 ± 2 µg/mL

Certified Density: 1.005 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **999 ± 2 µg/mL (Avg. of 2 Runs)**
ICP Assay NIST SRM 3150 Lot Number: 071204

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ACCREDITED Reference Material Producer Certificate 853.02

2.0 DESCRIPTION OF CRM — 1000 µg/mL Scandium in 7% (v/v) HNO3

Catalog Number:	CGSC1-1, CGSC1-2, and CGSC1-5
Lot Number:	**D2-SC02088**
Starting Material:	Sc2O3
Starting Material Purity (%):	99.995611
Starting Material Lot No:	1532
Matrix:	7% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,002 ± 2 µg/mL (avg. of 2 methods)

Certified Density: 1.037 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

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4.1 **Assay Method #1** **1,002 ± 4 µg/mL**
ICP Assay NIST SRM 3148a Lot Number: 792111

Assay Method #2 **1,001 ± 2 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Antimony in 1% (v/v) HNO3 / 3% Tartaric Acid**

Catalog Number:	CGSB1-1, CGSB1-2 and CGSB1-5
Lot Number:	**D2-SB02126**
Starting Material:	Sb shot
Starting Material Purity (%):	99.996681
Starting Material Lot No:	R1105SBA1
Matrix:	1% (v/v) HNO3 / 3% Tartaric Acid

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 996 ± 4 µg/mL

Certified Density: 1.020 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **996 ± 4 µg/mL**
ICP Assay NIST SRM 3102A Lot Number: 061229

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Antimony in 1% (v/v) HNO3 / 3% Tartaric Acid**

Catalog Number:	CGSB1-1, CGSB1-2 and CGSB1-5
Lot Number:	**D2-SB02126**
Starting Material:	Sb shot
Starting Material Purity (%):	99.996681
Starting Material Lot No:	R1105SBA1
Matrix:	1% (v/v) HNO3 / 3% Tartaric Acid

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 996 ± 4 µg/mL

Certified Density: 1.020 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **996 ± 4 µg/mL**
ICP Assay NIST SRM 3102A Lot Number: 061229

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Nickel in 2% (v/v) HNO3**

Catalog Number:	CGNI1-1, CGNI1-2, and CGNI1-5
Lot Number:	**D2-NI02067**
Starting Material:	Ni pieces
Starting Material Purity (%):	99.999033
Starting Material Lot No:	E25T014
Matrix:	2% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 997 ± 4 µg/mL (avg. of 2 methods)

Certified Density: 1.012 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **995 ± 4 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3136 Lot Number: 000612

Assay Method #2 **998 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 DESCRIPTION OF CRM

1000 µg/mL Molybdenum in H2O / tr. NH4OH

Catalog Number:	CGMO1-1, CGMO1-2, and CGMO1-5
Lot Number:	**D2-MO02036**
Starting Material:	(NH4)6Mo7O24xH2O
Starting Material Purity (%):	99.999912
Starting Material Lot No:	P704MOA1
Matrix:	H2O / tr. NH4OH

EXPIRES
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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,006 ± 5 µg/mL

Certified Density: 0.998 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements

Uncertainty (±) $= \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

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4.1 **Assay Method #1** **1,006 ± 5 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3134 Lot Number: 891307

Assay Method #2 **1,000 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **10000 µg/mL Magnesium in 2% (v/v) HNO3**

Catalog Number:	CGMG10-1, CGMG10-2, and CGMG10-5
Lot Number:	**D2-MG03095**
Starting Material:	Mg metal
Starting Material Purity (%):	99.999300
Starting Material Lot No:	1484
Matrix:	2% (v/v) HNO3

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 9,979 ± 46 µg/mL- weighted mean

Certified Density: 1.053 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

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Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
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n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **9,986 ± 33 µg/mL**
ICP Assay NIST SRM 3131a Lot Number: 050302

Assay Method #2 **9,969 ± 26 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 DESCRIPTION OF CRM

DESCRIPTION OF CRM	**1000 µg/mL Magnesium in 0.1% (v/v) HNO3**
Catalog Number:	CGMG1-1, CGMG1-2, and CGMG1-5
Lot Number:	**D2-MG03098**
Starting Material:	Mg metal
Starting Material Purity (%):	99.999299
Starting Material Lot No:	1484
Matrix:	0.1% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,000 ± 6 µg/mL-weighted mean

Certified Density: 1.003 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **998 ± 3 µg/mL**
ICP Assay NIST SRM 3131a Lot Number: 050302

Assay Method #2 **1,001 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 DESCRIPTION OF CRM — 1000 µg/mL Lead in 0.5% (v/v) HNO3

Catalog Number:	CGPB1-1, CGPB1-2, and CGPB1-5
Lot Number:	**D2-PB03020**
Starting Material:	Pb(NO3)2
Starting Material Purity (%):	99.999554
Starting Material Lot No:	E1007PBA1
Matrix:	0.5% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,008 ± 2 µg/mL-weighted avg. of 2 methods

Certified Density: 1.001 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\overline{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\overline{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **1,003 ± 3 µg/mL**
ICP Assay NIST SRM 3128 Lot Number: 030721

Assay Method #2 **1,009 ± 2 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **10000 µg/mL Sodium in 2% (v/v) HNO3**

Catalog Number:	CGNA10-1, CGNA10-2, and CGNA10-5
Lot Number:	**D2-NA03085**
Starting Material:	Na2CO3
Starting Material Purity (%):	99.999710
Starting Material Lot No:	C181157
Matrix:	2% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 10,003 ± 58 µg/mL -weighted mean

Certified Density: 1.035 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **10,001 ± 55 µg/mL**
ICP Assay NIST SRM 3152a Lot Number: 010728

Assay Method #2 **10,024 ± 16 µg/mL**
Gravimetric NIST SRM Lot Number: See Sec. 4.2

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2.0 DESCRIPTION OF CRM

	1000 µg/mL Sodium in 0.1% (v/v) HNO3
Catalog Number:	CGNA1-1, CGNA1-2, and CGNA1-5
Lot Number:	**D2-NA03084**
Starting Material:	Na2CO3
Starting Material Purity (%):	99.999709
Starting Material Lot No:	C181157
Matrix:	0.1% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 996 ± 4 µg/mL - weighted mean

Certified Density: 1.001 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **995 ± 4 µg/mL**
ICP Assay NIST SRM 3152a Lot Number: 010728

Assay Method #2 **998 ± 2 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 DESCRIPTION OF CRM

	1000 µg/mL Manganese in 3% (v/v) HNO3
Catalog Number:	CGMN1-1, CGMN1-2, and CGMN1-5
Lot Number:	**D2-MN02086**
Starting Material:	Mn pieces
Starting Material Purity (%):	99.990792
Starting Material Lot No:	R806MNA1
Matrix:	3% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 999 ± 5 µg/mL- weighted mean

Certified Density: 1.017 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6:10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **998 ± 4 µg/mL**
ICP Assay NIST SRM 3132 Lot Number: 050429

Assay Method #2 **1,000 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **10000 µg/mL Potassium in 2% (v/v) HNO3**

Catalog Number:	CGK10-1, CGK10-2, and CGK10-5
Lot Number:	**D2-K03017**
Starting Material:	KNO3
Starting Material Purity (%):	99.998079
Starting Material Lot No:	B19P01
Matrix:	2% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 10,039 ± 51 µg/mL -weighted mean

Certified Density: 1.025 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\overline{x}) = \frac{\Sigma x_i}{n}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **10,050 ± 32 µg/mL**
ICP Assay NIST SRM 3141a Lot Number: 051220

Assay Method #2 **10,020 ± 24 µg/mL**
Gravimetric NIST SRM Lot Number: See Sec. 4.2

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2.0 DESCRIPTION OF CRM — 1000 µg/mL Potassium in 0.1% (v/v) HNO3

Catalog Number:	CGK1-1, CGK1-2, and CGK1-5
Lot Number:	**D2-K03015**
Starting Material:	KNO3
Starting Material Purity (%):	99.998075
Starting Material Lot No:	B19P01
Matrix:	0.1% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 996 ± 3 µg/mL (avg. of 2 methods)

Certified Density: 0.998 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** — **998 ± 4 µg/mL**
ICP Assay NIST SRM 3141a Lot Number: 051220

Assay Method #2 — **994 ± 2 µg/mL**
Gravimetric NIST SRM Lot Number: See Sec. 4.2

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2.0 DESCRIPTION OF CRM — 1000 µg/mL Mercury in 5% (v/v) HNO3

Catalog Number:	CGHG1-1, CGHG1-2, and CGHG1-5
Lot Number:	**D2-HG02077**
Starting Material:	Hg metal
Starting Material Purity (%):	99.999792
Starting Material Lot No:	R307HGA1
Matrix:	5% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,003 ± 4 µg/mL (weighted avg. of 2 assay methods)

Certified Density: 1.029 g/mL (measured at 20 ± 1°C)

The Certified Value is based upon the most precise method used to analyze this CRM. The following equations are used in the calculation of the certified value and the uncertainty.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **1,000 ± 6 µg/mL**
ICP Assay NIST SRM 3133 Lot Number: 061204

Assay Method #2 **1,004 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Lithium in 0.1% (v/v) HNO3**

Catalog Number:	CGLI1-1, CGLI1-2, and CGLI1-5
Lot Number:	**D2-LI02122**
Starting Material:	Li2CO3
Starting Material Purity (%):	99.998872
Starting Material Lot No:	1312
Matrix:	0.1% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,003 ± 1 µg/mL

Certified Density: 1.005 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\overline{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **997 ± 4 µg/mL**
ICP Assay NIST SRM 3129a Lot Number: 000505

Assay Method #2 **1,003 ± 1 µg/mL**
Gravimetric NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Copper in 3% (v/v) HNO3**

Catalog Number:	CGCU1-1, CGCU1-2, and CGCU1-5
Lot Number:	**D2-CU02121**
Starting Material:	Cu shot
Starting Material Purity (%):	99.999158
Starting Material Lot No:	1544
Matrix:	3% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,001 ± 3 µg/mL (avg. of 2 methods)

Certified Density: 1.015 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **1,000 ± 4 µg/mL**
ICP Assay NIST SRM 3114 Lot Number: 011017

Assay Method #2 **1,001 ± 2 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Cobalt in 3% (v/v) HNO3**

Catalog Number:	CGCO1-1, CGCO1-2, and CGCO1-5
Lot Number:	**D2-CO02031**
Starting Material:	Co powder
Starting Material Purity (%):	99.999528
Starting Material Lot No:	1556
Matrix:	3% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,000 ± 4 µg/mL (avg. of 2 methods)

Certified Density: 1.018 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 Assay Method #1 **999 ± 4 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3113 Lot Number: 00630

Assay Method #2 **1,001 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 DESCRIPTION OF CRM

1000 µg/mL Cadmium in 3% (v/v) HNO3

Catalog Number:	CGCD1-1, CGCD1-2, and CGCD1-5
Lot Number:	**D2-CD02027**
Starting Material:	Cd shot
Starting Material Purity (%):	99.999656
Starting Material Lot No:	R1205CDA1
Matrix:	3% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,002 ± 4 µg/mL (avg. of 2 methods)

Certified Density: 1.015 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **1,002 ± 4 µg/mL**
ICP Assay NIST SRM 3108 Lot Number: 060531

Assay Method #2 **1,002 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Iron in 2% (v/v) HNO3**

Catalog Number:	CGFE1-1, CGFE1-2, and CGFE1-5
Lot Number:	**D2-FE03125**
Starting Material:	Fe powder
Starting Material Purity (%):	99.995339
Starting Material Lot No:	1539
Matrix:	2% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 997 ± 3 µg/mL (avg. of 2 methods)

Certified Density: 1.008 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **996 ± 4 µg/mL**
ICP Assay NIST SRM 3126a Lot Number: 051031

Assay Method #2 **997 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **10000 µg/mL Iron in 5% (v/v) HNO3**

Catalog Number:	CGFE10-1, CGFE10-2, and CGFE10-5
Lot Number:	**D2-FE03115**
Starting Material:	Fe powder
Starting Material Purity (%):	99.995342
Starting Material Lot No:	1539
Matrix:	5% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 10,125 ± 26 µg/mL

Certified Density: 1.066 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **10,130 ± 47 µg/mL (avg. of 3 runs)**
ICP Assay NIST SRM 3126a Lot Number: 051031

Assay Method #2 **10,125 ± 26 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **10000 µg/mL Calcium in 2% (v/v) HNO3**

Catalog Number:	CGCA10-1, CGCA10-2, and CGCA10-5
Lot Number:	**D2-CA04008**
Starting Material:	CaO
Starting Material Purity (%):	99.995507
Starting Material Lot No:	C808CAA1
Matrix:	2% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 9,994 ± 37 µg/mL (avg. of 2 methods)

Certified Density: 1.038 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\overline{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **9,995 ± 47 µg/mL**
ICP Assay NIST SRM 3109a Lot Number: 050825

Assay Method #2 **9,992 ± 26 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Calcium in 0.1% (v/v) HNO3**

Catalog Number:	CGCA1-1, CGCA1-2, and CGCA1-5
Lot Number:	**D2-CA04002**
Starting Material:	CaO
Starting Material Purity (%):	99.995377
Starting Material Lot No:	C808CAA1
Matrix:	0.1% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,001 ± 3 µg/mL

Certified Density: 1.001 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **1,003 ± 5 µg/mL (avg. of 3 runs)**
ICP Assay NIST SRM 3109a Lot Number: 050825

Assay Method #2 **1,001 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 DESCRIPTION OF CRM — 1000 µg/mL Beryllium in 3% (v/v) HNO3

Catalog Number:	CGBE1-1, CGBE1-2, and CGBE1-5
Lot Number:	**D2-BE02003**
Starting Material:	Be(OOCCH3)2
Starting Material Purity (%):	99.999948
Starting Material Lot No:	0801-1
Matrix:	3% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,004 ± 6 µg/mL

Certified Density: 1.023 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

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4.1 **Assay Method #1** **1,004 ± 6 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3105a Lot Number: 892707

Assay Method #2 **1,001 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Barium in 0.1% (v/v) HNO3**

Catalog Number:	CGBA1-1, CGBA1-2, and CGBA1-5
Lot Number:	**D2-BA02060**
Starting Material:	Ba(NO3)2
Starting Material Purity (%):	99.999842
Starting Material Lot No:	1514
Matrix:	0.1% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,000 ± 6 µg/mL-weighted mean

Certified Density: 1.000 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **999 ± 4 µg/mL**
ICP Assay NIST SRM 3104a Lot Number: 070222

Assay Method #2 **1,003 ± 3 µg/mL**
Gravimetric NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Boron in H2O / tr. NH4OH**

Catalog Number:	CGB1-1, CGB1-2, and CGB1-5
Lot Number:	**D2-B02091**
Starting Material:	H3BO3
Starting Material Purity (%):	99.999981
Starting Material Lot No:	OV0133
Matrix:	H2O / tr. NH4OH

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,007 ± 5 µg/mL

Certified Density: 1.000 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **1,007 ± 5 µg/mL**
ICP Assay NIST SRM 3107 Lot Number: 070514

Assay Method #2 **1,000 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Silver in 5% (v/v) HNO3**

Catalog Number:	CGAG1-1, CGAG1-2, and CGAG1-5
Lot Number:	**D2-AG03009**
Starting Material:	Ag shot
Starting Material Purity (%):	99.999461
Starting Material Lot No:	1575
Matrix:	5% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 995 ± 5 µg/mL - weighted mean

Certified Density: 1.025 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **995 ± 4 µg/mL**
ICP Assay NIST SRM 3151 Lot Number: 992212

Assay Method #2 **996 ± 2 µg/mL**
Volhard NIST SRM 999b Lot Number: 999b

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Aluminum in 3% (v/v) HNO3**

Catalog Number:	CGAL1-1, CGAL1-2, and CGAL1-5
Lot Number:	**D2-AL04087**
Starting Material:	Al ingot
Starting Material Purity (%):	99.999679
Starting Material Lot No:	1502
Matrix:	3% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,001 ± 4 µg/mL (avg. of 2 methods)

Certified Density: 1.019 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

$$\text{Certified Value } (\bar{x}) = \frac{\sum x_i}{n}$$

$$\text{Uncertainty } (\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$$

($\bar{x}$) = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **1,001 ± 5 µg/mL**
ICP Assay NIST SRM 3101a Lot Number: 060502

Assay Method #2 **1,001 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **10000 µg/mL Aluminum in 7% (v/v) HNO3**

Catalog Number:	CGAL10-1, CGAL10-2, and CGAL10-5
Lot Number:	**D2-AL04086**
Starting Material:	Al ingot
Starting Material Purity (%):	99.999682
Starting Material Lot No:	1502
Matrix:	7% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 10,031 ± 30 µg/mL

Certified Density: 1.085 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **9,997 ± 39 µg/mL**
ICP Assay NIST SRM 3101a Lot Number: 060502

Assay Method #2 **10,031 ± 30 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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CERTIFICATE OF ANALYSIS

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ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

EXPIRES
MAR 01 2012

2.0 **DESCRIPTION OF CRM** Stock Second Source Solution

Catalog No.: QCP-QCS-3

Lot Number: **D2-MEB324067**

Matrix: 7% HNO3(v/v)

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

50.00 µg/mL ea:
Se,

10.00 µg/mL ea:
Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr3, Cu, Fe, K, Mg, Mn, Mo, Na,
Ni, Pb, Sb, Th, Tl, U, V, Zn

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Aluminum, Al	10.01 ± 0.02 µg/mL	Antimony, Sb	10.02 ± 0.02 µg/mL	Arsenic, As	10.00 ± 0.03 µg/
Barium, Ba	10.00 ± 0.01 µg/mL	Beryllium, Be	10.00 ± 0.02 µg/mL	Cadmium, Cd	10.01 ± 0.02 µg/
Calcium, Ca	10.01 ± 0.03 µg/mL	Chromium+3, Cr3	10.00 ± 0.04 µg/mL	Cobalt, Co	10.00 ± 0.04 µg/
Copper, Cu	10.00 ± 0.02 µg/mL	Iron, Fe	10.01 ± 0.03 µg/mL	Lead, Pb	10.00 ± 0.02 µg/
Magnesium, Mg	10.01 ± 0.03 µg/mL	Manganese, Mn	10.00 ± 0.05 µg/mL	Molybdenum, Mo	10.02 ± 0.04 µg
Nickel, Ni	10.00 ± 0.03 µg/mL	Potassium, K	10.01 ± 0.03 µg/mL	Selenium, Se	49.99 ± 0.13 µg
Silver, Ag	10.00 ± 0.05 µg/mL	Sodium, Na	10.01 ± 0.02 µg/mL	Thallium, Tl	10.00 ± 0.02 µg
Thorium, Th	9.94 ± 0.03 µg/mL	Uranium, U	10.02 ± 0.04 µg/mL	Vanadium, V	10.00 ± 0.03 µg
Zinc, Zn	10.00 ± 0.04 µg/mL				

Certified Density: 1.034 g/mL (measured at 22° C)

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ACCREDITED Testing Laboratory Certificate 883.01

ACCRE Reference Mat Certificate

2.0 **DESCRIPTION OF CRM** Stock Second Source Solution

Catalog No.: QCP-QCS-2

Lot Number: **D2-MEB324018**

Matrix: tr. HF, 5% HNO3(v/v)

EXPIRES
MAR 01 2012

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

500 µg/mL ea:
SiO2, Sn,

200 µg/mL ea:
Sb,

100 µg/mL ea:
Mo, Ti

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Antimony, Sb	200.0 ± 0.5 µg/mL	Molybdenum, Mo	100.1 ± 0.4 µg/mL	Silica, SiO2	500.0 ± 2.4
Tin, Sn	500.0 ± 1.4 µg/mL	Titanium, Ti	100.0 ± 0.3 µg/mL		

Certified Density: 1.024 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expande uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

$$\text{Certified Value } (\bar{x}) = \frac{\Sigma x_i}{n}$$

$$\text{Uncertainty } (\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$$

($\bar{x}$) = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEBILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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ACCREDITED Testing Laboratory Certificate 893.01

ACCREDITED Reference Material Producer Certificate 893.02

2.0 **DESCRIPTION OF CRM** Stock Second Source Solution

Catalog No.: QCP-QCS-1

Lot Number: **D2-MEB317042**

Matrix: 5% HNO3(v/v)

EXPIRES
MAR 01 2012

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

500.00 µg/mL ea:
K, P, Tl,

200.00 µg/mL ea:
As, Hg, Pb,

100.00 µg/mL ea:
Al, B, Ba, Be, Ca, Cd, Ce, Co, Cr3, Cu, Fe, Li, Mg, Mn, Na, Ni, Se, Sr, V, Zn,

25.00 µg/mL ea:
Ag

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Aluminum, Al	99.9 ± 0.3 µg/mL	Arsenic, As	200.0 ± 0.6 µg/mL	Barium, Ba	100.0 ± 0.1 µg/mL
Beryllium, Be	100.0 ± 0.2 µg/mL	Boron, B	100.0 ± 0.4 µg/mL	Cadmium, Cd	100.0 ± 0.2 µg/mL
Calcium, Ca	100.1 ± 0.3 µg/mL	Cerium, Ce	100.0 ± 0.3 µg/mL	Chromium+3, Cr3	100.1 ± 0.4 µg/mL
Cobalt, Co	100.0 ± 0.2 µg/mL	Copper, Cu	99.9 ± 0.3 µg/mL	Iron, Fe	100.0 ± 0.2 µg/mL
Lead, Pb	200.0 ± 0.8 µg/mL	Lithium, Li	100.0 ± 0.3 µg/mL	Magnesium, Mg	99.6 ± 0.4 µg/mL
Manganese, Mn	100.1 ± 0.2 µg/mL	Mercury, Hg	200.0 ± 0.5 µg/mL	Nickel, Ni	99.6 ± 0.3 µg/mL
Phosphorus, P	500.0 ± 1.5 µg/mL	Potassium, K	500.0 ± 3.0 µg/mL	Selenium, Se	100.0 ± 1.0 µg/mL
Silver, Ag	25.06 ± 0.13 µg/mL	Sodium, Na	99.8 ± 0.4 µg/mL	Strontium, Sr	100.0 ± 0.3 µg/mL
Thallium, Tl	500.0 ± 2.0 µg/mL	Vanadium, V	100.0 ± 0.3 µg/mL	Zinc, Zn	99.7 ± 0.3 µg/mL

Certified Density: 1.037 g/mL (measured at 20 ± 1° C)

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ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Stock Second Source Solution

Catalog No.: QCP-QCS-4

Lot Number: **D2-MEB335083**

Matrix: 7% HNO3(v/v)

EXPIRES
MAR 01 2012

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

5.00 µg/mL ea:
Hg

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Mercury, Hg	5.000 ± 0.012 µg/mL				

Certified Density: 1.034 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

$$\text{Certified Value } (\bar{x}) = \frac{\Sigma x_i}{n}$$

$$\text{Uncertainty } (\pm) = \frac{2[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEBILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

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4.1 ASSAY INFORMATION

ELEMENT	METHOD	NIST SRM#	SRM LOT#	ELEMENT	METHOD	NIST SRM#	SRM LOT#
Hg	ICP Assay	3133	061204	Hg	EDTA	928	928

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EXPIRES
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2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: WW-LFS-2

Lot Number: **D2-MEB324072**

Matrix: tr. HF, 5% HNO3(v/v)

200.00 µg/mL ea:
SiO2,
80.00 µg/mL ea:
Sb,
70.00 µg/mL ea:
Sn,
40.00 µg/mL ea:
Mo,
20.00 µg/mL ea:
Ti

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Antimony, Sb	80.0 ± 0.2 µg/mL	Molybdenum, Mo	39.98 ± 0.14 µg/mL	Silica, SiO2	200.0 ± 1.1 µg/mL
Tin, Sn	70.0 ± 0.2 µg/mL	Titanium, Ti	20.04 ± 0.06 µg/mL		

Certified Density: 1.022 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: WW-LFS-2

Lot Number: **D2-MEB324072**

Matrix: tr. HF, 5% HNO3(v/v)

EXPIRES MAR 01 2012

200.00 µg/mL ea:
SiO2,
80.00 µg/mL ea:
Sb,
70.00 µg/mL ea:
Sn,
40.00 µg/mL ea:
Mo,
20.00 µg/mL ea:
Ti

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Antimony, Sb	80.0 ± 0.2 µg/mL	Molybdenum, Mo	39.98 ± 0.14 µg/mL	Silica, SiO2	200.0 ± 1.1 µg
Tin, Sn	70.0 ± 0.2 µg/mL	Titanium, Ti	20.04 ± 0.06 µg/mL		

Certified Density: 1.022 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

$$\text{Certified Value } (\bar{x}) = \frac{\sum x_i}{n}$$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements

$$\text{Uncertainty } (\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$$

$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Custom Solution

Catalog No.: WW-LFS-1

Lot Number: **D2-MEB324015**

Matrix: 5% HNO3(v/v)

EXPIRES
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1,000.00 µg/mL ea:
K,

600.00 µg/mL ea:
P,

300.00 µg/mL ea:
Fe, Na,

200.00 µg/mL ea:
Al, Ce, Mg, Se, Tl,

100.00 µg/mL ea:
Ca, Pb,

80.00 µg/mL ea:
As,

70.00 µg/mL ea:
Hg,

50.00 µg/mL ea:
Ni,

40.00 µg/mL ea:
Cr3,

30.00 µg/mL ea:
B, Cu, V,

20.00 µg/mL ea:
Ba, Be, Cd, Co, Li, Mn, Sr, Zn,

7.50 µg/mL ea:
Ag

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Aluminum, Al	200.0 ± 0.7 µg/mL	Arsenic, As	80.0 ± 0.3 µg/mL	Barium, Ba	20.07 ± 0.03 µg/
Beryllium, Be	19.98 ± 0.08 µg/mL	Boron, B	29.99 ± 0.12 µg/mL	Cadmium, Cd	20.02 ± 0.04 µg/
Calcium, Ca	100.0 ± 0.3 µg/mL	Cerium, Ce	200.0 ± 0.3 µg/mL	Chromium+3, Cr3	39.84 ± 0.15 µg/
Cobalt, Co	20.07 ± 0.04 µg/mL	Copper, Cu	29.97 ± 0.06 µg/mL	Iron, Fe	300.0 ± 0.8 µg/
Lead, Pb	100.0 ± 0.2 µg/mL	Lithium, Li	20.02 ± 0.08 µg/mL	Magnesium, Mg	200.0 ± 0.5 µg/
Manganese, Mn	19.94 ± 0.11 µg/mL	Mercury, Hg	70.0 ± 0.2 µg/mL	Nickel, Ni	49.90 ± 0.14 µg/

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ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: 6020ICS-0A

Lot Number: **D2-MEB321139**

Matrix: 1.4% HNO3(v/v)

EXPIRES
MAR 01 2012

10,000.00 µg/mL ea:
Chloride,

2,000.00 µg/mL ea:
C,

1,000.00 µg/mL ea:
Al, Ca, Fe, K, Mg, Na, P, S,

20.00 µg/mL ea:
Mo, Ti

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Aluminum, Al	1,000 ± 2 µg/mL	Calcium, Ca	1,000 ± 3 µg/mL	Carbon, C	2,000 ± 10 µg/mL
Chloride, Chloride	10,000.0 ± 20.0 µg/mL	Iron, Fe	1,000 ± 3 µg/mL	Magnesium, Mg	1,000 ± 3 µg/mL
Molybdenum, Mo	20.00 ± 0.07 µg/mL	Phosphorus, P	1,000 ± 5 µg/mL	Potassium, K	1,000 ± 3 µg/mL
Sodium, Na	1,000 ± 9 µg/mL	Sulfur, S	1,000 ± 5 µg/mL	Titanium, Ti	20.05 ± 0.06 µg/mL

Certified Density: 1.041 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements

Uncertainty (±) $= \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: 6020SPK-W

Lot Number: **B2-CICP22006**

Matrix: 5% HNO3(abs)

EXPIRES
MAR 01 2012

100.00 µg/mL ea:
Fe,

50.00 µg/mL ea:
Ba, Zn,

20.00 µg/mL ea:
Co, Cr3, Cu, Mn, Ni, Sb, V,

10.00 µg/mL ea:
As, Pb,

5.00 µg/mL ea:
Ag, Be, Cd, Se, Tl

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Antimony, Sb	20.03 ± 0.04 µg/mL	Arsenic, As	10.04 ± 0.03 µg/mL	Barium, Ba	50.15 ± 0.08 µg/mL
Beryllium, Be	4.989 ± 0.010 µg/mL	Cadmium, Cd	5.016 ± 0.015 µg/mL	Chromium+3, Cr3	19.99 ± 0.08 µg/mL
Cobalt, Co	20.01 ± 0.10 µg/mL	Copper, Cu	20.04 ± 0.04 µg/mL	Iron, Fe	99.7 ± 0.2 µg/mL
Lead, Pb	10.04 ± 0.02 µg/mL	Manganese, Mn	20.01 ± 0.04 µg/mL	Nickel, Ni	20.02 ± 0.06 µg/mL
Selenium, Se	5.001 ± 0.020 µg/mL	Silver, Ag	5.015 ± 0.015 µg/mL	Thallium, Tl	5.013 ± 0.010 µg/mL
Vanadium, V	20.01 ± 0.04 µg/mL	Zinc, Zn	50.00 ± 0.18 µg/mL		

Certified Density: 1.040 g/mL (measured at 22° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements

Uncertainty (±) $= \frac{2[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume, and the fixed error reported on the NIST SRM certificate of analysis.)

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ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: 2007ICS-3

Lot Number: **D2-MEB347056**

Matrix: 7% HNO3(v/v)

EXPIRES
MAR 01 2012

20,000.00 µg/mL ea:
K,

1,000.00 µg/mL ea:
As, Pb, Tl,

500.00 µg/mL ea:
Se,

300.00 µg/mL ea:
Ag, Ba, Cd, Co, Cr3, Cu, Ni, V, Zn,

200.00 µg/mL ea:
Mn,

100.00 µg/mL ea:
Be

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Arsenic, As	1,000 ± 3 µg/mL	Barium, Ba	300.0 ± 0.9 µg/mL	Beryllium, Be	100.0 ± 0.4 µg/mL
Cadmium, Cd	300.0 ± 0.6 µg/mL	Chromium+3, Cr3	300.0 ± 2.2 µg/mL	Cobalt, Co	300.0 ± 0.8 µg/mL
Copper, Cu	300.0 ± 0.6 µg/mL	Lead, Pb	1,000 ± 2 µg/mL	Manganese, Mn	200.0 ± 1.1 µg/mL
Nickel, Ni	300.0 ± 0.8 µg/mL	Potassium, K	20,000.0 ± 100.0 µg/mL	Selenium, Se	500.0 ± 2.9 µg/mL
Silver, Ag	300.0 ± 1.2 µg/mL	Thallium, Tl	1,000 ± 4 µg/mL	Vanadium, V	300.0 ± 1.0 µg/mL
Zinc, Zn	300.0 ± 1.3 µg/mL				

Certified Density: 1.090 g/mL (measured at 20 ± 1° C)

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CERTIFICATE OF ANALYSIS

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2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: 6020SPK-W

Lot Number: **B2-CICP22006**

Matrix: 5% HNO3(abs)

EXPIRES
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100.00 µg/mL ea:
Fe,

50.00 µg/mL ea:
Ba, Zn,

20.00 µg/mL ea:
Co, Cr3, Cu, Mn, Ni, Sb, V,

10.00 µg/mL ea:
As, Pb,

5.00 µg/mL ea:
Ag, Be, Cd, Se, Tl

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Antimony, Sb	20.03 ± 0.04 µg/mL	Arsenic, As	10.04 ± 0.03 µg/mL	Barium, Ba	50.15 ± 0.08 µg/mL
Beryllium, Be	4.989 ± 0.010 µg/mL	Cadmium, Cd	5.016 ± 0.015 µg/mL	Chromium+3, Cr3	19.99 ± 0.08 µg/mL
Cobalt, Co	20.01 ± 0.10 µg/mL	Copper, Cu	20.04 ± 0.04 µg/mL	Iron, Fe	99.7 ± 0.2 µg/mL
Lead, Pb	10.04 ± 0.02 µg/mL	Manganese, Mn	20.01 ± 0.04 µg/mL	Nickel, Ni	20.02 ± 0.06 µg/mL
Selenium, Se	5.001 ± 0.020 µg/mL	Silver, Ag	5.015 ± 0.015 µg/mL	Thallium, Tl	5.013 ± 0.010 µg/mL
Vanadium, V	20.01 ± 0.04 µg/mL	Zinc, Zn	50.00 ± 0.18 µg/mL		

Certified Density: 1.040 g/mL (measured at 22° C)

The following equations are used in the calculation of the certified value and the uncertainty

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume, and the fixed error reported on the NIST SRM certificate of analysis.)

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2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: 6020ICS-0B

Lot Number: **D2-MEB332026**

Matrix: 3% HNO3(v/v)

EXPIRES MAR 01 2012

2.00 µg/mL ea:
Ag, As, Cd, Co, Cr3, Cu, Mn, Ni, Zn

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Arsenic, As	1.999 ± 0.008 µg/mL	Cadmium, Cd	2.005 ± 0.004 µg/mL	Chromium+3, Cr3	1.995 ± 0.004 µg/mL
Cobalt, Co	1.998 ± 0.006 µg/mL	Copper, Cu	2.005 ± 0.004 µg/mL	Manganese, Mn	2.001 ± 0.004 µg/mL
Nickel, Ni	2.001 ± 0.004 µg/mL	Silver, Ag	1.996 ± 0.002 µg/mL	Zinc, Zn	2.003 ± 0.006 µg/mL

Certified Density: 1.013 g/mL (measured at 20 ± 1° C)

The Certified Value is based upon the most precise method used to analyze this CRM. The following equations are used in the calculation of the certified value and the uncertainty.

$$\text{Certified Value } (\bar{x}) = \frac{\sum x_i}{n}$$

$$\text{Uncertainty } (\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}.$$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

4.0 TRACEBILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are report taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where NIST SRMs are available, the term 'in-house std.' is specified.

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2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: 2007ICS-1

Lot Number: **D2-MEB335093**

Matrix: 0.3% HF(v/v), 2% HNO3(v/v)

EXPIRES
MAR 01 2012

1,000 µg/mL ea:
Ti,
500 µg/mL ea:
B,
300 µg/mL ea:
Mo,
230 µg/mL ea:
Si

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Boron, B	500.0 ± 3.1 µg/mL	Molybdenum, Mo	300.0 ± 1.1 µg/mL	Silicon, Si	230.0 ± 1.0 µg/mL
Titanium, Ti	1,000 ± 3 µg/mL				

Certified Density: 1.015 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements

Uncertainty (±) $= \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: 2007ICS-4

Lot Number: **D2-MEB329125**

Matrix: 3% HNO3(v/v)

EXPIRES
MAR 01 2012

15,000.00 µg/mL ea:
Ca,
12,500.00 µg/mL ea:
Fe,
7,500.00 µg/mL ea:
Mg,
3,000.00 µg/mL ea:
Al,
2,500.00 µg/mL ea:
Na

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Aluminum, Al	3,000 ± 11 µg/mL	Calcium, Ca	15,000.0 ± 40.0 µg/mL	Iron, Fe	12,500.0 ± 40.0 µg/mL
Magnesium, Mg	7,500.0 ± 20.0 µg/mL	Sodium, Na	2,500 ± 22 µg/mL		

Certified Density: 1.175 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Scandium in 7% (v/v) HNO3**

Catalog Number:	CGSC1-1, CGSC1-2, and CGSC1-5
Lot Number:	**D2-SC02088**
Starting Material:	Sc2O3
Starting Material Purity (%):	99.995611
Starting Material Lot No:	1532
Matrix:	7% (v/v) HNO3

EXPIRES
MAR 01 2012

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,002 ± 2 µg/mL (avg. of 2 methods)

Certified Density: 1.037 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\overline{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **1,002 ± 4 µg/mL**
ICP Assay NIST SRM 3148a Lot Number: 792111

Assay Method #2 **1,001 ± 2 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 DESCRIPTION OF CRM Ion Chromatography 10,000 µg/mL Fluoride in H2O

Catalog Number:	ICF10K
Lot Number:	C2-F01054MCA
Starting Material:	Sodium Fluoride
Starting Material Purity (%):	99.0000
Starting Material Lot No.:	04408EZ
Matrix:	H2O

EXPIRES
MAR 01 2012

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 10,117 ± 19 µg/mL

Certified Density: 1.020 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

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- This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 Assay Method #1 **10,117 ± 19 µg/mL (Avg. of 2 Runs)**
IC Assay NIST SRM 3183 Lot Number: 050721

Assay Method #2 **10,019 ± 51 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Ion Chromatography Custom Solution

Catalog No.: ICCL10-5

Lot Number: **E2-MEB363069**

Matrix: H2O

EXPIRES MAR 01 2012

10,000 µg/mL ea:
Chloride

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

ION	CERTIFIED VALUE	ION	CERTIFIED VALUE	ION	CERTIFIED VALUE
Chloride	10,000.0 ± 30.0 µg/mL				

Certified Density: 1.012 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **ASSAY INFORMATION**

ION	METHOD	NIST SRM#	SRM LOT#	ION	METHOD	NIST SRM#	SRM LOT#
Chloride	IC Assay	3182	060925	Chloride	Volhard	999b	999b

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2.0 **DESCRIPTION OF CRM** **Ion Chromatography 1000 µg/mL Bromide in H2O**

Catalog Number:	ICBR1-1 and ICBR1-5
Lot Number:	**D2-BR01078**
Starting Material:	KBr
Starting Material Purity (%):	99.0000
Starting Material Lot No.:	09014BY
Matrix:	H2O

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,002 ± 2 µg/mL

Certified Density: 0.998 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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Assay Method #1 **999 ± 3 µg/mL**
IC Assay NIST SRM 3184 Lot Number: 020701

Assay Method #2 **1,002 ± 2 µg/mL**
Volhard NIST SRM 999b Lot Number: 999b

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2.0 DESCRIPTION OF CRM — Ion Chromatography — 10000 µg/mL Nitrite as N in H2O

Catalog Number:	ICNNO210K
Lot Number:	D2-NOX02082MCA
Starting Material:	NaNO2
Starting Material Purity (%):	100.0000
Starting Material Lot No.:	1574
Matrix:	H2O

EXPIRES
MAR 01 2012

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 10,316 ± 69 µg/mL

Certified Density: 1.038 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

$$\text{Certified Value } (\bar{x}) = \frac{\sum x_i}{n}$$

$$\text{Uncertainty } (\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 Assay Method #1 — **10,316 ± 69 µg/mL (avg. of 2 runs)**
IC Assay NIST SRM 40h Lot Number: 40h

Assay Method #2 — **10,372 ± 52 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **Ion Chromatography 10000 µg/mL Nitrate as N in H2O**

Catalog Number:	ICNNO310K
Lot Number:	**D2-NOX02083MCA**
Starting Material:	NaNO3
Starting Material Purity (%):	99.0000
Starting Material Lot No.:	1571
Matrix:	H2O

EXPIRES
MAR 01 2012

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 10,206 ± 62 µg/mL

Certified Density: 1.038 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **10,206 ± 62 µg/mL (avg. of 2 runs)**
IC Assay NIST SRM 3185 Lot Number: 050517

Assay Method #2 **10,000 ± 50 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0

DESCRIPTION OF CRM	Ion Chromatography	10,000 µg/mL Phosphate as P in H2O
Catalog Number:	ICPPO410K	
Lot Number:	**B2-POX01082MCA**	
Starting Material:	NH4H2PO4	
Starting Material Purity (%):	99.9990	
Starting Material Lot No.:	10911CA / 07430AE	
Matrix:	H2O	

EXPIRES
MAR 01 2012

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 10,006 ± 26 µg/mL

Certified Density: 1.018 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

- "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)
- This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 Assay Method #1 **10,006 ± 26 µg/mL (Avg. of 2 Runs)**
IC Assay NIST SRM 3186 Lot Number: 000330

Assay Method #2 **10,009 ± 50 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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CERTIFICATE OF ANALYSIS

14206
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1.0 **INORGANIC VENTURES** is an ISO Guide 34 "General Requirements for the Competence of Reference Material Producers" and ISO 9001 registered manufacturer. Our manufacturing laboratory is accredited to ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories."

ACCREDITED Testing Laboratory Certificate 833.01

ACCREDITED Reference Material Producer Certificate 833.02

2.0

DESCRIPTION OF CRM	**Ion Chromatography**	**10,000 µg/mL Sulfate in H20**
Catalog Number:	ICSO410K	
Lot Number:	**B2-SOX01084MCA**	
Starting Material:	K2SO4	
Starting Material Purity (%):	99.0000	
Starting Material Lot No.:	08524KC	
Matrix:	H20	

EXPIRES
MAR 01 2012

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 10,030 ± 22 µg/mL

Certified Density: 1.011 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

- "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)
- This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 Assay Method #1 **10,030 ± 22 µg/mL (Avg. of 2 Runs)**
IC Assay NIST SRM 3154 Lot Number: 892205

Assay Method #2 **10,010 ± 50 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Custom Second Source Custom Solution

Catalog No.: QCP-QCS-5

Lot Number: **D2-MEB343140**

Matrix: H2O

EXPIRES
MAR 01 2012

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

75 µg/mL ea:
Sulfate,

50 µg/mL ea:
Bromide,

25 µg/mL ea:
oPhosphate_as_P,

15 µg/mL ea:
Chloride, Nitrite_as_N,

10 µg/mL ea:
Fluoride, Nitrate_as_N

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Bromide, Bromide	49.99 ± 0.23 µg/mL	Chloride, Chloride	15.01 ± 0.03 µg/mL	Fluoride, Fluoride	10.01 ± 0.03 µg/mL
Nitrate_ as_ N, Nitrate_as_N	10.00 ± 0.02 µg/mL	Nitrite_ as_ N, Nitrite_as_N	15.00 ± 0.04 µg/mL	o-Phosphate as P, oPhosphate_as_P	25.01 ± 0.07 µg/mL
Sulfate, Sulfate	75.0 ± 0.2 µg/mL				

Certified Density: 0.997 g/mL (measured at 20 ± 1° C)

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WATER QC CERTIFIED REFERENCE MATERIAL Complex Nutrients

Catalog No: QCP-NUT-2

Lot Number: **B2-NUT01111**

EXPIRES
MAR 01 2012

STABILITY AND STORAGE INFORMATION

- This CRM can be stored at room temperature before opening. After opening and dilution, the EPA recommends that it be stored at 4 °C for no more than 48 hours for Nitrate as N and Phosphate as P. For Nitrate plus Nitrite as N and Ammonia as N samples, a "maximum" holding time of 28 days at 4 °C is recommended. The EPA recommendations for holding time and storage conditions should be followed after opening and dilution.

SPECIFICATIONS AND TRACEABILITY:

Parameter	Certified Value	Made to Value	Analytical Method	NIST Traceability	Acceptance Limits
Total Kjeldahl Nitrogen as N	15.1 ± 0.3 mg/L	15.0 mg/L	Dumas Micro Combustion	SRM 141c	18.6 – 11.5 mg/L
Total Organic Phosphorus as P	8.02 ± 0.04 mg/L	8.00 mg/L	ICP	SRM 3139a	9.64 – 6.40 mg/L

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume, and the fixed error reported on the NIST SRM certificate of analysis

ANALYZED DENSITY OF SOLUTION (measured at 22°C): **1.013 g/mL**

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ACCREDITED Testing Laboratory Certificate 883.01 · ACCREDITED Reference Material Producer Certificate 883.02

Recvd: 10/19/2010
Exp: 11/01/2011

WATER QC Reference Material **Solids**

Catalog No: QCP-SLD

Lot Number: **C2-SLD02006**

STABILITY AND STORAGE INFORMATION - This reference material can be stored at room temperature before and after opening. The EPA recommends a "maximum" holding time for solids samples of 7 days at 4 °C. Our stability data indicates that this standard should be disposed of in 3 months after opening.

SPECIFICATIONS AND TRACEABILITY:

Parameter	Certified Value	Made to Value	Analytical Method	NIST Traceability	Acceptance Limits
Filterable Residue	743.0 ± 36 mg/L	750 mg/L	EPA Method 160.1	Gravimetric	934 - 552 mg/L
Non-filterable Residue	27.0 ± 2.7 mg/L	35 mg/L	EPA Method 160.2	Gravimetric	31.7 – 22.2 mg/L
Total Residue	777 ± 61 mg/L	785 mg/L	EPA Method 160.3	Gravimetric	977 – 577 mg/L

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume, and the fixed error reported on the NIST SRM certificate of analysis.)

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RECEIVED 1/07/13
EXP 120801

WATER QC REFERENCE MATERIAL Minerals

Catalog No: QCP-MIN

Lot Number: **E2-MIN01123**

STABILITY AND STORAGE INFORMATION

- Do not put transfer devices, probes, etc. in sample container. The insertion of a pH electrode, for example, can significantly increase the conductivity, potassium, and chloride values. This standard can be stored at room temperature before opening. After opening, the EPA recommends a "maximum" holding time for the following:

Parameter	Holding Conditions	Holding Time
Alkalinity	4°C	14 days
Conductivity	4°C	28 days
Chloride	None required	28 days
Sulfate	4°C	28 days
Nitrate as N	4°C	48 hours
Fluoride	None required	28 days
Sodium	HNO_3 to pH<2	6 months
Potassium	HNO_3 to pH<2	6 months

SPECIFICATIONS AND TRACEABILITY:

***pH: The value listed below is for informational purposes only. The pH value of this CRM is not stable and cannot be relied upon. It can change up to 1 pH unit. For a certified pH CRM, use catalog no. QCP-PH.**

Parameter	Certified Value	Made to Value	Analytical Method	NIST Traceability	Acceptance Limits
Alkalinity	115.19 ± 0.58 mg/L $CaCO_3$	110.075 mg/L	EPA Method 310.1	723d	122.71 – 107.66 mg/L $CaCO_3$
Conductivity	1287 ± 7 µmhos/cm @ 25°C	Measured	EPA Method 120.1	999b	1421 – 1153 µmhos/cm @ 25°C
Chloride	200.24 ± 0.44 mg/L	200.21 mg/L	EPA Method 300.0	3182	215.05 – 185.43 mg/L
Fluoride	7.92 ± 0.04 mg/L	8.00 mg/L	EPA Method 300.0	3183	8.54 – 7.30 mg/L
Sulfate	125.22 ± 0.75 mg/L	125.00 mg/L	EPA Method 300.0	3181	142.82 – 107.62 mg/L
Nitrate as N	8.80 ± 0.08 mg/L	9.00 mg/L	EPA Method 300.0	3185	10.54 – 7.05 mg/L
Sodium	202.31 ± 0.75 mg/L	203.01 mg/L	ICP	3152a	222.03 – 182.58 mg/L
Potassium	101.71 ± 1.63 mg/L	101.68 mg/L	ICP	3141a	116.10 – 87.32 mg/L
pH	9.21 units	Measured	4500-H^+B	186g, 185h	*See parameters table above

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QCPLUS MINERALS 14750 Rec'd: 2011-07-27

WATER QC REFERENCE MATERIAL Minerals

Catalog No: QCP-MIN

Lot Number: **E2-MIN01122**

STABILITY AND STORAGE INFORMATION

- Do not put transfer devices, probes, etc. in sample container. The insertion of a pH electrode, for example, can significantly increase the conductivity, potassium, and chloride values. This standard can be stored at room temperature before opening. After opening, the EPA recommends a "maximum" holding time for the following:

Parameter	Holding Conditions	Holding Time
Alkalinity	4°C	14 days
Conductivity	4°C	28 days
Chloride	None required	28 days
Sulfate	4°C	28 days
Nitrate as N	4°C	48 hours
Fluoride	None required	28 days
Sodium	HNO_3 to pH<2	6 months
Potassium	HNO_3 to pH<2	6 months

SPECIFICATIONS AND TRACEABILITY:

***pH: The value listed below is for informational purposes only. The pH value of this CRM is not stable and cannot be relied upon. It can change up to 1 pH unit. For a certified pH CRM, use catalog no. QCP-PH.**

Parameter	Certified Value	Made to Value	Analytical Method	NIST Traceability	Acceptance Limits
Alkalinity	24.16 ± 0.20 mg/L $CaCO_3$	23.78 mg/L	EPA Method 310.1	723d	28.12 – 20.20 mg/L $CaCO_3$
Conductivity	211 ± 1 µmhos/cm @ 25°C	Measured	EPA Method 120.1	999b	234 – 188 µmhos/cm @ 25°C
Chloride	24.87 ± 0.05 mg/L	25.00 mg/L	EPA Method 300.0	3182	28.13 – 21.61 mg/L
Fluoride	3.01 ± 0.01 mg/L	3.00 mg/L	EPA Method 300.0	3183	3.28 – 2.74 mg/L
Sulfate	20.14 ± 0.09 mg/L	20.00 mg/L	EPA Method 300.0	3181	23.98 – 16.30 mg/L
Nitrate as N	1.48 ± 0.03 mg/L	1.50 mg/L	EPA Method 300.0	3185	1.81 – 1.15 mg/L
Sodium	32.17 ± 0.13 mg/L	31.98 mg/L	ICP	3152a	35.59 – 28.75 mg/L
Potassium	16.34 ± 0.061 mg/L	16.27 mg/L	ICP	3141a	18.82 – 13.87 mg/L
pH	9.12 units	Measured	4500-H^+B	186g, 185h	*See parameters table above

TechLaw
Quality & Integrity

Ion Chromatography
EPA Method 300.0 / SW-846 Method 9056

Analysis Date: 8/15/11 Analyst: N. Philpot

TDF #: DG-264 Project Name: Rico - Argentine LIMS #: C110805

Standards Traceability Documentation

Vendor	Standard	LIMS ID #:	Expires	Purpose
Inorganic Ventures	QCP-QCS-5	1040749	3-1-12	ICV / LCS
Inorganic Ventures	10,000 ppm Cl	1040750	3-1-12	Calibration
Inorganic Ventures	10,000 ppm NO_2	1040754	3-1-12	Calibration
Inorganic Ventures	10,000 ppm Br	1040752	3-1-12	Calibration
Inorganic Ventures	10,000 ppm PO_4	1040755	3-1-12	Calibration
Inorganic Ventures	10,000 ppm Fl	1040751	3-1-12	Calibration
Inorganic Ventures	10,000 ppm SO_4	1040756	3-1-12	Calibration
Inorganic Ventures	10,000 ppm NO_3	1040753	3-1-12	Calibration
ESAT	Cl + SO_4 + F	1052401	3-1-12	Spike

Calibration Standards

Cal Stock LIMS ID #: 1052601 Prepared: 05-24-2011 Exp: 3-1-2012

Name	F^- mg/L	Cl^- mg/L	Br^- mg/L	NO_2-N g/L	NO_3-N mg/L	PO_4 mg/L	SO_4^- mg/L
Stock	20	200	50	50	50	20	500
Std. 1	0.2	2	0.5	0.5	0.5	0.2	5.0
Std. 2	0.4	4	1	1	1	0.4	10
Std. 3	1	10	2.5	2.5	2.5	1	25
Std. 4	4	40	10	10	10	4	100
Std. 5	10	100	25	25	25	10	250

Instrument Analysis Parameters

Column Pres. ≈ 2650 psi Eluent Cond.: ≈ 0.0 Eluent Prep. Date: 8/15/11

Cal. Date: 6/28/11 Cal. By: SV

Analytical Run Information

CCV LIMS ID #: 1052602 Prepared: 05-24-2011 Exp: 3-1-2012

Spiked Sample ID: C110805-02 mL Sample: 10 ~~mL~~ Spike: 100 mL

Analytical Batch ID: 11080756

Sequence ID: 110879

Upload Date: 8/18/11 Upload By: NP

Peer Review Date: 09/15/11 By: SR

ANALYSIS SEQUENCE

1108079

Instrument: ESAT Dionex IC Sequence Date: 08/18/11 00:00 Printed: 8/18/2011 12:06:24PM

Lab Number	Dilut. Factor	Analysis	STD ID	Sample/Std Name	EPA Tag ID	Source Sple	Comments
1108079-ICV1		QC				-	
1108079-ICB1		QC				-	
1108056-BLK1		QC		Blank		-	
1108056-BS1		QC		LCS		-	
C110805-02 A		nions by Ion Chromatograpl		ArgentineShaft	No Tag Prefix-C		
1108056-DUP1		QC		Duplicate		C110805-02	
1108056-MS1		QC		Matrix Spike		C110805-02	
1108056-MSD1		QC		Matrix Spike Dup		C110805-02	
C110805-05 A		nions by Ion Chromatograpl		BlaineTunnel	No Tag Prefix-C		
1108079-CCV1		QC	1052602	Calibration Check		-	
1108079-CCB1		QC		Calibration Blank		-	

PREPARATION BENCH SHEET

1108056

TechLaw, Inc. - ESAT Region 8

Printed: 8/12/2011 10:11:20AM

Matrix: Water

Date Prepared: 08/12/11 10:09 By: NP

Prepared using: WETCHEM - No Prep Req

Lab Number	Analysis	EPA Tag ID	Initial (mL)	Final (mL)	Spike1 ID	ul Spike1	Spike2 ID	ul Spike2	Source ID	QC Code	Extraction Comments
1108056-BLK1	QC		10	10						Blank	
1108056-BS1	QC		10	10	1052401	100				LCS	
1108056-DUP1	QC		10	10					C110805-02	Duplicate	
1108056-MS1	QC		10	10	1052401	100			C110805-02	Matrix Spike	
1108056-MSD1	QC		10	10	1052401	100			C110805-02	Matrix Spike Dup	
C110805-02 A	nions by Ion Chromatograpl	lo Tag Prefix-	10	10						ArgentineShaft	
C110805-05 A	nions by Ion Chromatograpl	lo Tag Prefix-	10	10						BlaineTunnel	

DG-264

ANION SUMMARY REPORT

No.	Name	Time min Fluoride ECD_1	Area µS*min Fluoride ECD_1	Rel.Area % Fluoride ECD_1	Height µS Fluoride ECD_1	Rel.Height % Fluoride ECD_1	Amount mg/L Fluoride ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	3.023	0.0542	3.94	0.39	6.24	0.1999
3	Std 2	3.023	0.1023	3.74	0.78	6.25	0.4093
4	Std 3	3.023	0.2371	3.35	1.96	5.85	0.9884
5	Std 4	3.030	0.9745	3.03	8.16	5.25	4.0027
6	Std 5	3.020	2.6209	2.89	21.66	5.28	9.9997
7	SEQ-ICV	2.997	2.5762	7.70	19.80	13.39	9.8479
8	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	1108056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	1108056-BS1	2.997	1.1390	12.17	8.66	16.11	4.6436
11	C110805-02	2.997	0.2109	0.95	1.24	1.99	0.8764
12	1108056-DUP1	3.003	0.2012	0.91	1.22	1.95	0.8350
13	1108056-MS1	2.993	1.3386	4.16	9.54	8.16	5.4071
14	1108056-MSD1	2.993	1.3437	4.14	9.61	8.17	5.4264
15	C110805-05	3.000	0.4401	0.96	2.54	2.10	1.8432
16	SEQ-CCV	2.993	0.9032	2.81	6.63	4.47	3.7217
17	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	39.093	12.142	50.746	92.189	85.207	48.201
	Average:	3.007	0.934	3.904	7.091	6.554	3.708
	Rel.Std.Dev:	0.474 %	93.614 %	78.472 %	98.912 %	64.359 %	90.266 %

No.	Name	Time min Chloride ECD_1	Area µS*min Chloride ECD_1	Rel.Area % Chloride ECD_1	Height µS Chloride ECD_1	Rel.Height % Chloride ECD_1	Amount mg/L Chloride ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	4.62	0.315	22.95	2.254	35.75	2.3542
3	Std 2	4.62	0.623	22.80	4.507	36.00	3.9930
4	Std 3	4.62	1.682	23.73	12.496	37.33	9.5374
5	Std 4	4.65	8.020	24.90	61.253	39.41	40.1287
6	Std 5	4.67	22.838	25.15	162.964	39.72	99.9866
7	SEQ-ICV	4.54	2.655	7.94	18.670	12.63	14.5100
8	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	1108056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	1108056-BS1	4.56	4.599	49.15	33.474	62.28	24.1226
11	C110805-02	4.53	0.009	0.04	0.062	0.10	0.7109
12	1108056-DUP1	4.54	0.009	0.04	0.060	0.10	0.7081
13	1108056-MS1	4.55	4.652	14.44	33.601	28.75	24.3778
14	1108056-MSD1	4.55	4.668	14.38	33.666	28.64	24.4567
15	C110805-05	4.53	0.007	0.02	0.048	0.04	0.7002
16	SEQ-CCV	4.56	8.017	24.97	58.408	39.42	40.1157

17	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	59.533	58.097	230.518	421.463	360.170	285.702
	Average:	4.579	4.469	17.732	32.420	27.705	21.977
	Rel.Std.Dev:	1.046 %	139.369 %	77.944 %	137.856 %	68.796 %	124.867 %

No.	Name	Time min Nitrite ECD_1	Area µS*min Nitrite ECD_1	Rel.Area % Nitrite ECD_1	Height µS Nitrite ECD_1	Rel.Height % Nitrite ECD_1	Amount mg/L Nitrite ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	5.673	0.171	12.436	0.951	15.092	0.534
3	Std 2	5.670	0.329	12.029	1.860	14.856	0.976
4	Std 3	5.667	0.872	12.303	4.853	14.497	2.485
5	Std 4	5.687	3.672	11.400	20.865	13.425	10.006
6	Std 5	5.693	9.715	10.699	53.128	12.949	24.999
7	SEQ-ICV	5.577	5.418	16.203	30.255	20.462	14.500
8	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	1108056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	1108056-BS1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11	C110805-02	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	1108056-DUP1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	1108056-MS1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	1108056-MSD1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	C110805-05	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
16	SEQ-CCV	5.577	3.520	10.964	19.679	13.283	9.609
17	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	39.543	23.696	86.034	131.590	104.563	63.108
	Average:	5.649	3.385	12.291	18.799	14.938	9.015
	Rel.Std.Dev:	0.891 %	101.106 %	15.032 %	99.867 %	17.224 %	97.765 %

No.	Name	Time min Bromide ECD_1	Area µS*min Bromide ECD_1	Rel.Area % Bromide ECD_1	Height µS Bromide ECD_1	Rel.Height % Bromide ECD_1	Amount mg/L Bromide ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	6.943	0.033	2.371	0.164	2.594	0.474
3	Std 2	6.943	0.066	2.417	0.326	2.603	1.004
4	Std 3	6.933	0.164	2.309	0.812	2.426	2.531
5	Std 4	6.943	0.663	2.058	3.336	2.146	9.991
6	Std 5	6.930	1.782	1.962	9.146	2.229	25.001
7	SEQ-ICV	6.793	3.924	11.736	19.525	13.205	49.379
8	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	1108056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	1108056-BS1	6.813	0.659	7.043	3.143	5.848	9.939

11	C110805-02	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	1108056-DUP1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	1108056-MS1	6.803	0.677	2.103	3.217	2.752	10.201
14	1108056-MSD1	6.800	0.663	2.042	3.156	2.685	9.991
15	C110805-05	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
16	SEQ-CCV	6.807	0.664	2.068	3.227	2.178	10.007
17	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	68.710	9.294	36.109	46.053	38.668	128.516
	Average:	6.871	0.929	3.611	4.605	3.867	12.852
	Rel.Std.Dev:	1.043 %	125.175 %	89.837 %	126.476 %	89.400 %	113.707 %

No.	Name	Time min Nitrate ECD_1	Area µS*min Nitrate ECD_1	Rel.Area % Nitrate ECD_1	Height µS Nitrate ECD_1	Rel.Height % Nitrate ECD_1	Amount mg/L Nitrate ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	7.873	0.189	13.716	0.818	12.971	0.502
3	Std 2	7.870	0.384	14.034	1.617	12.917	1.007
4	Std 3	7.853	0.970	13.689	4.189	12.514	2.489
5	Std 4	7.840	4.257	13.218	18.735	12.055	10.002
6	Std 5	7.793	12.391	13.647	51.996	12.673	25.000
7	SEQ-ICV	7.667	4.382	13.104	18.263	12.351	10.265
8	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	1108056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	1108056-BS1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11	C110805-02	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	1108056-DUP1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	1108056-MS1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	1108056-MSD1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	C110805-05	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
16	SEQ-CCV	7.677	4.293	13.372	18.270	12.332	10.078
17	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	54.573	26.866	94.780	113.887	87.813	59.343
	Average:	7.796	3.838	13.540	16.270	12.545	8.478
	Rel.Std.Dev:	1.143 %	110.190 %	2.393 %	109.082 %	2.645 %	100.594 %

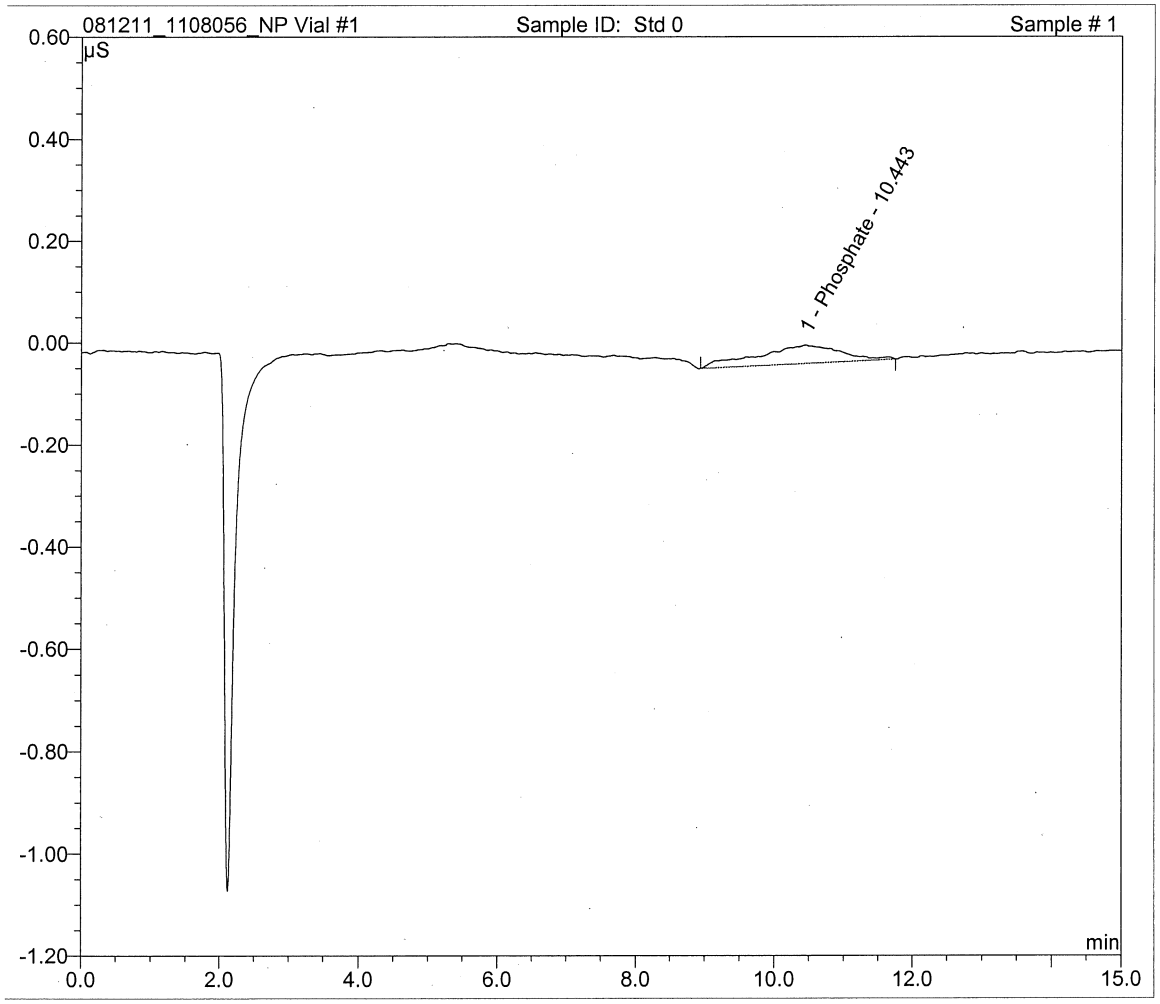
No.	Name	Time min Phosphate ECD_1	Area µS*min Phosphate ECD_1	Rel.Area % Phosphate ECD_1	Height µS Phosphate ECD_1	Rel.Height % Phosphate ECD_1	Amount mg/L Phosphate ECD_1
1	Std 0	10.443	0.051	100.000	0.036	100.000	0.366
2	Std 1	10.343	0.022	1.583	0.061	0.966	0.153
3	Std 2	10.333	0.069	2.530	0.140	1.114	0.503
4	Std 3	10.330	0.128	1.802	0.325	0.971	0.933

5	Std 4	10.333	0.557	1.730	1.440	0.927	4.012
6	Std 5	10.310	1.445	1.591	3.821	0.931	9.999
7	SEQ-ICV	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	1108056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	1108056-BS1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11	C110805-02	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	1108056-DUP1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	1108056-MS1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	1108056-MSD1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	C110805-05	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
16	SEQ-CCV	10.013	0.459	1.429	1.086	0.733	3.317
17	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	72.107	2.730	110.666	6.909	105.643	19.283
	Average:	10.301	0.390	15.809	0.987	15.092	2.755
	Rel.Std.Dev:	1.301 %	131.069 %	234.836 %	138.217 %	248.090 %	128.545 %

No.	Name	Time min Sulfate ECD_1	Area µS*min Sulfate ECD_1	Rel.Area % Sulfate ECD_1	Height µS Sulfate ECD_1	Rel.Height % Sulfate ECD_1	Amount mg/L Sulfate ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	11.693	0.591	43.002	1.663	26.388	5.682
3	Std 2	11.693	1.160	42.446	3.288	26.261	10.021
4	Std 3	11.697	3.035	42.818	8.841	26.410	24.067
5	Std 4	11.770	14.065	43.669	41.626	26.783	100.257
6	Std 5	11.850	39.974	44.026	107.337	26.162	249.973
7	SEQ-ICV	11.317	10.774	32.219	31.381	21.223	78.546
8	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	1108056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	1108056-BS1	11.250	2.961	31.641	8.469	15.758	23.521
11	C110805-02	11.360	21.924	98.970	61.255	97.886	149.242
12	1108056-DUP1	11.370	21.859	99.025	61.341	97.935	148.848
13	1108056-MS1	11.373	25.533	79.279	70.523	60.331	170.568
14	1108056-MSD1	11.377	25.778	79.413	71.095	60.485	171.986
15	C110805-05	11.483	45.597	98.976	118.102	97.815	278.752
16	SEQ-CCV	11.327	14.248	44.383	40.856	27.577	101.444
17	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	149.560	227.499	779.866	625.777	611.013	1,512.907
	Average:	11.505	17.500	59.990	48.137	47.001	116.377
	Rel.Std.Dev:	1.779 %	82.598 %	44.478 %	79.196 %	68.020 %	76.454 %

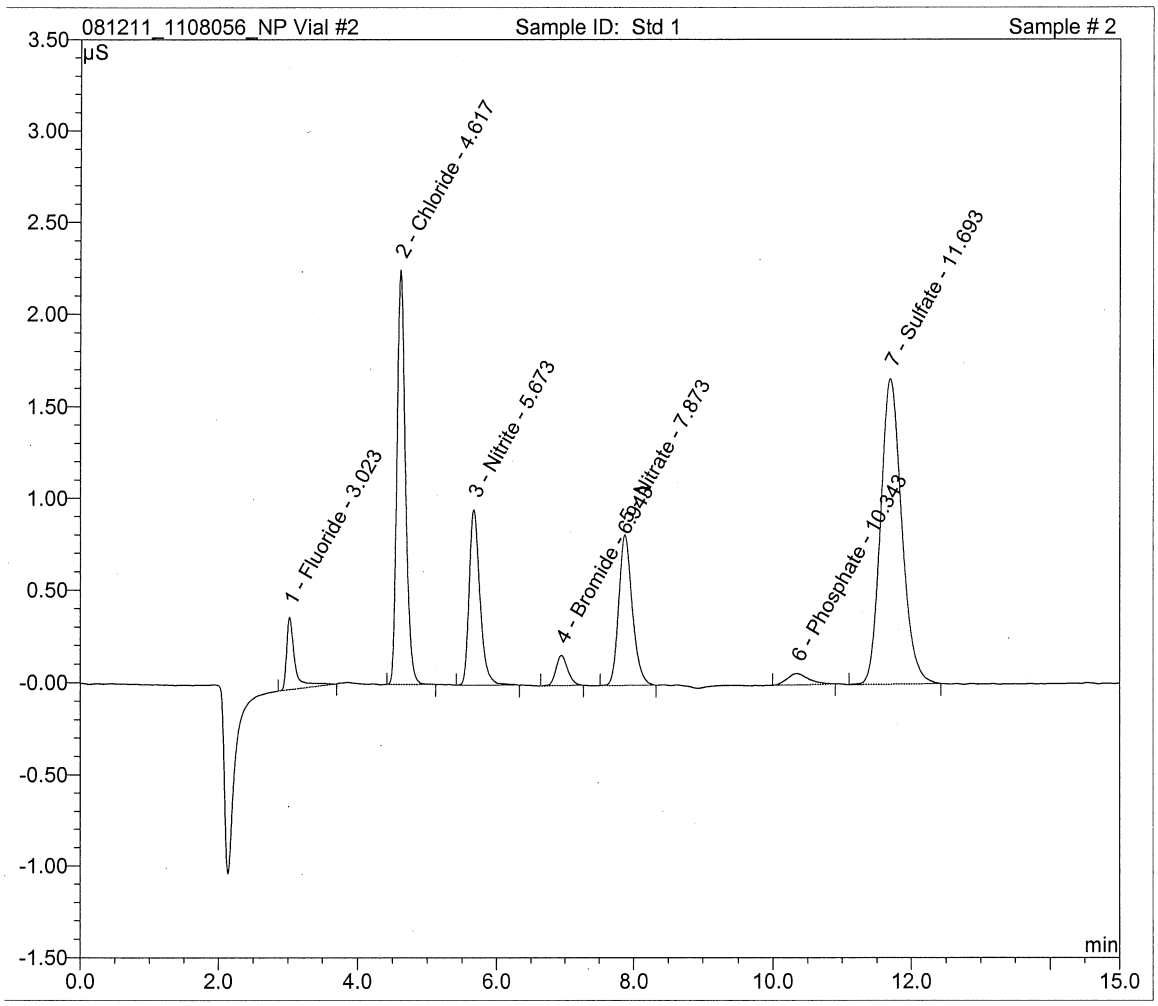
Sample Name:	**Std 0**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**1**
Inj. Date/Time:	**06.28.11 09:04**	*Run Number:*	**1**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	10.44	Phosphate	BMB	0.051	0.036	0.3659



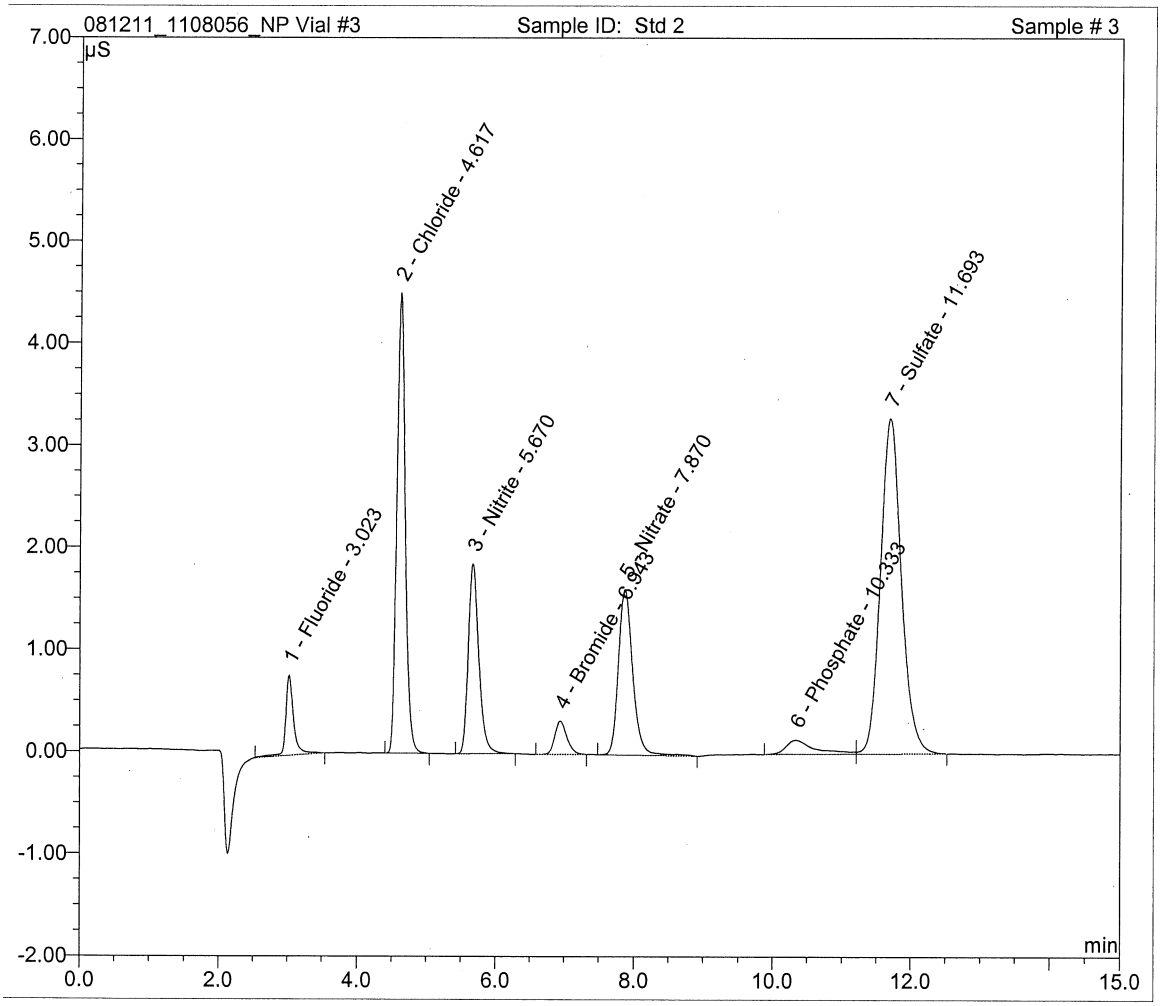
Sample Name:	**Std 1**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**2**
Inj. Date/Time:	**06.28.11 09:21**	*Run Number:*	**2**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.02	Fluoride	BMB	0.054	0.393	0.1999
2	4.62	Chloride	BMB	0.315	2.254	2.3542
3	5.67	Nitrite	BMB	0.171	0.951	0.5336
4	6.94	Bromide	BMB	0.033	0.164	0.4736
5	7.87	Nitrate	BMB	0.189	0.818	0.5017
6	10.34	Phosphate	BMB	0.022	0.061	0.1528
7	11.69	Sulfate	BMB	0.591	1.663	5.6818



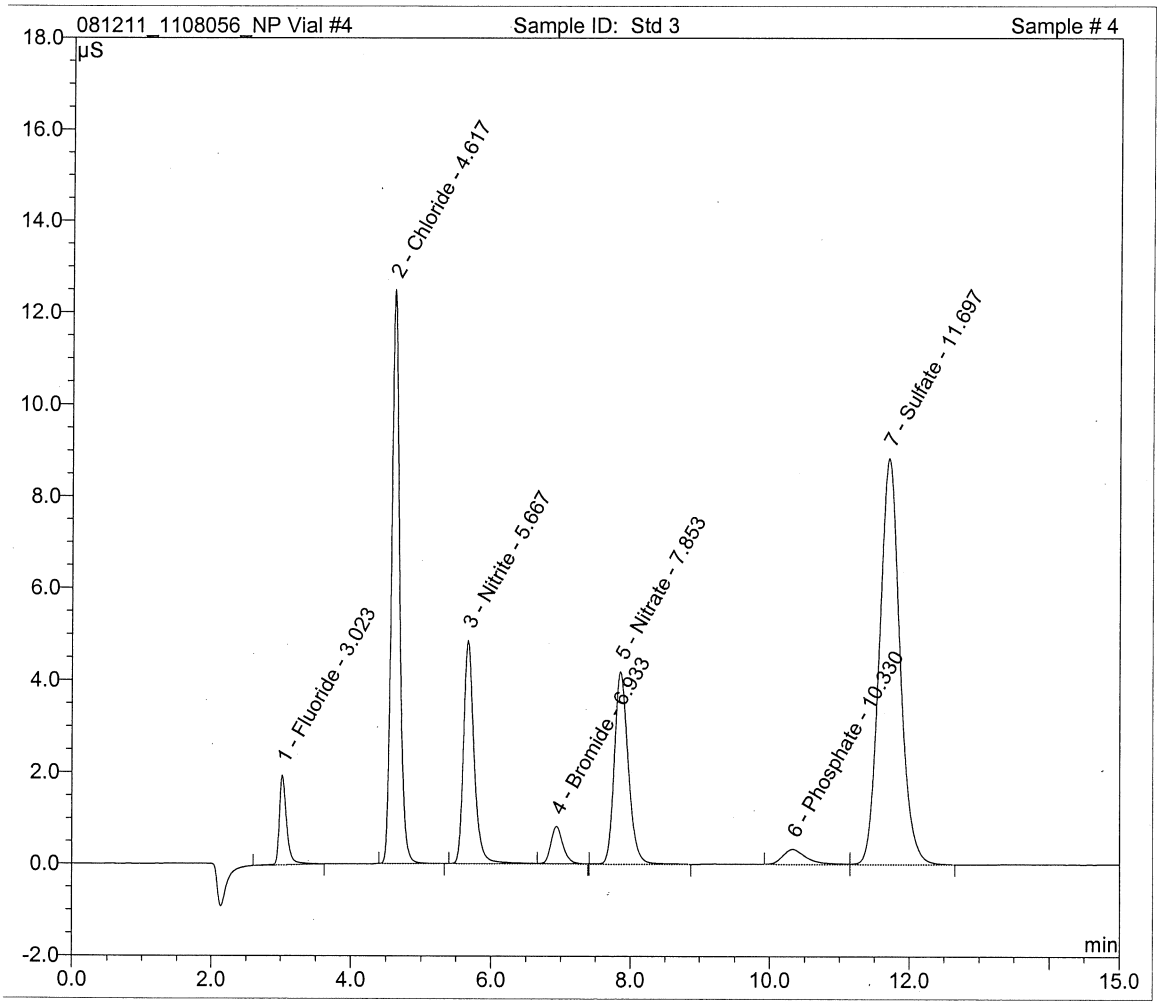
Sample Name:	**Std 2**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**3**
Inj. Date/Time:	**06.28.11 09:39**	*Run Number:*	**3**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.02	Fluoride	BMB	0.102	0.782	0.4093
2	4.62	Chloride	BMB	0.623	4.507	3.9930
3	5.67	Nitrite	BMB	0.329	1.860	0.9756
4	6.94	Bromide	BMB	0.066	0.326	1.0035
5	7.87	Nitrate	BMB	0.384	1.617	1.0067
6	10.33	Phosphate	BM	0.069	0.140	0.5030
7	11.69	Sulfate	MB	1.160	3.288	10.0211



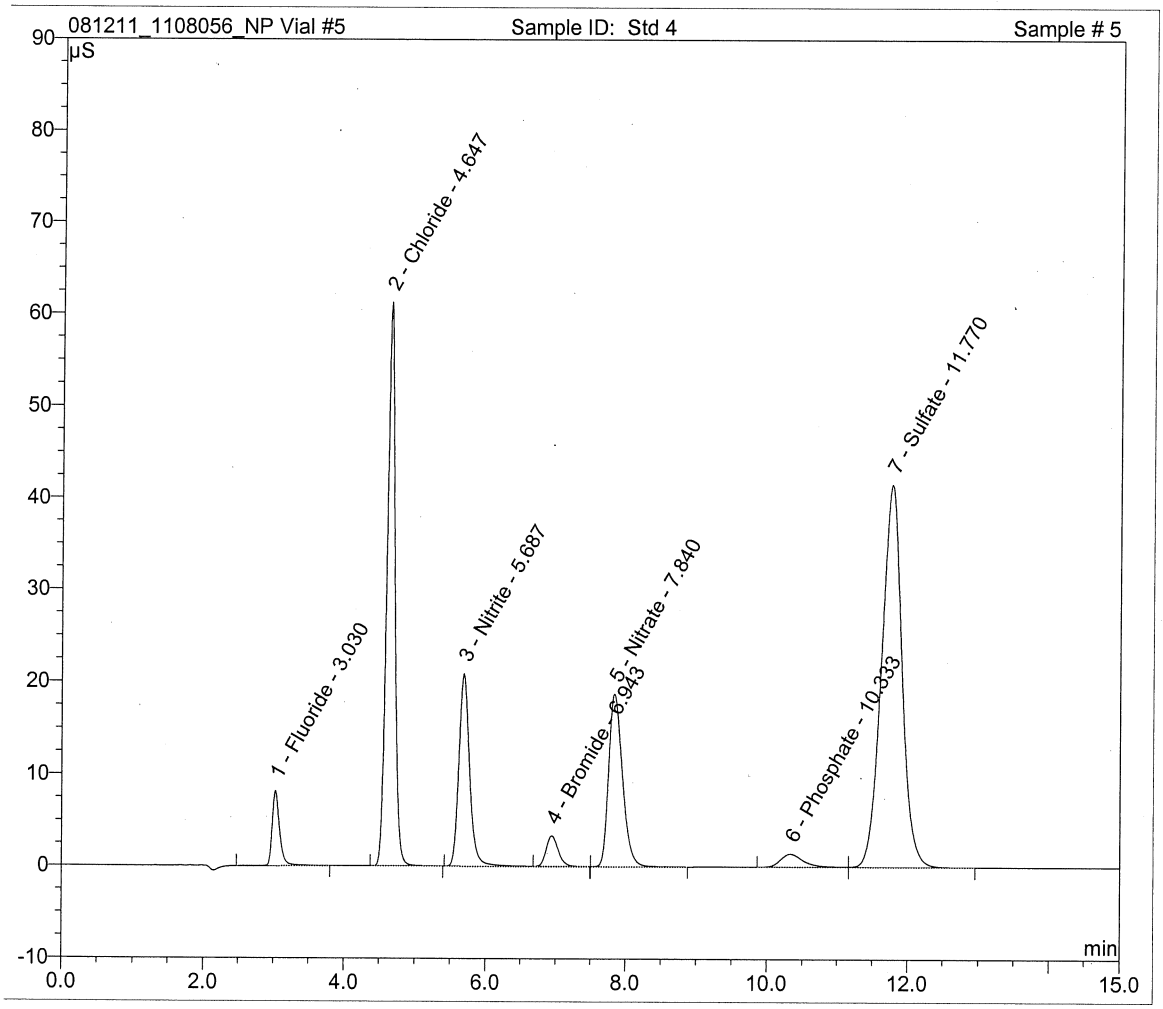
Sample Name:	**Std 3**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**4**
Inj. Date/Time:	**06.28.11 09:57**	*Run Number:*	**4**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.02	Fluoride	BMB	0.237	1.959	0.9884
2	4.62	Chloride	BMB	1.682	12.496	9.5374
3	5.67	Nitrite	BM	0.872	4.853	2.4852
4	6.93	Bromide	Rd	0.164	0.812	2.5313
5	7.85	Nitrate	MB	0.970	4.189	2.4895
6	10.33	Phosphate	BM	0.128	0.325	0.9335
7	11.70	Sulfate	MB	3.035	8.841	24.0667



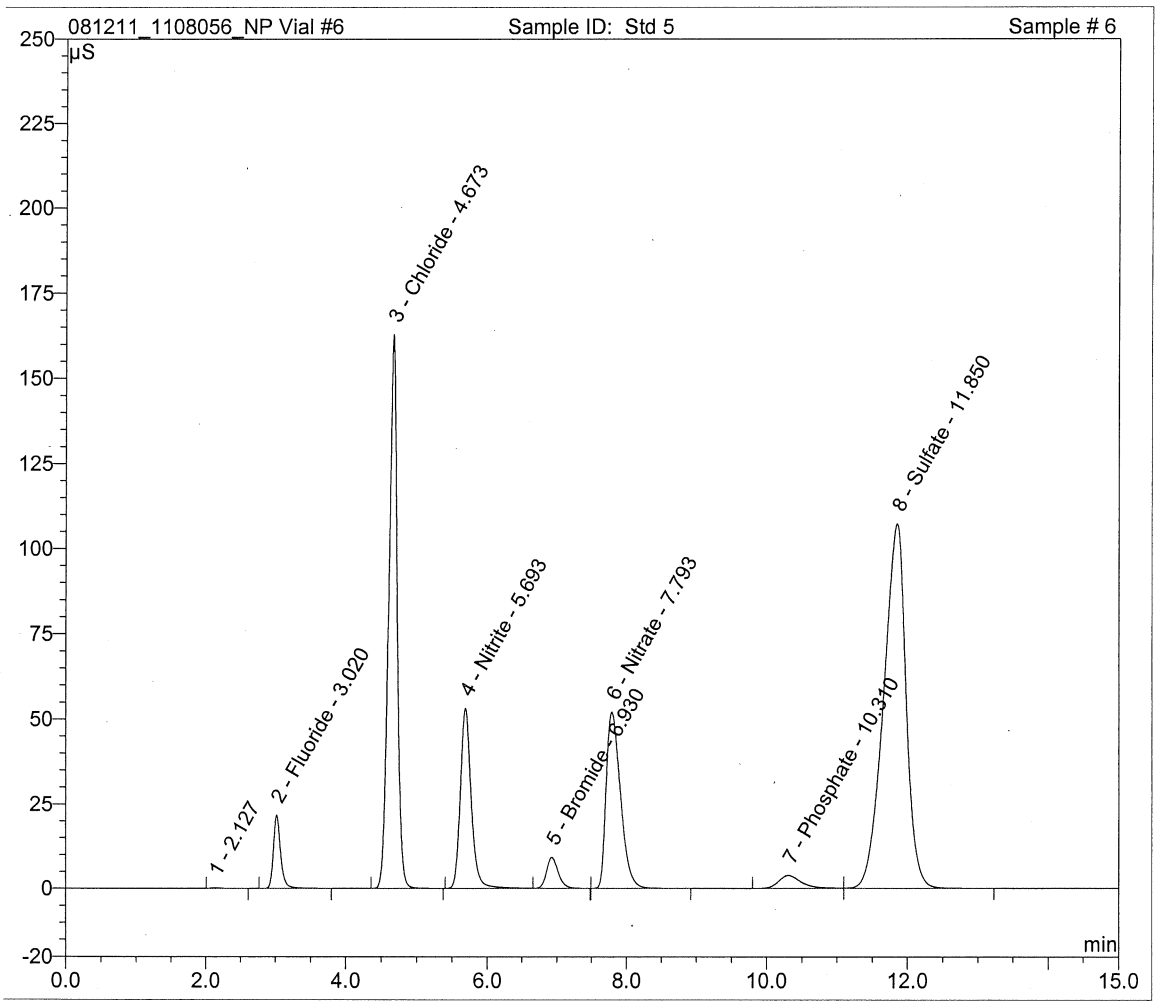
Sample Name:	**Std 4**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**5**
Inj. Date/Time:	**06.28.11 10:14**	*Run Number:*	**5**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.03	Fluoride	BMB	0.974	8.162	4.0027
2	4.65	Chloride	BMB	8.020	61.253	40.1287
3	5.69	Nitrite	BM	3.672	20.865	10.0063
4	6.94	Bromide	Rd	0.663	3.336	9.9906
5	7.84	Nitrate	MB	4.257	18.735	10.0024
6	10.33	Phosphate	BM	0.557	1.440	4.0119
7	11.77	Sulfate	MB	14.065	41.626	100.2571



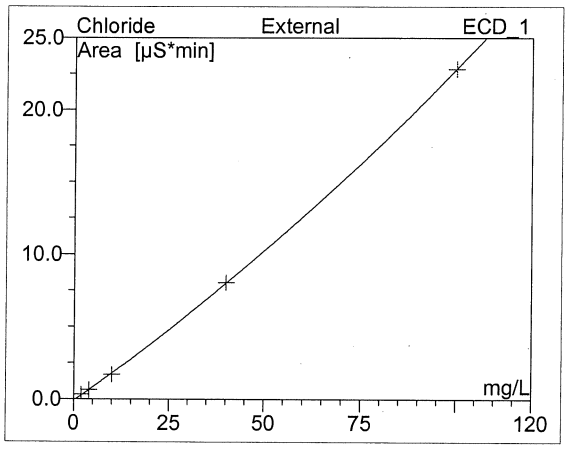
Sample Name:	**Std 5**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**6**
Inj. Date/Time:	**06.28.11 10:32**	*Run Number:*	**6**

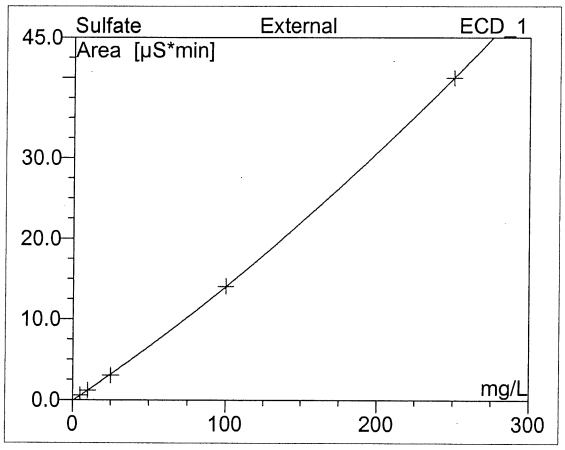
No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
2	3.02	Fluoride	BMB	2.621	21.665	9.9997
3	4.67	Chloride	BMB	22.838	162.964	99.9866
4	5.69	Nitrite	BM	9.715	53.128	24.9992
5	6.93	Bromide	Rd	1.782	9.146	25.0011
6	7.79	Nitrate	MB	12.391	51.996	24.9998
7	10.31	Phosphate	BM	1.445	3.821	9.9987
8	11.85	Sulfate	MB	39.974	107.337	249.9733

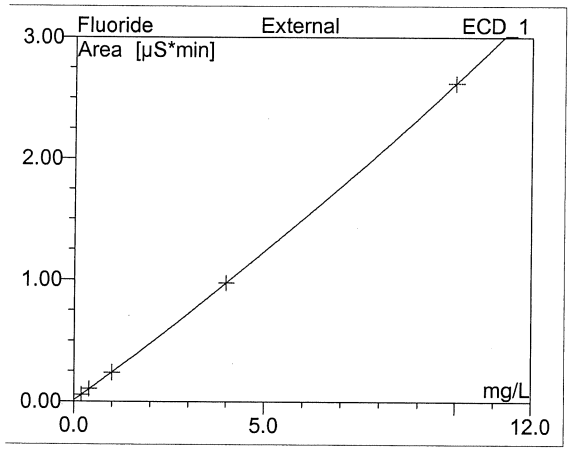


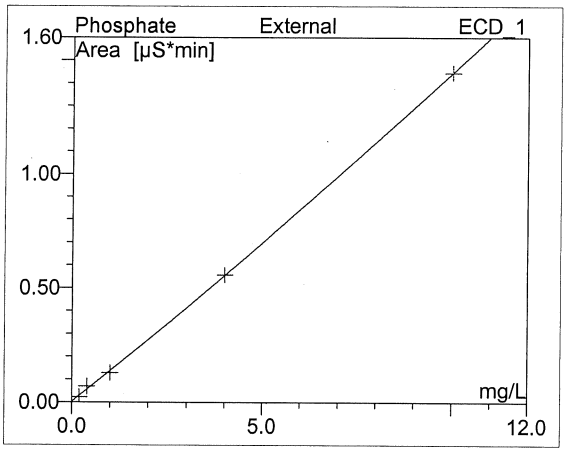
Calibration Batch Report

Sequence:	**081211_1108056_NP**	Inj. Vol.:	**25.0**
Program:	**Program Anions Right**	Operator:	ESAT
Inj. Date/Time:	**06/28/11 10:32**	Run Time:	**15.00**



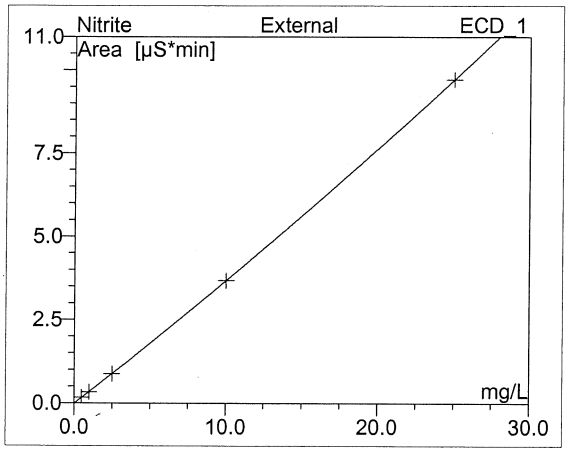


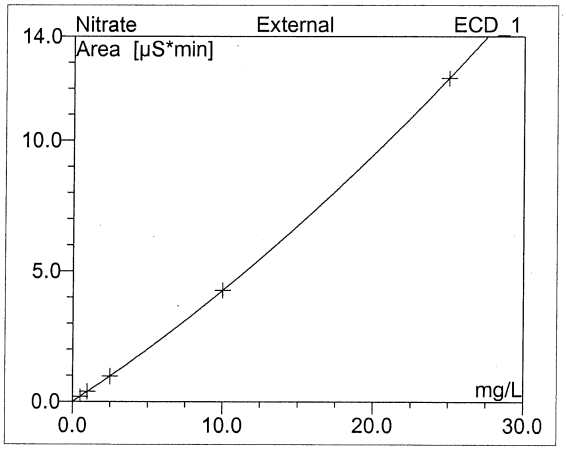


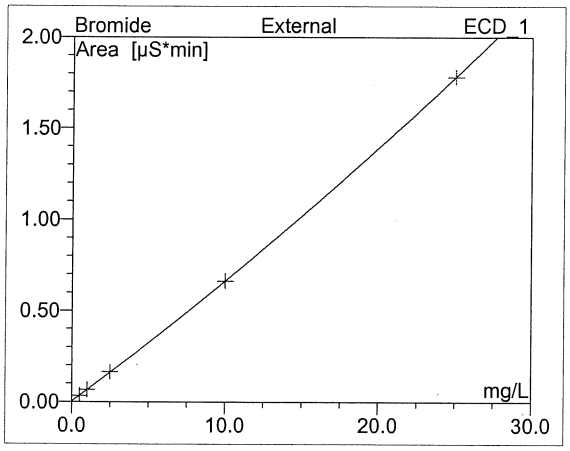


No.	Ret.Time min	Peak Name	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
2	3.02	Fluoride	QOff	5	0.008	0.228	0.003	99.9997
3	4.67	Chloride	QOff	5	-0.122	0.185	0.000	99.9964
4	5.69	Nitrite	QOff	5	-0.019	0.355	0.001	99.9996
5	6.93	Bromide	QOff	5	0.003	0.063	0.000	99.9997
6	7.79	Nitrate	QOff	5	-0.003	0.379	0.005	100.0000
7	10.31	Phosphate	QOff	5	0.001	0.135	0.001	99.9776
8	11.85	Sulfate	QOff	5	-0.147	0.129	0.000	99.9977
AVERAGE:					-0.0399	0.2106	0.0016	99.9958

Sequence:	**081211_1108056_NP**	*Inj. Vol.:*	**25.0**
Program:	**Program Anions Right**	*Operator:*	**n.a.**
Inj. Date/Time:	**06/28/11 10:32**	*Run Time:*	**15.00**



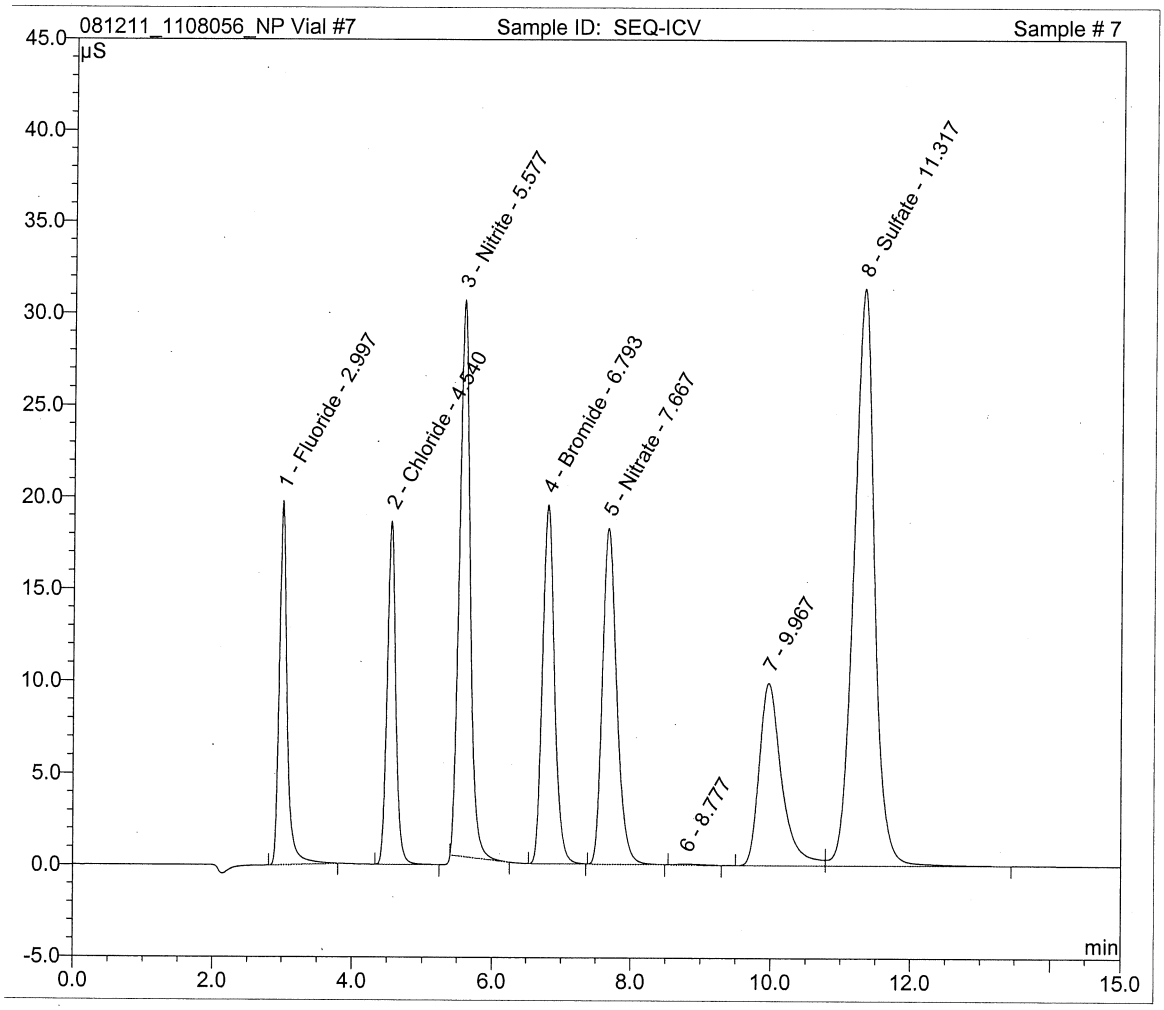




No.	Ret.Time min	Peak Name	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
2	3.02	Fluoride	QOff	5	0.008	0.228	0.003	99.9997
3	4.67	Chloride	QOff	5	-0.122	0.185	0.000	99.9964
4	5.69	Nitrite	QOff	5	-0.019	0.355	0.001	99.9996
5	6.93	Bromide	QOff	5	0.003	0.063	0.000	99.9997
6	7.79	Nitrate	QOff	5	-0.003	0.379	0.005	100.0000
7	10.31	Phosphate	QOff	5	0.001	0.135	0.001	99.9776
8	11.85	Sulfate	QOff	5	-0.147	0.129	0.000	99.9977
AVERAGE:					-0.0399	0.2106	0.0016	99.9958

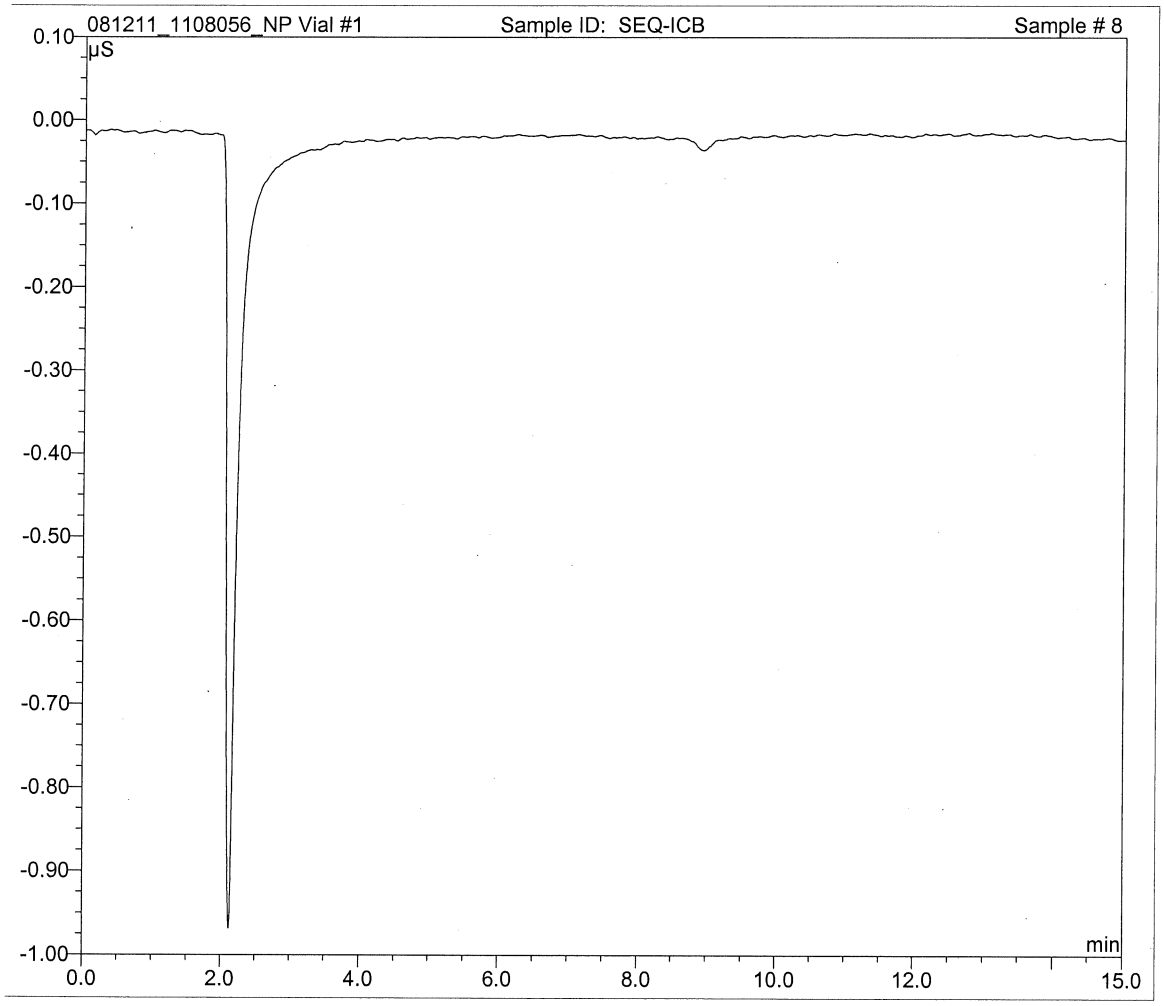
Sample Name:	**SEQ-ICV**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**7**
Inj. Date/Time:	**08.15.11 10:46**	*Run Number:*	**7**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.00	Fluoride	BMB	2.576	19.798	9.8479
2	4.54	Chloride	BMB	2.655	18.670	14.5100
3	5.58	Nitrite	BMB	5.418	30.255	14.4996
4	6.79	Bromide	BMB	3.924	19.525	49.3787
5	7.67	Nitrate	BMB	4.382	18.263	10.2653
8	11.32	Sulfate	MB	10.774	31.381	78.5465



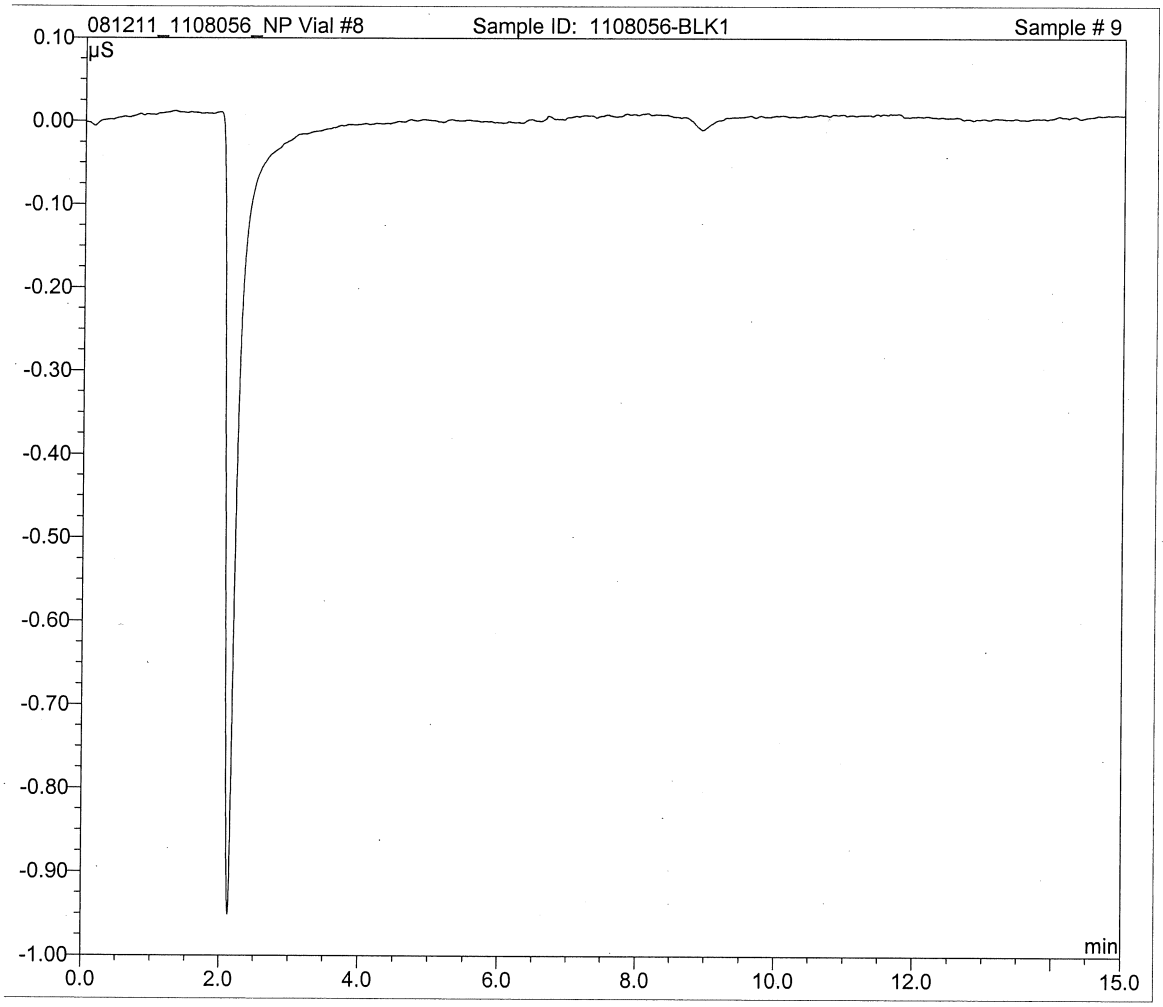
Sample Name:	**SEQ-ICB**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**1**
Inj. Date/Time:	**08.15.11 11:03**	*Run Number:*	**8**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L



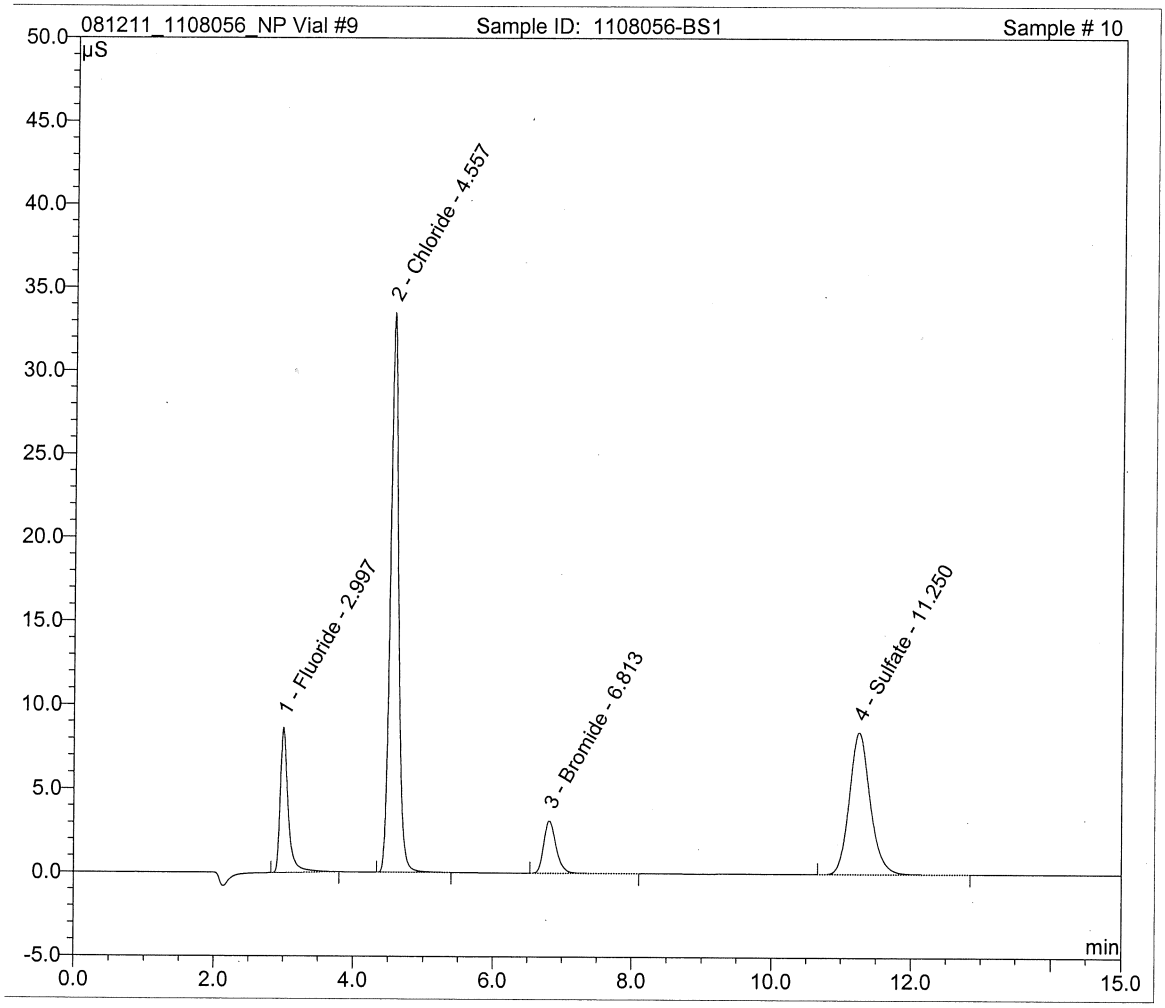
Sample Name:	**1108056-BLK1**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**8**
Inj. Date/Time:	**08.15.11 11:21**	*Run Number:*	**9**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L



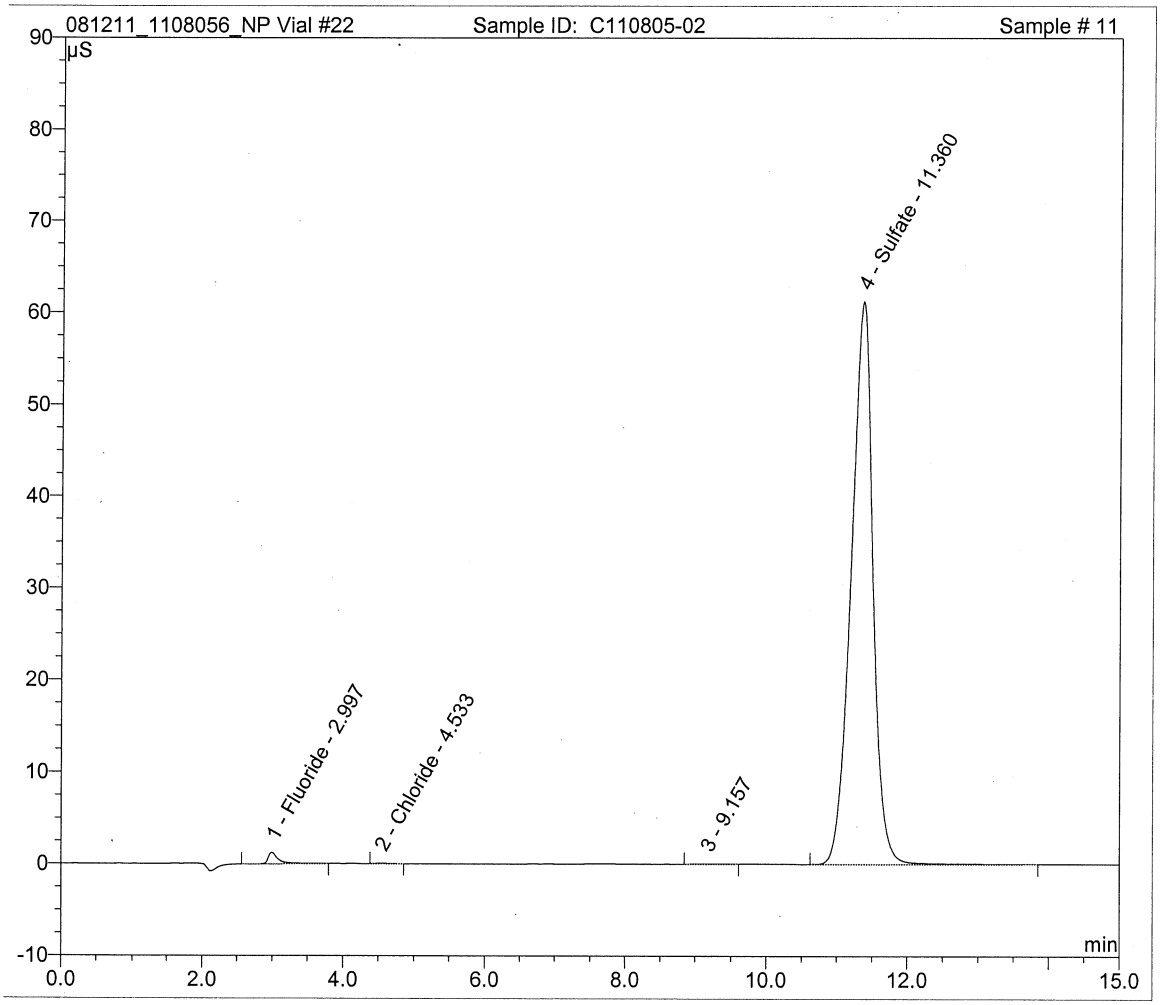
Sample Name:	**1108056-BS1**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**9**
Inj. Date/Time:	**08.15.11 11:39**	*Run Number:*	**10**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.00	Fluoride	BMB	1.139	8.660	4.6436
2	4.56	Chloride	BMB	4.599	33.474	24.1226
3	6.81	Bromide	BMB	0.659	3.143	9.9386
4	11.25	Sulfate	BMB	2.961	8.469	23.5214



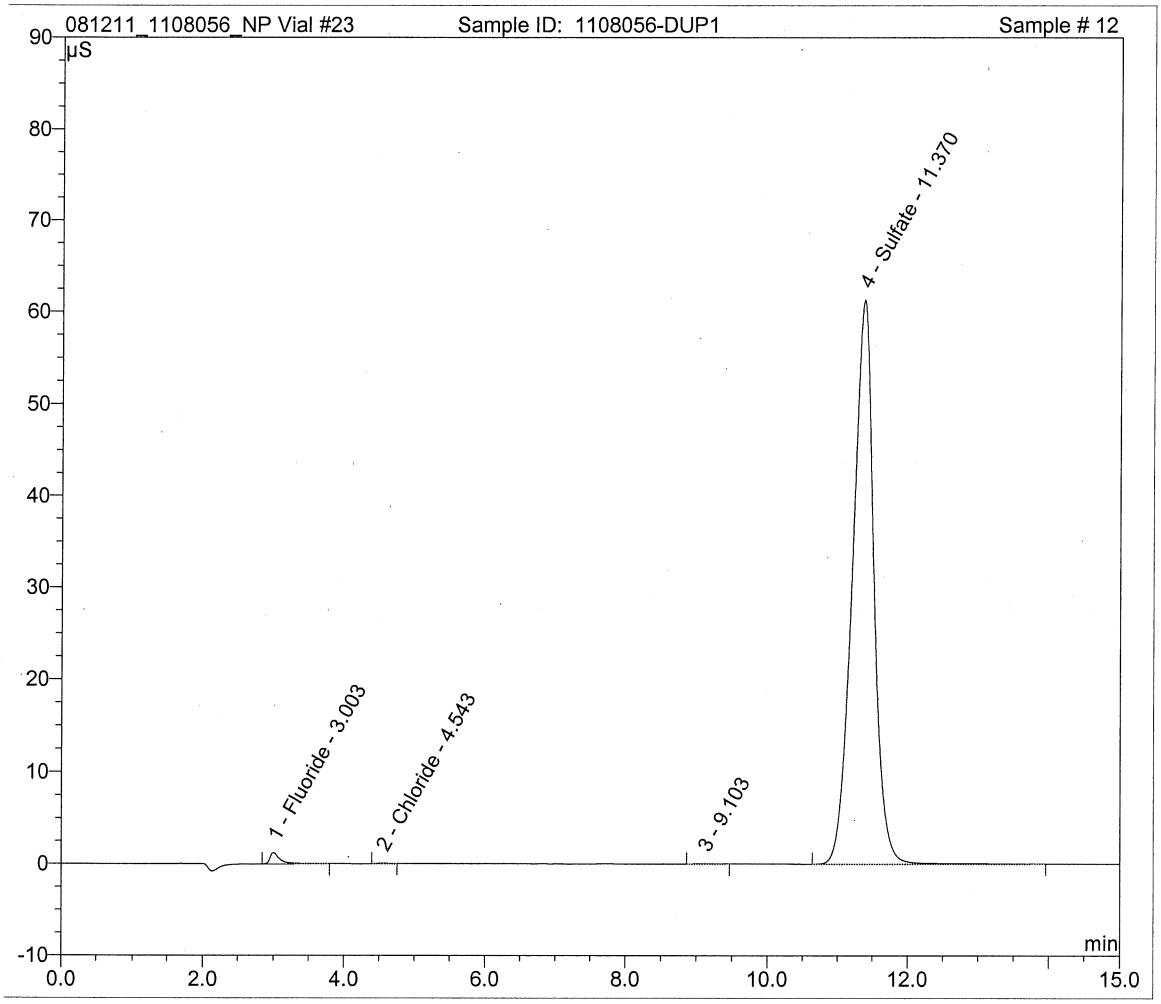
Sample Name:	**C110805-02**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**22**
Inj. Date/Time:	**08.15.11 11:56**	*Run Number:*	**11**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.00	Fluoride	BMB	0.211	1.243	0.8764
2	4.53	Chloride	BMB	0.009	0.062	0.7109
4	11.36	Sulfate	BMB	21.924	61.255	149.2416



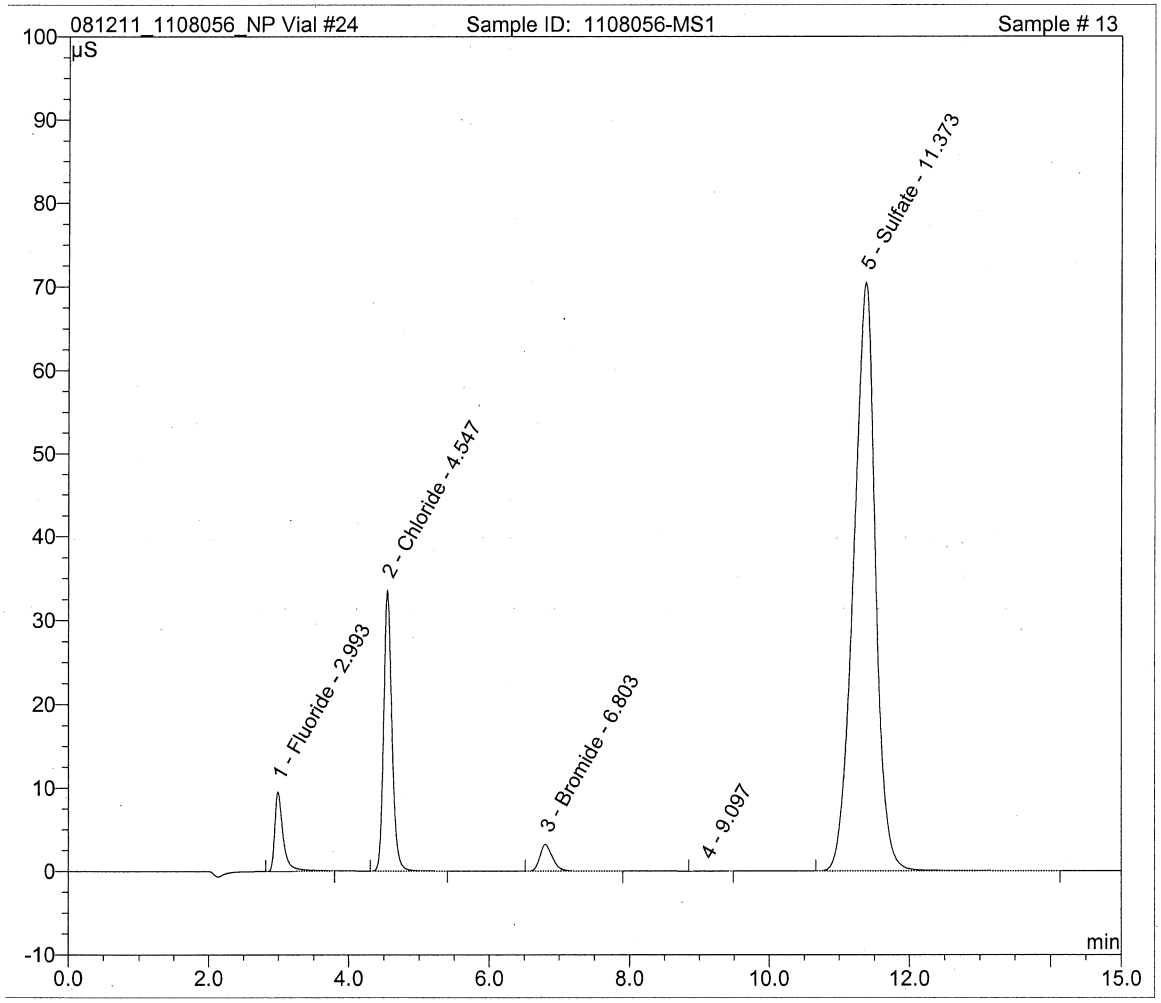
Sample Name:	**1108056-DUP1**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**23**
Inj. Date/Time:	**08.15.11 12:14**	*Run Number:*	**12**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.00	Fluoride	BMB	0.201	1.219	0.8350
2	4.54	Chloride	BMB	0.009	0.060	0.7081
4	11.37	Sulfate	BMB	21.859	61.341	148.8479



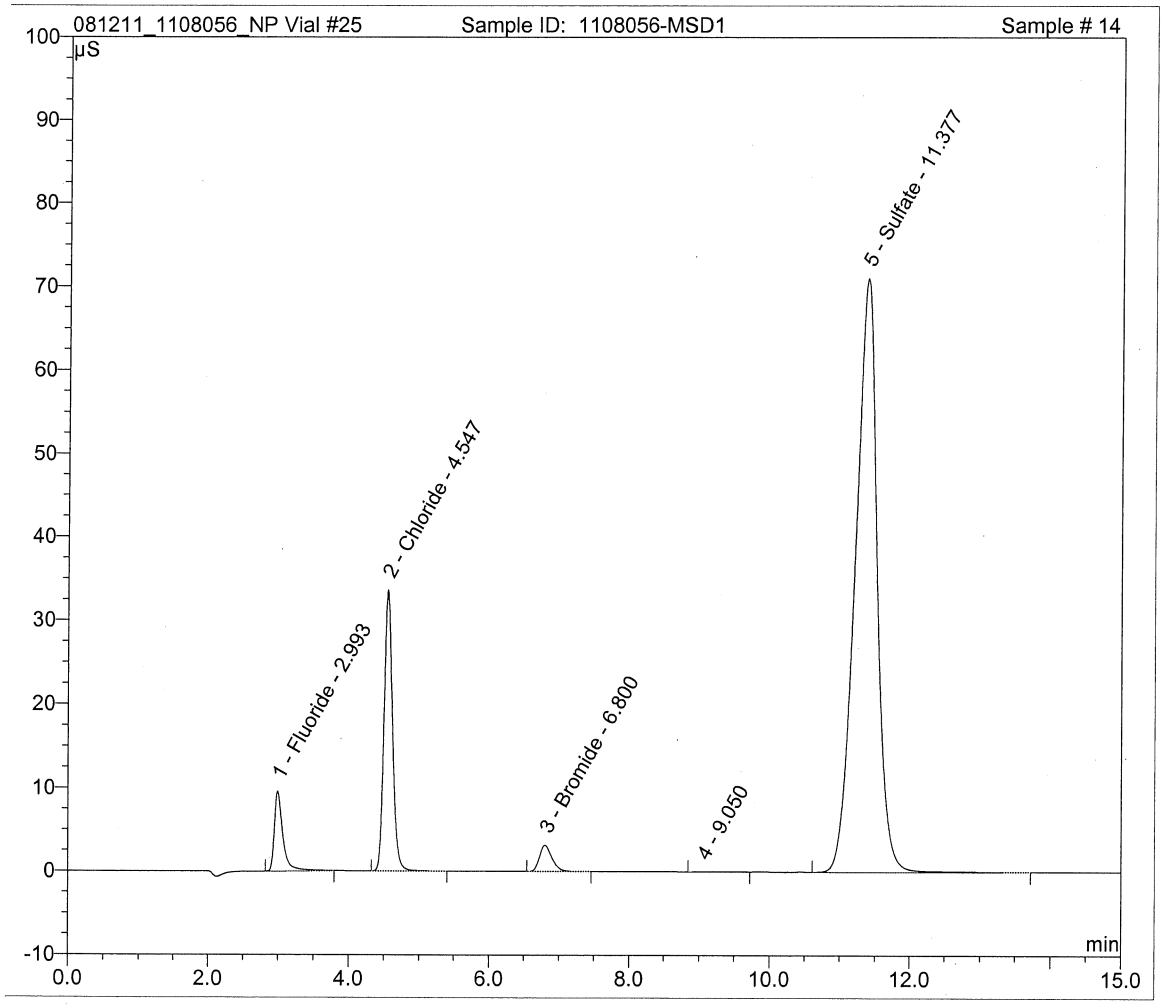
Sample Name:	**1108056-MS1**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**24**
Inj. Date/Time:	**08.15.11 12:31**	*Run Number:*	**13**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	2.99	Fluoride	BMB	1.339	9.537	5.4071
2	4.55	Chloride	BMB	4.652	33.601	24.3778
3	6.80	Bromide	BMB	0.677	3.217	10.2014
5	11.37	Sulfate	BMB	25.533	70.523	170.5678



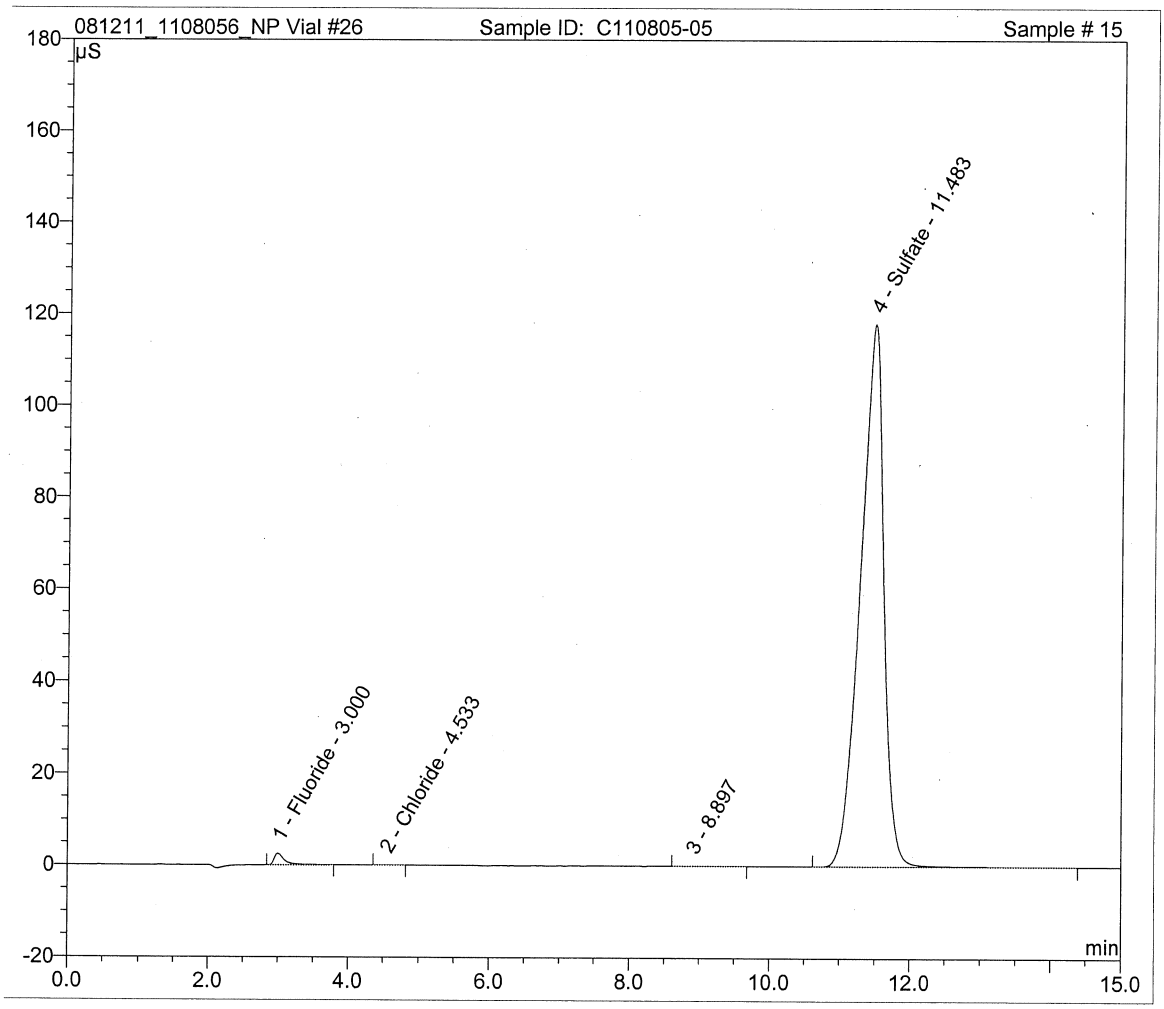
Sample Name:	**1108056-MSD1**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**25**
Inj. Date/Time:	**08.15.11 12:49**	*Run Number:*	**14**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	2.99	Fluoride	BMB	1.344	9.606	5.4264
2	4.55	Chloride	BMB	4.668	33.666	24.4567
3	6.80	Bromide	BMB	0.663	3.156	9.9907
5	11.38	Sulfate	BMB	25.778	71.095	171.9860



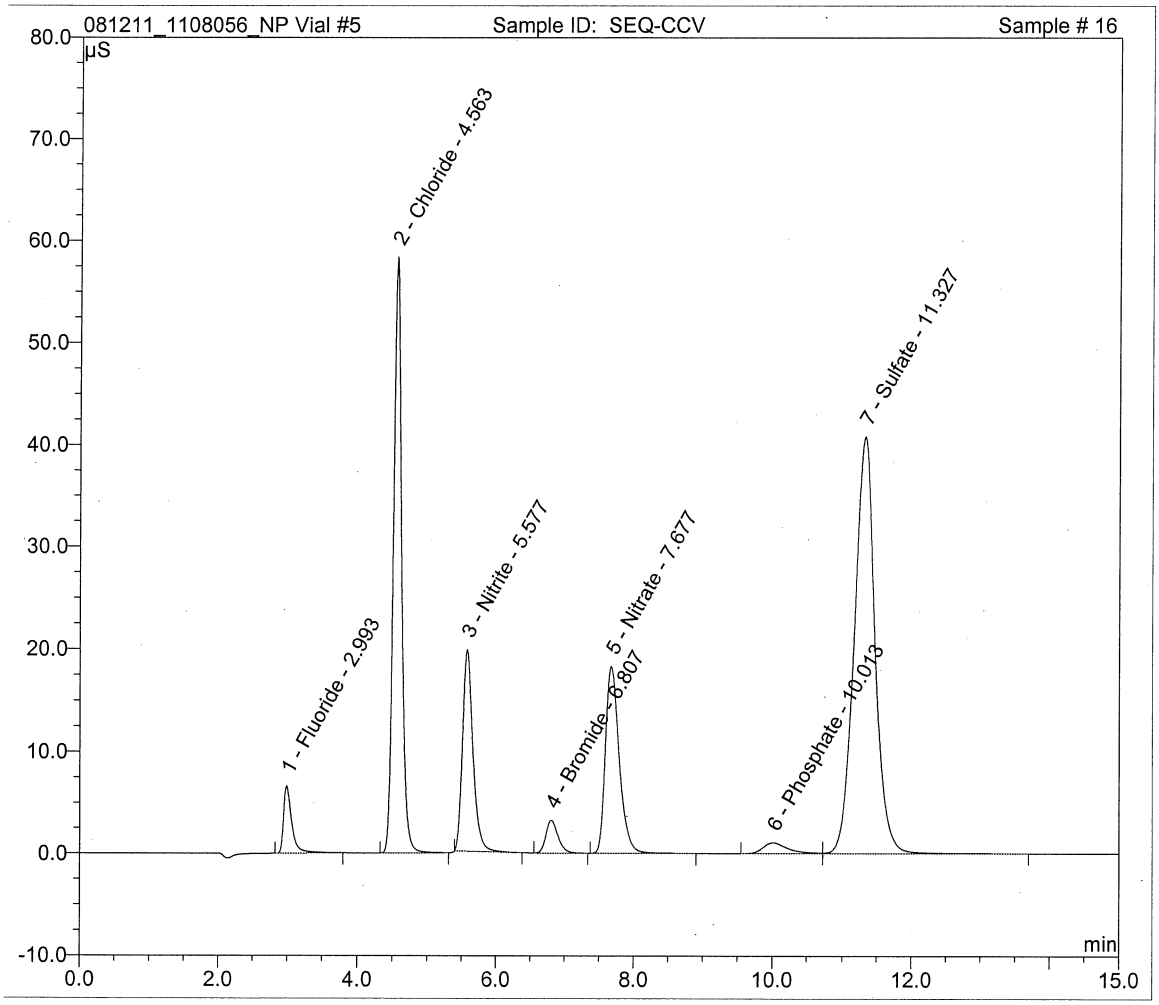
Sample Name:	**C110805-05**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**26**
Inj. Date/Time:	**08.15.11 13:06**	*Run Number:*	**15**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.00	Fluoride	BMB	0.440	2.538	1.8432
2	4.53	Chloride	BMB	0.007	0.048	0.7002
4	11.48	Sulfate	BMB	45.597	118.102	278.7517



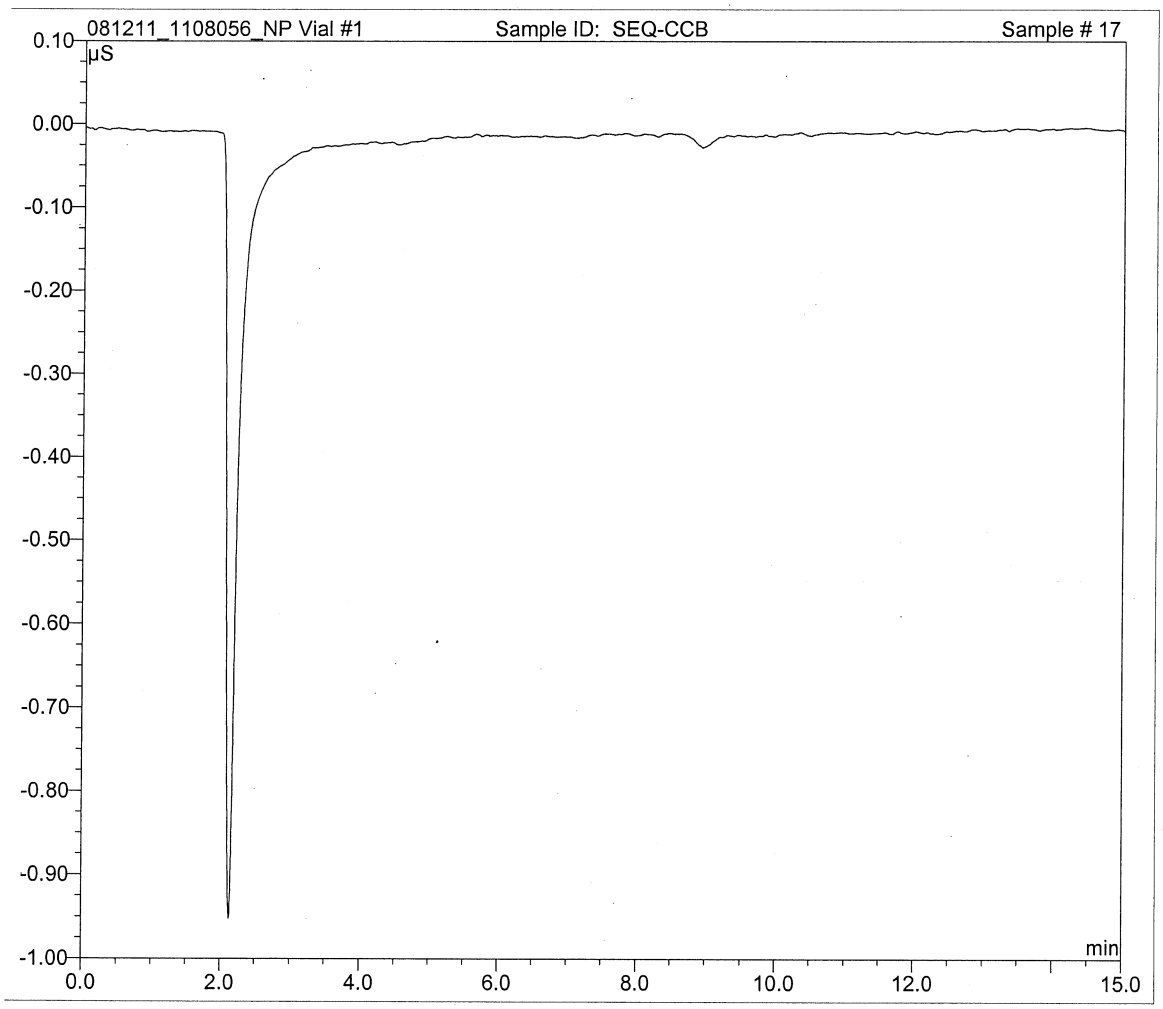
Sample Name:	**SEQ-CCV**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**5**
Inj. Date/Time:	**08.15.11 13:24**	*Run Number:*	**16**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	2.99	Fluoride	BMB	0.903	6.628	3.7217
2	4.56	Chloride	BMB	8.017	58.408	40.1157
3	5.58	Nitrite	BMB	3.520	19.679	9.6085
4	6.81	Bromide	BMB	0.664	3.227	10.0066
5	7.68	Nitrate	BMB	4.293	18.270	10.0776
6	10.01	Phosphate	BM	0.459	1.086	3.3175
7	11.33	Sulfate	MB	14.248	40.856	101.4438



Sample Name:	**SEQ-CCB**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**1**
Inj. Date/Time:	**08.15.11 13:42**	*Run Number:*	**17**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L



Sample Name:	**n.a.**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Stop**	*Vial #:*	**1**
Inj. Date/Time:	**n.a.**	*Run Number:*	**18**

n.a.	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**
n.a.	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**	**n.a.**

081211_1108056_NP Vial #1 Sample ID: STOP Sample # 18

Can't open raw data file "C:\Chromel\data\Right_system\Sequences and Data\2011 ESAT\081211_1108056_NP.SEQ\ECD_1.CHL\48.acd".
The system cannot find the file specified.

PERKIN ELMER OPTIMA 4300DV ICP-OE

Project(s): Rio Argentine / Upper Tenmile July 2011 Date: 9 / 15 / 2011

Work Order(s): C110805 / C110806 TDF: DG-265/264 Analyst: S. Walker

Batch Preparation Information

Digest / Prep	Matrix	Batch ID
TR / Total / Diss.	Water / Soil / Other	1109037 / 1109043

Data Storage

Data File: X:/Metals Data Files/ 2011 / 06264_ 1109

Standard Information

Calibration Std. # 1 = Reagent Blank Solution

ICV: *(LIMS ID: 1041203)*

Prepped: 7-12-11 By: S

CRQL Stock: *(LIMS ID: 1041206)*

Prepped: 4-12-2011 By: SV

CRQL Daily *(LIMS ID: 1041207)*

Prepped: 9-15-11 By: S

Calibration Std. # 2 = ESAT High, LIMS: 1041201

Prepped: 8-26-11 By: S

CCV: 1:2 of 1041201 *(LIMS ID: 1041202)*

Prepped: 9-15-11 By: S

ICSA: 1041204 **Prepped: 4-12-2011**

ICSAB: 1041205 **Prepped: 4-12-2011**

Spike Information

Dissolved Spikes

Sample ID: C110806-01

Sample ID: —

Sample vol: 10 mL

PSS2007-219: 100 uL

QCS-3 Exp: 3-1-2012 (LIMS ID: 1050201)

SS-114-044: 100 uL

Salt Spike Prepped 4-12-2011 *(LIMS ID: 1041104)*

Tot. / Tot. Rec. Spikes

Sample ID: C110806-02

Sample Vol: 50 mL

PSS2007-220: 500 uL

WW-LFS1 Exp: 3-1-2012 *(LIMS ID: 1040736)*

PSS2007-221: 500 uL

WW-LFS2 Exp: 3-1-2012 *(LIMS ID: 1040737)*

Comments / Maintenance

Replace Nebulizer? Y / N New pump tubing? Y / N Replace torch or injector? Y / N

Analytes Reported:

Ag, Al, As, Ba, Be, B, Ca, Cd, Co, Cr, Cu, Fe, K, Mg,

Mn, Mo, Na, Ni, Pb, Sb, Se, SiO2, Sr, Ti, Tl, V, Zn

Sequence ID: 1109047 / 1109048

Lims Entry (Date / Init): 9-15-11 S

2 of 3

TLF-06.01	SOP: QAQ-04.00	Eff. Date: 1/17/2007

ESAT Region 8

Analytical Data Review Form

Analyst / Bench Review – Level I

LIMS: CH0805/CH0806	Project: Rico Argentine / Upper Tenmile July 2011	
TDF: DG-264/265	Matrix: Water	Analysis: Dissolved & Total Recoverable Metals

Method / Instrument QC Parameters				Analytical Batch / Sample Parameters	
☐ Yes ☐ No N/A	Corr. Coef. ≥ 0.995	☒ Yes ☐ No	ICV 90% - 110%	☒ Yes ☐ No	Mth. Blk. (MB) / Prep. BLK (PB) ≤ ± PQL
☒ Yes ☐ No	ICB ≤ ± PQL	☒ Yes ☐ No	CRI 70% - 130%	☒ Yes ☐ No	Blk. Spike (BS) / LCS (SRM) In Control
☒ Yes ☐ No	ICSA Spiked Analytes 80% - 120%			☒ Yes ☐ No	Laboratory Duplicate Analyzed
☒ Yes ☐ No	ICSA Non-Spiked Analytes ≤ ± PQL			☒ Yes ☐ No	MS / MSD Analyzed
☒ Yes ☐ No	ICSAB Spiked Analytes 80% - 120%			☒ Yes ☐ No	Serial Dilution Analyzed
☒ Yes ☐ No	CCBs ≤ ± PQL	☒ Yes ☐ No	CCVs 90% - 110%	☒ Yes ☐ No	Post-Digest Spike Analyzed for Tot. / Tot. Rec.
☒ Yes ☐ No	QA QC Samples Internal Stds. 60% - 125%			☒ Yes ☐ No	Samples Internal Stds. 60% - 125%

Other obvious data quality issues are identified ☐ Yes ☒ No

Describe any anomaly or deficiency not indicated above in the space provided

LIMS Electronic Data Transfer

☒ Yes ☐ No	The instrument data file is uploaded to the X: drive	☒ Yes ☐ No	Instrument data are uploaded into the LIMS
☒ Yes ☐ No	All samples and QC data are present in LIMS	☒ Yes ☐ No	The analyte list for the sequence is complete
Analyst:		Date: 9/15/11	

Peer Review of Analytical Analysis – Level II

Method / Instrument QC Parameters				Analytical Batch / Sample Parameters	
☐ Yes ☐ No N/A	Corr. Coef. ≥ 0.995	☒ Yes ☐ No	ICV 90% - 110%	☒ Yes ☐ No	Mth. Blk. (MB) / Prep. BLK (PB) ≤ ± PQL
☒ Yes ☐ No	ICB ≤ ± PQL	☒ Yes ☐ No	CRI 70% - 130%	☒ Yes ☐ No	Blk. Spike (BS) / LCS (SRM) In Control
☒ Yes ☐ No	ICSA Spiked Analytes 80% - 120%			☒ Yes ☐ No	Laboratory Duplicate Analyzed
☒ Yes ☐ No	ICSA Non-Spiked Analytes ≤ ± PQL			☒ Yes ☐ No	MS / MSD Analyzed
☒ Yes ☐ No	ICSAB Spiked Analytes 80% - 120%			☒ Yes ☐ No	Serial Dilution Analyzed
☒ Yes ☐ No	CCBs ≤ ± PQL	☒ Yes ☐ No	CCVs 90% - 110%	☒ Yes ☐ No	Post-Digest Spike Analyzed for Tot. / Tot. Rec.
☒ Yes ☐ No	QA QC Samples Internal Stds. 60% - 125%			☒ Yes ☐ No	Samples Internal Stds. 60% - 125%

Other obvious data quality issues are identified ☐ Yes ☒ No

Describe any anomaly or deficiency not indicated above in the space provided

LIMS Electronic Data Transfer

☒ Yes ☐ No	The instrument data file is uploaded to the X: drive	☒ Yes ☐ No	Instrument data are uploaded into the LIMS
☒ Yes ☐ No	All samples and QC data are present in LIMS	☒ Yes ☐ No	The analyte list for the sequence is complete
Peer Reviewer:		Date: 09/15/11	

PREPARATION BENCH SHEET

1109043

TechLaw, Inc. - ESAT Region 8

ID 9-15-4

Matrix: Water

Printed: 9/15/2011 8:19:56AM

Date Prepared: 09/14/11 14:50 By: SV

Prepared using: METALS - No Lab Prep Reqd

Lab Number	Analysis	EPA Tag ID	Initial (mL)	Final (mL)	Spike1 ID	ul Spike1	Spike2 ID	ul Spike2	Source ID	QC Code	Extraction Comments
C110805-01 A	DM-Hardness - Calculated	lo Tag Prefix-	50	50						ArgentineShaft	
C110805-03 A	DM-Hardness - Calculated	lo Tag Prefix-	50	50						BlaineTunnel	
C110806-01 A	DM-Hardness - Calculated	lo Tag Prefix-	50	50						R-MS063-NAD-001	
C110805-01 A	ICPOE Diss. Metals-2010	lo Tag Prefix-	50	50						ArgentineShaft	
C110805-03 A	ICPOE Diss. Metals-2010	lo Tag Prefix-	50	50						BlaineTunnel	
C110806-01 A	ICPOE Diss. Metals-2010	lo Tag Prefix-	50	50						R-MS063-NAD-001	
1109043-BLK1	QC		50	50						Blank	
1109043-BS1	QC		10	10	1050201	100				LCS	
1109043-DUP1	QC		50	50					C110806-01	Duplicate	
1109043-MS1	QC		10	10	1050201	100			C110806-01	Matrix Spike	
1109043-MSD1	QC		10	10	1050201	100			C110806-01	Matrix Spike Dup	

ANALYSIS SEQUENCE

1109047

10
9-15-11

Instrument: ICPOE - PE Optima Sequence Date: 09/15/11 00:00 Printed: 9/15/2011 1:30:38PM

Lab Number	Dilut. Factor	Analysis	STD ID	Sample/Std Name	EPA Tag ID	Source Sple	Comments
1109047-ICV1		QC	1041203	Initial Cal Check		-	
1109047-ICB1		QC		Initial Cal Blank		-	
1109047-CRL1		QC	1041207	MRL Check		-	
1109047-IFA1		QC	1041204	Interference Check A		-	
1109047-IFB1		QC	1041205	Interference Check B		-	
1109047-CCV1		QC	1041202	Calibration Check		-	
1109047-CCB1		QC		Calibration Blank		-	
1109043-BLK1		QC		Blank		-	
1109043-BS1		QC		LCS		-	
C110806-01 A		DM-Hardness - Calculated		TR-MS063-NAD-001-(	No Tag Prefix-A		
C110806-01 A		ICPOE Diss. Metals-2010		TR-MS063-NAD-001-(	No Tag Prefix-A		
1109043-DUP1		QC		Duplicate		C110806-01	
1109047-SRD1		QC		Serial Dilution		C110806-01	
1109043-MS1		QC		Matrix Spike		C110806-01	
1109043-MSD1		QC		Matrix Spike Dup		C110806-01	
C110805-01 A		DM-Hardness - Calculated		ArgentineShaft	No Tag Prefix-A		
C110805-01 A		ICPOE Diss. Metals-2010		ArgentineShaft	No Tag Prefix-A		
C110805-03 A		DM-Hardness - Calculated		BlaineTunnel	No Tag Prefix-A		
C110805-03 A		ICPOE Diss. Metals-2010		BlaineTunnel	No Tag Prefix-A		
1109047-CCV2		QC	1041202	Calibration Check		-	
1109047-CCB2		QC		Calibration Blank		-	

PREPARATION BENCH SHEET

1109037

TD
9-15-11

Matrix: Water

TechLaw, Inc. - ESAT Region 8

Printed: 9/15/2011 8:18:58AM

Date Prepared: 09/13/11 12:06 By: SV

Prepared using: METALS - 200.2 - TR Metals

Lab Number	Analysis	EPA Tag ID	Initial (mL)	Final (mL)	Spike1 ID	ul Spike1	Spike2 ID	ul Spike2	Source ID	QC Code	Extraction Comments
C110805-04 A	CP-MS Tot. Rec. Metals-201	No Tag Prefix-	50	50						BlaineTunnel	
C110806-02 A	CP-MS Tot. Rec. Metals-201	No Tag Prefix-	50	50						R-MS063-NAD-001	
C110805-04 A	CPOE Tot. Rec Metals-201(	No Tag Prefix-	50	50						BlaineTunnel	
C110806-02 A	CPOE Tot. Rec Metals-201(	No Tag Prefix-	50	50						R-MS063-NAD-001	
1109037-BLK1	QC		50	50						Blank	
1109037-BLK2	QC		50	50						Blank	
1109037-DUP1	QC		50	50					C110806-02	Duplicate	
1109037-DUP2	QC		50	50					C110806-02	Duplicate	
1109037-MS1	QC		50	50	1040736	500	1040737	500	C110806-02	Matrix Spike	
1109037-MS2	QC		50	50	1040736	500	1040737	500	C110806-02	Matrix Spike	
1109037-MSD1	QC		50	50	1040736	500	1040737	500	C110806-02	Matrix Spike Dup	
1109037-MSD2	QC		50	50	1040736	500	1040737	500	C110806-02	Matrix Spike Dup	
1109037-PS1	QC		10	10	1050201	100			C110806-02	Post Spike	
1109037-PS2	QC		10	10	1050201	100			C110806-02	Post Spike	
1109037-SRM1	QC		50	50	1040747	500	1040748	500		Reference	
1109037-SRM2	QC		50	50	1040747	500	1040748	500		Reference	

ANALYSIS SEQUENCE

1109048

ID 9/15 M

Instrument: ICPOE - PE Optima Sequence Date: 09/15/11 00:00 Printed: 9/15/2011 1:33:40PM

Lab Number	Dilut. Factor	Analysis	STD ID	Sample/Std Name	EPA Tag ID	Source Sple	Comments
1109048-ICV1		QC	1041203	Initial Cal Check		-	
1109048-ICB1		QC		Initial Cal Blank		-	
1109048-CRL1		QC	1041207	MRL Check		-	
1109048-IFA1		QC	1041204	Interference Check A		-	
1109048-IFB1		QC	1041205	Interference Check B		-	
1109048-CCV1		QC	1041202	Calibration Check		-	
1109048-CCB1		QC		Calibration Blank		-	
1109048-CCV2		QC	1041202	Calibration Check		-	
1109048-CCB2		QC		Calibration Blank		-	
1109037-BLK1		QC		Blank		-	
1109037-SRM1		QC		Reference		-	
C110806-02 A		CPOE Tot. Rec Metals-201(		TR-MS063-NAD-001-(	No Tag Prefix-B		
1109037-DUP1		QC		Duplicate		C110806-02	
1109048-SRD1		QC		Serial Dilution		C110806-02	
1109037-MS1		QC		Matrix Spike		C110806-02	
1109037-MSD1		QC		Matrix Spike Dup		C110806-02	
1109037-PS1		QC		Post Spike		C110806-02	
C110805-04 A		CPOE Tot. Rec Metals-201(		BlaineTunnel	No Tag Prefix-B		
1109048-CCV3		QC	1041202	Calibration Check		-	
1109048-CCB3		QC		Calibration Blank		-	

Analytical Sequence

Method : ESAT_2009_1.1

Seq.	Loc.		Sample ID
1	1		Cal Blank
2	9		High Std
3	10	QC	SEQ-ICV
4	1	QC	SEQ-ICB
5	11	QC	SEQ-CRL
6	12	QC	SEQ-IFA
7	13	QC	SEQ-IFB
8	3	QC	SEQ-CCV
9	1	QC	SEQ-CCB
10	26		1109043-BLK1
11	27		1109043-BS1
12	28		C110806-01
13	29		1109043-DUP1
14	30		SEQ-SRD1 @5X
15	31		1109043-MS1
16	32		1109043-MSD1
17	33		C110805-01 @5X
18	34		C110805-03 @5X
19	35		blank
20	3	QC	SEQ-CCV
21	1	QC	SEQ-CCB
22	36		1109037-BLK1
23	37		1109037-SRM1
24	38		C110806-02
25	39		1109037-DUP1
26	40		SEQ-SRD1 @5X
27	41		1109037-MS1
28	42		1109037-MSD1
29	43		1109037-PS1
30	44		C110805-04 @5X
31	45		blank
32	3	QC	SEQ-CCV
33	1	QC	SEQ-CCB

ID
9/15/11

Sample Information Detail Report
Document Name: DG265_1109037_OED_TR_110915

File Description
DG-264 Rico-Argentine DG-265 Upper Ten Mile Aug 2011

Parameters Common to All Samples

Batch ID	1109043/1109037
Analyst Name	S.Walker
Volume Units	mL
Weight Units	g

Parameters That Vary By Sample

Sample No	A/S Location	Sample ID	Remarks
1	26	1109043-BLK1	
2	27	1109043-BS1	
3	28	C110806-01	
4	29	1109043-DUP1	
5	30	SEQ-SRD1 @5X	
6	31	1109043-MS1	
7	32	1109043-MSD1	
8	33	C110805-01 @5X	
9	34	C110805-03 @5X	
10	35	blank	
11	36	1109037-BLK1	
12	37	1109037-SRM1	
13	38	C110806-02	
14	39	1109037-DUP1	
15	40	SEQ-SRD1 @5X	
16	41	1109037-MS1	
17	42	1109037-MSD1	
18	43	1109037-PS1	
19	44	C110805-04 @5X	
20	45	blank	

Sample No	Aliquot Volume	Diluted To Vol.	Matrix Check Sample
1			
2			Recovery 3 of 1
3			
4			Duplicate of 3
5	2	10	5X Dilution of 3
6			Recovery 3 of 3
7			Recovery 3 of 3
8	2	10	
9	2	10	
10			
11			
12			Recovery 2 of 11
13			
14			Duplicate of 13
15	2	10	5X Dilution of 13
16			Recovery 1 of 13
17			Recovery 1 of 13
18			Recovery 3 of 13
19	2	10	
20			

Analysis Begun

Start Time: 9/15/2011 8:40:54 AM **Plasma On Time: 9/15/2011 8:04:38 AM**
Logged In Analyst: esat **Technique: ICP Continuous**
Spectrometer Model: Optima 4300 DV, S/N 077N3082602Autosampler Model: AS-93plus

Sample Information File: C:\pe\Administrator\Sample Information\2011\TenMile Creek\DG265_1109037_OED_TR_1
Batch ID: 1109043/1109037
Results Data Set: DG265_1109037_110915
Results Library: C:\pe\Administrator\Results\Results.mdb

Sequence No.: 1 **Autosampler Location: 1**
Sample ID: Cal Blank **Date Collected: 9/15/2011 8:40:54 AM**
Analyst: **Data Type: Original**
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Nebulizer Parameters: Cal Blank

Analyte	Back Pressure	Flow
All	216.0 kPa	0.80 L/min

VD 9-15-11

Mean Data: Cal Blank

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Sc Axial	3265924.5	16385.76	0.50%	100.0	%
Sc Radial	414946.1	2555.41	0.62%	100.0	%
Ag 328.068†	-218.1	18.50	8.48%	[0.00]	ug/L
Al 396.153†	46.2	12.56	27.17%	[0.00]	ug/L
As 193.696†	-8.9	0.92	10.36%	[0.00]	ug/L
Ba 233.527†	-13.2	1.27	9.63%	[0.00]	ug/L
Be 313.107†	-585.9	5.30	0.90%	[0.00]	ug/L
B 249.677†	-260.6	2.31	0.89%	[0.00]	ug/L
Ca 317.933†	55.7	5.59	10.04%	[0.00]	ug/L
Cd 214.440†	-1.3	0.63	47.27%	[0.00]	ug/L
Co 228.616†	-26.7	1.64	6.14%	[0.00]	ug/L
Cr 267.716†	2.9	2.95	101.18%	[0.00]	ug/L
Cu 324.752†	5977.0	28.10	0.47%	[0.00]	ug/L
Fe 238.204†	10.8	1.50	13.87%	[0.00]	ug/L
K 766.490†	384.1	19.84	5.16%	[0.00]	ug/L
Mg 285.213†	19.3	1.58	8.20%	[0.00]	ug/L
Mn 257.610†	101.9	2.86	2.80%	[0.00]	ug/L
Mo 202.031†	-4.9	0.59	12.20%	[0.00]	ug/L
Na 589.592†	110.5	6.85	6.19%	[0.00]	ug/L
Ni 231.604†	118.6	4.53	3.82%	[0.00]	ug/L
Pb 220.353†	-9.1	1.28	13.99%	[0.00]	ug/L
Sb 206.836†	10.2	0.21	2.05%	[0.00]	ug/L
Se 196.026†	3.8	3.12	82.59%	[0.00]	ug/L
SiO2 251.603†	133.2	5.02	3.77%	[0.00]	ug/L
Sr 421.552†	7726.0	47.27	0.61%	[0.00]	ug/L
Ti 334.940†	35.0	5.01	14.32%	[0.00]	ug/L
Tl 190.801†	-5.7	0.94	16.60%	[0.00]	ug/L
V 290.880†	3150.4	12.21	0.39%	[0.00]	ug/L
Zn 206.200†	-5.1	2.41	46.98%	[0.00]	ug/L