Rico-Argentine_Waters_NOV 2013 Due: 12/15/13
TDF: A-025 1053 LIMS: C131107

1769941 - R8 SDMS

Deliverable Submission and Evaluation Form

EPA Region 8 ESAT

Contractor: TechLaw | Updated: 10/28/13 | Contract No: EP-W-13-028

Submission Information (to be completed by ESAT):

Task Order: 0002 - Analytical Support and Data Validation					
DCN:	EP8 - 1 - 1053				
TDF:	A025	Line Item:	All	TDF Status:	In Progress
Submission Date: 12/12/2013					
Submitted By: Holly Sprunger, ESAT Environmental Scientist					
Deliverable Description:					
Rico-Argentine_Waters_NOV 2013					
Submitter Comments:					
Hardcopy Data Report and Hardcopy Raw Data + CD-ROM with Data Report .pdf, Scribe EXCEL EDD, and Raw Data .pdf					

Evaluation Information (to be completed by EPA):

Review Date: 1/7/14	
Reviewed by: [signature]	
Evaluation:	√ This deliverable is considered acceptable.
	This deliverable requires revisions as noted below or per attached.
Evaluation Comments:	
Completeness Check only	

1053

TLF-05.04	SOP: QAQ-04.00	Eff. Date: 07/20/2012

ESAT Region 8

Data Package Completeness and Tracking Form

The attached data package has been reviewed for completeness for the following items by the ESAT Document Control Officer and the ESAT Region 8 Manager

LIMS: C131107	Project Name: Rico - Argentine _ Waters _ NOV 2013
TDF: A-025	Due Date: 12/15/2013

Data Package Deliverable Element	ESAT Mgmt. / DCO / QAQC Rev.	
ESAT Region 8 Final Report Review Form attached to this page	☒	Initials: HS
ESAT Region 8 Data Package Chain of Custody Form	☒	Initials:
DCN	☒	Initials:
LIMS Report	☒	Initials:
MDL Forms for ICP-OE & ICP-MS	☒	Initials:
Hardness Sample Calculation	☒	Initials:
Sample Cross Reference	☒	Initials:
Copy of Field COC & project TDF	☒	Initials:
Case Narrative Reviewed	☑	Initials:
CD-ROM: * EDD * LIMS Report * Standards COAs * Raw Data	☒	Initials: HS

Data Package Tracking

Destination	Date	Initials
Final Report Complete	12/12/2013	HS
LIMS Tracking Updated		
Package to ESAT Mgmt. For Approval		
Package to DCO for CD-ROM and EPA Delivery	12/12/2013	
CD ROM Completed and Attached to Deliverable	12/16/2013	HS
Package Delivered to EPA		
Signed DCN Returned		

TLF-07.01	SOP: QAQ-04.00	Eff. Date: 1/17/2007

ESAT Region 8

Final Report Review Form

LIMS: C13407	Project: Rio Arzafina Waters Nov 2013
TDF: A-025	Due Date: 12/15/2013

QA/QC Review – Level III

Compare TDF to performed analysis / Ensure all analyses are complete	☒ Yes	☐ No
Review each Analytical Data Review form noting discrepancies for narrative	☒ Yes	☐ No
Examine each analytical sequence in LIMS using Data Entry Review application	☒ Yes	☐ No
Generate draft report, print QC section	☒ Yes	☐ No
Confirm presence of each analytical batch, QC samples	☒ Yes	☐ No
Examine analytical results (Form I) for accuracy and completeness	☒ Yes	☐ No
Check spike recoveries of LCSs, matrix spikes and post-digestion spikes	☒ Yes	☐ No
Verify serial dilution %D and duplicate RPD for each metals batch	☒ Yes	☐ No

Narrative Comments

None.

Review By: [signature]	Date: 12/11/2013

ESAT Management Review – Level IV

All analytical data and deliverable review forms present and complete	☑ Yes	☐ No
COC copy, received temp. noted, preservatives noted, signature present, holding times met	☑ Yes	☐ No
Copy of TDF present, Analytical requirements met	☑ Yes	☐ No
Case narrative checked for spelling, grammar, technical content and completeness	☑ Yes	☐ No
10% Validation of raw data to reported data on Form Ones	☑ Yes	☐ No
Standard Traceability COAs and ICP / ICP-MS MDL forms present	☑ Yes	☐ No
Final Report cover letter including DCN present	☑ Yes	☐ No
Deficiencies noted requiring correction before delivery to EPA Project Officer	☑ Yes	☐ No

Manager Review Comments

None.

Review By: [signature]	Date: 12/12/2013
Corrections By:	Date:

WORK ORDER

Printed: 11/18/2013 8:43:44AM

C131107

TechLaw, Inc. - ESAT Region 8

Client:	Superfund	Project Manager:	Scott VanOvermeiren
Project:	Rico-Argentine_Waters_NOV 2013_A-025	Project Number:	A-025

Report To:
Superfund
Steve Way
1595 Wynkoop Street
Denver, CO 80202
Phone: (303) 312-7720
Fax: (303) 312-7801

Invoice To:
Superfund
Steve Way
1595 Wynkoop Street
Denver, CO 80202
Phone :(303) 312-7720
Fax: (303) 312-7801

Date Due:	12/15/13 00:00 (30 day TAT)		
Received By:	Kelsey Bartling	Date Received:	11/15/13 10:50
Logged In By:	Kelsey Bartling	Date Logged In:	11/18/13 08:41

Samples Received at:	2°C		
Custody Seals	Yes	Received On Ice	Yes
Containers Intact	Yes		
COC/Labels Agree	Yes		
Preservation Confin	Yes		

Analysis	Due	TAT	Expires	Comments
C131107-01 CHV-101U [Water] Sampled 11/13/13 09:46 Dateline				
Dissolved Metals + Hardness	12/06/13 00:00	21	05/12/14 15:46	
C131107-02 CHV-101U [Water] Sampled 11/13/13 09:46 Dateline				
Total Recoverable Metals	12/06/13 00:00	21	05/12/14 15:46	
C131107-03 CHV-101U [Water] Sampled 11/13/13 09:46 Dateline				
WC - Anions by Ion Chromatography 2(	12/15/13 00:00	30	12/11/13 14:46	
C131107-04 DR-1 [Water] Sampled 11/13/13 15:47 Dateline				
Dissolved Metals + Hardness	12/06/13 00:00	21	05/12/14 21:47	

WORK ORDER

Printed: 11/18/2013 8:43:44AM

C131107

TechLaw, Inc. - ESAT Region 8

Client:	Superfund	Project Manager:	Scott VanOvermeiren
Project:	Rico-Argentine_Waters_NOV 2013_A-025	Project Number:	A-025

Analysis	Due	TAT	Expires	Comments
C131107-05 DR-1 [Water] Sampled 11/13/13 15:47 Dateline				
Total Recoverable Metals	12/06/13 00:00	21	05/12/14 21:47	
C131107-06 DR-1 [Water] Sampled 11/13/13 15:47 Dateline				
WC - Anions by Ion Chromatography 2(	12/15/13 00:00	30	12/11/13 20:47	
C131107-07 DR-2 [Water] Sampled 11/13/13 14:35 Dateline				
Dissolved Metals + Hardness	12/06/13 00:00	21	05/12/14 20:35	
C131107-08 DR-2 [Water] Sampled 11/13/13 14:35 Dateline				
Total Recoverable Metals	12/06/13 00:00	21	05/12/14 20:35	
C131107-09 DR-3 [Water] Sampled 11/13/13 10:16 Dateline				
Dissolved Metals + Hardness	12/06/13 00:00	21	05/12/14 16:16	
C131107-10 DR-3 [Water] Sampled 11/13/13 10:16 Dateline				
Total Recoverable Metals	12/06/13 00:00	21	05/12/14 16:16	
C131107-11 DR-3 [Water] Sampled 11/13/13 10:16 Dateline				
WC - Anions by Ion Chromatography 2(	12/15/13 00:00	30	12/11/13 15:16	
C131107-12 DR-4 [Water] Sampled 11/13/13 11:10 Dateline				
Dissolved Metals + Hardness	12/06/13 00:00	21	05/12/14 17:10	
C131107-13 DR-4 [Water] Sampled 11/13/13 11:10 Dateline				
Total Recoverable Metals	12/06/13 00:00	21	05/12/14 17:10	
C131107-14 DR-5 [Water] Sampled 11/13/13 15:10 Dateline				
Dissolved Metals + Hardness	12/06/13 00:00	21	05/12/14 21:10	

WORK ORDER

Printed: 11/18/2013 8:43:44AM

C131107

TechLaw, Inc. - ESAT Region 8

Client: Superfund
Project: Rico-Argentine_Waters_NOV 2013_A-025

Project Manager: Scott VanOvermeiren
Project Number: A-025

Analysis	Due	TAT	Expires	Comments
C131107-15 DR-5 [Water] Sampled 11/13/13 15:10 Dateline				
Total Recoverable Metals	12/06/13 00:00	21	05/12/14 21:10	
C131107-16 DR-6 [Water] Sampled 11/13/13 14:08 Dateline				
Dissolved Metals + Hardness	12/06/13 00:00	21	05/12/14 20:08	
C131107-17 DR-6 [Water] Sampled 11/13/13 14:08 Dateline				
Total Recoverable Metals	12/06/13 00:00	21	05/12/14 20:08	
C131107-18 DR-6 [Water] Sampled 11/13/13 14:08 Dateline				
WC - Anions by Ion Chromatography 2	12/15/13 00:00	30	12/11/13 19:08	
C131107-19 DR-7 [Water] Sampled 11/13/13 12:56 Dateline				
Dissolved Metals + Hardness	12/06/13 00:00	21	05/12/14 18:56	
C131107-20 DR-7 [Water] Sampled 11/13/13 12:56 Dateline				
Total Recoverable Metals	12/06/13 00:00	21	05/12/14 18:56	
C131107-21 DR-7 [Water] Sampled 11/13/13 12:56 Dateline				
WC - Anions by Ion Chromatography 2	12/15/13 00:00	30	12/11/13 17:56	
C131107-22 MW-109S [Water] Sampled 11/13/13 13:41 Dateline				
Dissolved Metals + Hardness	12/06/13 00:00	21	05/12/14 19:41	
C131107-23 MW-109S [Water] Sampled 11/13/13 13:41 Dateline				
Total Recoverable Metals	12/06/13 00:00	21	05/12/14 19:41	
C131107-24 MW-109S [Water] Sampled 11/13/13 13:41 Dateline				
WC - Anions by Ion Chromatography 2	12/15/13 00:00	30	12/11/13 18:41	

C131107

TechLaw, Inc. - ESAT Region 8

Client: Superfund
Project: Rico-Argentine_Waters_NOV 2013_A-025

Project Manager: Scott VanOvermeiren
Project Number: A-025

Analysis	Due	TAT	Expires	Comments
C131107-25 MW-110 [Water] Sampled 11/13/13 13:00 Dateline				
Dissolved Metals + Hardness	12/06/13 00:00	21	05/12/14 19:00	
C131107-26 MW-110 [Water] Sampled 11/13/13 13:00 Dateline				
Total Recoverable Metals	12/06/13 00:00	21	05/12/14 19:00	
C131107-27 MW-110 [Water] Sampled 11/13/13 13:00 Dateline				
WC - Anions by Ion Chromatography 2(	12/15/13 00:00	30	12/11/13 18:00	
C131107-28 MW-2D [Water] Sampled 11/13/13 10:58 Dateline				
Dissolved Metals + Hardness	12/06/13 00:00	21	05/12/14 16:58	
C131107-29 MW-2D [Water] Sampled 11/13/13 10:58 Dateline				
Total Recoverable Metals	12/06/13 00:00	21	05/12/14 16:58	
C131107-30 MW-3D [Water] Sampled 11/13/13 11:46 Dateline				
Dissolved Metals + Hardness	12/06/13 00:00	21	05/12/14 17:46	
C131107-31 MW-3D [Water] Sampled 11/13/13 11:46 Dateline				
Total Recoverable Metals	12/06/13 00:00	21	05/12/14 17:46	

Analysis groups included in this work order

Dissolved Metals + Hardness

ICPOE Diss. Metals ICPMS Diss. Metals DM-Hardness - Calculated

Total Recoverable Metals

ICPOE Tot. Rec. Metals ICPMS Tot. Rec. Metals

Reviewed By Date

C131107

ESAT Technical Direction Form

Contract No. EPW13028
EPA Region 8

Site ID: 08BU
TDF ID: A-025

Date Issued: 11/12/2013
Date Updated:

Date Closed By:

Name: Rico Argentine 2014 Analytical Support Now

Details: The Contractor shall analyze approximately 12 surface water samples collected from the Rico Argentine St. Louis Tunnel Superfund site as indicated in the Analytical Information Section. The samples will be collected by the R8 START Contractor Weston Solutions (Jan Christner) and sent to the ESAT R8 Lab the week ending 11/22/13.

TO02/Subtask 02b: Inorganic Chemistry

The site RPM is Steve Way.

Analytical Information:

MATRIX

☒ Water ☐ Soils ☐ Vegetation ☐ Biota

WET CHEM

☐ TSS ☐ TDS ☐ DOC ☐ Alk ☒ Chloride ☒ Sulfate ☒ Fluoride ☒ Nitrate ☒ Nitrite
Other Report as combined NO2-NO3

METALS

☒ Dissolved ☒ Total Recoverable ☐ Total ☒ Hardness (Calc)

200.7: ☐ Ag ☒ Al ☐ As ☐ Ba ☒ Be ☐ B ☒ Ca ☐ Cd ☐ Co ☐ Cr ☐ Cu ☒ Fe ☒ K ☒ Mg
☒ Mn ☐ Mo ☒ Na ☐ Ni ☐ Pb ☐ Sb ☐ Se ☐ Sr ☐ Ti ☐ Tl ☐ V ☒ Zn ☐ SiO2

200.8: ☒ Ag ☒ Al ☒ As ☒ Ba ☒ Be ☒ Cd ☒ Co ☒ Cr ☒ Cu ☒ Mn ☒ Mo ☒ Ni ☒ Pb ☒ Sb
☒ Se ☒ Th ☒ Tl ☒ U ☒ V ☒ Zn

7470/7471/747 ☐ Hg

12/10/13

FIBERS

☐ PLM ☐ TEM

Deliverables

ID	*Description*	*Due Date*	*Submission Date*
1	Provide final deliverable package to Task Monitor no later than 30 days after delivery of samples.		

12/12/13

USEPA
DateShipped: 11/14/2013
CarrierName: FedEx
AirbillNo:

A-025

CHAIN OF CUSTODY RECORD
Site #: 08BU
Contact Name: Jan Christner
Contact Phone: 505-269-1925

No: 8-111413-111939-0001
Cooler #:
Lab: ESAT
Lab Phone: 303-312-7798

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	08BU-0001	DR-1	Dissolved Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0001	DR-1	Total Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0001	DR-1	ESAT Anions	Surface Water	11/13/2013	1	500 mL poly	4 C	N
	08BU-0002	DR-2	Dissolved Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0002	DR-2	Total Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0003	DR-3	Dissolved Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0003	DR-3	Total Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0003	DR-3	ESAT Anions	Surface Water	11/13/2013	1	500 mL poly	4 C	N
	08BU-0004	DR-4	Dissolved Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0004	DR-4	Total Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0005	DR-5	Dissolved Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0005	DR-5	Total Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0006	DR-6	Dissolved Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0006	DR-6	Total Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0006	DR-6	ESAT Anions	Surface Water	11/13/2013	1	500 mL poly	4 C	N
	08BU-0007	DR-7	Dissolved Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0007	DR-7	Total Metals	Surface Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0007	DR-7	ESAT Anions	Surface Water	11/13/2013	1	500 mL poly	4 C	N
	08BU-0008	MW-109S	Dissolved Metals	Ground Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N

Special Instructions:

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
	[signature]	11/14/13	[signature]	11/15/13	10:50						

USEPA
DateShipped: 11/14/2013
CarrierName: FedEx
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 08BU
Contact Name: Jan Christner
Contact Phone: 505-269-1925

No: 8-111413-111939-0001
Cooler #:
Lab: ESAT
Lab Phone: 303-312-7798

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	08BU-0008	MW-109S	Total Metals	Ground Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0008	MW-109S	ESAT Anions	Ground Water	11/13/2013	1	500 mL poly	4 C	N
	08BU-0009	MW-110	Dissolved Metals	Ground Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0009	MW-110	Total Metals	Ground Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0009	MW-110	ESAT Anions	Ground Water	11/13/2013	1	500 mL poly	4 C	N
	08BU-0010	CHV-101U	Dissolved Metals	Ground Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0010	CHV-101U	Total Metals	Ground Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0010	CHV-101U	ESAT Anions	Ground Water	11/13/2013	1	500 mL poly	4 C	N
	08BU-0011	MW-2D	Dissolved Metals	Ground Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0011	MW-2D	Total Metals	Ground Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0012	MW-3D	Dissolved Metals	Ground Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N
	08BU-0012	MW-3D	Total Metals	Ground Water	11/13/2013	1	500 mL poly	HNO3 pH<2	N

Special Instructions:

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
	[illegible]	11/14/13	Kelsey Bartling	11/15/13	10:50						

TechLaw
Quality & Integrity

Ion Chromatography
EPA Method 300.0 / SW-846 Method 9056

Analysis Date: 11/19/2013 Analyst: Nick Philpot

TDF #: A-025 Project Name: 2013 NOV Waters Rico-Argentine LIMS #:C131107

Standards Traceability Documentation

Vendor	Standard	LIMS ID #:	Expires	Purpose
Inorganic Ventures	QCP-QCS-5	3020147	1-1-2014	ICV / LCS
Inorganic Ventures	10,000 ppm Cl	3020148	1-1-2014	Calibration
Inorganic Ventures	10,000 ppm NO_2	3020151	1-1-2014	Calibration
Inorganic Ventures	10,000 ppm Br	3020150	1-1-2014	Calibration
Inorganic Ventures	10,000 ppm PO_4	3020153	1-1-2014	Calibration
Inorganic Ventures	10,000 ppm Fl	3020149	1-1-2014	Calibration
Inorganic Ventures	10,000 ppm SO_4	3020154	1-1-2014	Calibration
Inorganic Ventures	10,000 ppm NO_3	3020152	1-1-2014	Calibration
ESAT	Cl + SO_4 + F	3030401	1-1-2014	Spike

Calibration Standards

Cal Stock LIMS ID #: 3022102 Prepared: 02/01/2013 Exp: 02/01/2014

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 Press: Approx 1850 Eluent Cond: approx 0.00 Eluent Prep. Date: 11/19/2013

Cal. Date: 11/19/2013 Cal. By: NP

Analytical Run Information

CCV LIMS ID #: 3022101 Prepared: 02-01-2013 Exp: prepared as needed

Spiked Sample ID: C131107-03 mL Sample: 10
mL Spike: varies

Analytical Batch ID: 1311056

Sequence ID: 1311068

Upload Date: 11/20/2013 Upload By: NP

Peer Review Date: 12/11/13 By: SV

ANALYSIS SEQUENCE

1311068

Instrument: ESAT Dionex IC Sequence Date: 11/20/13 11:41 Printed: 11/20/2013 11:43:09AM

Lab Number	Dilut. Factor	Analysis	STD ID	Sample/Std Name	EPA Tag ID	Source Sple	Comments
1311068-ICV1		QC	3022101	Initial Cal Check		-	
1311068-ICB1		QC		Initial Cal Blank		-	
1311068-SCV1		QC	3020147	Secondary Cal Check		-	
1311068-IBL1		QC		Instrument Blank		-	
1311056-BS1		QC		LCS		-	
1311056-BLK1		QC		Blank		-	
1311056-DUP1		QC		Duplicate		C131107-03	
1311056-MS1		QC		Matrix Spike		C131107-03	
C131107-03 A		nions by Ion Chromatograp		CHV-101U	8-C		
C131107-06 A		nions by Ion Chromatograp		DR-1	8-C		
C131107-11 A		nions by Ion Chromatograp		DR-3	8-C		
C131107-18 A		nions by Ion Chromatograp		DR-6	8-C		
1311068-CCV1		QC	3022101	Calibration Check		-	
1311068-CCB1		QC		Calibration Blank		-	
C131107-21 A		nions by Ion Chromatograp		DR-7	8-C		
C131107-24 A		nions by Ion Chromatograp		MW-109S	8-C		
C131107-27 A		nions by Ion Chromatograp		MW-110	8-C		
1311068-CCV2		QC	3022101	Calibration Check		-	
1311068-CCB2		QC		Calibration Blank		-	

PREPARATION BENCH SHEET

1311056

TechLaw, Inc. - ESAT Region 8

Printed: 11/18/2013 9:11:29AM

Matrix: Water

Date Prepared: 11/18/13 09:10 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
1311056-BLK1	QC		10	10						Blank	
1311056-BS1	QC		10	10	3030401	100				LCS	
1311056-DUP1	QC		10	10					C131107-03	Duplicate	
1311056-MS1	QC		10	10	3030401	100			C131107-03	Matrix Spike	
C131107-03 A	nions by Ion Chromatograpl	8-C	10	10						CHV-101U	10 x
C131107-06 A	nions by Ion Chromatograpl	8-C	10	10						DR-1	
C131107-11 A	nions by Ion Chromatograpl	8-C	10	10						DR-3	10 x
C131107-18 A	nions by Ion Chromatograpl	8-C	10	10						DR-6	10 x
C131107-21 A	nions by Ion Chromatograpl	8-C	10	10						DR-7	
C131107-24 A	nions by Ion Chromatograpl	8-C	10	10						MW-109S	10 x
C131107-27 A	nions by Ion Chromatograpl	8-C	10	10						MW-110	10 x

A-025

Preparation Reviewed By Date

Sequence: 1311056_C131107_NP
Operator: US ENVIRONMENTAL PRO
Printed: 11/20/2013 9:25:30 AM

Title: Right Sequence
Datasource: D9VVZ191_local
Location: Right_system\Sequences and Data\2013 ESAT
Timebase: Right_system
#Samples: 26
Created: 11/18/2013 12:05:00 PM by US ENVIRONMENTAL PRO
Last Update: 11/20/2013 9:20:52 AM by US ENVIRONMENTAL PRO

No.	Pos.	Name	Dil. Factor	Type	Inj. Date/Time	Inj. Vol.	Status	Method
1	1	Std 0	1.0000	Unknown	11/19/2013 4:47:25 PM	25.0	Finished	Met Anions Rt
2	2	Std 1	1.0000	Standard	11/19/2013 5:05:30 PM	25.0	Finished	Met Anions Rt
3	3	Std 2	1.0000	Standard	11/19/2013 5:23:35 PM	25.0	Finished	Met Anions Rt
4	4	Std 3	1.0000	Standard	11/19/2013 5:41:39 PM	25.0	Finished	Met Anions Rt
5	5	Std 4	1.0000	Standard	11/19/2013 5:59:42 PM	25.0	Finished	Met Anions Rt
6	6	Std 5	1.0000	Standard	11/19/2013 6:17:47 PM	25.0	Finished	Met Anions Rt
7	5	SEQ-ICV1	1.0000	Unknown	11/19/2013 6:35:51 PM	25.0	Finished	Met Anions Rt
8	1	SEQ-ICB1	1.0000	Unknown	11/19/2013 6:53:55 PM	25.0	Finished	Met Anions Rt
9	7	SEQ-SCV1	1.0000	Unknown	11/19/2013 7:12:00 PM	25.0	Finished	Met Anions Rt
10	1	SEQ-IBL1	1.0000	Unknown	11/19/2013 7:30:05 PM	25.0	Finished	Met Anions Rt
11	8	1311056-BS1	1.0000	Unknown	11/19/2013 7:48:09 PM	25.0	Finished	Met Anions Rt
12	9	1311056-BLK1	1.0000	Unknown	11/19/2013 8:06:14 PM	25.0	Finished	Met Anions Rt
13	10	C131107-03 @10x	1.0000	Unknown	11/19/2013 8:24:19 PM	25.0	Finished	Met Anions Rt
14	11	1311056-DUP1 @10x	1.0000	Unknown	11/19/2013 8:42:24 PM	25.0	Finished	Met Anions Rt
15	12	1311056-MS1 @10x	1.0000	Unknown	11/19/2013 9:00:29 PM	25.0	Finished	Met Anions Rt
16	13	C131107-06	1.0000	Unknown	11/19/2013 9:18:33 PM	25.0	Finished	Met Anions Rt
17	14	C131107-11 @10x	1.0000	Unknown	11/19/2013 9:36:38 PM	25.0	Finished	Met Anions Rt
18	15	C131107-18 @10x	1.0000	Unknown	11/19/2013 9:54:42 PM	25.0	Finished	Met Anions Rt
19	5	SEQ-CCV	1.0000	Unknown	11/19/2013 10:12:47 PM	25.0	Finished	Met Anions Rt
20	1	SEQ-CCB	1.0000	Unknown	11/19/2013 10:30:51 PM	25.0	Finished	Met Anions Rt
21	16	C131107-21	1.0000	Unknown	11/19/2013 10:48:56 PM	25.0	Finished	Met Anions Rt
22	17	C131107-24 @10x	1.0000	Unknown	11/19/2013 11:07:00 PM	25.0	Finished	Met Anions Rt
23	18	C131107-27 @10x	1.0000	Unknown	11/19/2013 11:25:04 PM	25.0	Finished	Met Anions Rt
24	5	SEQ-CCV	1.0000	Unknown	11/19/2013 11:43:09 PM	25.0	Finished	Met Anions Rt
25	1	SEQ-CCB	1.0000	Unknown	11/20/2013 12:01:14 AM	25.0	Finished	Met Anions Rt
26	1	STOP	1.0000	Unknown	11/20/2013 12:16:50 AM	25.0	Finished	Met Anions Rt

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	3.663	0.0587	3.52	0.33	5.37	0.2198
3	Std 2	3.663	0.1130	3.37	0.65	5.29	0.4024
4	Std 3	3.670	0.2834	3.29	1.64	5.09	0.9702
5	Std 4	3.663	1.2354	2.98	7.31	4.53	4.0086
6	Std 5	3.647	3.3109	2.87	19.45	4.47	9.9990
7	SEQ-ICV1	3.653	1.2339	2.97	7.32	4.53	4.0041
8	SEQ-ICB1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	SEQ-SCV1	3.653	3.4368	7.92	20.99	13.05	10.3395
10	SEQ-IBL1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11	1311056-BS1	3.653	1.6420	6.93	9.72	9.69	5.2445
12	1311056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	C131107-03 @10x	3.650	0.0574	0.52	0.33	1.15	0.2155
14	1311056-DUP1 @10x	3.663	0.0588	0.53	0.33	1.17	0.2200
15	1311056-MS1 @10x	3.653	1.6295	4.82	9.58	7.68	5.2069
16	C131107-06	3.657	0.0319	0.62	0.18	1.37	0.1294
17	C131107-11 @10x	3.660	0.0677	0.65	0.38	1.44	0.2499
18	C131107-18 @10x	3.650	0.0716	0.64	0.39	1.37	0.2632
19	SEQ-CCV	3.653	1.2361	2.96	7.26	4.56	4.0107
20	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	C131107-21	3.653	0.1009	0.57	0.52	1.13	0.3618
22	C131107-24 @10x	3.653	0.0590	0.34	0.28	0.63	0.2208
23	C131107-27 @10x	3.657	0.0713	0.78	0.41	1.75	0.2621
24	SEQ-CCV	3.650	1.2389	2.95	7.31	4.56	4.0193
25	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
26	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	69.467	15.937	49.239	94.370	78.844	50.348
	Average:	3.656	0.839	2.592	4.967	4.150	2.650
	Rel.Std.Dev:	0.167 %	128.774 %	84.890 %	130.292 %	79.296 %	123.914 %

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	5.33	0.394	23.56	2.092	34.13	2.4838
3	Std 2	5.32	0.797	23.73	4.240	34.39	4.1272
4	Std 3	5.34	2.057	23.89	11.390	35.28	9.1933
5	Std 4	5.35	10.343	24.93	60.460	37.45	40.2176
6	Std 5	5.37	29.054	25.18	167.321	38.43	99.9770
7	SEQ-ICV1	5.33	10.371	24.96	60.571	37.51	40.3146
8	SEQ-ICB1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

9	SEQ-SCV1	5.31	3.375	7.78	18.477	11.49	14.3807
10	SEQ-IBL1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11	1311056-BS1	5.31	5.996	25.29	34.025	33.95	24.3970
12	1311056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	C131107-03 @10x	5.29	0.017	0.16	0.089	0.31	0.9405
14	1311056-DUP1 @10x	5.31	0.017	0.15	0.090	0.32	0.9389
15	1311056-MS1 @10x	5.32	5.794	17.15	32.598	26.16	23.6406
16	C131107-06	5.30	0.194	3.80	1.002	7.59	1.6668
17	C131107-11 @10x	5.31	0.007	0.06	0.032	0.12	0.8961
18	C131107-18 @10x	5.30	0.007	0.06	0.037	0.13	0.8981
19	SEQ-CCV	5.32	10.410	24.95	59.877	37.61	40.4542
20	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	C131107-21	5.30	0.227	1.29	1.160	2.52	1.8022
22	C131107-24 @10x	5.30	0.035	0.20	0.177	0.40	1.0114
23	C131107-27 @10x	5.31	0.031	0.34	0.154	0.67	0.9954
24	SEQ-CCV	5.32	10.473	24.98	60.390	37.66	40.6746
25	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
26	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	101.037	89.598	252.464	514.182	376.144	349.010
	Average:	5.318	4.716	13.288	27.062	19.797	18.369
	Rel.Std.Dev:	0.343 %	153.263 %	88.163 %	154.223 %	86.679 %	138.189 %

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	6.403	0.218	13.042	0.966	15.761	0.580
3	Std 2	6.397	0.436	12.981	1.911	15.504	1.019
4	Std 3	6.413	1.107	12.856	4.863	15.065	2.366
5	Std 4	6.407	4.995	12.038	22.084	13.680	10.040
6	Std 5	6.400	12.883	11.163	55.999	12.862	24.995
7	SEQ-ICV1	6.383	4.978	11.983	22.110	13.694	10.008
8	SEQ-ICB1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	SEQ-SCV1	6.390	7.528	17.344	32.816	20.406	14.929
10	SEQ-IBL1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11	1311056-BS1	6.380	4.933	20.810	21.688	21.642	9.920
12	1311056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	C131107-03 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	1311056-DUP1 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	1311056-MS1 @10x	6.383	4.813	14.248	21.013	16.863	9.685
16	C131107-06	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
17	C131107-11 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	C131107-18 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	SEQ-CCV	6.380	4.988	11.956	21.838	13.718	10.027
20	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	C131107-21	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

22	C131107-24 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
23	C131107-27 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
24	SEQ-CCV	6.377	5.010	11.949	21.963	13.697	10.070
25	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
26	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	70.313	51.888	150.369	227.252	172.892	103.638
	Average:	6.392	4.717	13.670	20.659	15.717	9.422
	Rel.Std.Dev:	0.195 %	75.412 %	21.206 %	74.893 %	18.368 %	73.016 %

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	7.693	0.042	2.510	0.168	2.737	0.519
3	Std 2	7.687	0.085	2.537	0.333	2.705	1.037
4	Std 3	7.703	0.202	2.349	0.813	2.518	2.428
5	Std 4	7.670	0.866	2.088	3.511	2.175	10.019
6	Std 5	7.630	2.299	1.992	9.560	2.196	24.998
7	SEQ-ICV1	7.637	0.868	2.090	3.516	2.178	10.042
8	SEQ-ICB1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	SEQ-SCV1	7.643	5.047	11.627	20.625	12.825	49.960
10	SEQ-IBL1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11	1311056-BS1	7.637	0.855	3.608	3.416	3.409	9.897
12	1311056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	C131107-03 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	1311056-DUP1 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	1311056-MS1 @10x	7.640	0.827	2.448	3.278	2.630	9.584
16	C131107-06	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
17	C131107-11 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	C131107-18 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	SEQ-CCV	7.633	0.873	2.092	3.470	2.180	10.092
20	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	C131107-21	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
22	C131107-24 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
23	C131107-27 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
24	SEQ-CCV	7.637	0.877	2.092	3.489	2.176	10.142
25	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
26	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	84.210	12.842	35.433	52.179	37.728	138.717
	Average:	7.655	1.167	3.221	4.744	3.430	12.611
	Rel.Std.Dev:	0.358 %	121.931 %	87.676 %	123.177 %	91.530 %	111.429 %

No.	Name	Time min Nitrate	Area µS*min Nitrate	Rel.Area % Nitrate	Height µS Nitrate	Rel.Height % Nitrate	Amount mg/L Nitrate

		ECD_1	ECD_1	ECD_1	ECD_1	ECD_1	ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	8.623	0.222	13.296	0.792	12.919	0.564
3	Std 2	8.613	0.438	13.039	1.566	12.703	1.011
4	Std 3	8.623	1.121	13.013	3.971	12.302	2.401
5	Std 4	8.570	5.218	12.576	18.721	11.596	10.026
6	Std 5	8.500	14.987	12.987	52.275	12.007	24.997
7	SEQ-ICV1	8.537	5.231	12.590	18.746	11.611	10.048
8	SEQ-ICB1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	SEQ-SCV1	8.557	5.632	12.975	19.561	12.164	10.740
10	SEQ-IBL1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11	1311056-BS1	8.533	5.635	23.771	19.949	19.906	10.746
12	1311056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	C131107-03 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	1311056-DUP1 @10x	8.583	0.004	0.035	0.015	0.053	0.107
15	1311056-MS1 @10x	8.540	5.472	16.199	19.255	15.452	10.465
16	C131107-06	8.600	0.023	0.459	0.081	0.610	0.148
17	C131107-11 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	C131107-18 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	SEQ-CCV	8.530	5.255	12.597	18.497	11.619	10.091
20	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	C131107-21	8.593	0.020	0.113	0.067	0.146	0.141
22	C131107-24 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
23	C131107-27 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
24	SEQ-CCV	8.533	5.282	12.597	18.602	11.601	10.136
25	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
26	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	119.937	54.538	156.246	192.098	144.689	101.622
	Average:	8.567	3.896	11.160	13.721	10.335	7.259
	Rel.Std.Dev:	0.463 %	104.913 %	59.388 %	104.193 %	56.971 %	96.721 %

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	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	11.673	0.015	0.915	0.043	0.705	0.212
3	Std 2	11.627	0.049	1.465	0.123	0.999	0.425
4	Std 3	11.640	0.134	1.553	0.340	1.054	0.951
5	Std 4	11.620	0.644	1.553	1.607	0.995	4.012
6	Std 5	11.587	1.734	1.503	4.432	1.018	9.999
7	SEQ-ICV1	11.603	0.639	1.538	1.597	0.989	3.981
8	SEQ-ICB1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	SEQ-SCV1	11.590	5.032	11.592	13.327	8.287	25.129
10	SEQ-IBL1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11	1311056-BS1	11.603	0.813	3.428	2.022	2.017	4.982

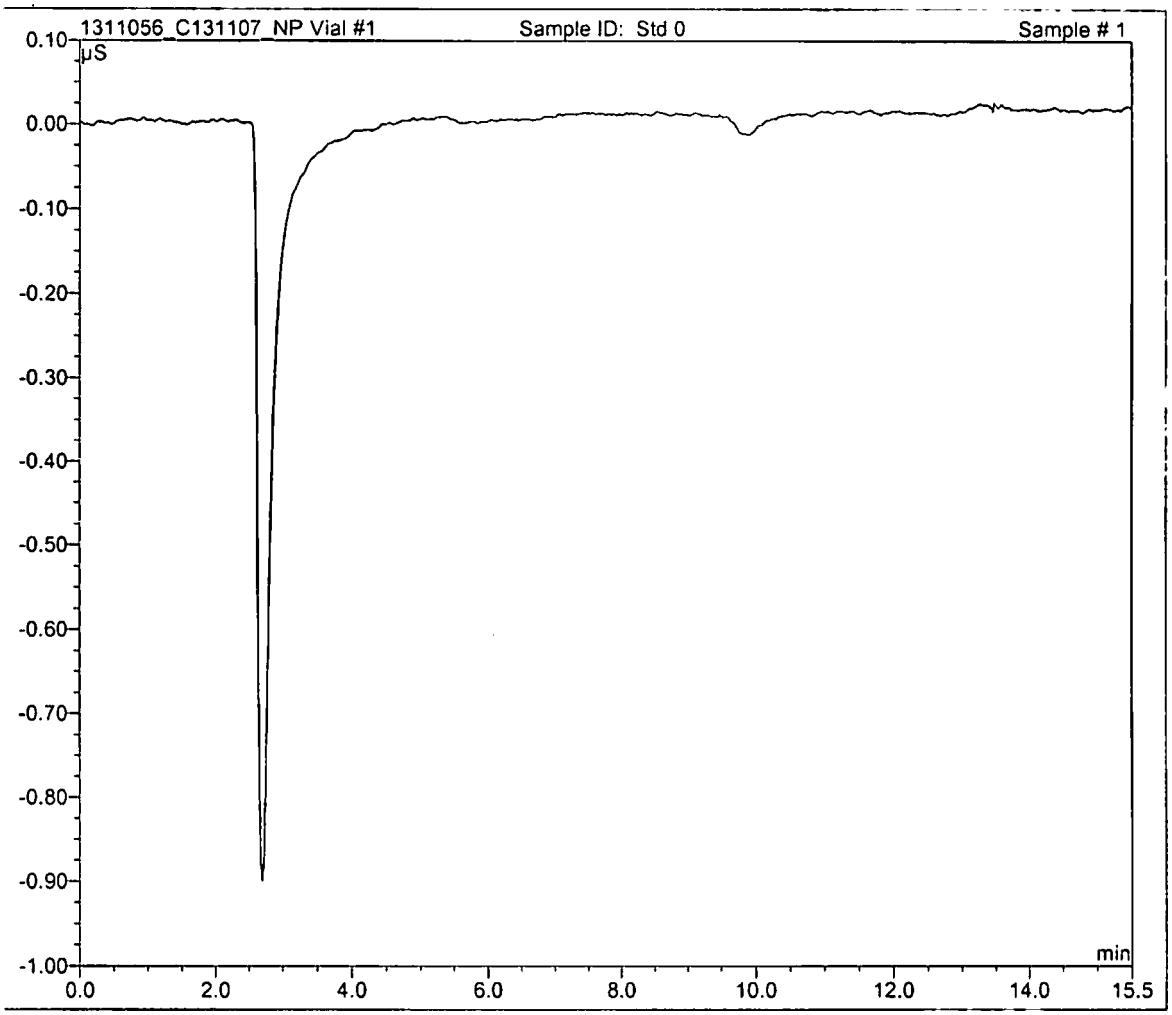
12	1311056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	C131107-03 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	1311056-DUP1 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	1311056-MS1 @10x	11.607	0.723	2.139	1.725	1.384	4.465
16	C131107-06	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
17	C131107-11 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	C131107-18 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	SEQ-CCV	11.593	0.633	1.517	1.545	0.970	3.946
20	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	C131107-21	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
22	C131107-24 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
23	C131107-27 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
24	SEQ-CCV	11.580	0.628	1.499	1.541	0.961	3.919
25	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
26	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	127.723	11.044	28.702	28.303	19.381	62.023
	Average:	11.611	1.004	2.609	2.573	1.762	5.638
	Rel.Std.Dev:	0.236 %	141.070 %	116.749 %	146.213 %	124.343 %	124.213 %

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	13.223	0.721	43.160	1.739	28.373	6.073
3	Std 2	13.220	1.440	42.882	3.502	28.408	10.254
4	Std 3	13.243	3.707	43.048	9.259	28.683	23.248
5	Std 4	13.320	18.190	43.839	47.749	29.577	100.473
6	Std 5	13.430	51.133	44.309	126.348	29.020	249.950
7	SEQ-ICV1	13.310	18.225	43.867	47.597	29.479	100.649
8	SEQ-ICB1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	SEQ-SCV1	13.303	13.355	30.769	35.016	21.774	75.699
10	SEQ-IBL1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11	1311056-BS1	13.233	3.831	16.162	9.397	9.378	23.953
12	1311056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	C131107-03 @10x	13.260	10.965	99.323	27.812	98.532	63.102
14	1311056-DUP1 @10x	13.263	10.998	99.282	27.853	98.462	63.276
15	1311056-MS1 @10x	13.287	14.520	42.987	37.167	29.826	81.754
16	C131107-06	13.237	4.860	95.119	11.935	90.427	29.752
17	C131107-11 @10x	13.263	10.363	99.289	26.040	98.442	59.890
18	C131107-18 @10x	13.253	11.052	99.294	27.826	98.499	63.566
19	SEQ-CCV	13.293	18.325	43.923	46.706	29.339	101.153
20	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	C131107-21	13.293	17.257	98.024	44.292	96.208	95.763
22	C131107-24 @10x	13.290	17.254	99.461	44.219	98.971	95.750
23	C131107-27 @10x	13.240	8.982	98.878	22.568	97.580	52.460

24	SEQ-CCV	13.270	18.419	43.930	47.052	29.344	101.627
25	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
26	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	252.233	253.597	1,227.546	644.076	1,070.323	1,398.391
	Average:	13.275	13.347	64.608	33.899	56.333	73.600
	Rel.Std.Dev:	0.360 %	82.046 %	47.195 %	80.604 %	64.068 %	72.746 %

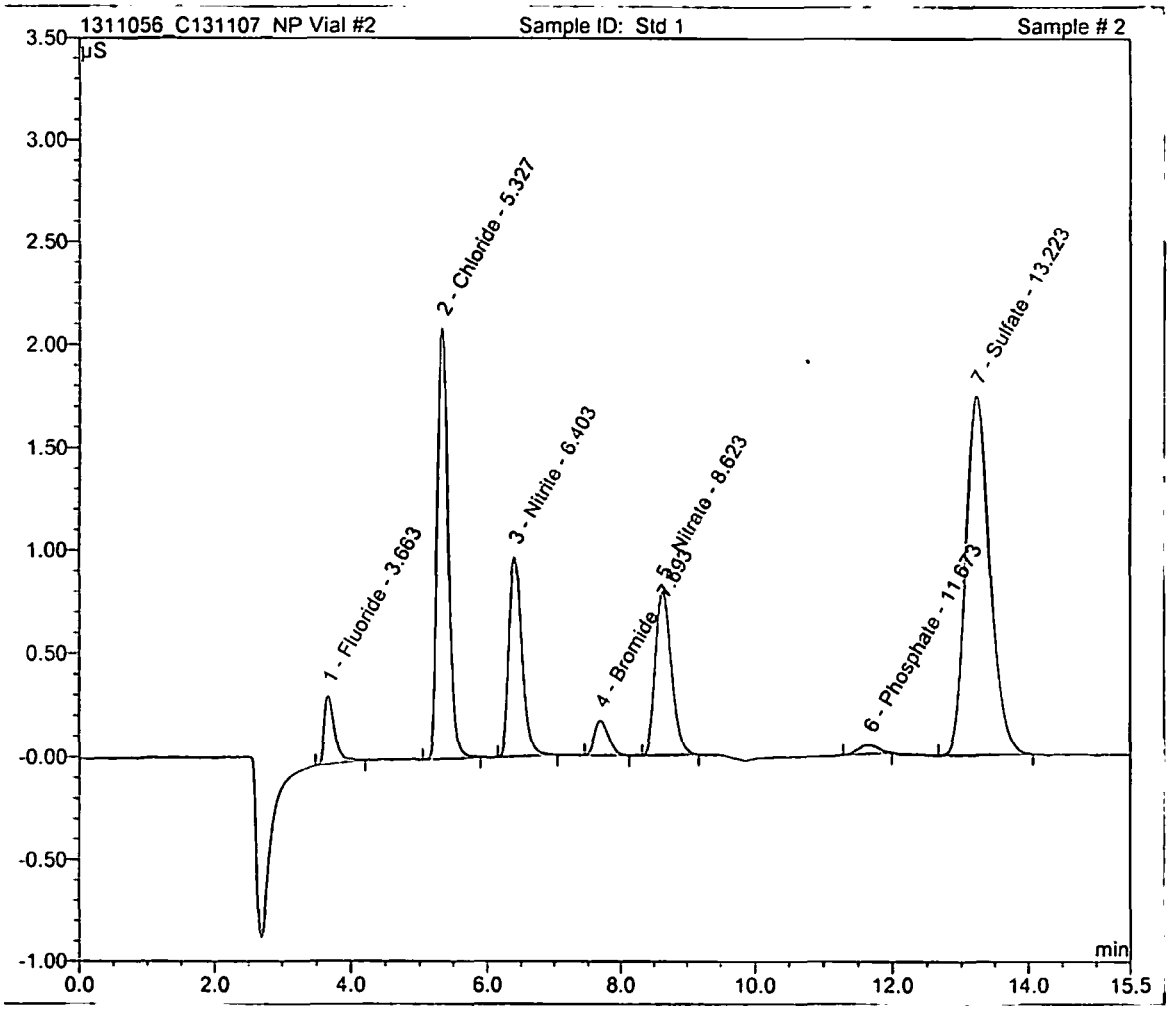
Sample Name:	**Std 0**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**1**
Inj. Date/Time:	**11.19.13 16:47**	*Run Number:*	**1**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L



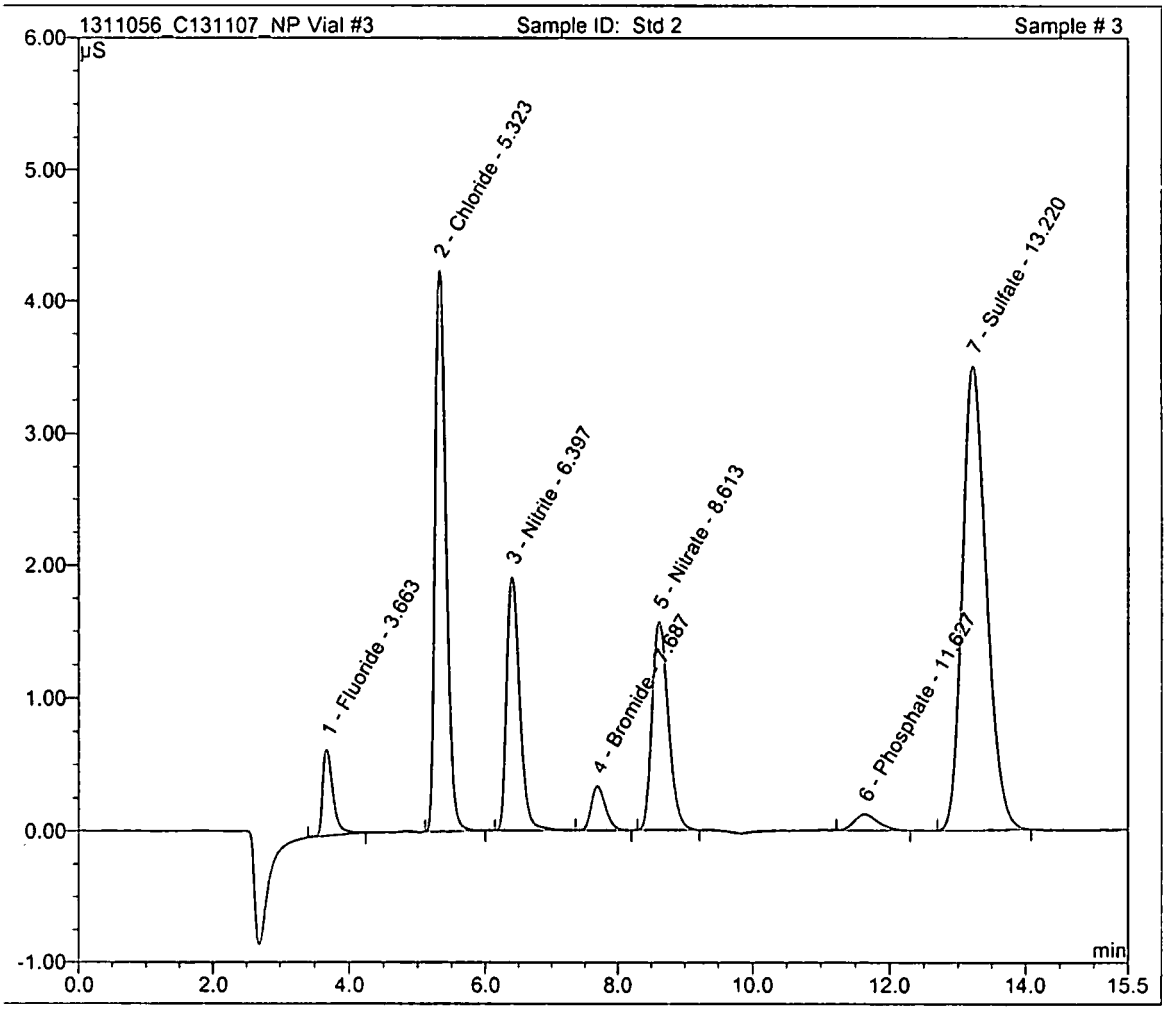
Sample Name:	**Std 1**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**2**
Inj. Date/Time:	**11.19.13 17:05**	*Run Number:*	**2**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.66	Fluoride	BMB	0.059	0.329	0.2198
2	5.33	Chloride	BMB	0.394	2.092	2.4838
3	6.40	Nitrite	BMB	0.218	0.966	0.5801
4	7.69	Bromide	BMB	0.042	0.168	0.5190
5	8.62	Nitrate	BMB	0.222	0.792	0.5640
6	11.67	Phosphate	BMB	0.015	0.043	0.2125
7	13.22	Sulfate	BMB	0.721	1.739	6.0728



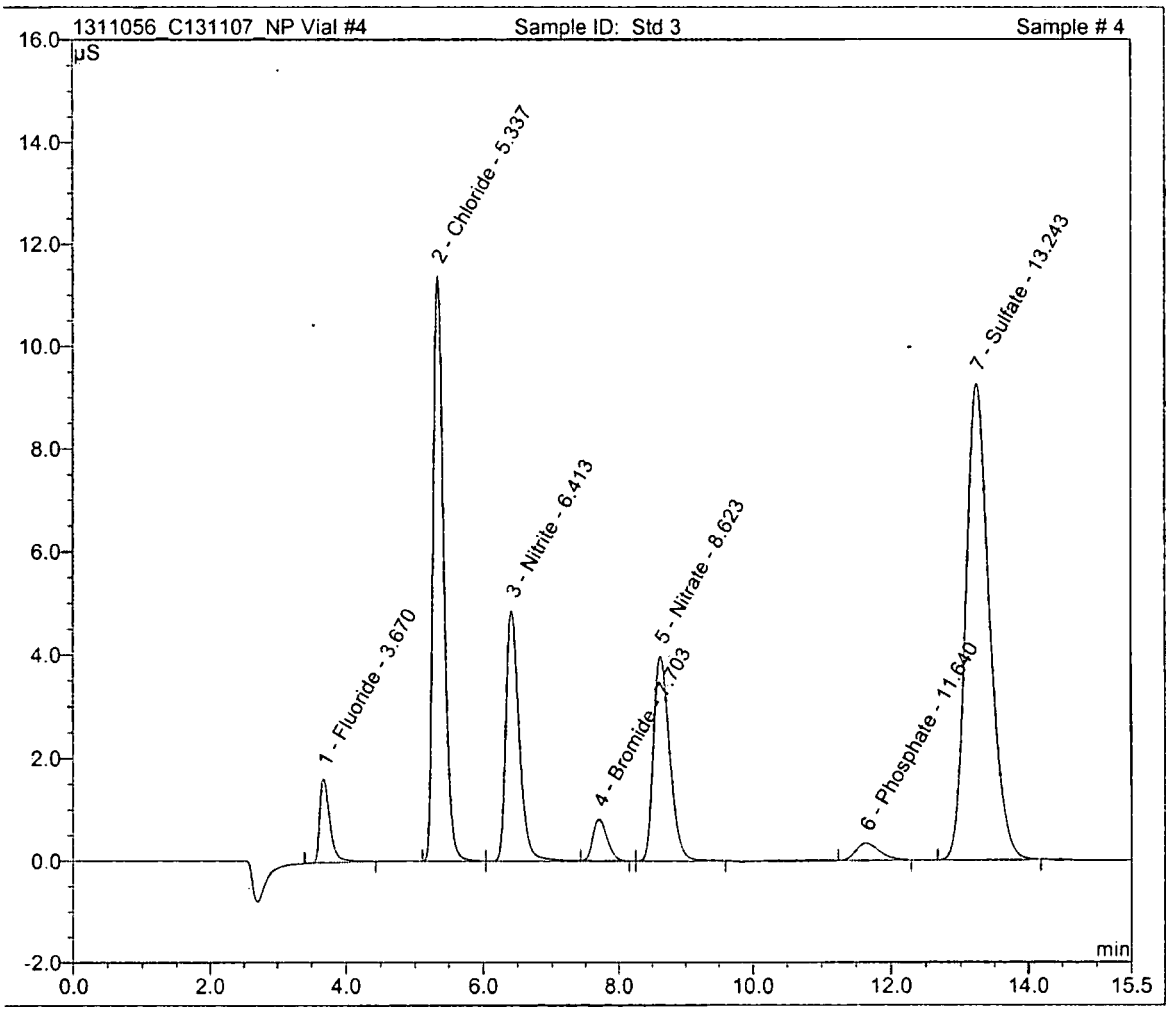
Sample Name:	**Std 2**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**3**
Inj. Date/Time:	**11.19.13 17:23**	*Run Number:*	**3**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.66	Fluoride	BMB	0.113	0.652	0.4024
2	5.32	Chloride	BMB	0.797	4.240	4.1272
3	6.40	Nitrite	BMB	0.436	1.911	1.0191
4	7.69	Bromide	Rd	0.085	0.333	1.0369
5	8.61	Nitrate	BMB	0.438	1.566	1.0115
6	11.63	Phosphate	BMB	0.049	0.123	0.4251
7	13.22	Sulfate	BMB	1.440	3.502	10.2537



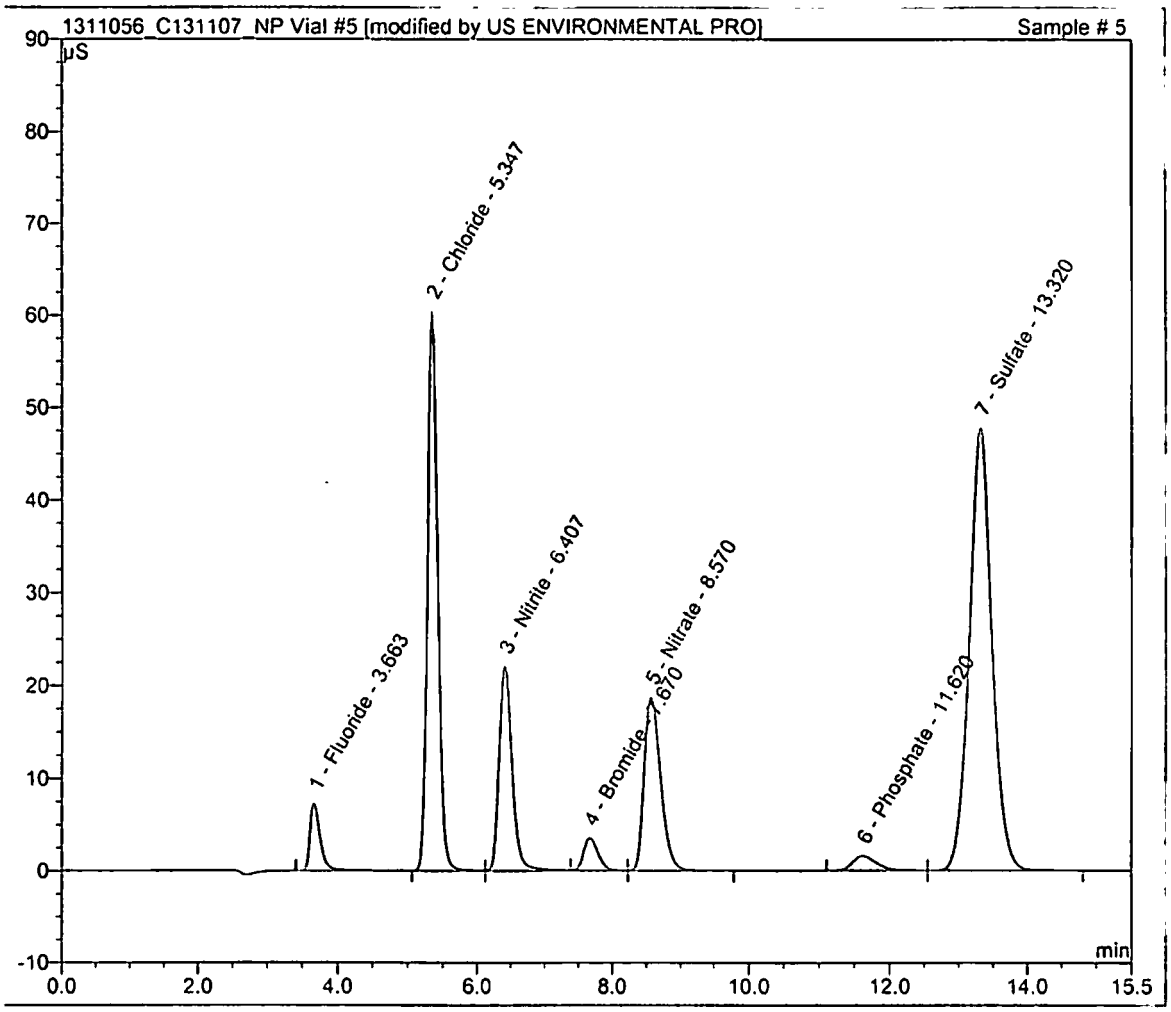
Sample Name:	**Std 3**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**4**
Inj. Date/Time:	**11.19.13 17:41**	*Run Number:*	**4**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.67	Fluoride	BMB	0.283	1.644	0.9702
2	5.34	Chloride	BM	2.057	11.390	9.1933
3	6.41	Nitrite	M	1.107	4.863	2.3660
4	7.70	Bromide	Rd	0.202	0.813	2.4277
5	8.62	Nitrate	MB	1.121	3.971	2.4010
6	11.64	Phosphate	BMB	0.134	0.340	0.9513
7	13.24	Sulfate	BMB	3.707	9.259	23.2482



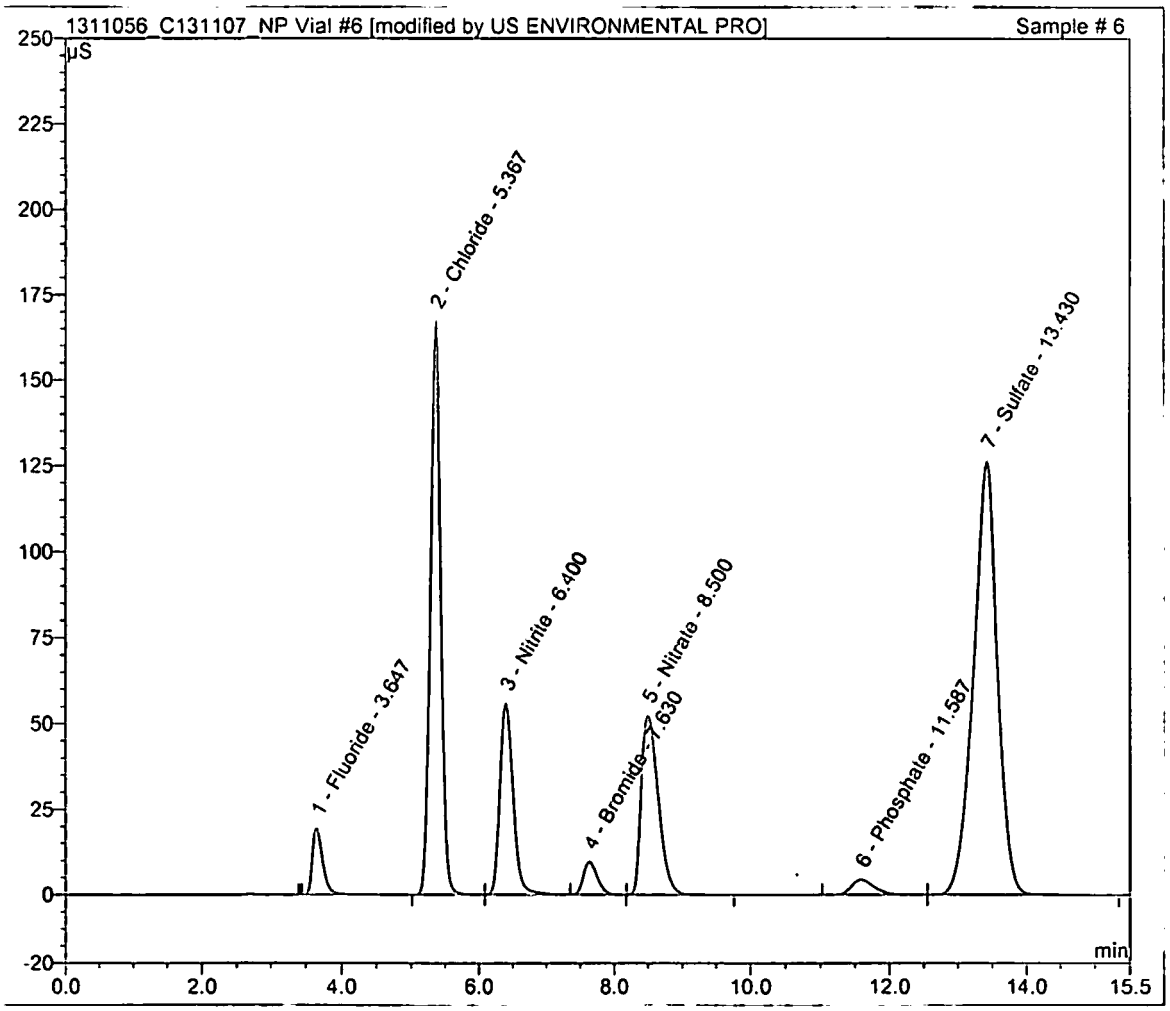
Sample Name:	**Std 4**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**5**
Inj. Date/Time:	**11.19.13 17:59**	*Run Number:*	**5**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.66	Fluoride	Ru	1.235	7.307	4.0086
2	5.35	Chloride	BM	10.343	60.460	40.2176
3	6.41	Nitrite	M	4.995	22.084	10.0396
4	7.67	Bromide	Rd	0.866	3.511	10.0186
5	8.57	Nitrate	MB	5.218	18.721	10.0263
6	11.62	Phosphate	BM	0.644	1.607	4.0125
7	13.32	Sulfate	MB	18.190	47.749	100.4732



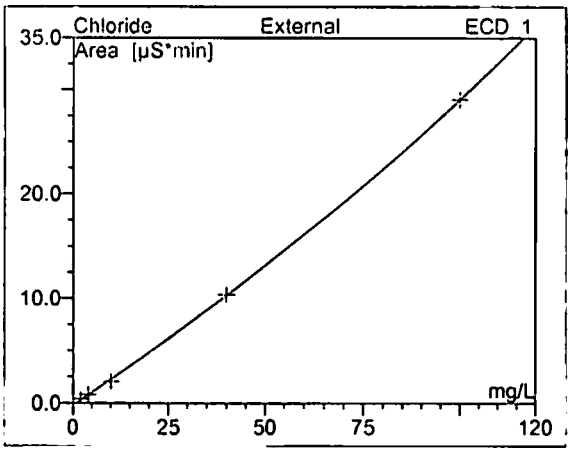
Sample Name:	**Std 5**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**6**
Inj. Date/Time:	**11.19.13 18:17**	*Run Number:*	**6**

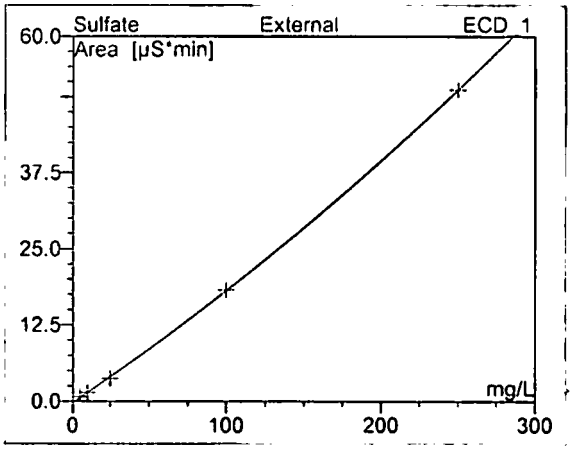
No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.65	Fluoride	Ru	3.311	19.449	9.9990
2	5.37	Chloride	BM	29.054	167.321	99.9770
3	6.40	Nitrite	M	12.883	55.999	24.9952
4	7.63	Bromide	Rd	2.299	9.560	24.9979
5	8.50	Nitrate	MB	14.987	52.275	24.9973
6	11.59	Phosphate	BM	1.734	4.432	9.9986
7	13.43	Sulfate	MB	51.133	126.348	249.9500

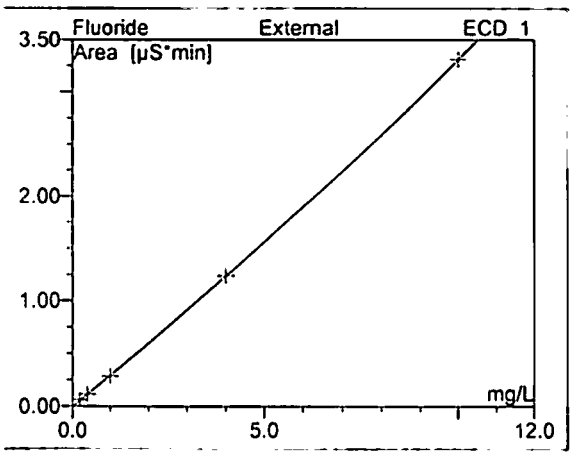


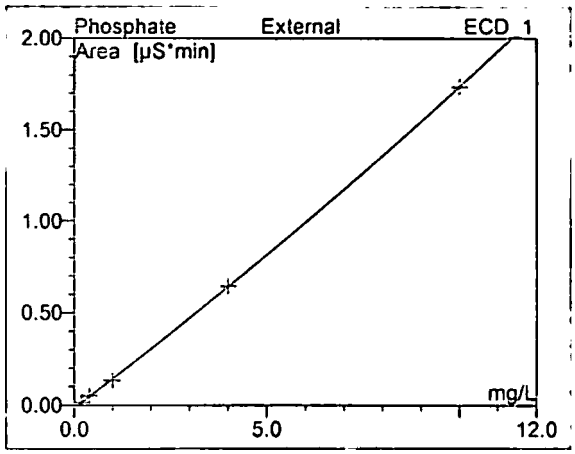
Calibration Batch Report

Sequence:	1311056_C131107_NP	Inj. Vol.:	25.0
Program:	Program Anions Right	Operator:	ESAT
Inj. Date/Time:	11/19/13 18:17	Run Time:	15.50



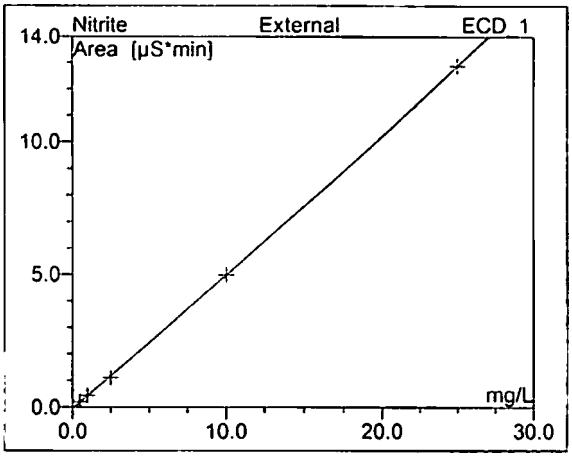


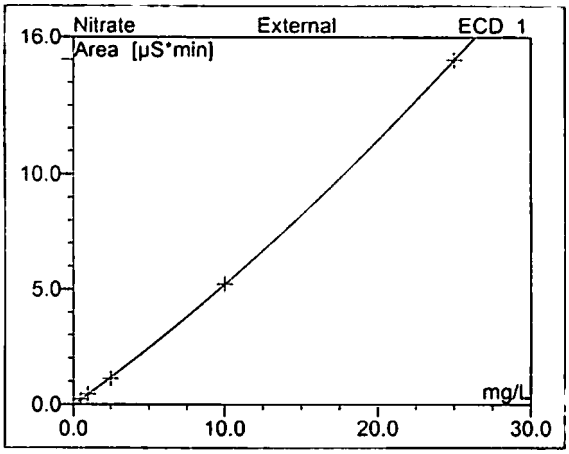


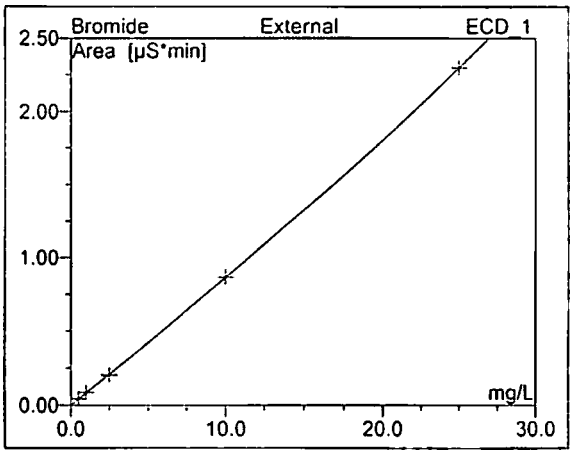


No.	Ret.Time min	Peak Name	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
1	3.65	Fluoride	QOff	5	-0.006	0.295	0.004	99.9984
2	5.37	Chloride	QOff	5	-0.211	0.242	0.001	99.9899
3	6.40	Nitrite	QOff	5	-0.070	0.495	0.001	99.9943
4	7.63	Bromide	QOff	5	-0.001	0.083	0.000	99.9986
5	8.50	Nitrate	QOff	5	-0.047	0.474	0.005	99.9977
6	11.59	Phosphate	QOff	5	-0.018	0.158	0.002	99.9959
7	13.43	Sulfate	QOff	5	-0.315	0.170	0.000	99.9923
AVERAGE:					-0.0954	0.2739	0.0018	99.9953

Sequence:	**1311056_C131107_NP**	*Inj. Vol.:*	**25.0**
Program:	**Program Anions Right**	*Operator:*	**n.a.**
Inj. Date/Time:	**11/19/13 18:17**	*Run Time:*	**15.50**



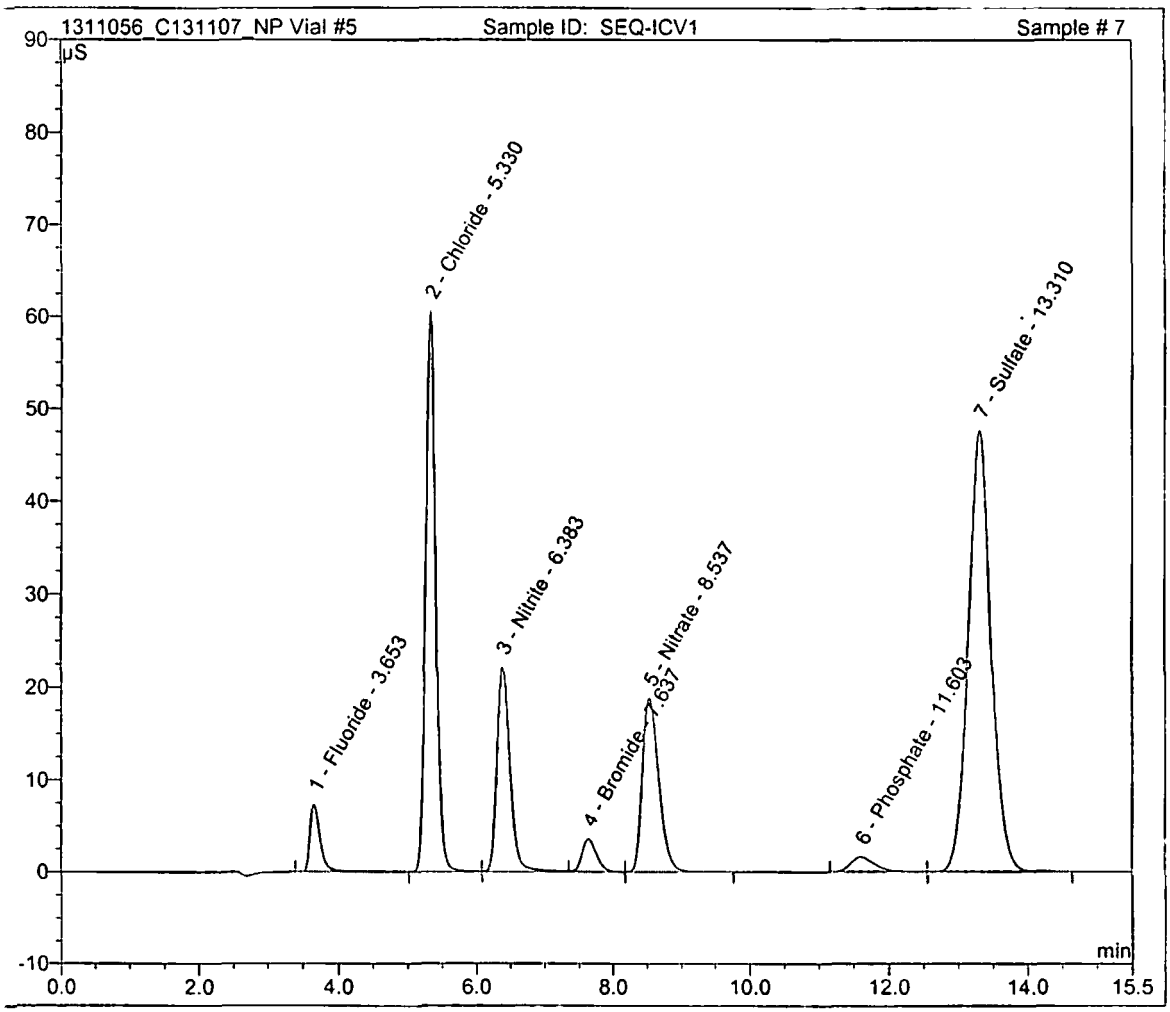




No.	Ret.Time min	Peak Name	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
1	3.65	Fluoride	QOff	5	-0.006	0.295	0.004	99.9984
2	5.37	Chloride	QOff	5	-0.211	0.242	0.001	99.9899
3	6.40	Nitrite	QOff	5	-0.070	0.495	0.001	99.9943
4	7.63	Bromide	QOff	5	-0.001	0.083	0.000	99.9986
5	8.50	Nitrate	QOff	5	-0.047	0.474	0.005	99.9977
6	11.59	Phosphate	QOff	5	-0.018	0.158	0.002	99.9959
7	13.43	Sulfate	QOff	5	-0.315	0.170	0.000	99.9923
AVERAGE:					-0.0954	0.2739	0.0018	99.9953

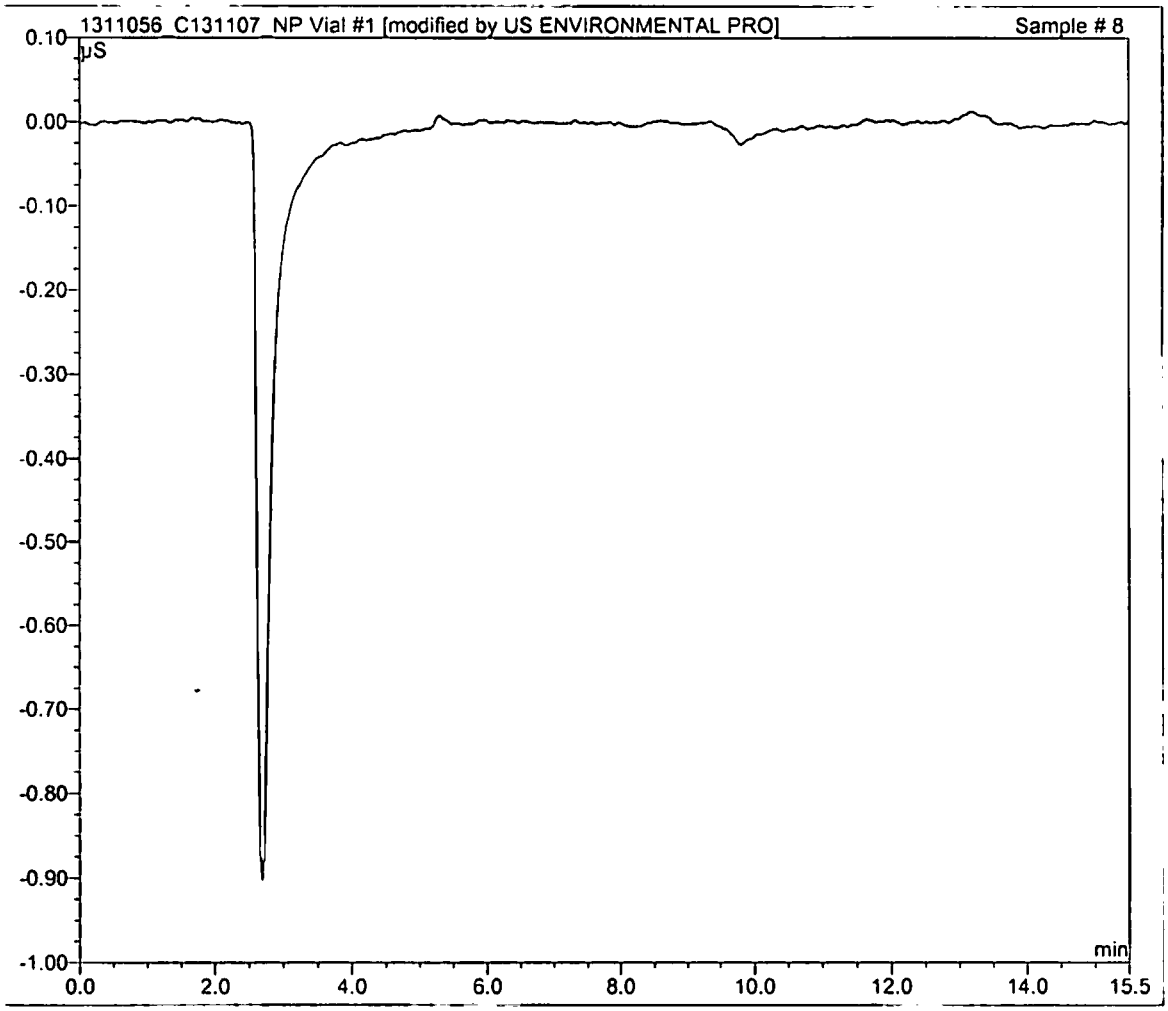
Sample Name:	**SEQ-ICV1**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**5**
Inj. Date/Time:	**11.19.13 18:35**	*Run Number:*	**7**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.65	Fluoride	Ru	1.234	7.322	4.0041
2	5.33	Chloride	BM	10.371	60.571	40.3146
3	6.38	Nitrite	M	4.978	22.110	10.0081
4	7.64	Bromide	Rd	0.868	3.516	10.0418
5	8.54	Nitrate	MB	5.231	18.746	10.0481
6	11.60	Phosphate	BM	0.639	1.597	3.9806
7	13.31	Sulfate	MB	18.225	47.597	100.6494



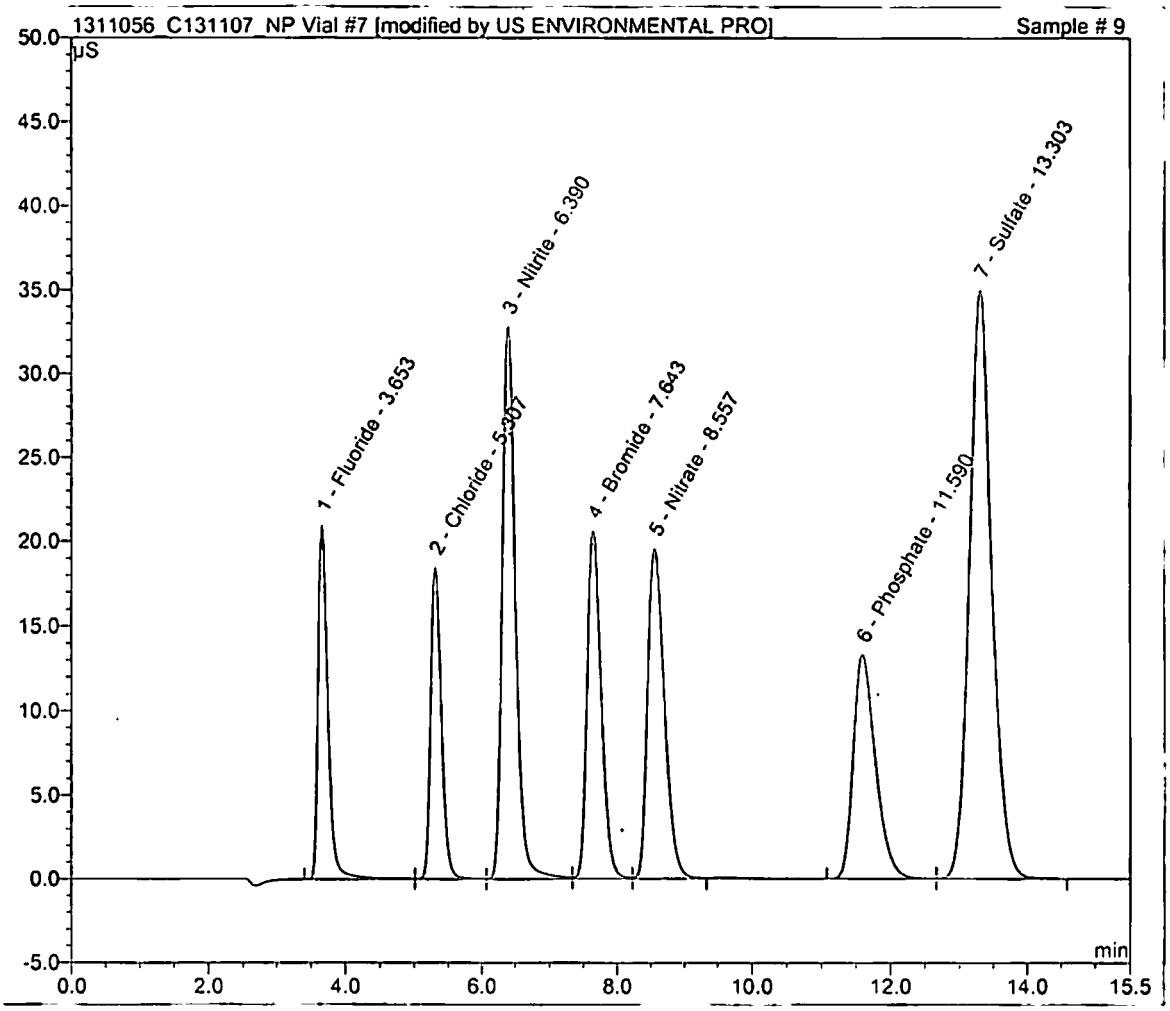
Sample Name:	**SEQ-ICB1**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**1**
Inj. Date/Time:	**11.19.13 18:53**	*Run Number:*	**8**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L



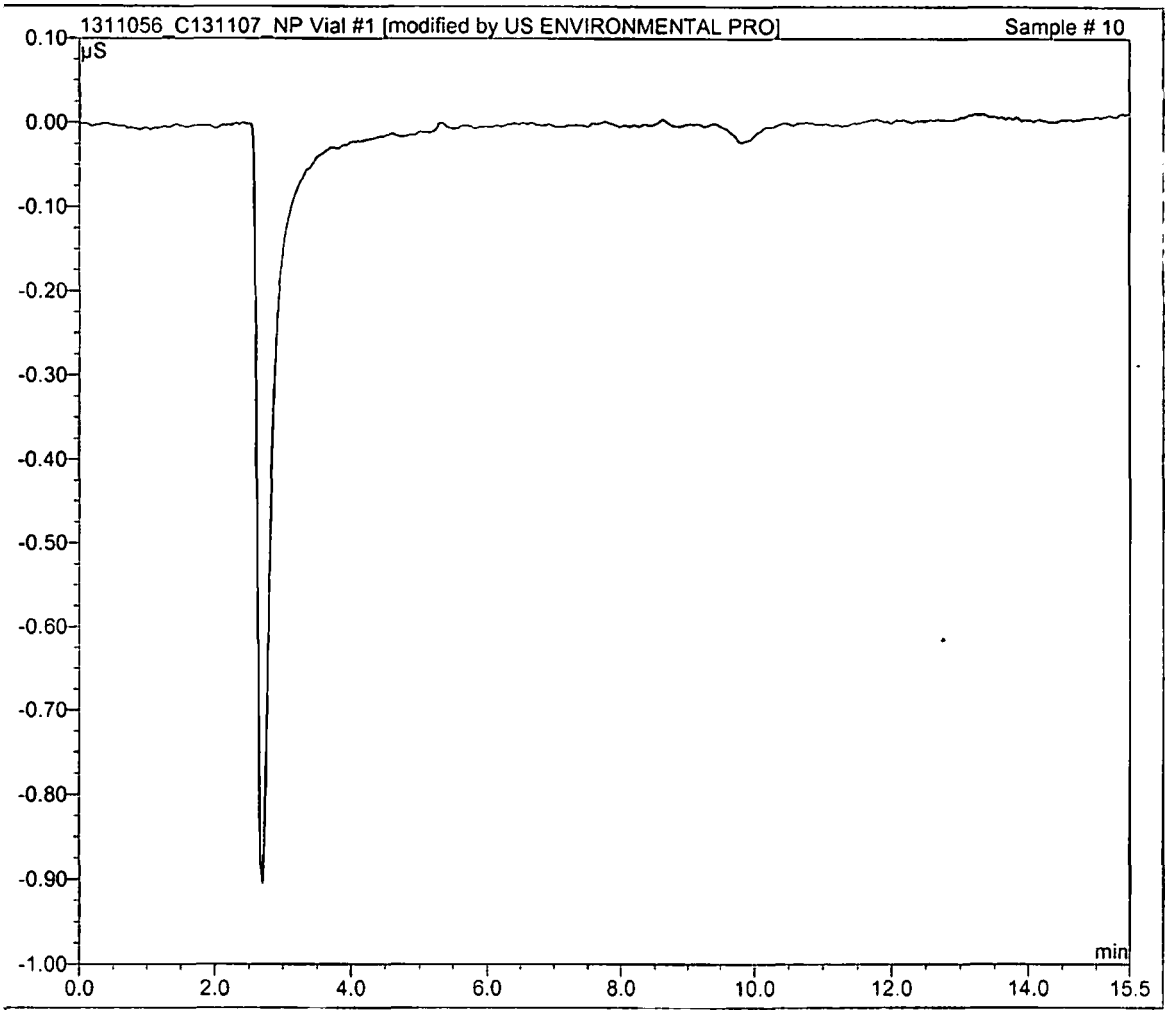
Sample Name:	**SEQ-SCV1**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**7**
Inj. Date/Time:	**11.19.13 19:12**	*Run Number:*	**9**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.65	Fluoride	BM *	3.437	20.994	10.3395
2	5.31	Chloride	M *	3.375	18.477	14.3807
3	6.39	Nitrite	M *	7.528	32.816	14.9289
4	7.64	Bromide	M *	5.047	20.625	49.9602
5	8.56	Nitrate	MB*	5.632	19.561	10.7400
6	11.59	Phosphate	BM	5.032	13.327	25.1293
7	13.30	Sulfate	MB	13.355	35.016	75.6987



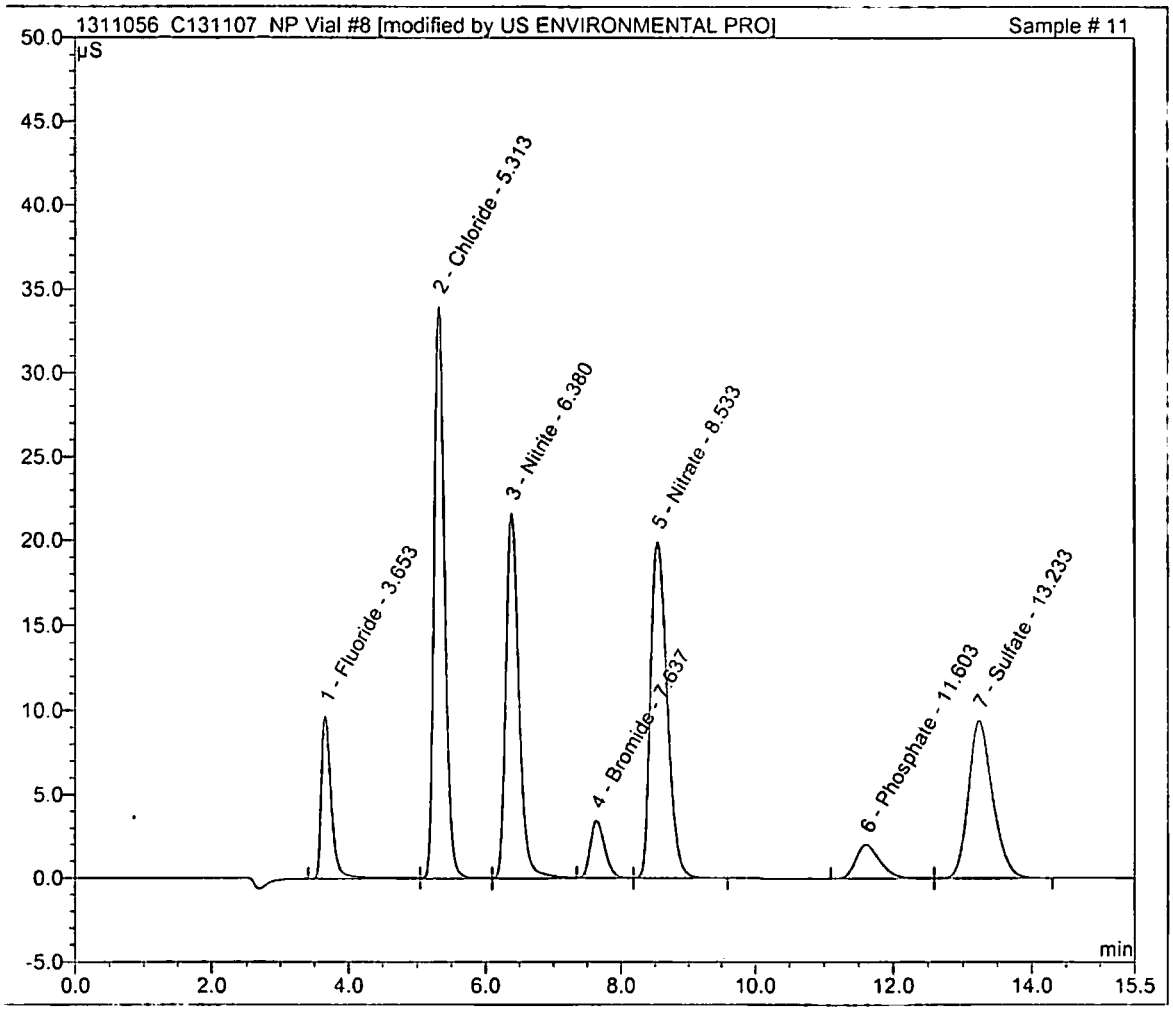
Sample Name:	**SEQ-IBL1**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**1**
Inj. Date/Time:	**11.19.13 19:30**	*Run Number:*	**10**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L



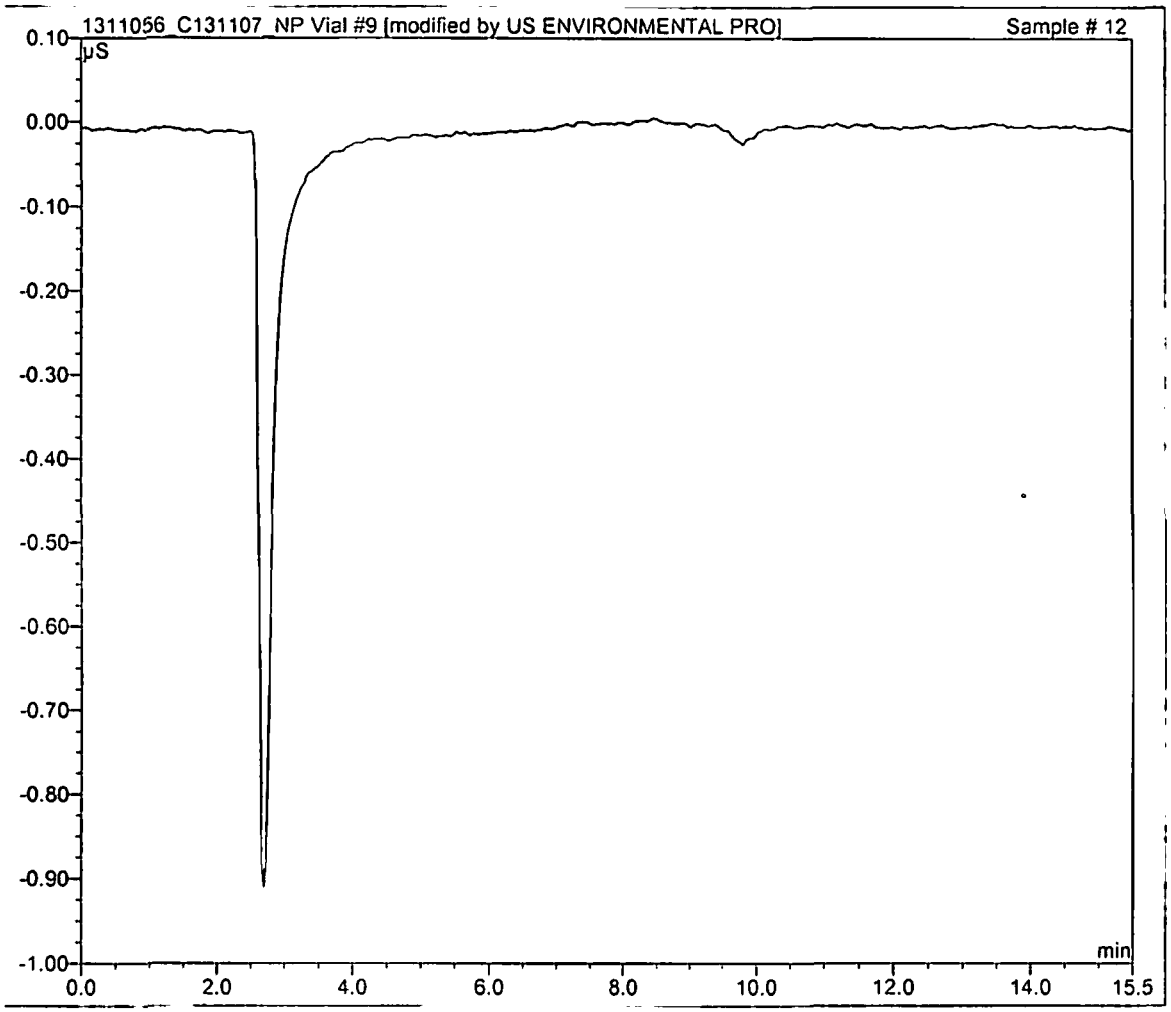
Sample Name:	**1311056-BS1**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**8**
Inj. Date/Time:	**11.19.13 19:48**	*Run Number:*	**11**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.65	Fluoride	BM *	1.642	9.715	5.2445
2	5.31	Chloride	M *	5.996	34.025	24.3970
3	6.38	Nitrite	M *	4.933	21.688	9.9197
4	7.64	Bromide	Rd	0.855	3.416	9.8967
5	8.53	Nitrate	MB*	5.635	19.949	10.7456
6	11.60	Phosphate	BM	0.813	2.022	4.9824
7	13.23	Sulfate	MB	3.831	9.397	23.9528



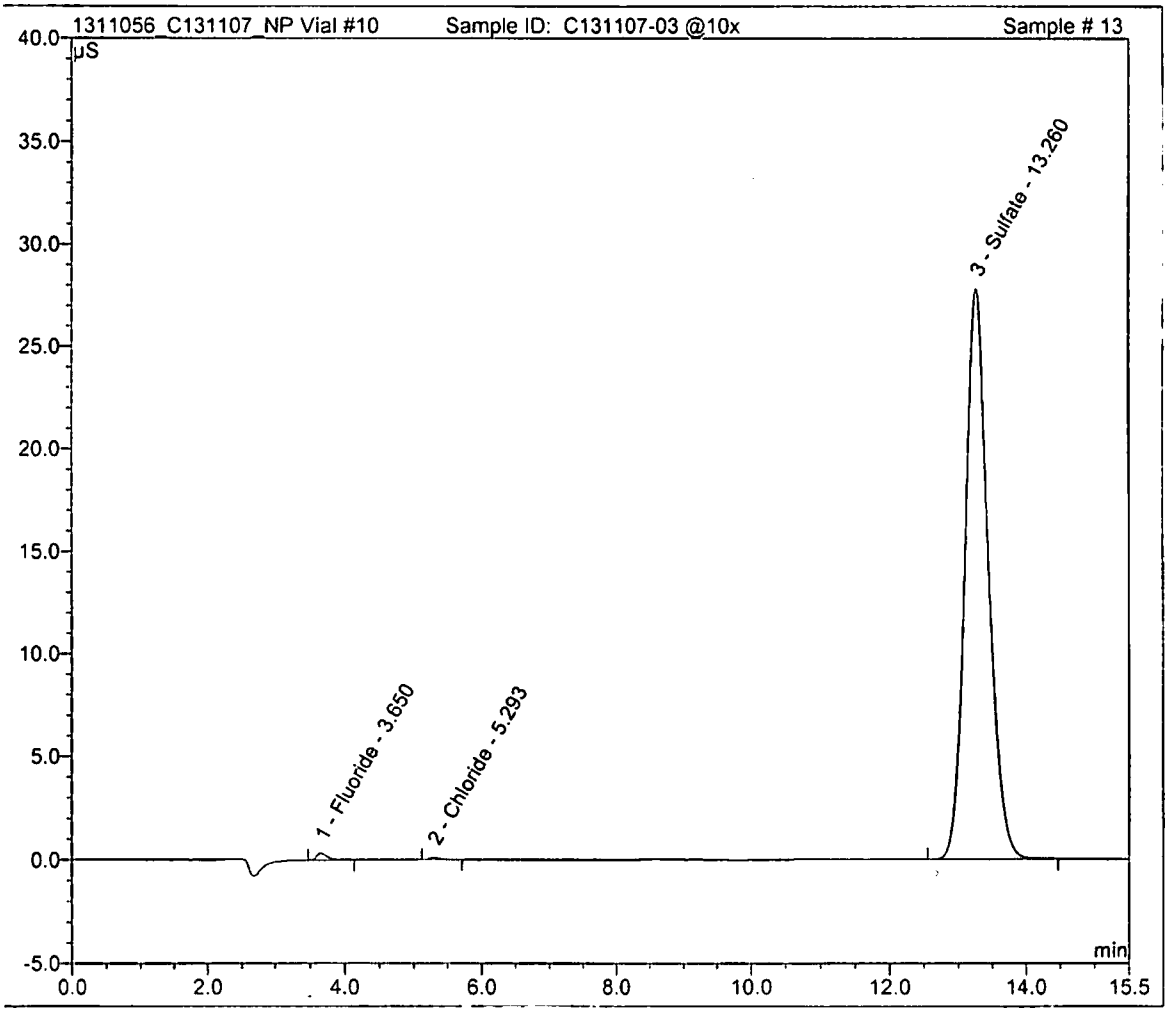
Sample Name:	1311056-BLK1	*Inj. Vol.:*	25.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	9
Inj. Date/Time:	11.19.13 20:06	*Run Number:*	12

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L



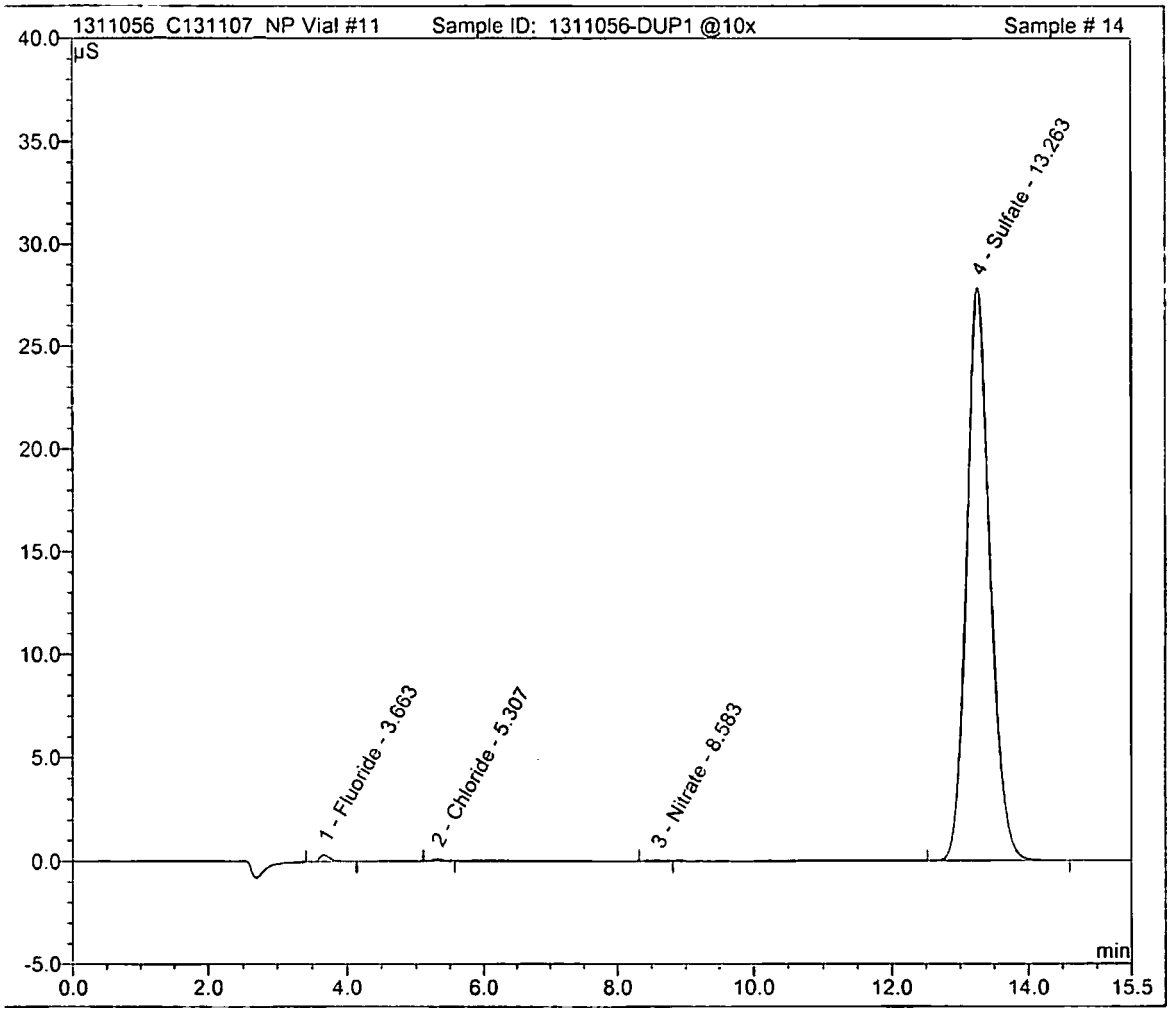
Sample Name:	**C131107-03 @10x**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**10**
Inj. Date/Time:	**11.19.13 20:24**	*Run Number:*	**13**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.65	Fluoride	BMB	0.057	0.326	0.2155
2	5.29	Chloride	BMB	0.017	0.089	0.9405
3	13.26	Sulfate	BMB	10.965	27.812	63.1021



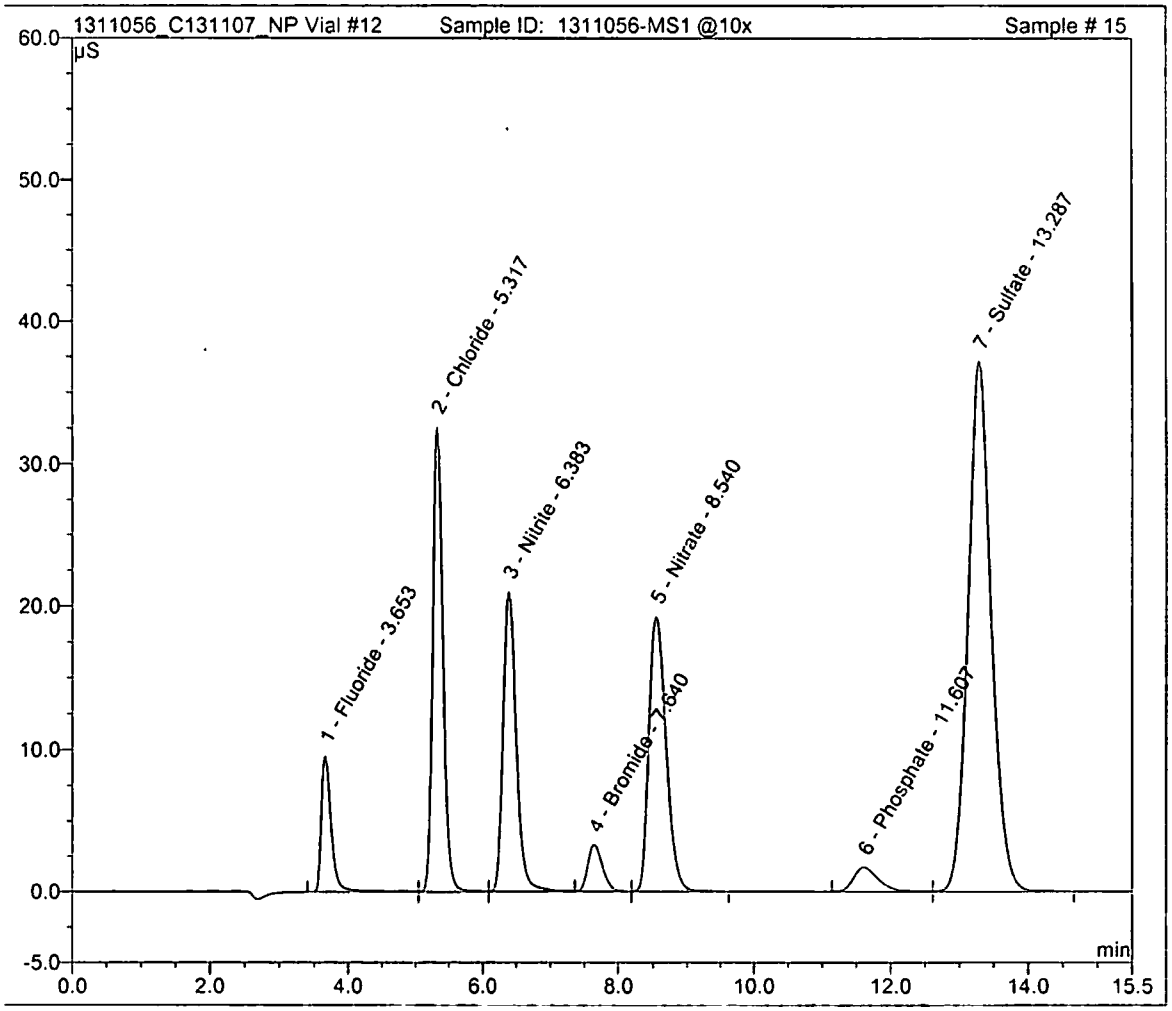
Sample Name:	**1311056-DUP1 @10x**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**11**
Inj. Date/Time:	**11.19.13 20:42**	*Run Number:*	**14**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.66	Fluoride	BMB	0.059	0.330	0.2200
2	5.31	Chloride	BMB	0.017	0.090	0.9389
3	8.58	Nitrate	BMB	0.004	0.015	0.1069
4	13.26	Sulfate	BMB	10.998	27.853	63.2757



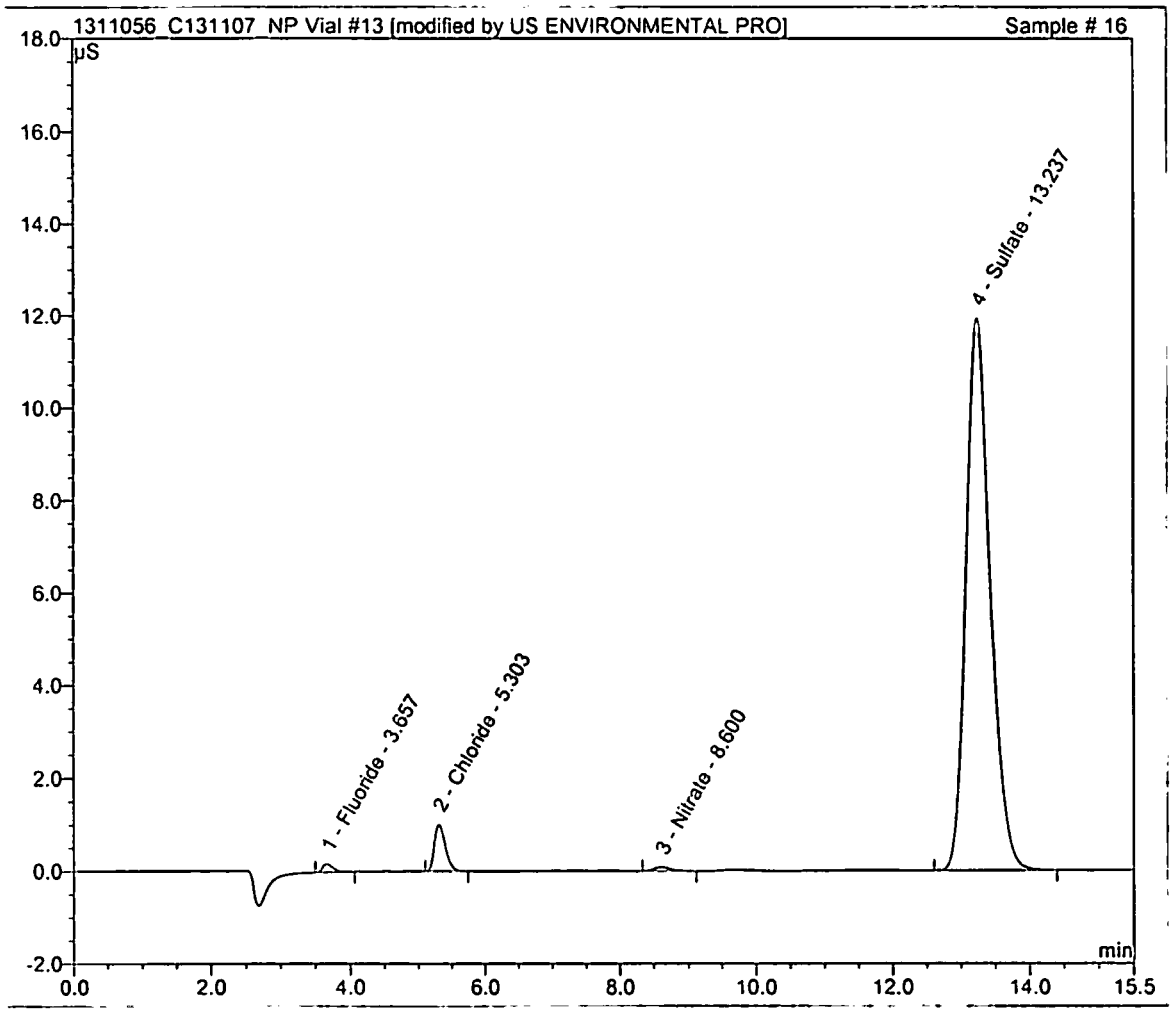
Sample Name:	**1311056-MS1 @10x**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**12**
Inj. Date/Time:	**11.19.13 21:00**	*Run Number:*	**15**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.65	Fluoride	BM	1.629	9.576	5.2069
2	5.32	Chloride	M	5.794	32.598	23.6406
3	6.38	Nitrite	M	4.813	21.013	9.6852
4	7.64	Bromide	Rd	0.827	3.278	9.5840
5	8.54	Nitrate	MB	5.472	19.255	10.4652
6	11.61	Phosphate	BM	0.723	1.725	4.4653
7	13.29	Sulfate	MB	14.520	37.167	81.7537



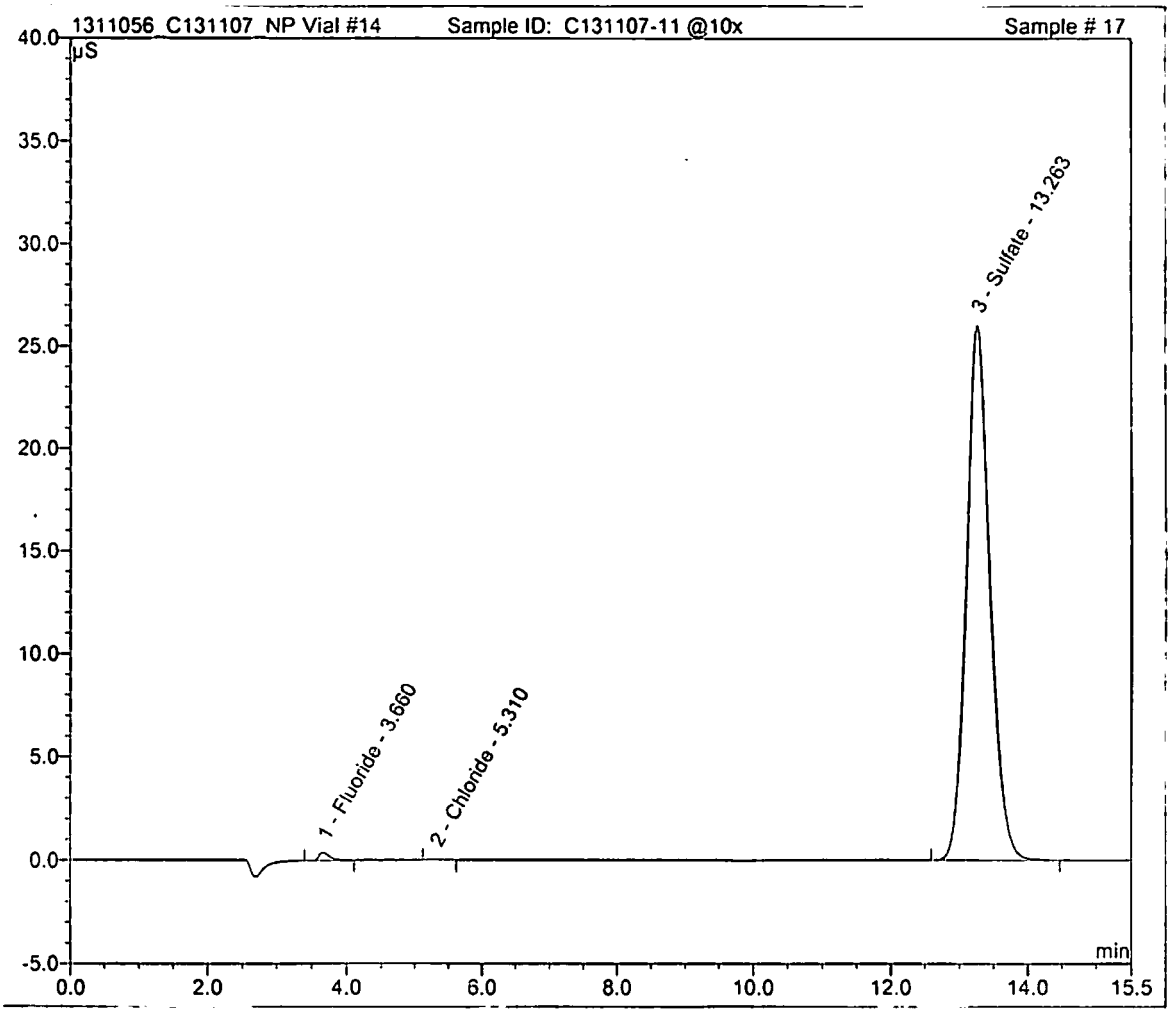
Sample Name:	C131107-06	*Inj. Vol.:*	25.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	13
Inj. Date/Time:	11.19.13 21:18	*Run Number:*	16

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.66	Fluoride	BMB	0.032	0.181	0.1294
2	5.30	Chloride	BMB	0.194	1.002	1.6668
3	8.60	Nitrate	BMB	0.023	0.081	0.1481
4	13.24	Sulfate	BMB	4.860	11.935	29.7524



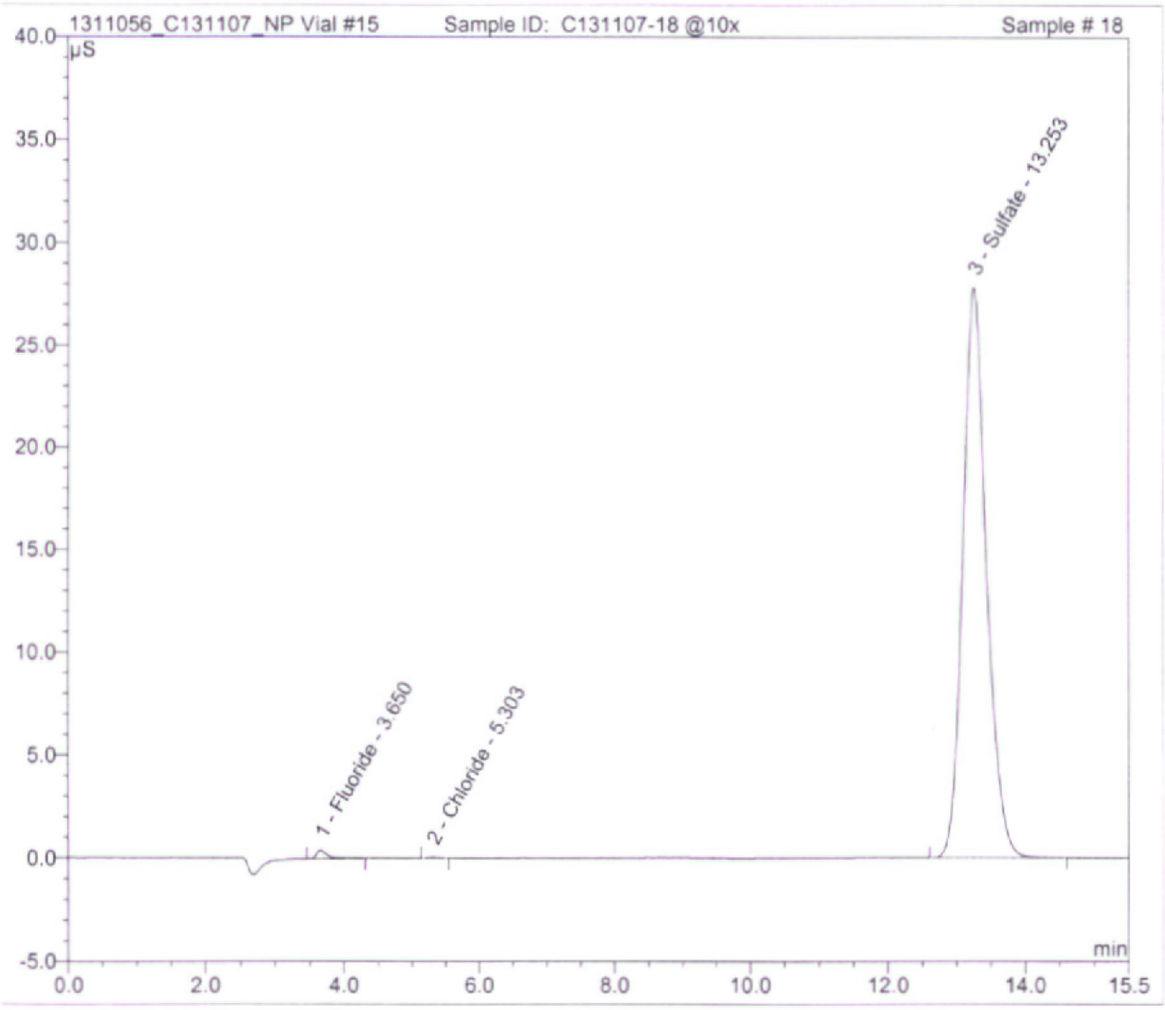
Sample Name:	C131107-11 @10x	*Inj. Vol.:*	25.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	14
Inj. Date/Time:	11.19.13 21:36	*Run Number:*	17

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.66	Fluoride	BMB	0.068	0.380	0.2499
2	5.31	Chloride	BMB	0.007	0.032	0.8961
3	13.26	Sulfate	BMB	10.363	26.040	59.8904



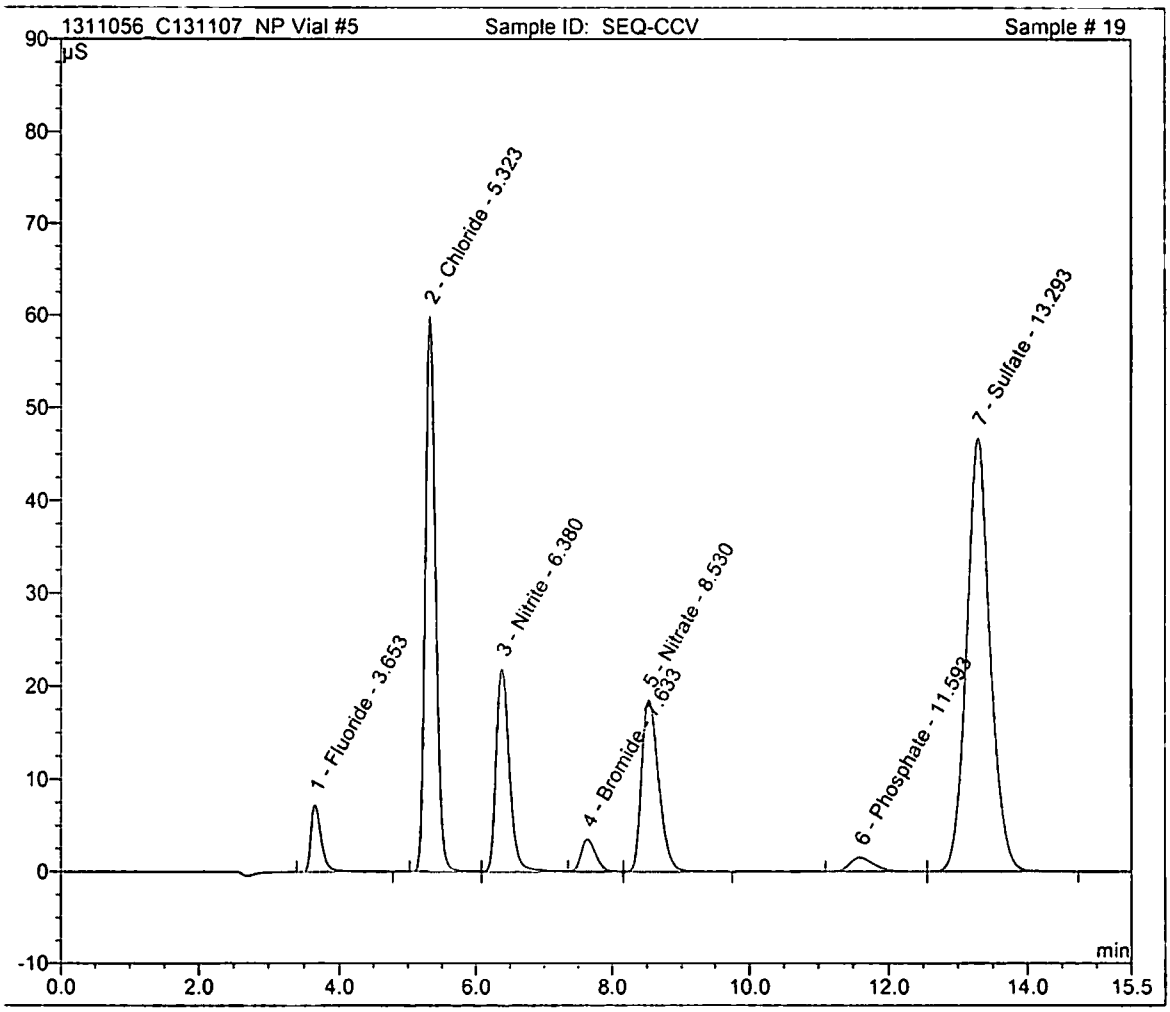
Sample Name:	**C131107-18 @10x**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**15**
Inj. Date/Time:	**11.19.13 21:54**	*Run Number:*	**18**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.65	Fluoride	BMB	0.072	0.387	0.2632
2	5.30	Chloride	BMB	0.007	0.037	0.8981
3	13.25	Sulfate	BMB	11.052	27.826	63.5656



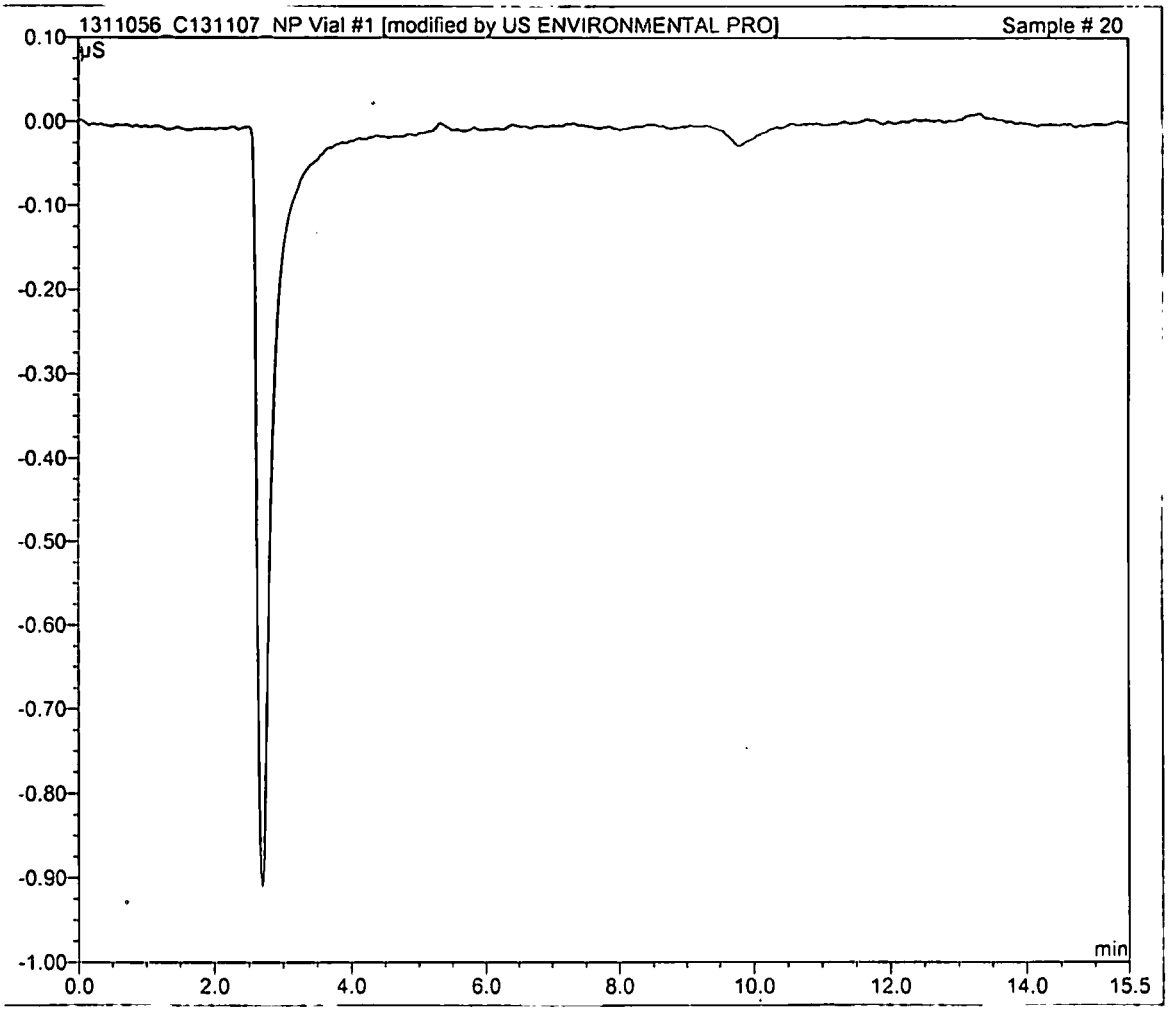
Sample Name:	**SEQ-CCV**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**5**
Inj. Date/Time:	**11.19.13 22:12**	*Run Number:*	**19**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.65	Fluoride	BMB	1.236	7.262	4.0107
2	5.32	Chloride	BM	10.410	59.877	40.4542
3	6.38	Nitrite	M	4.988	21.838	10.0265
4	7.63	Bromide	Rd	0.873	3.470	10.0924
5	8.53	Nitrate	MB	5.255	18.497	10.0912
6	11.59	Phosphate	BM	0.633	1.545	3.9456
7	13.29	Sulfate	MB	18.325	46.706	101.1529



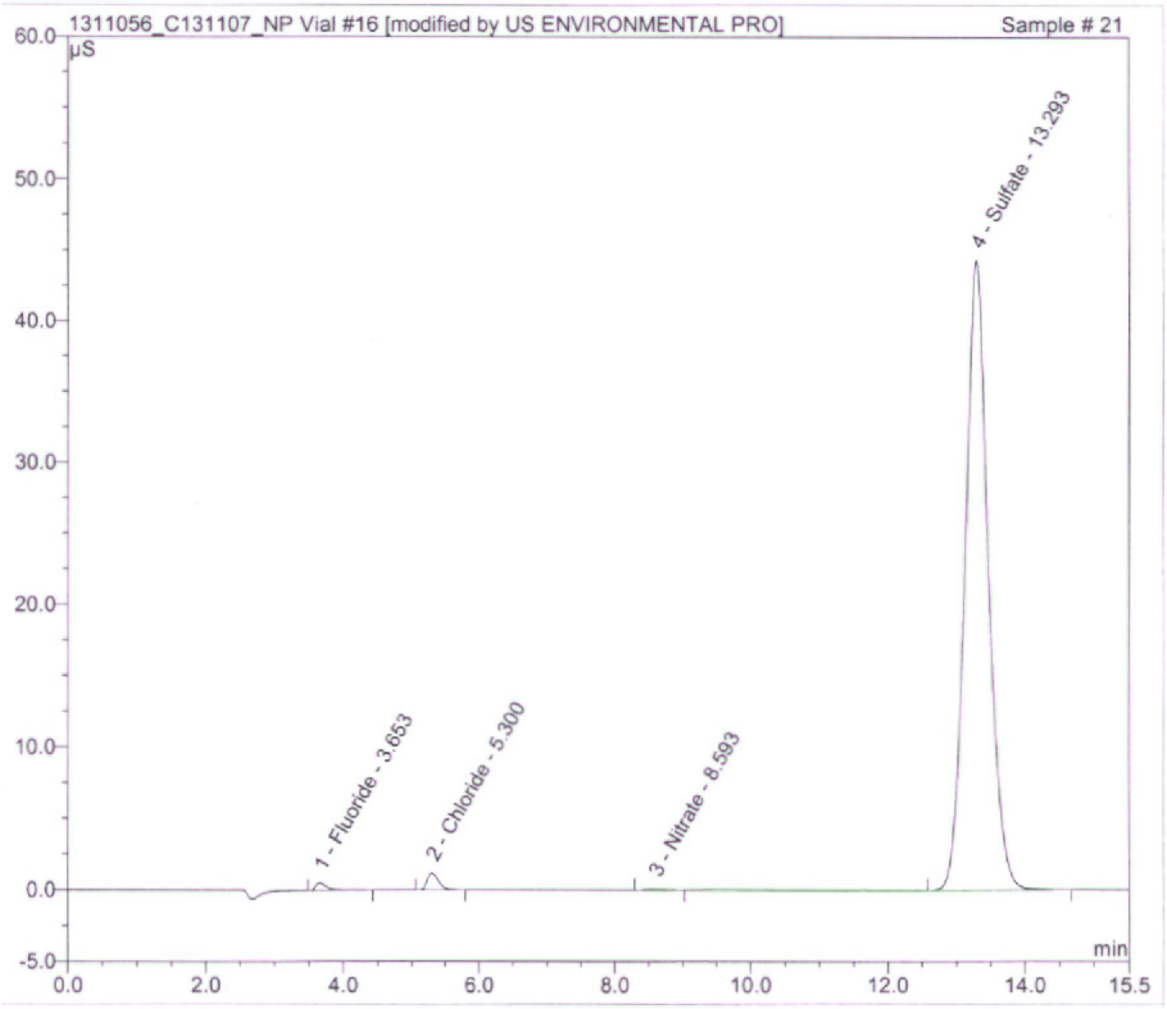
Sample Name:	SEQ-CCB	*Inj. Vol.:*	25.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	1
Inj. Date/Time:	11.19.13 22:30	*Run Number:*	20

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L



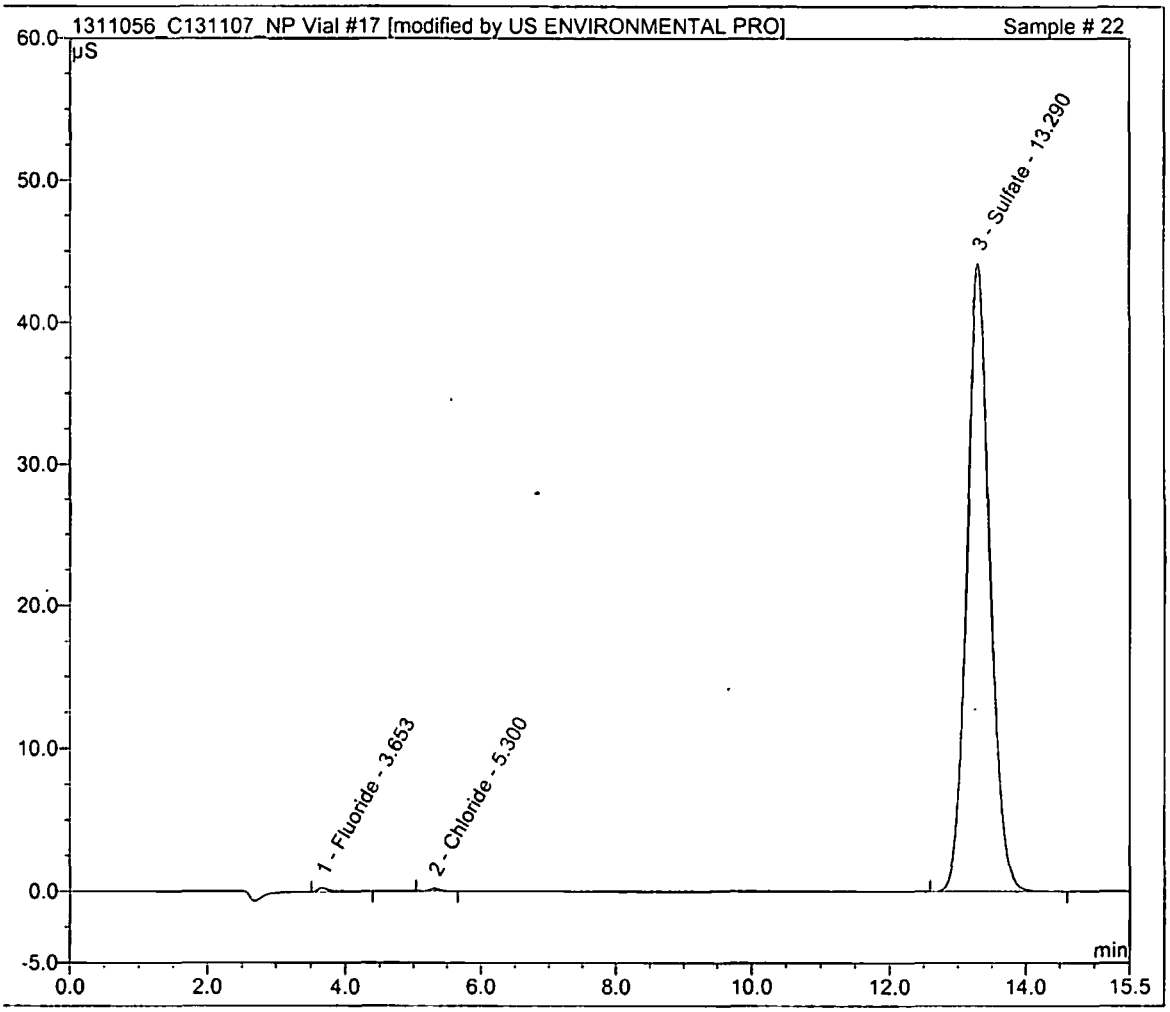
Sample Name:	**C131107-21**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**16**
Inj. Date/Time:	**11.19.13 22:48**	*Run Number:*	**21**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.65	Fluoride	BMB	0.101	0.519	0.3618
2	5.30	Chloride	BMB	0.227	1.160	1.8022
3	8.59	Nitrate	BMB	0.020	0.067	0.1408
4	13.29	Sulfate	BMB	17.257	44.292	95.7629



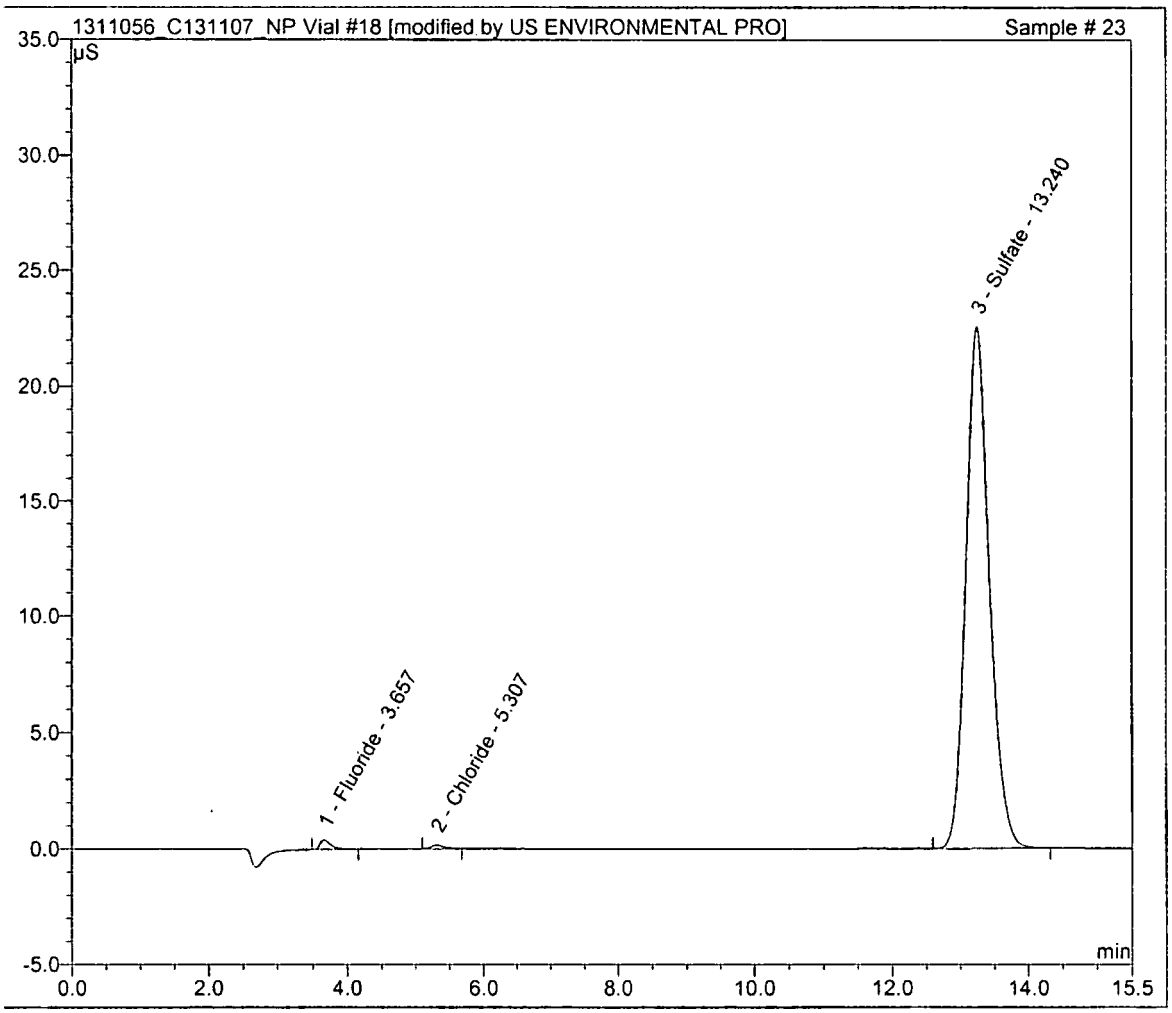
Sample Name:	**C131107-24 @10x**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**17**
Inj. Date/Time:	**11.19.13 23:07**	*Run Number:*	**22**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.65	Fluoride	BMB	0.059	0.283	0.2208
2	5.30	Chloride	BMB	0.035	0.177	1.0114
3	13.29	Sulfate	BMB	17.254	44.219	95.7498



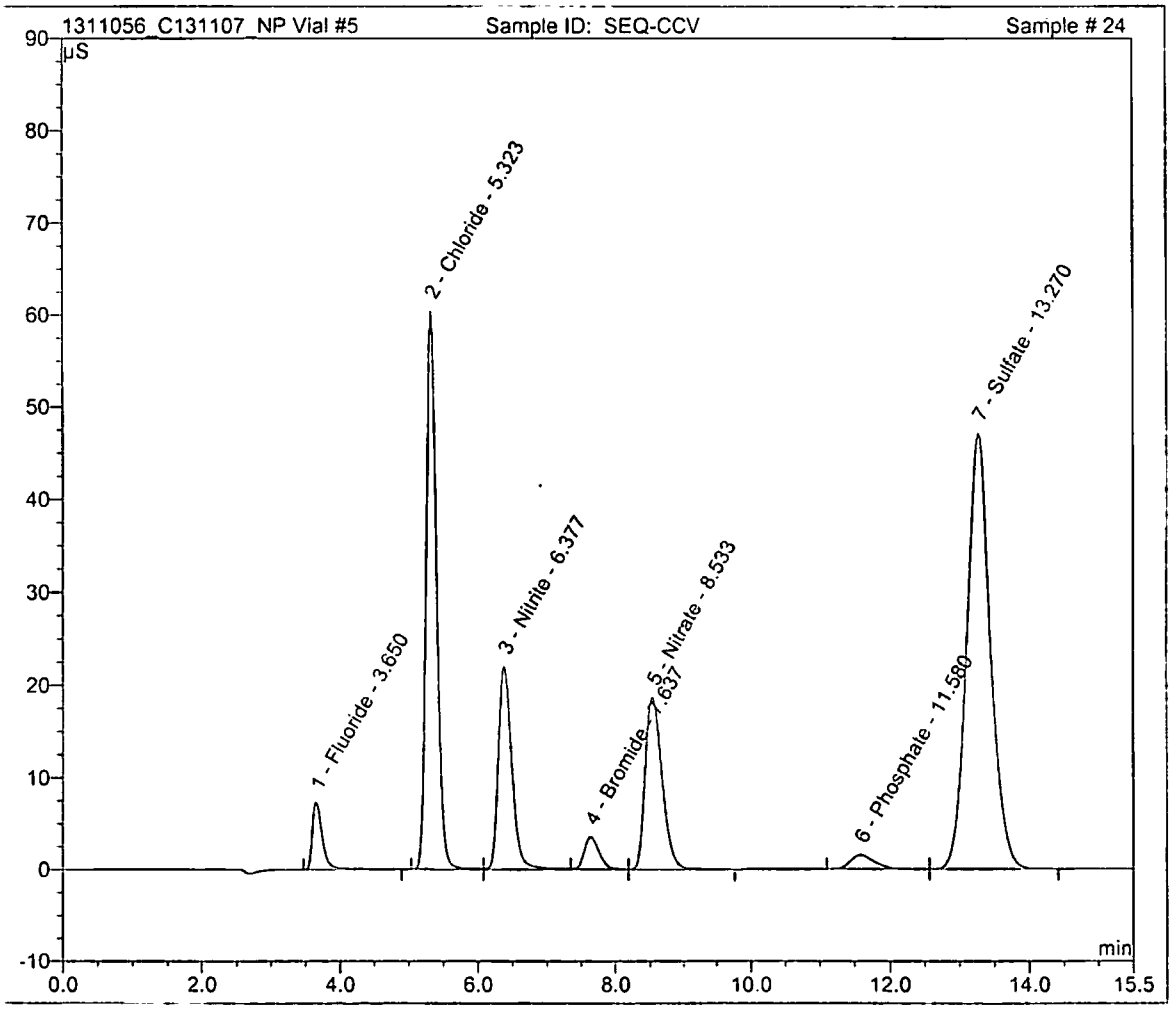
Sample Name:	**C131107-27 @10x**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**18**
Inj. Date/Time:	**11.19.13 23:25**	*Run Number:*	**23**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.66	Fluoride	BMB	0.071	0.405	0.2621
2	5.31	Chloride	BMB	0.031	0.154	0.9954
3	13.24	Sulfate	BMB*	8.982	22.568	52.4603



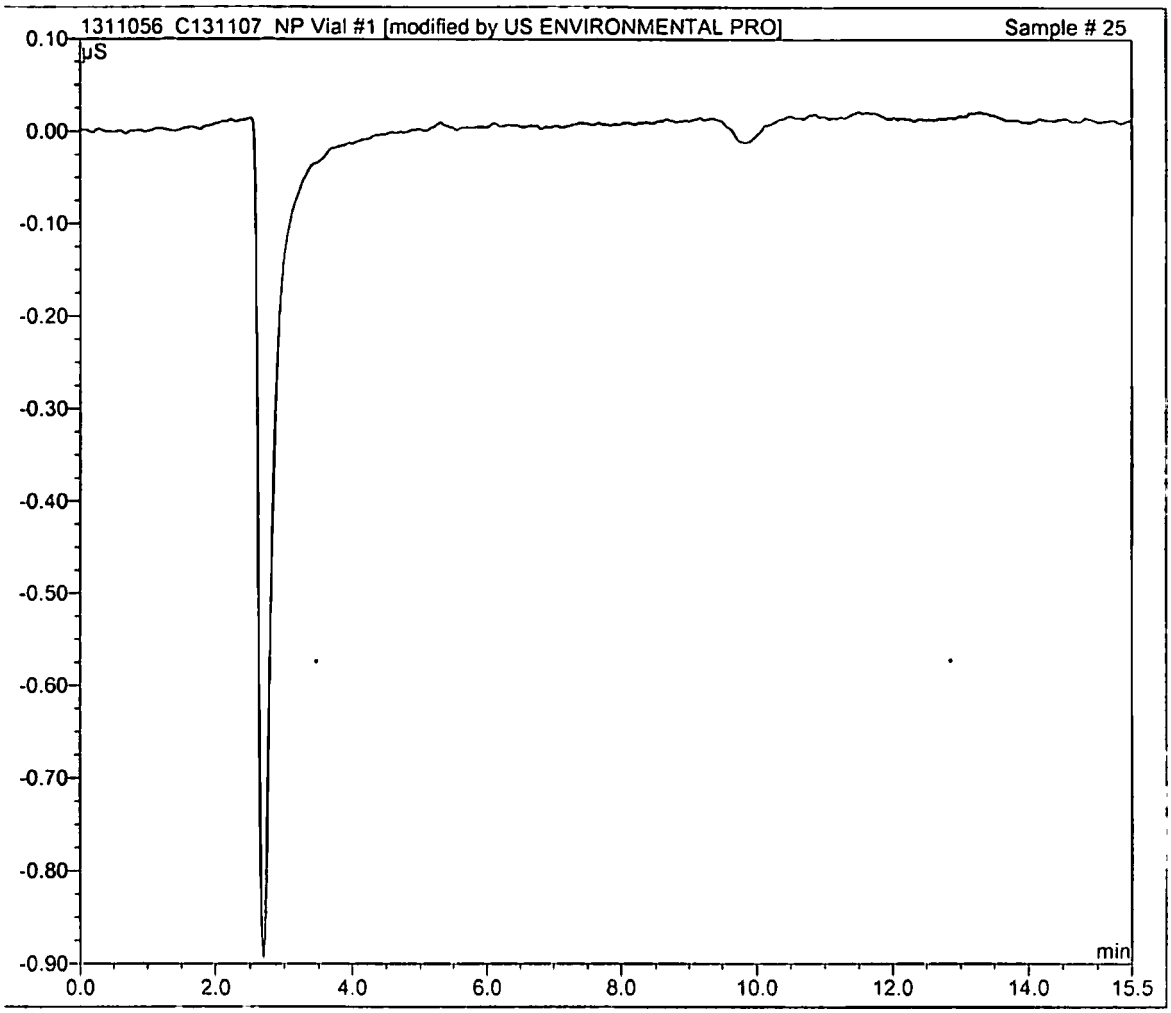
Sample Name:	**SEQ-CCV**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**5**
Inj. Date/Time:	**11.19.13 23:43**	*Run Number:*	**24**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.65	Fluoride	BMB	1.239	7.309	4.0193
2	5.32	Chloride	BM	10.473	60.390	40.6746
3	6.38	Nitrite	M	5.010	21.963	10.0696
4	7.64	Bromide	Rd	0.877	3.489	10.1418
5	8.53	Nitrate	MB	5.282	18.602	10.1365
6	11.58	Phosphate	BM	0.628	1.541	3.9193
7	13.27	Sulfate	MB	18.419	47.052	101.6267



Sample Name:	**SEQ-CCB**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**1**
Inj. Date/Time:	**11.20.13 00:01**	*Run Number:*	**25**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L



Sample Name:	STOP	*Inj. Vol.:*	25.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:	Program Stop	*Vial #:*	1
Inj. Date/Time:	11.20.13 00:16	*Run Number:*	26

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.

1311056_C131107_NP Vial #1 Sample ID: STOP Sample # 26

Can't open raw data file "C:\Chromel\data\Right_system\Sequences and Data\2013 ESAT\1311056_C131107_NP.SEQ\ECD_1.CHL\15916.acd".
The system cannot find the file specified.

PERKIN ELMER OPTIMA 4300DV ICP-OE

Project(s): Rio Argentine Nov 2013 Date: 12 / 10 / 2013

Work Order(s): C131107 TDF: A-025 Analyst: S. Van Overmeiren

Batch Preparation Information

Digest / Prep: TR / Total / Diss

Matrix: Water / Soil / Other

Batch ID: 1312039 / 1312035

Data Storage

Data File: X:/Metals Data Files/ A-025_1312039_131210

Standard Information

Calibration Std. # 1 = Reagent Blank Solution

ICV: *(LIMS ID: 3020406)*

Prepped: 11/04/13 By: SV

CRQL Stock: *(LIMS ID: 3020410)*

Prepped: 2-04-2013 By: SV

CRQL Daily *(LIMS ID: 3020411)*

Prepped: 12/10/13 By: SV

Calibration Std. # 2 = ESAT High, LIMS: 3020404

Prepped: 12/03/13 By: NP

ICV/CCV: 1:2 of 3020404 *(LIMS ID: 3020405)*

Prepped: 12/10/13 By: SV

ICSA: 3020408 **Prepped: 2-04-2013**

ICSAB: 3020409 Prepped: 2-04-2013

Spike Information

Dissolved Spikes

Sample ID: C131107-04

Sample ID: C131107-07

Sample vol: 10 mL

QCS-3 : 100 uL

Exp: 2-1-2014 (LIMS ID: 3020134)

Salt Spike: 100 uL

Prepped 2-04-2013 *(LIMS ID: 3020401)*

Tot. / Tot. Rec. Spikes

Sample ID: C131107-02, -05

Sample Vol: 50 mL

WW-LFS1: 500 uL

Exp: 2-1-2014 *(LIMS ID: 3020135)*

WW-LFS2: 500 uL

Exp: 2-1-2014 *(LIMS ID: 3020136)*

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: 1312045 / 1312046

Lims Entry (Date / Init): 12/11/13 SV

TLF-06.02	SOP: QAQ-04.01	Eff. Date: 11/11/2013

ESAT Region 8

ICP-OE Data Review Form

Analyst / Bench Review – Level I

LIMS:	C131107	TDF:	A-025
Matrix:	Water	Analysis:	Dissolved / Total Recoverable Metals

Method / Instrument QC Parameters				Analytical Batch / Sample Parameters	
☒ Yes ☐ No	ICV 95-105%	☒ Yes ☐ No	SCV 90-110%	☒ Yes ☐ No	Mth. Blk. (MB) / Prep. BLK (PB) ≤ ± PQL
☒ Yes ☐ No	ICB ≤ ± PQL	☒ Yes ☐ No	CRDL 70-130%	☒ Yes ☐ No	Blk. Spike (BS) 85-115% / 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 Analyzed Every 10% of Samples 70-130%
☒ Yes ☐ No	ICSAB Spiked Analytes 80-120%			☒ Yes ☐ No	Serial Dilution Analyzed
☒ Yes ☐ No	CCBs ≤ ± PQL	☒ Yes ☐ No	CCVs 90-110%	☒ Yes ☐ No	Internal Standards 80-120%

Other data quality issues 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:	[signature]	Date:	12/11/13

Peer Review of Analytical Analysis – Level II

Method / Instrument QC Parameters				Analytical Batch / Sample Parameters	
☒ Yes ☐ No	ICV 95-105%	☒ Yes ☐ No	SCV 90-110%	☒ Yes ☐ No	Mth. Blk. (MB) / Prep. BLK (PB) ≤ ± PQL
☒ Yes ☐ No	ICB ≤ ± PQL	☒ Yes ☐ No	CRDL 70-130%	☒ Yes ☐ No	Blk. Spike (BS) 85-115% / 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 Analyzed Every 10% of Samples 70-130%
☒ Yes ☐ No	ICSAB Spiked Analytes 80-120%			☒ Yes ☐ No	Serial Dilution Analyzed
☒ Yes ☐ No	CCBs ≤ ± PQL	☒ Yes ☐ No	CCVs 90-110%	☒ Yes ☐ No	Internal Standards 80-120%

Other data quality issues 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:	[signature]	Date:	12/11/2013

PREPARATION BENCH SHEET

1312039

TechLaw, Inc. - ESAT Region 8

Matrix: Water

Printed: 12/9/2013 1:26:02PM

Date Prepared: 12/09/13 13:24 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
C131107-01 A	DM-Hardness - Calculated	8-A	50	50						CHV-101U	
C131107-04 A	DM-Hardness - Calculated	8-A	50	50						DR-1	
C131107-07 A	DM-Hardness - Calculated	8-A	50	50						DR-2	
C131107-09 A	DM-Hardness - Calculated	8-A	50	50						DR-3	
C131107-12 A	DM-Hardness - Calculated	8-A	50	50						DR-4	
C131107-14 A	DM-Hardness - Calculated	8-A	50	50						DR-5	
C131107-16 A	DM-Hardness - Calculated	8-A	50	50						DR-6	
C131107-19 A	DM-Hardness - Calculated	8-A	50	50						DR-7	
C131107-22 A	DM-Hardness - Calculated	8-A	50	50						MW-109S	
C131107-25 A	DM-Hardness - Calculated	8-A	50	50						MW-110	
C131107-28 A	DM-Hardness - Calculated	8-A	50	50						MW-2D	
C131107-30 A	DM-Hardness - Calculated	8-A	50	50						MW-3D	
C131107-01 A	ICPOE Diss. Metals	8-A	50	50						CHV-101U	
C131107-04 A	ICPOE Diss. Metals	8-A	50	50						DR-1	
C131107-07 A	ICPOE Diss. Metals	8-A	50	50						DR-2	
C131107-09 A	ICPOE Diss. Metals	8-A	50	50						DR-3	
C131107-12 A	ICPOE Diss. Metals	8-A	50	50						DR-4	
C131107-14 A	ICPOE Diss. Metals	8-A	50	50						DR-5	
C131107-16 A	ICPOE Diss. Metals	8-A	50	50						DR-6	
C131107-19 A	ICPOE Diss. Metals	8-A	50	50						DR-7	
C131107-22 A	ICPOE Diss. Metals	8-A	50	50						MW-109S	
C131107-25 A	ICPOE Diss. Metals	8-A	50	50						MW-110	
C131107-28 A	ICPOE Diss. Metals	8-A	50	50						MW-2D	
C131107-30 A	ICPOE Diss. Metals	8-A	50	50						MW-3D	

12/10/13

Preparation Reviewed By Date

PREPARATION BENCH SHEET

1312039

TechLaw, Inc. - ESAT Region 8

Printed: 12/9/2013 1:26:02PM

Matrix: Water

Date Prepared: 12/09/13 13:24 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
1312039-BLK1	QC		50	50						Blank	
1312039-BS1	QC		10	10	3020403	100				LCS	
1312039-DUP1	QC		50	50					C131107-04	Duplicate	
1312039-MS1	QC		10	10	3020403	100			C131107-04	Matrix Spike	
1312039-MS2	QC		10	10	3020403	100			C131107-07	Matrix Spike	

Preparation Reviewed By Date

PREPARATION BENCH SHEET

1312035

TechLaw, Inc. - ESAT Region 8

Printed: 12/9/2013 8:14:53AM

Matrix: Water

Date Prepared: 12/09/13 08:09 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
1of C131107-02 A	ICPMS Tot. Rec. Metals	8-B	50	50						CHV-101U	10x
C131107-05 A	ICPMS Tot. Rec. Metals	8-B	50	50						DR-1	
C131107-08 A	ICPMS Tot. Rec. Metals	8-B	50	50						DR-2	
C131107-10 A	ICPMS Tot. Rec. Metals	8-B	50	50						DR-3	10x
C131107-13 A	ICPMS Tot. Rec. Metals	8-B	50	50						DR-4	↓
C131107-15 A	ICPMS Tot. Rec. Metals	8-B	50	50						DR-5	↓
C131107-17 A	ICPMS Tot. Rec. Metals	8-B	50	50						DR-6	↓
C131107-20 A	ICPMS Tot. Rec. Metals	8-B	50	50						DR-7	↓
C131107-23 A	ICPMS Tot. Rec. Metals	8-B	50	50						MW-109S	10x
C131107-26 A	ICPMS Tot. Rec. Metals	8-B	50	50						MW-110	↓
C131107-29 A	ICPMS Tot. Rec. Metals	8-B	50	50						MW-2D	↓
C131107-31 A	ICPMS Tot. Rec. Metals	8-B	50	50						MW-3D	↓
C131107-02 A	ICPOE Tot. Rec. Metals	8-B	50	50						CHV-101U	
C131107-05 A	ICPOE Tot. Rec. Metals	8-B	50	50						DR-1	
C131107-08 A	ICPOE Tot. Rec. Metals	8-B	50	50						DR-2	
C131107-10 A	ICPOE Tot. Rec. Metals	8-B	50	50						DR-3	
C131107-13 A	ICPOE Tot. Rec. Metals	8-B	50	50						DR-4	
C131107-15 A	ICPOE Tot. Rec. Metals	8-B	50	50						DR-5	
C131107-17 A	ICPOE Tot. Rec. Metals	8-B	50	50						DR-6	
C131107-20 A	ICPOE Tot. Rec. Metals	8-B	50	50						DR-7	
C131107-23 A	ICPOE Tot. Rec. Metals	8-B	50	50						MW-109S	
C131107-26 A	ICPOE Tot. Rec. Metals	8-B	50	50						MW-110	
C131107-29 A	ICPOE Tot. Rec. Metals	8-B	50	50						MW-2D	
C131107-31 A	ICPOE Tot. Rec. Metals	8-B	50	50						MW-3D	

12/10/13

Preparation Reviewed By Date

PREPARATION BENCH SHEET

1312035

TechLaw, Inc. - ESAT Region 8

Matrix: Water

Printed: 12/9/2013 8:14:53AM

Date Prepared: 12/09/13 08:09 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
1312035-BLK1	QC		50	50						Blank	
1312035-BLK2	QC		50	50						Blank	
1312035-DUP1	QC		50	50					C131107-02	Duplicate	
1312035-DUP2	QC		50	50					C131107-02	Duplicate	
1312035-MS1	QC		50	50	3020135	500	3020136	500	C131107-02	Matrix Spike	
1312035-MS2	QC		50	50	3020135	500	3020136	500	C131107-02	Matrix Spike	
1312035-MS3	QC		50	50	3020135	500	3020136	500	C131107-05	Matrix Spike	
1312035-MS4	QC		50	50	3020135	500	3020136	500	C131107-05	Matrix Spike	
1312035-SRM1	QC		50	50	3020145	500	3020146	500		Reference	
1312035-SRM2	QC		50	50	3020145	500	3020146	500		Reference	

Preparation Reviewed By Date

ANALYSIS SEQUENCE

1312045 Av12/11/13

Instrument: ICPOE - PE Optima Sequence Date: 12/10/13 00:00 Printed: 12/11/2013 8:44:59AM

Lab Number	Dilut. Factor	Analysis	STD ID	Sample/Std Name	EPA Tag ID	Source Sple	Comments
1312045-ICV1		QC	3062601	Initial Cal Check		-	
1312045-SCV1		QC	3020406	Secondary Cal Check		-	
1312045-ICB1		QC		Initial Cal Blank		-	
1312045-CRL1		QC	3020411	Instrument RL Check		-	
1312045-IFA1		QC	3020408	Interference Check A		-	
1312045-IFB1		QC	3020409	Interference Check B		-	
1312039-BLK1		QC		Blank		-	
1312039-BS1		QC		LCS		-	
C131107-04 A		DM-Hardness - Calculated		DR-1	8-A		
C131107-04 A		ICPOE Diss. Metals		DR-1	8-A		
1312039-DUP1		QC		Duplicate		C131107-04	
1312045-SRD1		QC		Serial Dilution		C131107-04	
1312039-MS1		QC		Matrix Spike		C131107-04	
C131107-07 A		DM-Hardness - Calculated		DR-2	8-A		
C131107-07 A		ICPOE Diss. Metals		DR-2	8-A		
1312039-MS2		QC		Matrix Spike		C131107-07	
C131107-01 A		DM-Hardness - Calculated		CHV-101U	8-A		
C131107-01 A		ICPOE Diss. Metals		CHV-101U	8-A		
1312045-CCV1		QC	3020405	Calibration Check		-	
1312045-CCB1		QC		Calibration Blank		-	
C131107-09 A		DM-Hardness - Calculated		DR-3	8-A		
C131107-09 A		ICPOE Diss. Metals		DR-3	8-A		
C131107-12 A		DM-Hardness - Calculated		DR-4	8-A		
C131107-12 A		ICPOE Diss. Metals		DR-4	8-A		
C131107-14 A		DM-Hardness - Calculated		DR-5	8-A		
C131107-14 A		ICPOE Diss. Metals		DR-5	8-A		
C131107-16 A		DM-Hardness - Calculated		DR-6	8-A		
C131107-16 A		ICPOE Diss. Metals		DR-6	8-A		
C131107-19 A		DM-Hardness - Calculated		DR-7	8-A		
C131107-19 A		ICPOE Diss. Metals		DR-7	8-A		
C131107-22 A		DM-Hardness - Calculated		MW-109S	8-A		
C131107-22 A		ICPOE Diss. Metals		MW-109S	8-A		
C131107-25 A		DM-Hardness - Calculated		MW-110	8-A		
C131107-25 A		ICPOE Diss. Metals		MW-110	8-A		
C131107-28 A		DM-Hardness - Calculated		MW-2D	8-A		
C131107-28 A		ICPOE Diss. Metals		MW-2D	8-A		
C131107-30 A		DM-Hardness - Calculated		MW-3D	8-A		
C131107-30 A		ICPOE Diss. Metals		MW-3D	8-A		
1312045-CCV2		QC	3020405	Calibration Check		-	
1312045-CCB2		QC		Calibration Blank		-	