Rico Argentine_Surface Water_JUN 2015 Due: 06/28/2015
TDF: A-081 1323 LIMS: C150604

1769944 - R8 SDMS

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

ESAT Region 8

Final Report Review Form

LIMS: C150604	Project: Rico Argentina - SW, June 2015
TDF: A-081	Due Date: 6/29/2015

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: 7/6/2015

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: 7/14/15
Corrections By:	Date:

1323

TLF-05.05	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: C150604	Project Name: Rico Argentine_SW_JUN 2015
TDF: A-081	Due Date: 6/28/15

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	7/10/15	HS
LIMS Tracking Updated		
Package to ESAT Mgmt. For Approval		
Package to DCO for CD-ROM and EPA Delivery	7/14/15	
CD ROM Completed and Attached to Deliverable	7/14/15	HS
Package Delivered to EPA		
Signed DCN Returned	7/23/15	HS

Deliverable Submission and Evaluation Form

EPA Region 8 ESAT

Contractor: TechLaw | Updated: 9/15/14 | Contract No: EP-W-13-028

Submission Information (to be completed by ESAT):

Task Order: 0002 - Analytical Support and Data Validation					
DCN:	EP8 - 2 - 1323				
TDF:	A081	Line Item:	All	TDF Status:	In Progress
Submission Date: 7/10/2015					
Submitted By: Holly Sprunger, ESAT Environmental Scientist					
Deliverable Description:					
Rico Argentine_Surface Waters_JUN 2015					
Submitter Comments:					
Hardcopy Data Report + CD-ROM with Data Report .pdf, Scribe EXCEL EDD, and Raw Data .pdf					

Evaluation Information (to be completed by EPA):

Review Date: 7/23/15	
Reviewed by:	
Evaluation:	☑ This deliverable is considered acceptable.
	☐ This deliverable requires revisions as noted below or per attached.
Evaluation Comments:	
Completeness Check	

WORK ORDER

Printed: 6/4/2015 10:01:31AM

C150604

TechLaw, Inc. - ESAT Region 8

Client: Superfund
Project: Rico Argentine_Surface Waters_JUN 2015_A-081
Project Manager: Scott VanOvermeiren
Project Number: A-081

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: 06/28/15 00:00 (30 day TAT)

Received By: Laura Wilson
Date Received: 05/29/15 11:50
Logged In By: Jessica Boyles
Date Logged In: 06/04/15 09:54

Samples Received at: 2.9°C

Custody Seals	Yes	Received On Ice	Yes
Containers Intact	Yes		
COC/Labels Agree	Yes		
Preservation Confin	Yes		

Analysis	Due	TAT	Expires	Comments
C150604-01 ART-POOL [Water] Sampled 05/28/15 13:00 (GMT-12:00) International Date				
Dissolved Metals + Hardness	06/19/15 00:00	21	11/24/15 18:00	
C150604-02 ART-POOL [Water] Sampled 05/28/15 13:00 (GMT-12:00) International Date				
Total Recoverable Metals	06/19/15 00:00	21	11/24/15 18:00	
C150604-03 ART-POOL [Water] Sampled 05/28/15 13:00 (GMT-12:00) International Date				
WC - Anions by Ion Chromatography 2(	06/28/15 00:00	30	06/25/15 19:00	

Reviewed By

Date

WORK ORDER

Printed: 6/4/2015 10:01:31AM

C150604

TechLaw, Inc. - ESAT Region 8

Client:	**Superfund**	**Project Manager:**	**Scott VanOvermeiren**
Project:	**Rico Argentine_Surface Waters_JUN 2015_A-081**	**Project Number:**	**A-081**

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

USEPA
DateShipped: 5/28/2015
CarrierName: Hand Carry
AirbillNo:

CHAIN OF CUSTODY RECORD
Site #: 08BU
Contact Name: Elliott Petri
Contact Phone: 719-216-2754

No: 8-052915-114218-0004
Cooler #:
Lab: ESAT
Lab Phone: 303-312-7798

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	Lab QC
	08BU-0019	ART-POOL	Dissolved Metals	Water	5/28/2015 1300	1	250 ml Poly	HNO3 pH<2	
	08BU-0019	ART-POOL	Total Metals	Water	5/28/2015 1300	1	250 ml Poly	HNO3 pH<2	
	08BU-0019	ART-POOL	Sulfate	Water	5/28/2015 1300	1	250 ml Poly	None	
						per Elliott @ 6/4/15 0907			

Special Instructions: Disolved Metals Sample has been field filtered.
Rico Argentine TDF A-081

SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	WESTON	11:50 5/29/15	Tech Law	1150 5/29/15	

TechLaw

Sample Receipt Form - TLF-51.00

Project: Rio Argentine **TDF #:** ~~TEA~~ A-081

Date Received: 5/29/15 **Time Received:** 1150 **By:** Laura Wilson

1	Airbill/shipping documents present?	Drop Off	Yes	No
2	Custody seals on **shipping** containers present and intact?	None	Yes	No
3	Custody seals on **sample** containers present and intact?	None	Yes	No
4	Chain of Custody (COC) present?		Yes	No
5	COC and sample container information agree?		Yes	No
6	Aqueous samples preserved correctly, if required?	N/A	Yes	No
7	Samples received within holding times for requested analyses?		Yes	No
8	Sufficient sample volume for requested analyses?		Yes	No
9	Sample containers intact and not leaking?		Yes	No
10	Sample containers appropriate for requested analyses?		Yes	No
11	Samples shipped on ice?		Yes	No
12	Cooler temperature(s) ≤ 6.0 °C?	N/A	Yes	No

Cooler #:	1	2	3	4	5
Temperature (°C):	2.9				

Comments and Additional Information:

Client notified of anomalies, if necessary?	N/A	Yes	No
Anomalies noted in case narrative and data qualified, if necessary ?	N/A	Yes	No

C150604

ESAT Technical Direction Form

Contract No. EPW13028
EPA Region 8

Site ID: 08BU	*Date Issued:* 5/26/2015	*Date Closed:*
TDF ID: A-081	*Date Updated:*	*Closed By:*

Name: Rico Argentine 2015 Analytical Support June

Details: The Contractor shall analyze approximately 3 surface water samples collected from the Rico Argentine Tunnel Superfund site as indicated in the Analytical Information Section. The samples will be collected by Weston Solutions and sent to the ESAT R8 Lab during the week ending 5/29/15.

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

METALS

☑ Dissolved ☑ Total Recoverabl ☐ 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

7470/7471/7473 ☐ Hg

lv 07/02/15

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 final sample(s).		

TechLaw
Quality & Integrity

Ion Chromatography
EPA Method 300.0 / SW-846 Method 9056

Analysis Date: 06/23/2015 Analyst: Nick Philpot

TDF #: A-081 Project Name: Rico Aregentine Surface Water JUN 2015 LIMS #:C150604

Standards Traceability Documentation

Vendor	Standard	LIMS ID #:	Expires	Purpose
Inorganic Ventures	QCP-QCS-5	C503008	1-31-2016	ICV / CCV
Inorganic Ventures	10,000 ppm Cl	C503002	1-31-2016	Calibration
Inorganic Ventures	10,000 ppm NO_2	C503003	1-31-2016	Calibration
Inorganic Ventures	10,000 ppm Br	C503004	1-31-2016	Calibration
Inorganic Ventures	10,000 ppm PO_4	C503006	1-31-2016	Calibration
Inorganic Ventures	10,000 ppm Fl	C503001	1-31-2016	Calibration
Inorganic Ventures	10,000 ppm SO_4	C503007	1-31-2016	Calibration
Inorganic Ventures	10,000 ppm NO_3	C503005	1-31-2016	Calibration
ESAT	Cl + SO_4 + F	C503010	1-31-2016	MS / LCS

Calibration Standards

Cal Stock LIMS ID #: C503011 Prepared: 01/31/2015 Exp: 01/31/2016

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 2000 Eluent Cond: approx 0.00 Eluent Prep. Date: 06/23/2015

Cal. Date: 06/22/15 Cal. By: N Philpot

Analytical Run Information

CCV LIMS ID #: C503012 Prepared: 01/31/2015 Exp: prepared as needed

Spiked Sample ID: C150604-03 mL Sample: 10
mL Spike: varies

Analytical Batch ID: 1506016

Sequence ID: 1506134

Upload Date: 06/30/2014 Upload By: NP

Peer Review Date: 07/02/15 By: SV

ANALYSIS SEQUENCE

1506134

Instrument: ESAT Dionex IC Sequence Date: 06/30/15 11:00 Printed: 6/30/2015 11:03:32AM

Lab Number	Dilut. Factor	Analysis	STD ID	Sample/Std Name	EPA Tag ID	Source Sple	Comments
1506134-ICV1		QC	C503012	Initial Cal Check		-	
1506134-ICB1		QC		Initial Cal Blank		-	
1506134-SCV1		QC	C503008	Secondary Cal Check		-	
1506134-IBL1		QC		Instrument Blank		-	
1506016-BS1		QC		LCS		-	
1506016-BLK1		QC		Blank		-	
C150604-03 A		nions by Ion Chromatograp		ART-POOL	8-C		
1506016-DUP1		QC		Duplicate		C150604-03	
1506016-MS1		QC		Matrix Spike		C150604-03	
1506134-CCV1		QC	C503012	Calibration Check		-	
1506134-CCB1		QC		Calibration Blank		-	

PREPARATION BENCH SHEET

1506016

TechLaw, Inc. - ESAT Region 8

Printed: 6/30/2015 11:04:06AM

Matrix: Water

Date Prepared: 06/04/15 10:41 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
1506016-BLK1	QC		10	10						Blank	
1506016-BS1	QC		10	10	C503010	100				LCS	
1506016-DUP1	QC		10	10					C150604-03	Duplicate	
1506016-MS1	QC		10	10	C503010	100			C150604-03	Matrix Spike	
C150604-03 A	nions by Ion Chromatograpl	8-C	10	10						ART-POOL	

A-081

Preparation Reviewed By Date

Sequence: 1506016_C150604_NP
Operator: US ENVIRONMENTAL PRO
Printed: 6/23/2015 3:55:24 PM

Title: Right Sequence
Datasource: D9VVZ191_local
Location: Right_system\Sequences and Data\2015 ESAT
Timebase: Right_system
#Samples: 19
Created: 6/23/2015 8:48:41 AM by US ENVIRONMENTAL PRO
Last Update: 6/23/2015 10:11:35 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	6/22/2015 10:30:22 AM	25.0	Finished	Met Anions Rt
2	2	Std 1	1.0000	Standard	6/22/2015 10:47:56 AM	25.0	Finished	Met Anions Rt
3	3	Std 2	1.0000	Standard	6/22/2015 11:05:30 AM	25.0	Finished	Met Anions Rt
4	4	Std 3	1.0000	Standard	6/22/2015 11:23:04 AM	25.0	Finished	Met Anions Rt
5	5	Std 4	1.0000	Standard	6/22/2015 11:40:39 AM	25.0	Finished	Met Anions Rt
6	6	Std 5	1.0000	Standard	6/22/2015 11:58:13 AM	25.0	Finished	Met Anions Rt
7	5	SEQ-ICV	1.0000	Unknown	6/23/2015 10:04:06 AM	25.0	Finished	Met Anions Rt
8	5	SEQ-ICV	1.0000	Unknown	6/23/2015 10:21:41 AM	25.0	Finished	Met Anions Rt
9	1	SEQ-ICB	1.0000	Unknown	6/23/2015 10:39:16 AM	25.0	Finished	Met Anions Rt
10	7	SEQ-SCV	1.0000	Unknown	6/23/2015 10:56:50 AM	25.0	Finished	Met Anions Rt
11	8	SEQ-IBL	1.0000	Unknown	6/23/2015 11:14:25 AM	25.0	Finished	Met Anions Rt
12	9	1506016-BS1	1.0000	Unknown	6/23/2015 11:32:00 AM	25.0	Finished	Met Anions Rt
13	10	1506016-BLK1	1.0000	Unknown	6/23/2015 11:49:34 AM	25.0	Finished	Met Anions Rt
14	22	C150604-03 @100x	1.0000	Unknown	6/23/2015 12:07:09 PM	25.0	Finished	Met Anions Rt
15	23	1506016-DUP1 @100x	1.0000	Unknown	6/23/2015 1:51:07 PM	25.0	Finished	Met Anions Rt
16	24	1506016-MS1 @100x	1.0000	Unknown	6/23/2015 2:08:42 PM	25.0	Finished	Met Anions Rt
17	5	SEQ-CCV	1.0000	Unknown	6/23/2015 2:26:16 PM	25.0	Finished	Met Anions Rt
18	1	SEQ-CCB	1.0000	Unknown	6/23/2015 2:43:51 PM	25.0	Finished	Met Anions Rt
19	1	STOP	1.0000	Unknown	6/23/2015 2:58:58 PM	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	3.137	0.0367	3.03	0.32	5.94	0.1598
3	Std 2	3.127	0.0861	3.37	0.69	5.99	0.3748
4	Std 3	3.127	0.2023	3.09	1.73	5.69	0.8804
5	Std 4	3.123	0.8939	2.83	7.70	5.14	3.8901
6	Std 5	3.117	2.3112	2.65	19.48	4.92	10.0577
7	SEQ-ICV	3.120	0.8731	2.76	7.27	4.83	3.7998
8	SEQ-ICV	3.123	0.8663	2.78	7.11	4.78	3.7698
9	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	SEQ-SCV	3.143	2.4631	7.76	20.18	13.90	10.7190
11	SEQ-IBL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	1506016-BS1	3.133	1.2616	6.86	10.61	10.93	5.4902
13	1506016-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	C150604-03 @100x	3.137	2.3762	8.25	18.51	19.68	10.3406
15	1506016-DUP1 @100x	3.143	2.3814	8.23	18.39	19.76	10.3632
16	1506016-MS1 @100x	3.153	3.7704	7.97	27.83	15.44	16.4079
17	SEQ-CCV	3.137	0.9538	2.83	7.29	5.02	4.1508
18	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	40.720	18.476	62.406	147.110	122.031	80.404
	Average:	3.132	1.421	4.800	11.316	9.387	6.185
	Rel.Std.Dev:	0.340 %	80.083 %	52.221 %	76.917 %	62.189 %	80.083 %

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	4.69	0.274	22.66	1.912	34.99	1.6885
3	Std 2	4.67	0.583	22.86	4.056	35.24	3.5663
4	Std 3	4.67	1.540	23.50	11.073	36.42	9.2371
5	Std 4	4.69	7.754	24.57	57.311	38.26	41.9069
6	Std 5	4.72	21.612	24.77	150.307	37.98	99.4834
7	SEQ-ICV	4.67	7.801	24.64	57.321	38.08	42.1324
8	SEQ-ICV	4.69	7.649	24.55	56.421	37.93	41.4059
9	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	SEQ-SCV	4.69	2.495	7.87	17.721	12.21	14.6973
11	SEQ-IBL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	1506016-BS1	4.69	4.481	24.37	32.877	33.86	25.4831
13	1506016-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	C150604-03 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	1506016-DUP1 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

16	1506016-MS1 @100x	4.70	4.702	9.93	32.268	17.91	26.6418
17	SEQ-CCV	4.71	8.297	24.61	55.984	38.58	44.4972
18	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	51.590	67.188	234.310	477.250	361.466	350.740
	Average:	4.690	6.108	21.301	43.386	32.861	31.885
	Rel.Std.Dev:	0.311 %	97.714 %	29.072 %	96.013 %	27.477 %	86.547 %

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	5.680	0.155	12.797	0.876	16.027	0.424
3	Std 2	5.660	0.321	12.561	1.823	15.838	0.876
4	Std 3	5.660	0.833	12.702	4.723	15.532	2.266
5	Std 4	5.663	3.790	12.010	21.599	14.419	10.109
6	Std 5	5.677	9.725	11.145	53.652	13.558	24.986
7	SEQ-ICV	5.633	3.854	12.171	21.757	14.453	10.275
8	SEQ-ICV	5.663	3.712	11.912	21.212	14.262	9.907
9	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	SEQ-SCV	5.693	5.582	17.597	31.298	21.557	14.715
11	SEQ-IBL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	1506016-BS1	5.677	3.027	16.462	17.172	17.688	8.117
13	1506016-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	C150604-03 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	1506016-DUP1 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
16	1506016-MS1 @100x	5.687	2.790	5.894	14.760	8.190	7.491
17	SEQ-CCV	5.687	4.009	11.892	20.527	14.147	10.678
18	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	62.380	37.797	137.144	209.399	165.671	99.845
	Average:	5.671	3.436	12.468	19.036	15.061	9.077
	Rel.Std.Dev:	0.301 %	78.471 %	23.838 %	78.311 %	21.266 %	76.534 %

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	6.920	0.030	2.517	0.150	2.741	0.456
3	Std 2	6.900	0.066	2.595	0.314	2.730	0.989
4	Std 3	6.893	0.161	2.456	0.794	2.611	2.390
5	Std 4	6.877	0.695	2.203	3.454	2.306	10.044
6	Std 5	6.863	1.822	2.087	9.267	2.342	24.995
7	SEQ-ICV	6.870	0.623	1.969	3.078	2.044	9.038

8	SEQ-ICV	6.880	0.683	2.192	3.433	2.308	9.876
9	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	SEQ-SCV	6.903	3.705	11.680	19.101	13.156	47.292
11	SEQ-IBL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	1506016-BS1	6.897	0.742	4.035	3.678	3.788	10.697
13	1506016-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	C150604-03 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	1506016-DUP1 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
16	1506016-MS1 @100x	6.920	0.767	1.622	3.592	1.993	11.049
17	SEQ-CCV	6.910	0.740	2.194	3.322	2.290	10.661
18	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	75.833	10.035	35.550	50.182	38.310	137.486
	Average:	6.894	0.912	3.232	4.562	3.483	12.499
	Rel.Std.Dev:	0.281 %	114.688 %	88.738 %	118.693 %	93.184 %	106.744 %

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	7.777	0.189	15.635	0.765	13.999	0.471
3	Std 2	7.757	0.381	14.919	1.584	13.762	0.943
4	Std 3	7.740	0.950	14.488	4.083	13.428	2.319
5	Std 4	7.697	4.443	14.081	19.450	12.984	10.069
6	Std 5	7.643	12.556	14.389	53.276	13.463	24.993
7	SEQ-ICV	7.693	4.526	14.293	19.664	13.062	10.239
8	SEQ-ICV	7.700	4.391	14.090	19.457	13.082	9.960
9	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	SEQ-SCV	7.747	4.067	12.822	17.411	11.992	9.285
11	SEQ-IBL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	1506016-BS1	7.720	5.109	27.784	22.269	22.939	11.434
13	1506016-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	C150604-03 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	1506016-DUP1 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
16	1506016-MS1 @100x	7.753	5.390	11.389	20.869	11.580	11.999
17	SEQ-CCV	7.733	4.760	14.119	18.812	12.965	10.721
18	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	84.960	46.761	168.010	197.640	153.256	102.432
	Average:	7.724	4.251	15.274	17.967	13.932	9.312
	Rel.Std.Dev:	0.490 %	79.358 %	28.115 %	79.476 %	22.033 %	72.720 %

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

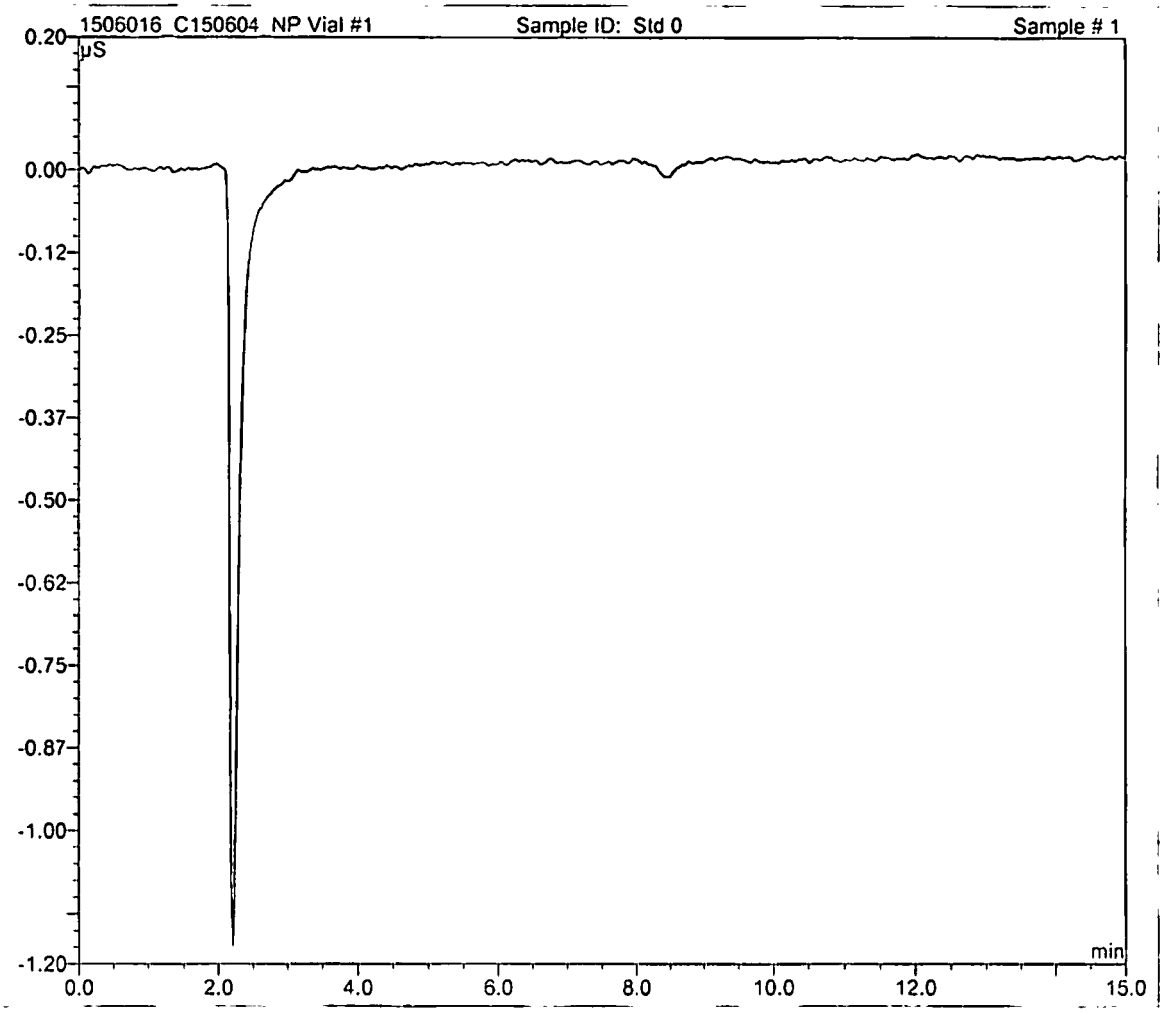
		ECD_1	ECD_1	ECD_1	ECD_1	ECD_1	ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	10.580	0.015	1.250	0.049	0.904	0.134
3	Std 2	10.547	0.039	1.535	0.113	0.982	0.345
4	Std 3	10.543	0.107	1.629	0.300	0.986	0.930
5	Std 4	10.533	0.486	1.539	1.359	0.908	4.037
6	Std 5	10.520	1.309	1.500	3.633	0.918	9.996
7	SEQ-ICV	10.543	0.475	1.500	1.335	0.887	3.953
8	SEQ-ICV	10.543	0.470	1.509	1.342	0.902	3.917
9	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	SEQ-SCV	10.603	3.597	11.338	10.607	7.306	23.261
11	SEQ-IBL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	1506016-BS1	10.623	0.680	3.700	1.850	1.906	5.532
13	1506016-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	C150604-03 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	1506016-DUP1 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
16	1506016-MS1 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
17	SEQ-CCV	10.610	0.511	1.516	1.223	0.843	4.235
18	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	105.647	7.689	27.016	21.811	16.541	56.340
	Average:	10.565	0.769	2.702	2.181	1.654	5.634
	Rel.Std.Dev:	0.344 %	138.169 %	115.265 %	143.845 %	121.546 %	121.306 %

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	12.133	0.510	42.113	1.387	25.392	4.193
3	Std 2	12.137	1.073	42.036	2.911	25.295	8.778
4	Std 3	12.147	2.762	42.141	7.703	25.334	22.300
5	Std 4	12.187	13.494	42.763	38.919	25.982	101.103
6	Std 5	12.270	37.883	43.412	105.782	26.731	249.879
7	SEQ-ICV	12.190	13.511	42.673	40.121	26.651	101.224
8	SEQ-ICV	12.180	13.391	42.972	39.761	26.732	100.400
9	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	SEQ-SCV	12.243	9.812	30.931	28.866	19.882	75.291
11	SEQ-IBL	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	1506016-BS1	12.197	3.088	16.793	8.625	8.884	24.869
13	1506016-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	C150604-03 @100x	12.293	26.440	91.754	75.552	80.324	184.137
15	1506016-DUP1 @100x	12.280	26.543	91.693	74.592	80.167	184.755
16	1506016-MS1 @100x	12.290	29.906	63.193	80.895	44.890	204.701
17	SEQ-CCV	12.213	14.440	42.836	37.939	26.148	107.560
18	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

19	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	158.760	192.853	635.310	543.053	442.411	1,369.192
	Average:	12.212	14.835	48.870	41.773	34.032	105.322
	Rel.Std.Dev:	0.474 %	81.158 %	43.979 %	80.123 %	64.247 %	76.142 %

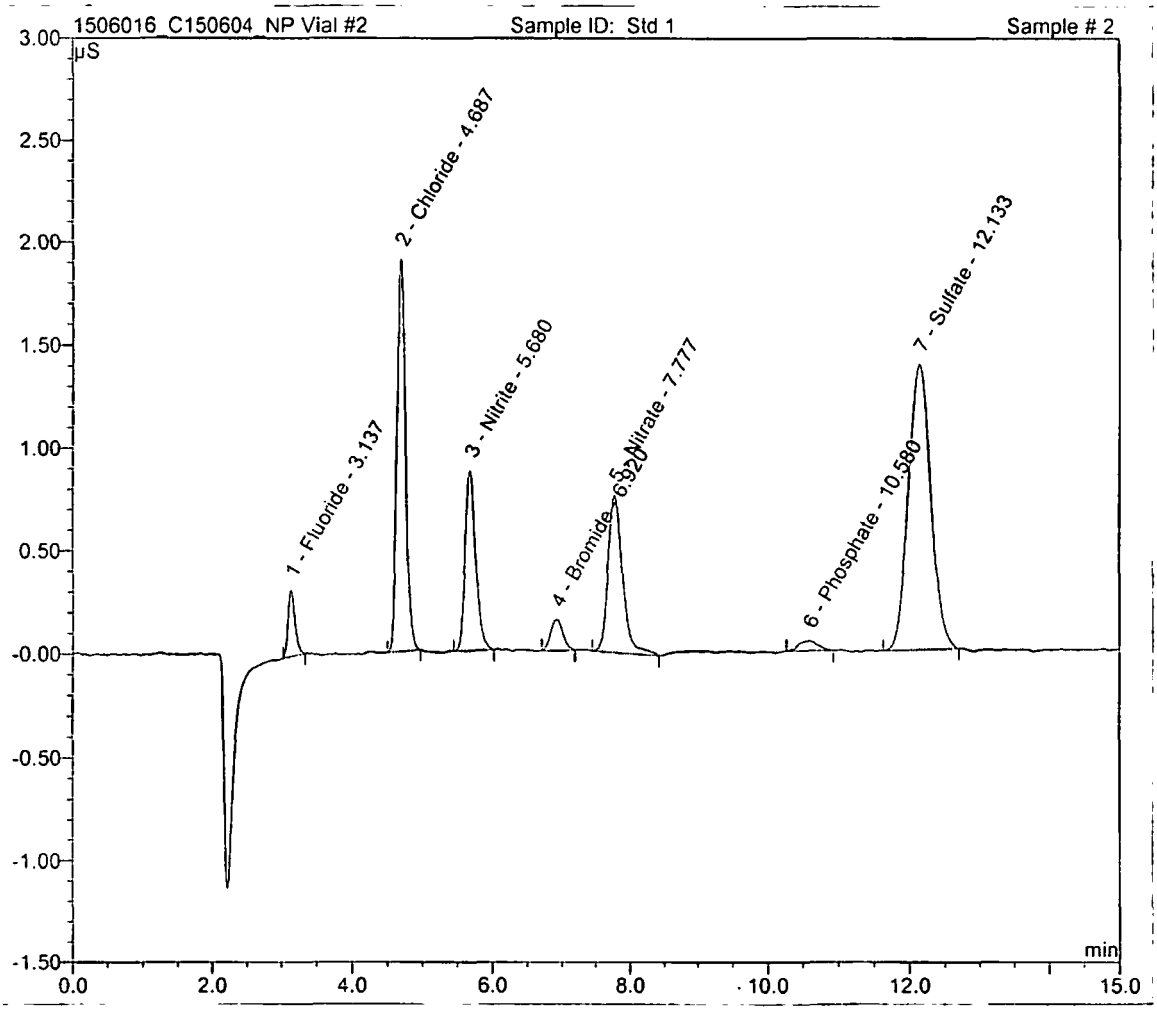
Sample Name:	Std 0	*Inj. Vol.:*	25.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	1
Inj. Date/Time:	06.22.15 10:30	*Run Number:*	1

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



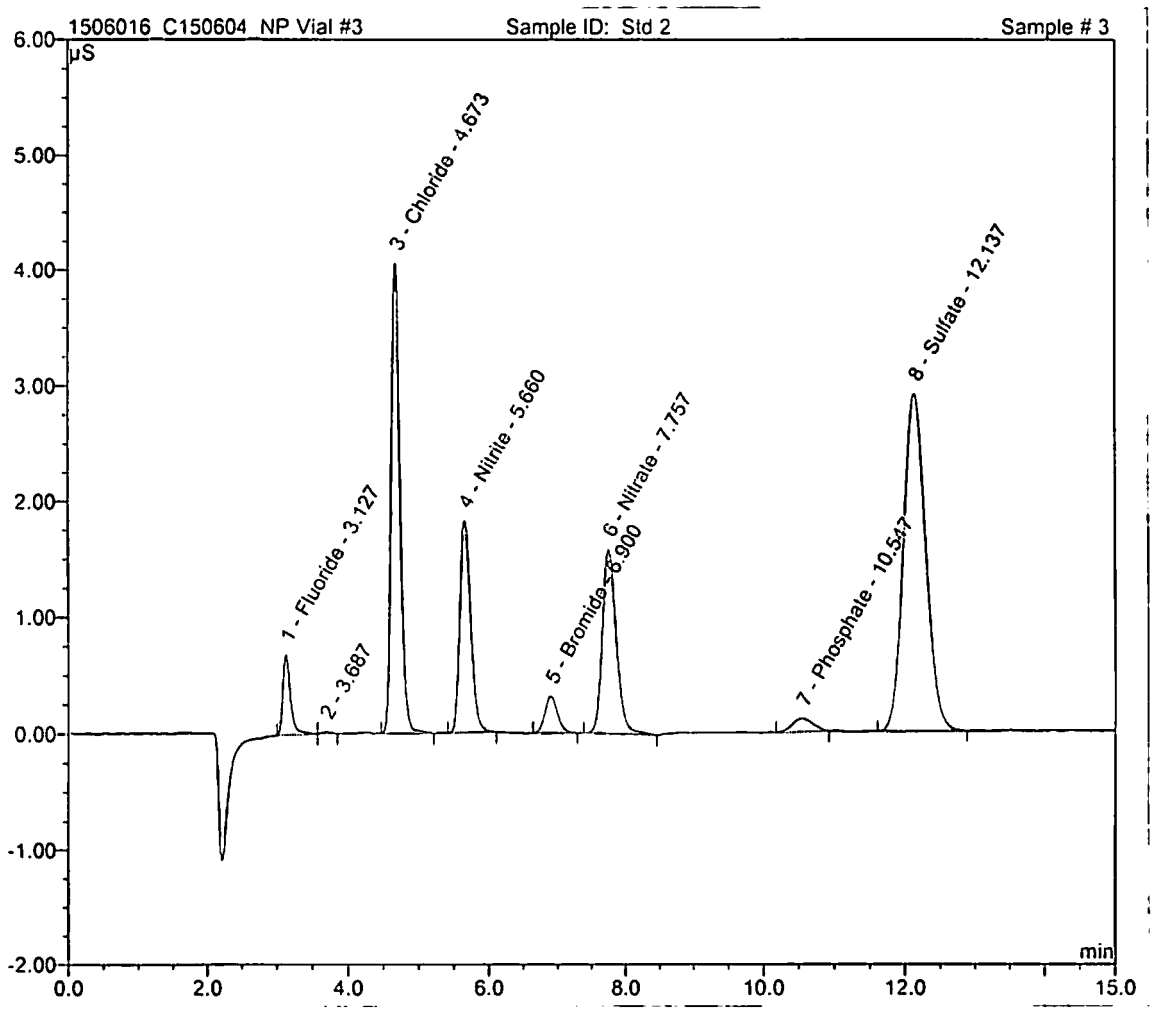
Sample Name:	**Std 1**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**2**
Inj. Date/Time:	**06.22.15 10:47**	*Run Number:*	**2**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.14	Fluoride	BMB	0.037	0.325	0.1598
2	4.69	Chloride	BMB	0.274	1.912	1.6885
3	5.68	Nitrite	BMB	0.155	0.876	0.4240
4	6.92	Bromide	BMB	0.030	0.150	0.4558
5	7.78	Nitrate	BMB	0.189	0.765	0.4711
6	10.58	Phosphate	BMB	0.015	0.049	0.1336
7	12.13	Sulfate	BMB	0.510	1.387	4.1926



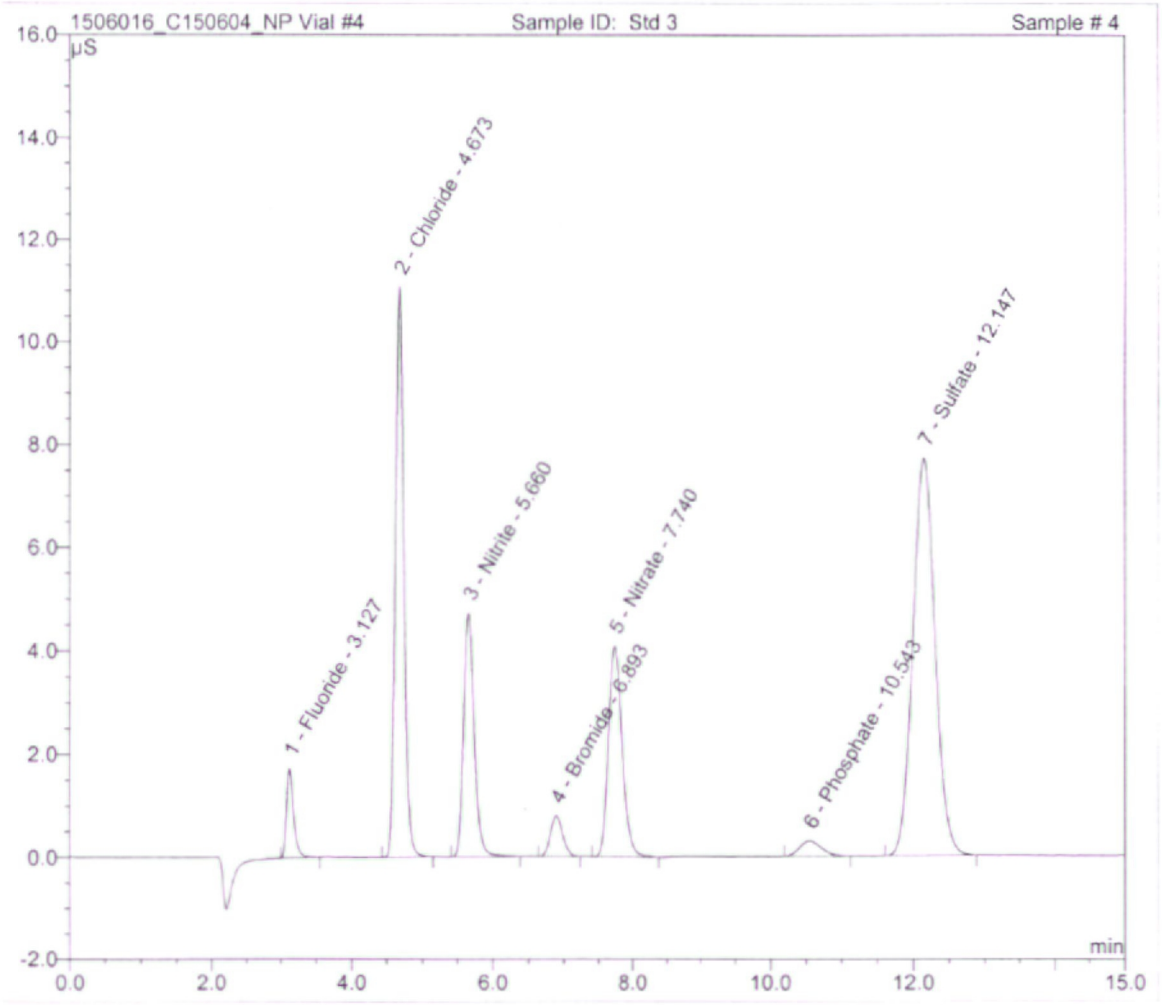
Sample Name:	**Std 2**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**3**
Inj. Date/Time:	**06.22.15 11:05**	*Run Number:*	**3**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.13	Fluoride	BM	0.086	0.690	0.3748
3	4.67	Chloride	BMB	0.583	4.056	3.5663
4	5.66	Nitrite	BMB	0.321	1.823	0.8759
5	6.90	Bromide	BMB	0.066	0.314	0.9886
6	7.76	Nitrate	BMB	0.381	1.584	0.9427
7	10.55	Phosphate	BMB	0.039	0.113	0.3446
8	12.14	Sulfate	BMB	1.073	2.911	8.7781



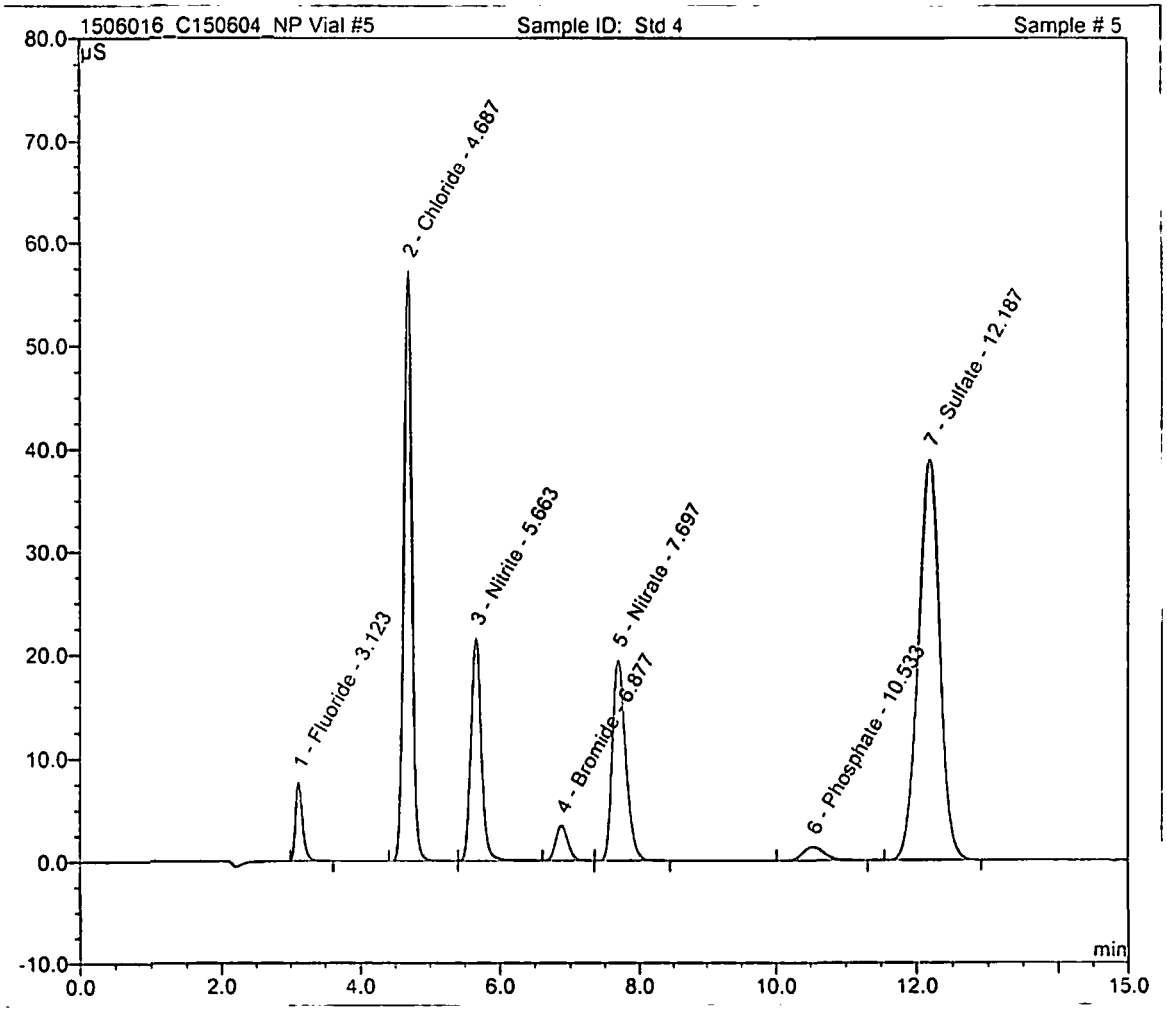
Sample Name:	**Std 3**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**4**
Inj. Date/Time:	**06.22.15 11:23**	*Run Number:*	**4**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.13	Fluoride	BMB	0.202	1.730	0.8804
2	4.67	Chloride	BMB	1.540	11.073	9.2371
3	5.66	Nitrite	BMB	0.833	4.723	2.2664
4	6.89	Bromide	BMB	0.161	0.794	2.3903
5	7.74	Nitrate	BMB	0.950	4.083	2.3187
6	10.54	Phosphate	BMB	0.107	0.300	0.9303
7	12.15	Sulfate	BMB	2.762	7.703	22.2999



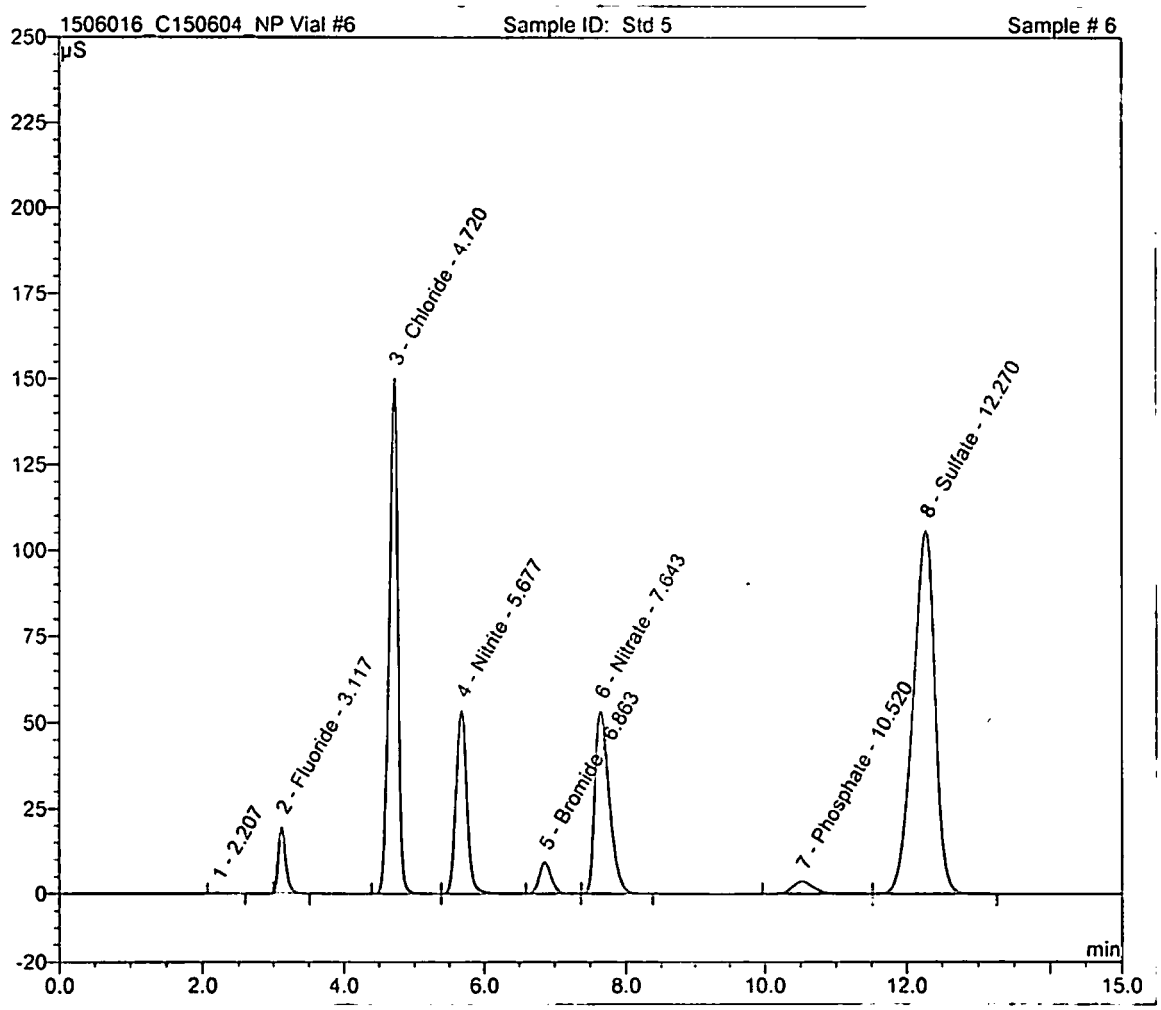
Sample Name:	Std 4	*Inj. Vol.:*	25.0
Sample Type:	standard	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	5
Inj. Date/Time:	06.22.15 11:40	*Run Number:*	5

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.12	Fluoride	BMB	0.894	7.700	3.8901
2	4.69	Chloride	BM	7.754	57.311	41.9069
3	5.66	Nitrite	M	3.790	21.599	10.1091
4	6.88	Bromide	Rd	0.695	3.454	10.0441
5	7.70	Nitrate	MB	4.443	19.450	10.0689
6	10.53	Phosphate	BMB	0.486	1.359	4.0367
7	12.19	Sulfate	BMB	13.494	38.919	101.1032



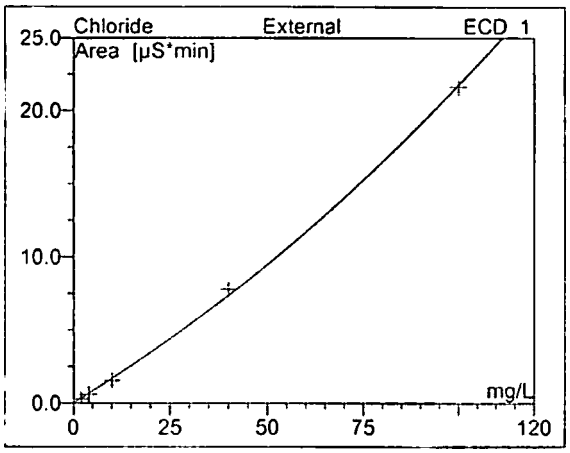
Sample Name:	Std 5	*Inj. Vol.:*	25.0
Sample Type:	standard	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	6
Inj. Date/Time:	06.22.15 11:58	*Run Number:*	6

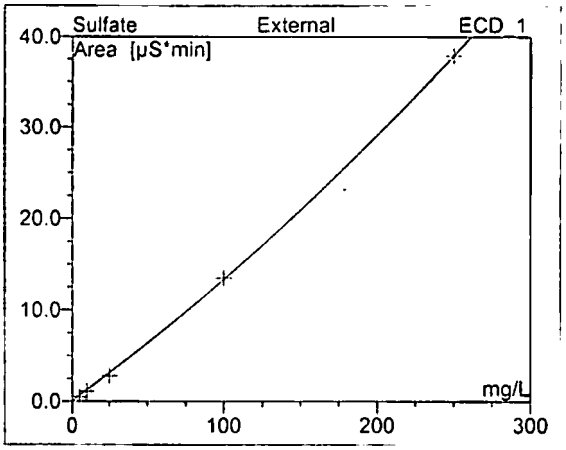
No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
2	3.12	Fluoride	BMB	2.311	19.485	10.0577
3	4.72	Chloride	BM	21.612	150.307	99.4834
4	5.68	Nitrite	MB	9.725	53.652	24.9861
5	6.86	Bromide	Rd	1.822	9.267	24.9946
6	7.64	Nitrate	BMB	12.556	53.276	24.9925
7	10.52	Phosphate	BM	1.309	3.633	9.9956
8	12.27	Sulfate	MB	37.883	105.782	249.8792

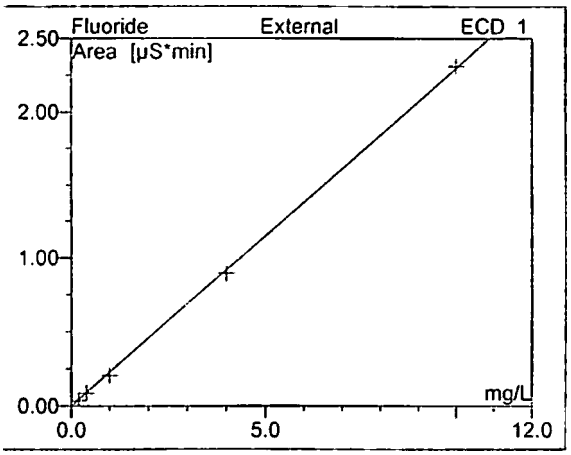


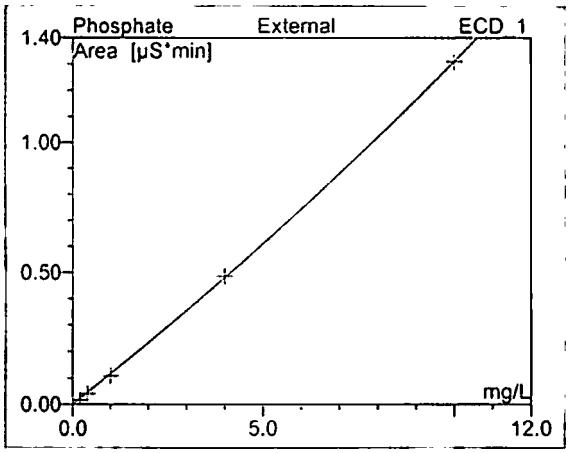
Calibration Batch Report

Sequence:	1506016_C150604_NP	Inj. Vol.:	25.0
Program:	Program Anions Right	Operator:	ESAT
Inj. Date/Time:	06/22/15 11:58	Run Time:	15.00



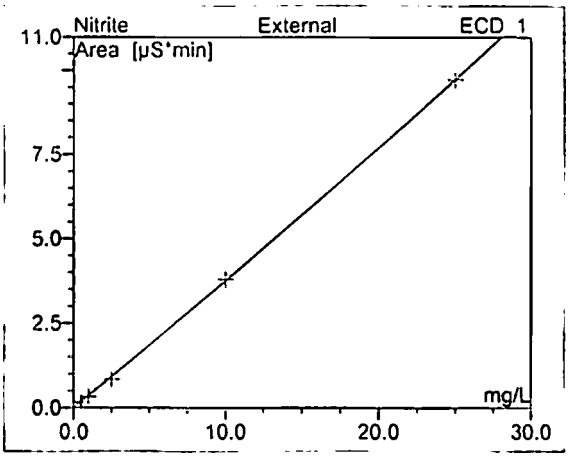


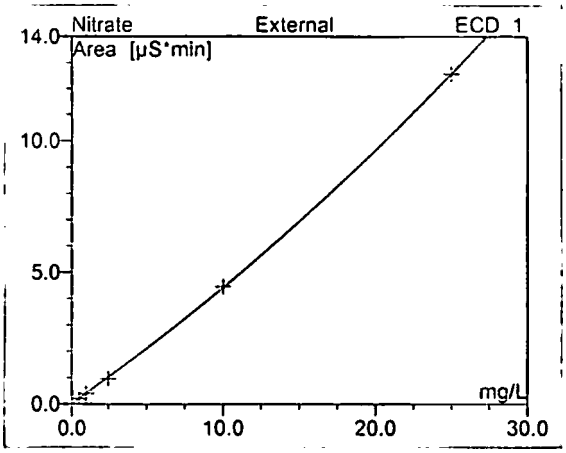


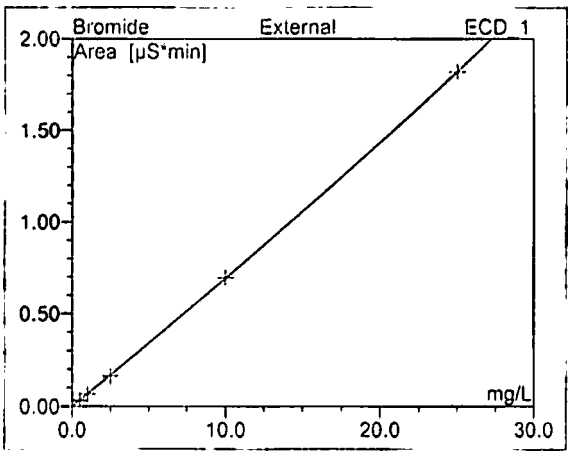


No.	Ret.Time min	Peak Name	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
2	3.12	Fluoride	Lin	5	0.000	0.230	0.000	99.9544
3	4.72	Chloride	XQuad	5	0.000	0.162	0.001	99.8527
4	5.68	Nitrite	Quad	5	0.000	0.365	0.001	99.9816
5	6.86	Bromide	Quad	5	0.000	0.067	0.000	99.9967
6	7.64	Nitrate	Quad	5	0.000	0.400	0.004	99.9931
7	10.52	Phosphate	Quad	5	0.000	0.113	0.002	99.9845
8	12.27	Sulfate	Quad	5	0.000	0.121	0.000	99.9825
AVERAGE:					0.0000	0.2082	0.0011	99.9636

Sequence:	**1506016_C150604_NP**	*Inj. Vol.:*	**25.0**
Program:	**Program Anions Right**	*Operator:*	**n.a.**
Inj. Date/Time:	**06/22/15 11:58**	*Run Time:*	**15.00**



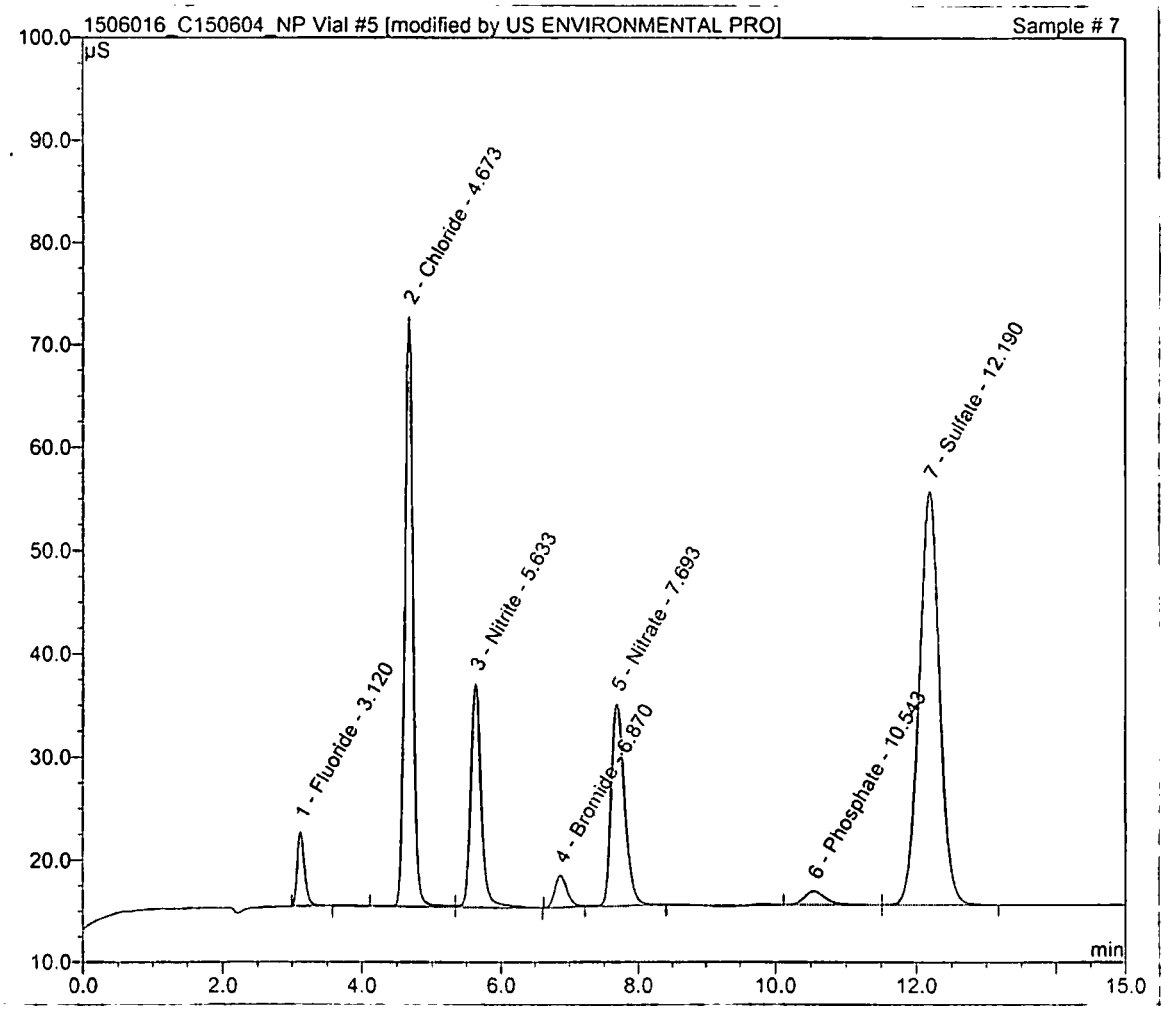




No.	Ret.Time min	Peak Name	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
2	3.12	Fluoride	Lin	5	0.000	0.230	0.000	99.9544
3	4.72	Chloride	XQuad	5	0.000	0.162	0.001	99.8527
4	5.68	Nitrite	Quad	5	0.000	0.365	0.001	99.9816
5	6.86	Bromide	Quad	5	0.000	0.067	0.000	99.9967
6	7.64	Nitrate	Quad	5	0.000	0.400	0.004	99.9931
7	10.52	Phosphate	Quad	5	0.000	0.113	0.002	99.9845
8	12.27	Sulfate	Quad	5	0.000	0.121	0.000	99.9825
AVERAGE:					0.0000	0.2082	0.0011	99.9636

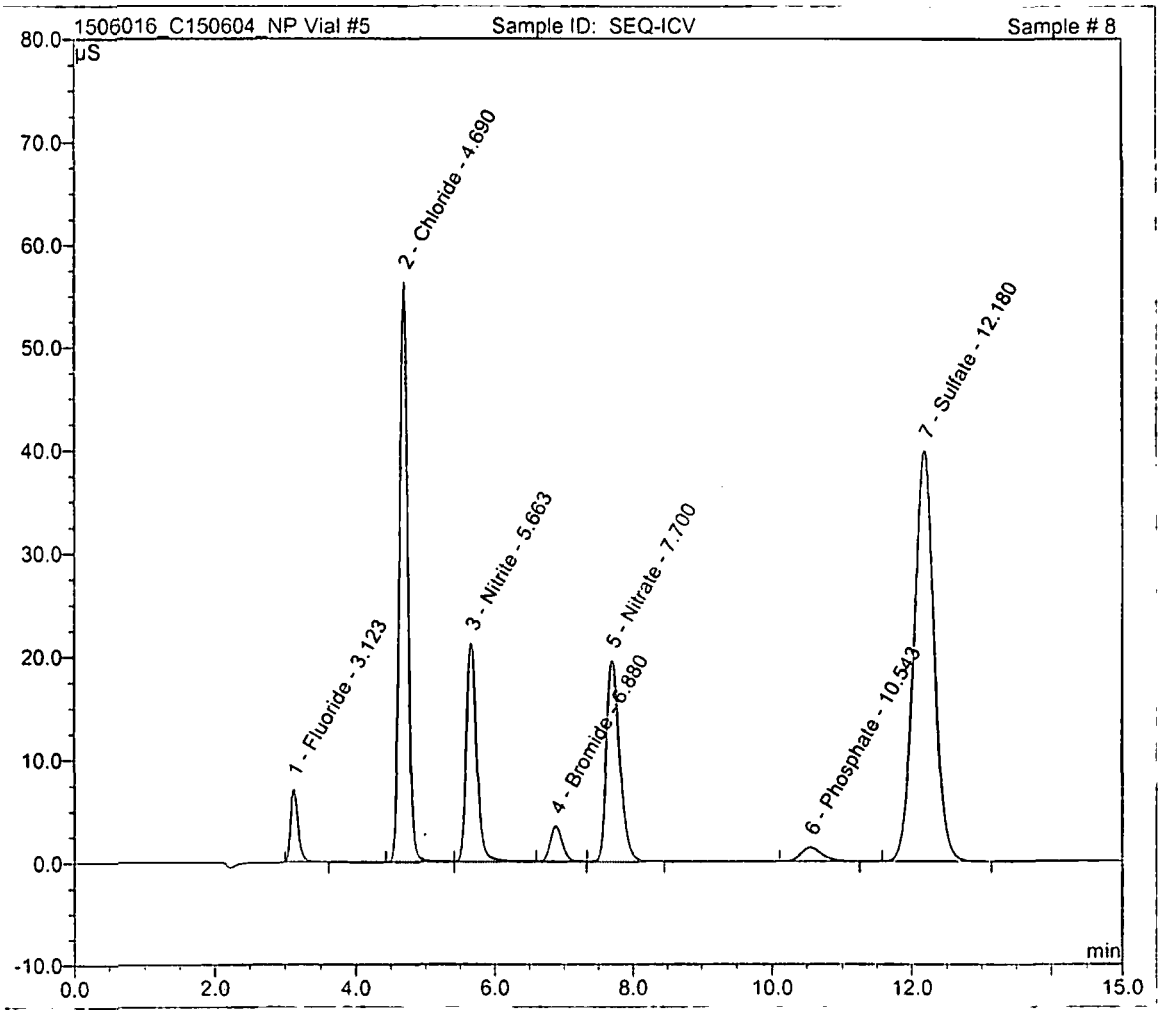
Sample Name:	**SEQ-ICV**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**5**
Inj. Date/Time:	**06.23.15 10:04**	*Run Number:*	**7**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.12	Fluoride	BMB	0.873	7.265	3.7998
2	4.67	Chloride	BM	7.801	57.321	42.1324
3	5.63	Nitrite	MB	3.854	21.757	10.2753
4	6.87	Bromide	Ru	0.623	3.078	9.0384
5	7.69	Nitrate	BMB*	4.526	19.664	10.2393
6	10.54	Phosphate	BM *	0.475	1.335	3.9534
7	12.19	Sulfate	MB*	13.511	40.121	101.2240



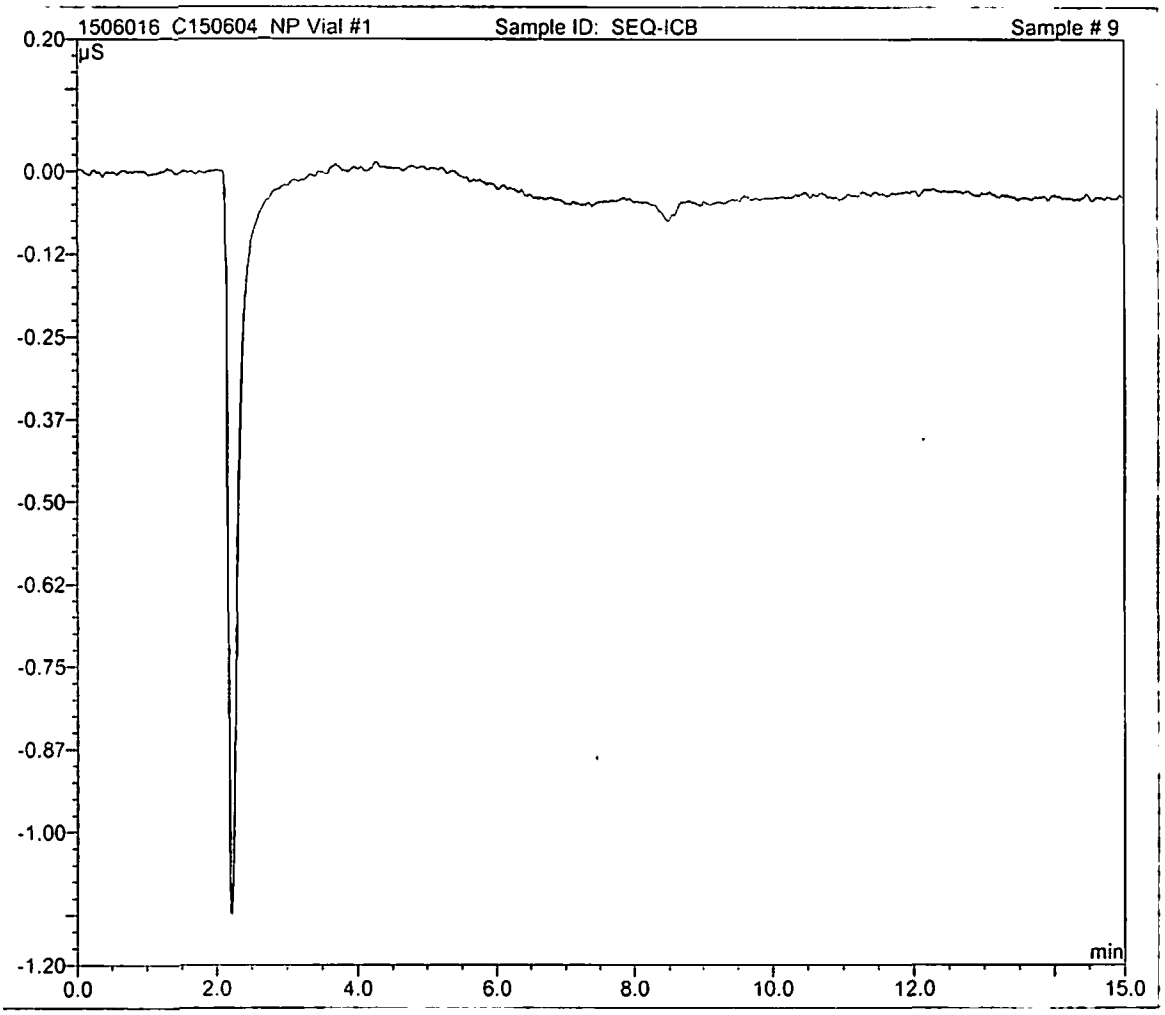
Sample Name:	**SEQ-ICV**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**5**
Inj. Date/Time:	**06.23.15 10:21**	*Run Number:*	**8**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.12	Fluoride	BMB	0.866	7.112	3.7698
2	4.69	Chloride	BM	7.649	56.421	41.4059
3	5.66	Nitrite	M	3.712	21.212	9.9071
4	6.88	Bromide	Rd	0.683	3.433	9.8759
5	7.70	Nitrate	MB	4.391	19.457	9.9604
6	10.54	Phosphate	BMB	0.470	1.342	3.9170
7	12.18	Sulfate	BMB	13.391	39.761	100.4005



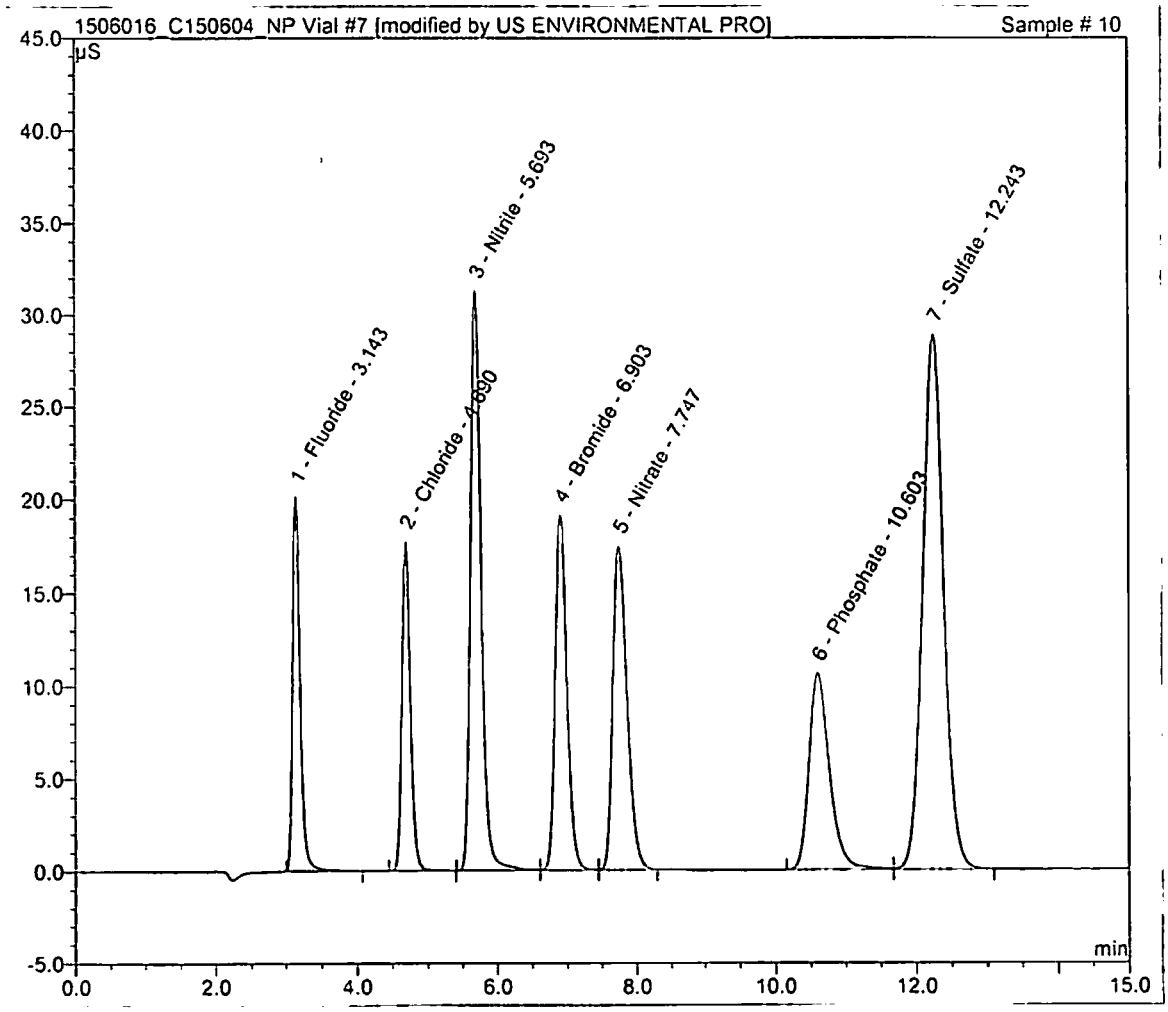
Sample Name:	**SEQ-ICB**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**1**
Inj. Date/Time:	**06.23.15 10:39**	*Run Number:*	**9**

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



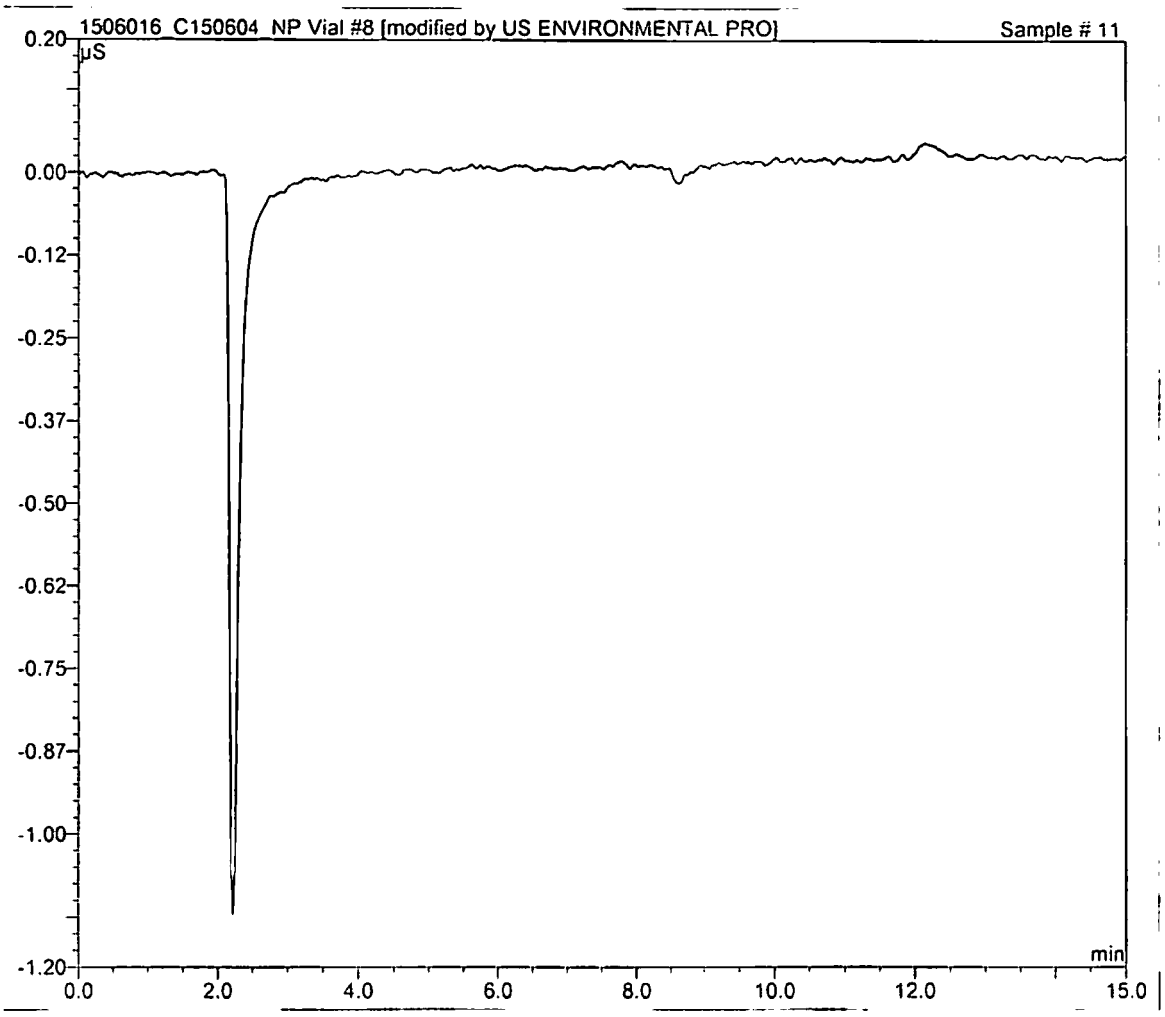
Sample Name:	SEQ-SCV	*Inj. Vol.:*	25.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	7
Inj. Date/Time:	06.23.15 10:56	*Run Number:*	10

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.14	Fluoride	BMB	2.463	20.184	10.7190
2	4.69	Chloride	BMB	2.495	17.721	14.6973
3	5.69	Nitrite	BM *	5.582	31.298	14.7154
4	6.90	Bromide	M *	3.705	19.101	47.2917
5	7.75	Nitrate	MB*	4.067	17.411	9.2850
6	10.60	Phosphate	BM	3.597	10.607	23.2608
7	12.24	Sulfate	MB	9.812	28.866	75.2911



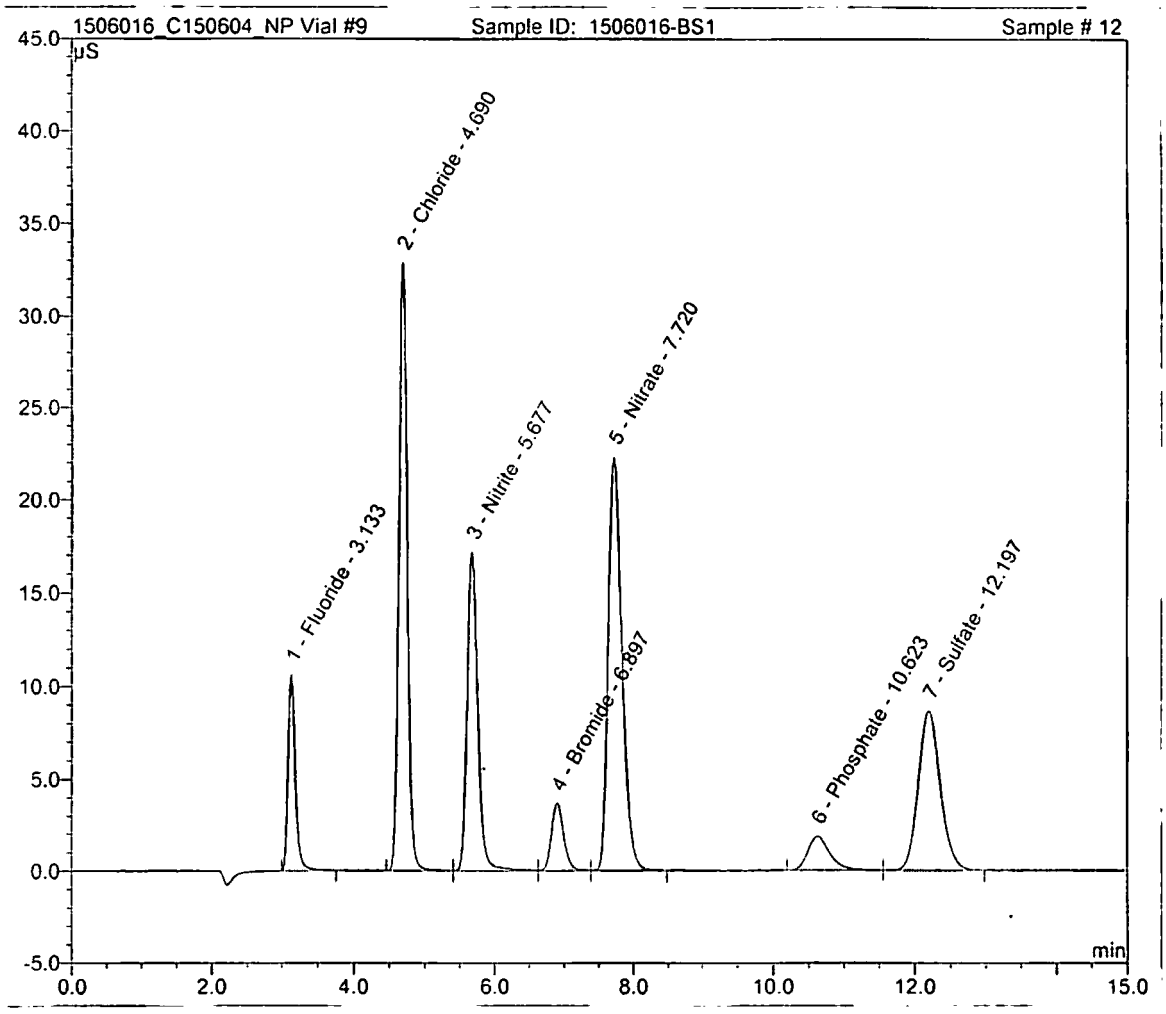
Sample Name:	SEQ-IBL	*Inj. Vol.:*	25.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	8
Inj. Date/Time:	06.23.15 11:14	*Run Number:*	11

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



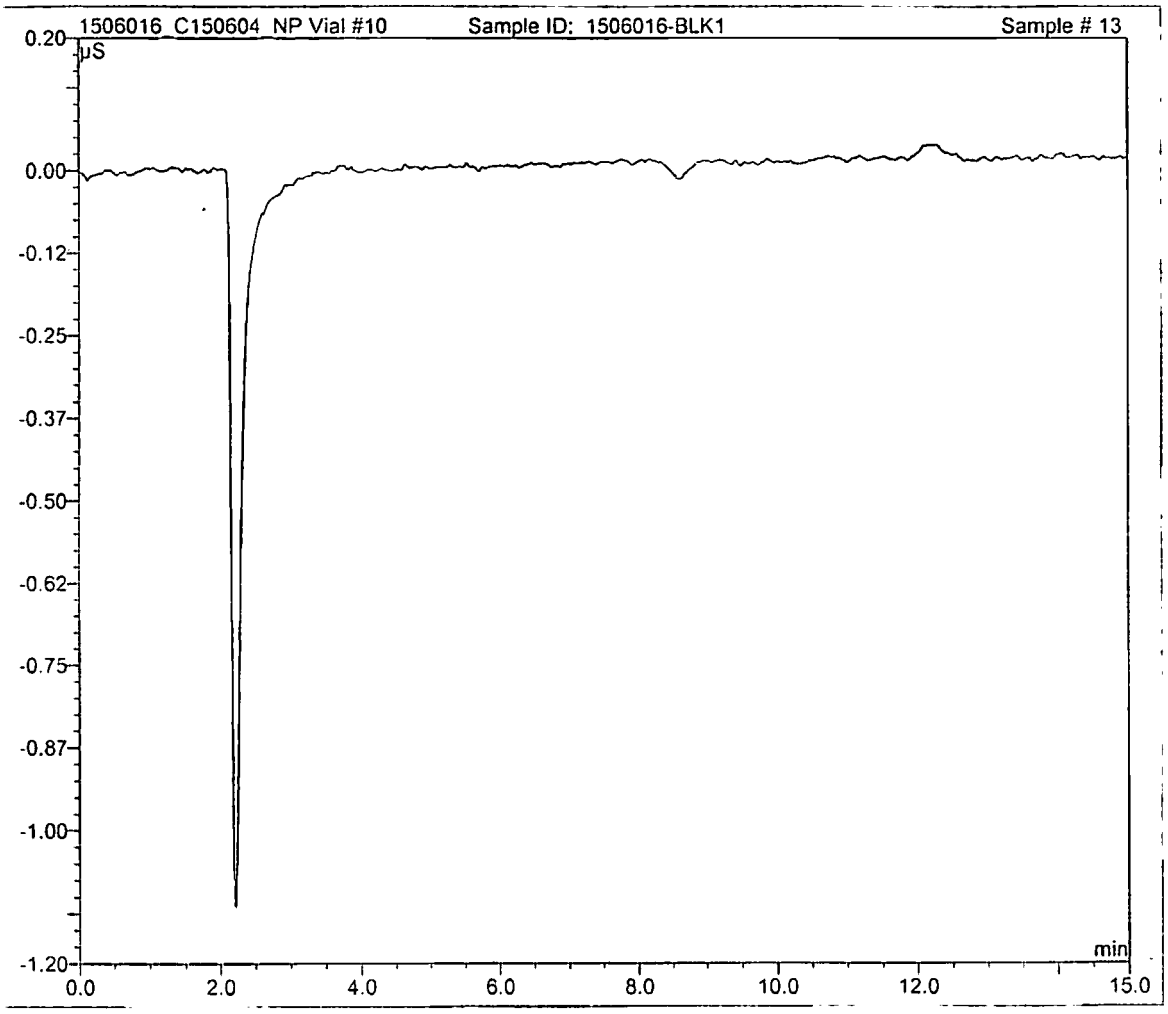
Sample Name:	**1506016-BS1**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**9**
Inj. Date/Time:	**06.23.15 11:32**	*Run Number:*	**12**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.13	Fluoride	BMB	1.262	10.612	5.4902
2	4.69	Chloride	BM	4.481	32.877	25.4831
3	5.68	Nitrite	M	3.027	17.172	8.1167
4	6.90	Bromide	M	0.742	3.678	10.6967
5	7.72	Nitrate	MB	5.109	22.269	11.4336
6	10.62	Phosphate	BM	0.680	1.850	5.5325
7	12.20	Sulfate	MB	3.088	8.625	24.8693



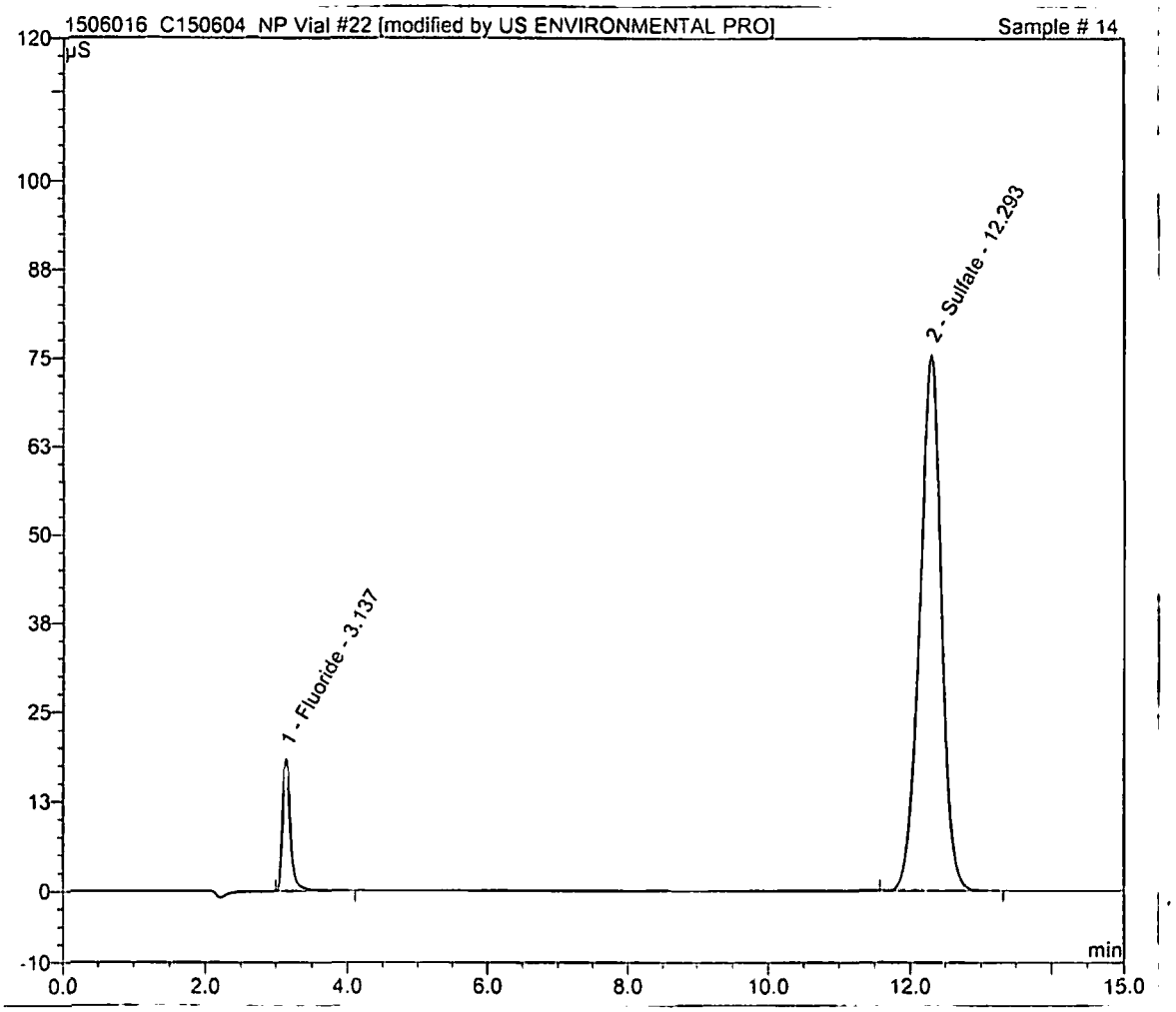
Sample Name:	1506016-BLK1	*Inj. Vol.:*	25.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	10
Inj. Date/Time:	06.23.15 11:49	*Run Number:*	13

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



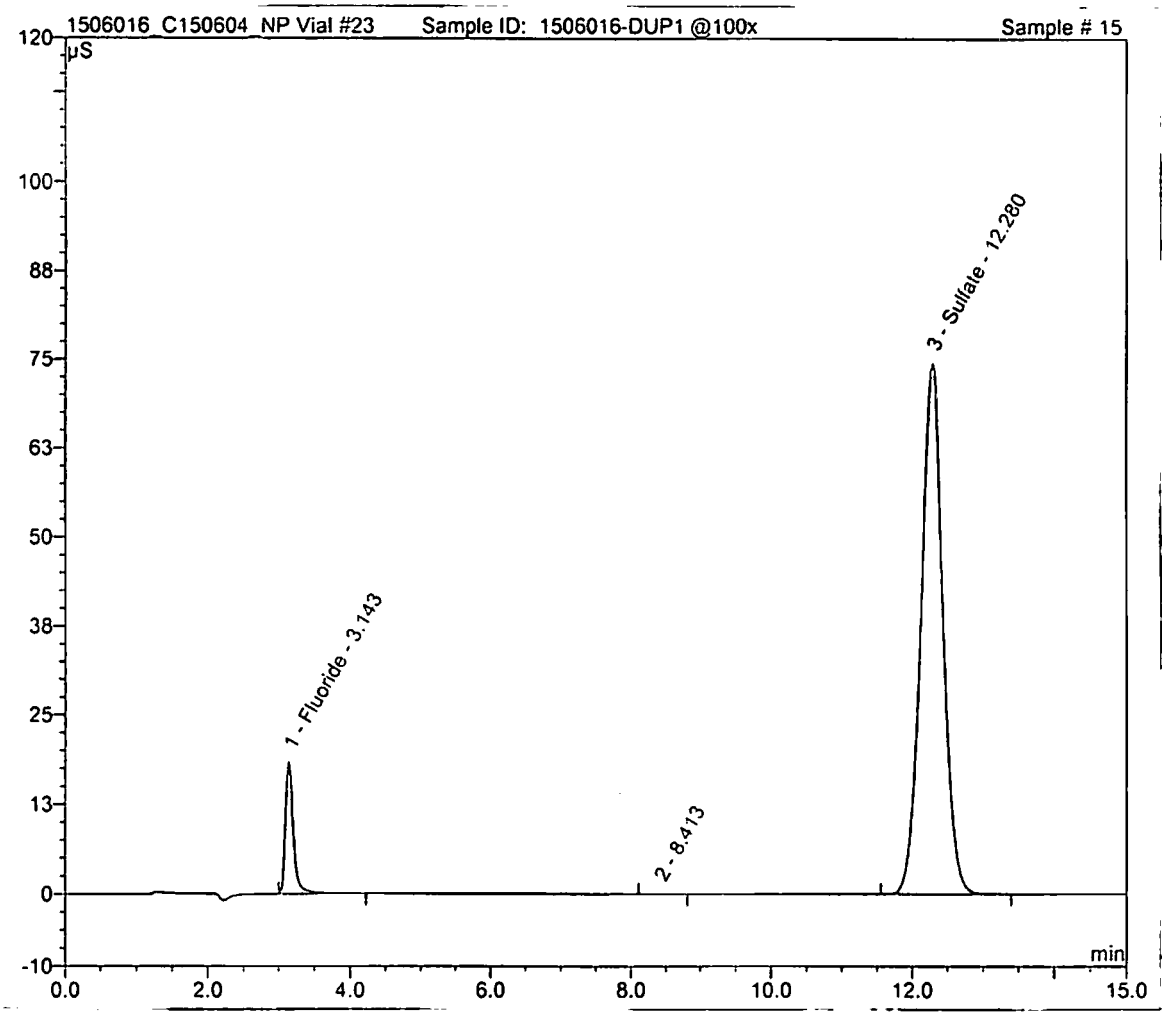
Sample Name:	C150604-03 @100x	*Inj. Vol.:*	25.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	22
Inj. Date/Time:	06.23.15 12:07	*Run Number:*	14

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.14	Fluoride	BMB	2.376	18.507	10.3406
2	12.29	Sulfate	BMB	26.440	75.552	184.1372



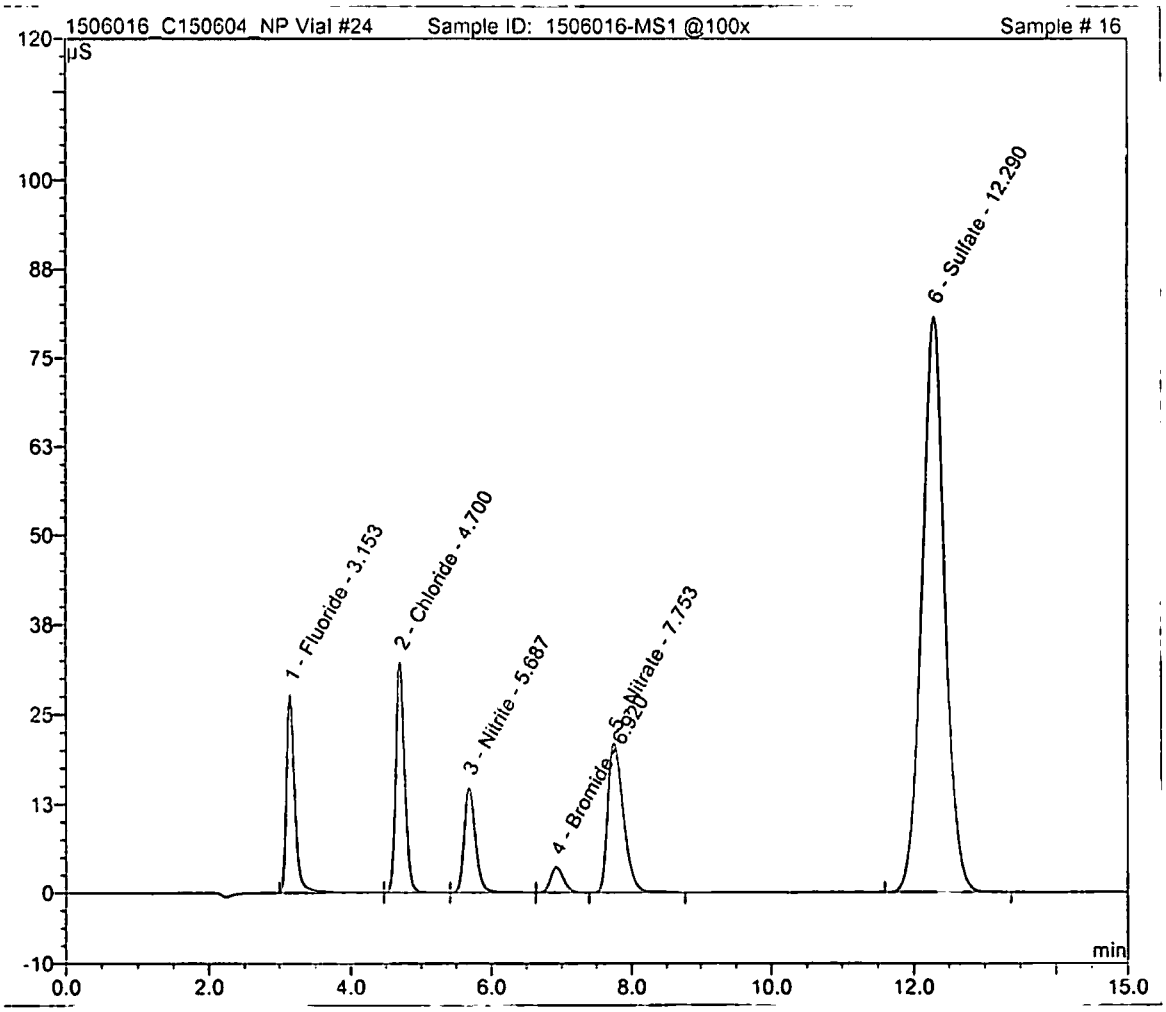
Sample Name:	1506016-DUP1 @100x	*Inj. Vol.:*	25.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	23
Inj. Date/Time:	06.23.15 13:51	*Run Number:*	15

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.14	Fluoride	BMB	2.381	18.386	10.3632
3	12.28	Sulfate	BMB	26.543	74.592	184.7554



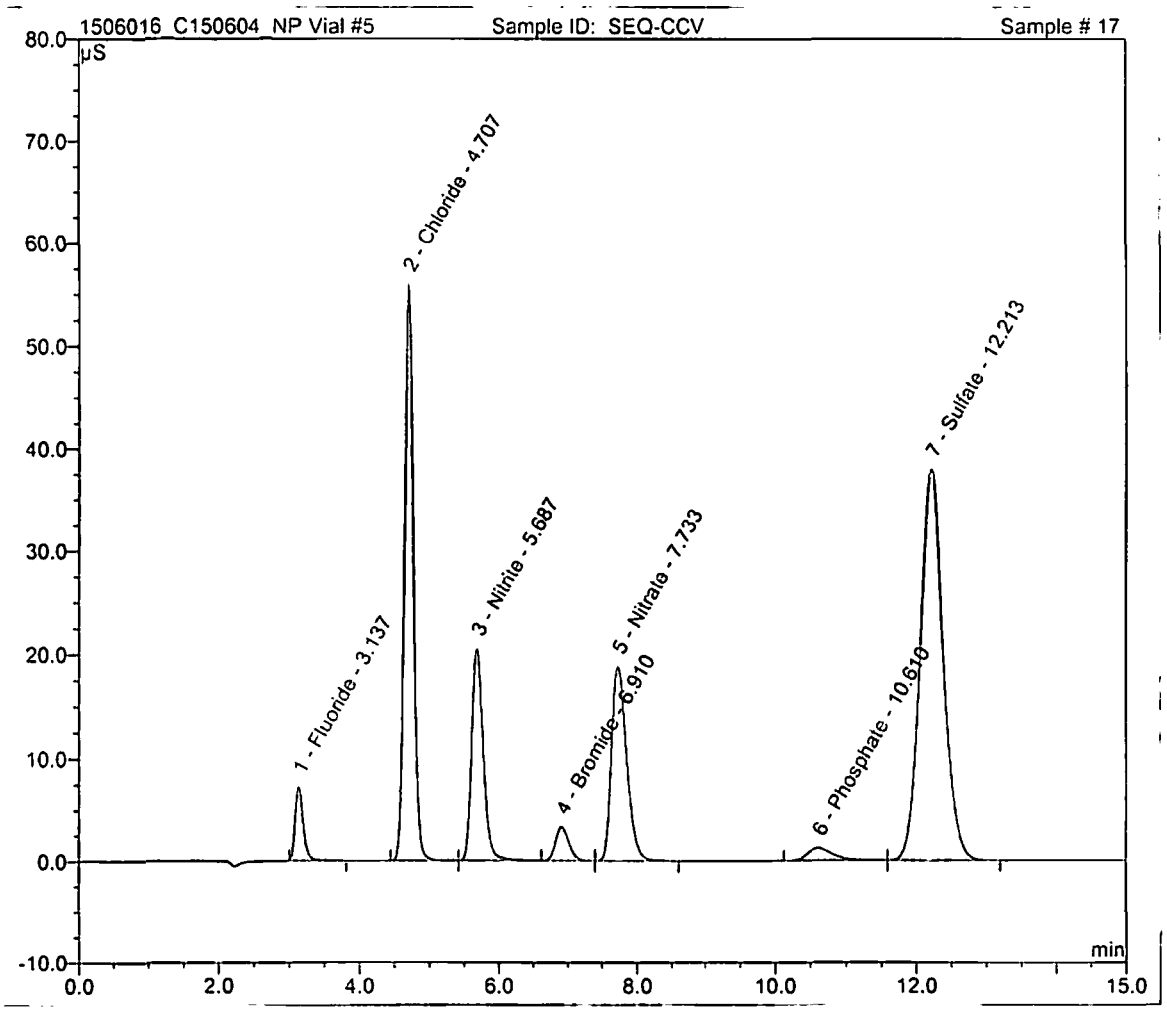
Sample Name:	**1506016-MS1 @100x**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**24**
Inj. Date/Time:	**06.23.15 14:08**	*Run Number:*	**16**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.15	Fluoride	BM	3.770	27.825	16.4079
2	4.70	Chloride	M	4.702	32.268	26.6418
3	5.69	Nitrite	M	2.790	14.760	7.4914
4	6.92	Bromide	Ru	0.767	3.592	11.0486
5	7.75	Nitrate	MB	5.390	20.869	11.9987
6	12.29	Sulfate	BMB	29.906	80.895	204.7008



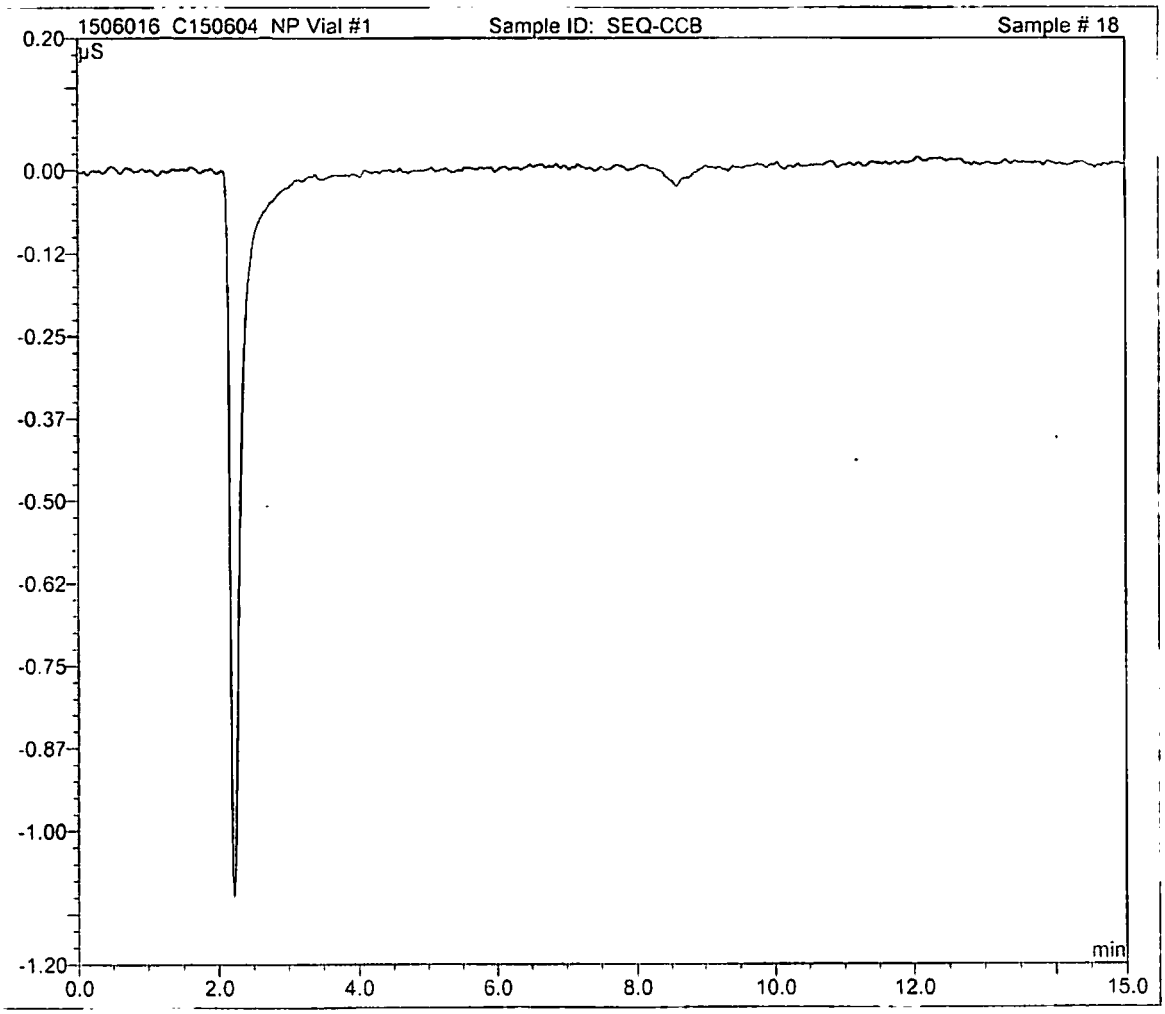
Sample Name:	SEQ-CCV	*Inj. Vol.:*	25.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	5
Inj. Date/Time:	06.23.15 14:26	*Run Number:*	17

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.14	Fluoride	BMB	0.954	7.289	4.1508
2	4.71	Chloride	BM	8.297	55.984	44.4972
3	5.69	Nitrite	M	4.009	20.527	10.6781
4	6.91	Bromide	Rd	0.740	3.322	10.6614
5	7.73	Nitrate	MB	4.760	18.812	10.7210
6	10.61	Phosphate	BM	0.511	1.223	4.2352
7	12.21	Sulfate	MB	14.440	37.939	107.5605



Sample Name:	SEQ-CCB	*Inj. Vol.:*	25.0
Sample Type:	unknown	*Dilution Factor:*	1.0000
Program:	Program Anions Right	*Vial #:*	1
Inj. Date/Time:	06.23.15 14:43	*Run Number:*	18

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:	06.23.15 14:58	*Run Number:*	19

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.

1506016_C150604_NP Vial #1 Sample ID: STOP Sample # 19

Can't open raw data file "C:\Chromel\data\Right_system\Sequences and Data\2015 ESAT\1506016_C150604_NP.SEQ\ECD_1.CHL\28.acd".
The system cannot find the file specified.

PERKIN ELMER OPTIMA 8300 ICP-OE

Project(s): Rico Argentine June 2015 Date: 07 / 02 / 2015

Work Order(s): C150604 TDF: A-081 Analyst: S. Van Overmeten

Batch Preparation Information

Digest / Prep: TR / Total / Diss.

Matrix: Water / Soil / Other

Batch ID: 1507009 / 1507003

Data Storage

Data File: X:/Metals Data Files/ A081-1507009-150702

Standard Information

Calibration Std. # 1 = Reagent Blank Solution

SCV: *(LIMS ID: C502065)*

Prepped: 04/13/15 By: SV

CRQL Stock: *(LIMS ID: C502068)*

Prepped: 2-02-2015 By: SV

CRQL Daily *(LIMS ID: C502069)*

Prepped: 07/02/15 By: SV

Calibration Std. #2 = ESAT High, LIMS: C502063

Prepped: 03/23/15 By: SV

ICV/CCV: 1:2 of C502063 *(LIMS ID: C502064)*

Prepped: 07/02/15 By: SV

ICSA: C502066 **Prepped: 2-02-2015**

ICSAB: C502067 Prepped: 2-02-2015

Spike Information

Dissolved Spikes

Sample ID: C150604-01

Sample ID: —

Sample vol: 10 mL

QCS-3 : 100 uL

Exp: 1-1-2016 (LIMS ID: C502034)

Salt Spike: 100 uL

Prepped 2-02-2015 *(LIMS ID: C502062)*

Tot. / Tot. Rec. Spikes

Sample ID: C150604-02

Sample Vol: 50 mL

WW-LFS1: 500 uL

Exp: 1-1-2016 *(LIMS ID: C502035)*

WW-LFS2: 500 uL

Exp: 1-1-2016 *(LIMS ID: C502036)*

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: 1507018 / 1507019

Lims Entry (Date / Init): 07/02/15

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:	C150604	TDF:	A-081
Matrix:	Water	Analysis:	Dissolved / Tot. Rec 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

Zinc recovered high in the SRD. As a result, the source sample was qualified "J" as estimated for zinc. Zinc was detected in the prep blank for batch 1507003, but at a level <10x the samples.

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:	07/01/15

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

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:		Date:	7/6/2015

PREPARATION BENCH SHEET

1507009

TechLaw, Inc. - ESAT Region 8

Printed: 7/1/2015 1:01:01PM

Matrix: Water

Date Prepared: 07/01/15 13:00 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
C150604-01 A	DM-Hardness - Calculated	8-A	50	50						ART-POOL	
C150604-01 A	ICPOE Diss. Metals	8-A	50	50						ART-POOL	
1507009-BLK1	QC		50	50						Blank	
1507009-BS1	QC		10	10	C502062	100				LCS	
1507009-DUP1	QC		50	50					C150604-01	Duplicate	
1507009-MS1	QC		10	10	C502062	100			C150604-01	Matrix Spike	

07/02/15

Preparation Reviewed By Date

PREPARATION BENCH SHEET

1507003

TechLaw, Inc. - ESAT Region 8

Printed: 7/1/2015 10:41:03AM

Matrix: Water

Date Prepared: 07/01/15 10:39 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
C150604-02 A	ICPMS Tot. Rec. Metals	8-B	50	50						ART-POOL	
C150604-02 A	ICPOE Tot. Rec. Metals	8-B	50	50						ART-POOL	
1507003-BLK1	QC		50	50						Blank	
1507003-BLK2	QC		50	50						Blank	
1507003-DUP1	QC		50	50					C150604-02	Duplicate	
1507003-DUP2	QC		50	50					C150604-02	Duplicate	
1507003-MS1	QC		50	50	C502035	500	C502036	500	C150604-02	Matrix Spike	
1507003-MS2	QC		50	50	C502035	500	C502036	500	C150604-02	Matrix Spike	
1507003-SRM1	QC		50	50	C502046	500	C502047	500		Reference	
1507003-SRM2	QC		50	50	C502046	500	C502047	500		Reference	

07/02/15

Preparation Reviewed By Date

ANALYSIS SEQUENCE

1507018 07/02/15

Instrument: ICPOE - PE Optima Sequence Date: 07/02/15 00:00 Printed: 7/2/2015 1:01:57PM

Lab Number	Dilut. Factor	Analysis	STD ID	Sample/Std Name	EPA Tag ID	Source Sple	Comments
1507018-ICV1		QC	C502064	Initial Cal Check		-	
1507018-SCV1		QC	C502065	Secondary Cal Check		-	
1507018-ICB1		QC		Initial Cal Blank		-	
1507018-CRL1		QC	C502069	Instrument RL Check		-	
1507018-IFA1		QC	C502066	Interference Check A		-	
1507018-IFB1		QC	C502067	Interference Check B		-	
1507009-BLK1		QC		Blank		-	
1507009-BS1		QC		LCS		-	
C150604-01 A		ICPOE Diss. Metals		ART-POOL	8-A		
C150604-01 A		DM-Hardness - Calculated		ART-POOL	8-A		
1507009-DUP1		QC		Duplicate		C150604-01	
1507018-SRD1		QC		Serial Dilution		C150604-01	
1507009-MS1		QC		Matrix Spike		C150604-01	
1507018-CCV1		QC	C502064	Calibration Check		-	
1507018-CCB1		QC		Calibration Blank		-	

ANALYSIS SEQUENCE

1507019

Aug/02/15

Instrument: ICPOE - PE Optima Sequence Date: 07/02/15 00:00 Printed: 7/2/2015 1:04:18PM

Lab Number	Dilut. Factor	Analysis	STD ID	Sample/Std Name	EPA Tag ID	Source Sple	Comments
1507019-ICV1		QC	C502064	Initial Cal Check		-	
1507019-SCV1		QC	C502065	Secondary Cal Check		-	
1507019-ICB1		QC		Initial Cal Blank		-	
1507019-CRL1		QC	C502069	Instrument RL Check		-	
1507019-IFA1		QC	C502066	Interference Check A		-	
1507019-IFB1		QC	C502067	Interference Check B		-	
1507019-CCV1		QC	C502064	Calibration Check		-	
1507019-CCB1		QC		Calibration Blank		-	
1507003-BLK1		QC		Blank		-	
1507003-SRM1		QC		Reference		-	
C150604-02 A		ICPOE Tot. Rec. Metals		ART-POOL	8-B		
1507003-DUP1		QC		Duplicate		C150604-02	
1507019-SRD1		QC		Serial Dilution		C150604-02	
1507003-MS1		QC		Matrix Spike		C150604-02	
1507019-CCV2		QC	C502064	Calibration Check		-	
1507019-CCB2		QC		Calibration Blank		-	

Analytical Sequence

Method : ESAT_2015_1.0

lw 07/02/15

Seq.	Loc.		Sample ID
1	1		Cal Blank
2	9		High Std
3	3	QC	SEQ-ICV
4	10	QC	SEQ-SCV
5	1	QC	SEQ-ICB
6	11	QC	SEQ-CRL
7	12	QC	SEQ-IFA
8	13	QC	SEQ-IFB
9	26		1507009-BLK1
10	27		1507009-BS1
11	28		C150604-01
12	29		1507009-DUP1
13	30		SEQ-SRD1 @5X
14	31		1507009-MS1
15	32		Blank
16	3	QC	SEQ-CCV
17	1	QC	SEQ-CCB

Analytical Sequence

Method : ESAT_2015_1.0

Seq.	Loc.		Sample ID
1	1		Cal Blank
2	9		High Std
3	3	QC	SEQ-ICV
4	10	QC	SEQ-SCV
5	1	QC	SEQ-ICB
6	11	QC	SEQ-CRL
7	12	QC	SEQ-IFA
8	13	QC	SEQ-IFB
9	26		1507003-BLK1
10	27		1507003-SRM1
11	28		C150604-02 @10X
12	29		1507003-DUP1 @10X
13	30		SEQ-SRD1 @50X
14	31		1507003-MS1 @10X
15	32		Blank
16	3	QC	SEQ-CCV
17	1	QC	SEQ-CCB

07/02/15

Sample Information Detail Report
Document Name: A-081_1507009_DISSA_070115

File Description
A-081 Rico Argentine June 2015

Parameters Common to All Samples

Batch ID	1507009
Analyst Name	S. VanOvermeiren
Volume Units	mL
Weight Units	g

Parameters That Vary By Sample

Sample No	A/S Location	Sample ID	Remarks
1	26	1507009-BLK1	
2	27	1507009-BS1	
3	28	C150604-01	
4	29	1507009-DUP1	
5	30	SEQ-SRD1 @5X	
6	31	1507009-MS1	
7	32	Blank	

Sample No	Aliquot Volume	Diluted To Vol.	Matrix Check Sample
1			
2			Recovery 3 of 1
3			
4			
5	2	10	5X Dilution of 3
6			Recovery 3 of 3
7			

Sample Information Detail Report
Document Name: A-081_1507003_150702

File Description
A-081 Rico Argentine May 2015

Parameters Common to All Samples

Batch ID	1507003
Analyst Name	S. VanOvermeiren
Volume Units	mL
Weight Units	g

Parameters That Vary By Sample

Sample No	A/S Location	Sample ID	Remarks
1	26	1507003-BLK1	
2	27	1507003-SRM1	
3	28	C150604-02 @10X	
4	29	1507003-DUP1 @10X	
5	30	SEQ-SRD1 @50X	
6	31	1507003-MS1 @10X	
7	32	Blank	

Sample No	Aliquot Volume	Diluted To Vol.	Matrix Check Sample
1			
2			Recovery 2 of 1
3	1	10	
4	1	10	Duplicate of 3
5	1	50	5X Dilution of 3
6	1	10	Recovery 1 of 3
7			

1107/02/15

Reprocessing Begun
Logged In Analyst: chemistry Technique: ICP Continuous

Results Data Set (original): A-081_1507009_150701
Results Library (original): C:\Users\Public\PerkinElmer\ICP\Data\Results\Results.mdb
Results Data Set (reprocessed):
Results Library (reprocessed):

Sequence No.: 1
Sample ID: Cal Blank
Analyst:
Logged In Analyst (Original) : chemistry
Initial Sample Wt:
Dilution:
Wash Time:

Autosampler Location: 1
Date Collected: 7/2/2015 10:47:11 AM
Data Type: Reprocessed on 7/2/2015 12:47:27 PM

Initial Sample Vol:
Sample Prep Vol:

Mean Data: Cal Blank

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Sc Axial	2070732.5	11605.76	0.56%	100.0	%
Sc Radial	392252.1	2819.01	0.72%	100.0	%
Ag 328.068†	-26.8	8.91	33.26%	[0.00]	ug/L
Al 396.153†	-32.4	5.68	17.54%	[0.00]	ug/L
As 193.696†	-14.2	1.01	7.09%	[0.00]	ug/L
Ba 233.527†	0.6	1.37	223.57%	[0.00]	ug/L
Be 313.107†	-2628.7	37.02	1.41%	[0.00]	ug/L
B 249.677†	14.6	3.20	21.90%	[0.00]	ug/L
Ca 317.933†	20.1	2.67	13.31%	[0.00]	ug/L
Cd 214.440†	-5.3	2.82	52.85%	[0.00]	ug/L
Co 228.616†	4.9	0.84	17.14%	[0.00]	ug/L
Cr 267.716†	26.7	2.04	7.66%	[0.00]	ug/L
Cu 324.752†	2157.2	21.01	0.97%	[0.00]	ug/L
Fe 238.204†	15.3	4.52	29.53%	[0.00]	ug/L
K 766.490†	197.5	9.72	4.92%	[0.00]	ug/L
Mg 285.213†	35.3	4.65	13.19%	[0.00]	ug/L
Mn 257.610†	114.9	7.78	6.77%	[0.00]	ug/L
Mo 202.031†	-8.6	2.67	30.99%	[0.00]	ug/L
Na 589.592†	-294.1	33.79	11.49%	[0.00]	ug/L
Ni 231.604†	-41.8	0.96	2.30%	[0.00]	ug/L
Pb 220.353†	-8.3	0.34	4.08%	[0.00]	ug/L
Sb 206.836†	2.5	1.18	46.42%	[0.00]	ug/L
Se 196.026†	0.0	0.93	>999.9%	[0.00]	ug/L
SiO2 251.603†	149.6	13.95	9.32%	[0.00]	ug/L
Sr 421.552†	581.3	16.09	2.77%	[0.00]	ug/L
Ti 334.940†	85.7	9.48	11.06%	[0.00]	ug/L
Tl 190.801†	-5.6	2.71	48.67%	[0.00]	ug/L
V 290.880†	1143.7	4.26	0.37%	[0.00]	ug/L
Zn 206.200†	17.8	2.10	11.80%	[0.00]	ug/L

Sequence No.: 2
Sample ID: High Std
Analyst:
Logged In Analyst (Original) : chemistry
Initial Sample Wt:
Dilution:
Wash Time:

Autosampler Location: 9
Date Collected: 7/2/2015 10:50:20 AM
Data Type: Reprocessed on 7/2/2015 12:47:28 PM

Initial Sample Vol:
Sample Prep Vol:

Mean Data: High Std

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Sc Axial	2004516.8	7209.43	0.36%	96.80	%
Sc Radial	370685.2	3699.41	1.00%	94.50	%
Ag 328.068†	27624.8	97.32	0.35%	[500]	ug/L
Al 396.153†	103989.5	3617.02	3.48%	[25000]	ug/L
As 193.696†	634.0	2.48	0.39%	[5000]	ug/L
Ba 233.527†	5794.7	106.96	1.85%	[1000]	ug/L
Be 313.107†	566993.4	674.95	0.12%	[1000]	ug/L
B 249.677†	65439.1	494.56	0.76%	[10000]	ug/L
Ca 317.933†	250054.9	4613.84	1.85%	[25000]	ug/L
Cd 214.440†	6404.8	40.17	0.63%	[1000]	ug/L
Co 228.616†	5284.2	27.49	0.52%	[1000]	ug/L
Cr 267.716†	44992.2	272.03	0.60%	[5000]	ug/L
Cu 324.752†	287587.6	3409.14	1.19%	[2000]	ug/L
Fe 238.204†	181074.2	3805.31	2.10%	[25000]	ug/L
K 766.490†	135830.3	3712.29	2.73%	[50000]	ug/L
Mg 285.213†	466750.1	12352.08	2.65%	[25000]	ug/L
Mn 257.610†	238819.0	646.62	0.27%	[2000]	ug/L
Mo 202.031†	1291.6	4.13	0.32%	[1000]	ug/L
Na 589.592†	273833.3	9884.58	3.61%	[25000]	ug/L
Ni 231.604†	20534.3	108.48	0.53%	[5000]	ug/L
Pb 220.353†	3056.8	24.52	0.80%	[5000]	ug/L
Sb 206.836†	1648.2	14.61	0.89%	[5000]	ug/L
Se 196.026†	360.9	3.76	1.04%	[5000]	ug/L
SiO2 251.603†	54709.1	438.59	0.80%	[20000]	ug/L
Sr 421.552†	950802.5	28087.21	2.95%	[1000]	ug/L
Ti 334.940†	157968.5	285.84	0.18%	[1000]	ug/L
Tl 190.801†	1831.5	20.10	1.10%	[5000]	ug/L
V 290.880†	39776.6	160.79	0.40%	[2000]	ug/L
Zn 206.200†	7968.7	44.92	0.56%	[5000]	ug/L

Calibration Summary

Analyte	Stds.	Equation	Intercept	Slope	Curvature	Corr. Coef.	Reslope
Ag 328.068	1	Lin Thru 0	0.0	55.25	0.00000	1.000000	
Al 396.153	1	Lin, Calc Int	0.0	4.160	0.00000	1.000000	
As 193.696	1	Lin Thru 0	0.0	0.1268	0.00000	1.000000	
Ba 233.527	1	Lin Thru 0	0.0	5.795	0.00000	1.000000	
Be 313.107	1	Lin Thru 0	0.0	567.0	0.00000	1.000000	
B 249.677	1	Lin Thru 0	0.0	6.544	0.00000	1.000000	
Ca 317.933	1	Lin Thru 0	0.0	10.00	0.00000	1.000000	
Cd 214.440	1	Lin Thru 0	0.0	6.405	0.00000	1.000000	
Co 228.616	1	Lin Thru 0	0.0	5.284	0.00000	1.000000	
Cr 267.716	1	Lin Thru 0	0.0	8.998	0.00000	1.000000	
Cu 324.752	1	Lin Thru 0	0.0	143.8	0.00000	1.000000	
Fe 238.204	1	Lin, Calc Int	-0.0	7.243	0.00000	1.000000	
K 766.490	1	Lin Thru 0	0.0	2.717	0.00000	1.000000	
Mg 285.213	1	Lin, Calc Int	0.0	18.67	0.00000	1.000000	
Mn 257.610	1	Lin Thru 0	0.0	119.4	0.00000	1.000000	
Mo 202.031	1	Lin Thru 0	0.0	1.292	0.00000	1.000000	
Na 589.592	1	Lin, Calc Int	0.0	10.95	0.00000	1.000000	
Ni 231.604	1	Lin Thru 0	0.0	4.107	0.00000	1.000000	
Pb 220.353	1	Lin Thru 0	0.0	0.6114	0.00000	1.000000	
Sb 206.836	1	Lin Thru 0	0.0	0.3296	0.00000	1.000000	
Se 196.026	1	Lin, Calc Int	0.0	0.0722	0.00000	1.000000	
SiO2 251.603	1	Lin, Calc Int	0.0	2.735	0.00000	1.000000	
Sr 421.552	1	Lin, Calc Int	0.0	950.8	0.00000	1.000000	
Ti 334.940	1	Lin Thru 0	0.0	158.0	0.00000	1.000000	

Tl 190.801	1	Lin Thru 0	0.0	0.3663	0.00000	1.000000
V 290.880	1	Lin Thru 0	0.0	19.89	0.00000	1.000000
Zn 206.200	1	Lin Thru 0	0.0	1.594	0.00000	1.000000

Sequence No.: 3
Sample ID: SEQ-ICV
Analyst:
Logged In Analyst (Original) : chemistry
Initial Sample Wt:
Dilution:
Wash Time:

Autosampler Location: 3
Date Collected: 7/2/2015 10:53:08 AM
Data Type: Reprocessed on 7/2/2015 12:47:28 PM

Initial Sample Vol:
Sample Prep Vol:

Mean Data: SEQ-ICV

Analyte	Mean Corrected Intensity	Calib. Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Sc Axial	2039733.5	98.50	%	0.601				0.61%
Sc Radial	374458.3	95.46	%	2.775				2.91%
Ag 328.068†	14067.4	254.9	ug/L	0.78	254.9	ug/L	0.78	0.31%
QC value within limits for Ag 328.068 Recovery = 101.97%								
Al 396.153†	52161.3	12550	ug/L	402.04	12550	ug/L	402.04	3.20%
QC value within limits for Al 396.153 Recovery = 100.39%								
As 193.696†	325.1	2620	ug/L	48.71	2620	ug/L	48.71	1.86%
QC value within limits for As 193.696 Recovery = 104.82%								
Ba 233.527†	2934.1	506.6	ug/L	19.50	506.6	ug/L	19.50	3.85%
QC value within limits for Ba 233.527 Recovery = 101.32%								
Be 313.107†	288292.6	509.9	ug/L	1.78	509.9	ug/L	1.78	0.35%
QC value within limits for Be 313.107 Recovery = 101.98%								
B 249.677†	33467.9	5114	ug/L	22.47	5114	ug/L	22.47	0.44%
QC value within limits for B 249.677 Recovery = 102.29%								
Ca 317.933†	126288.4	12640	ug/L	554.23	12640	ug/L	554.23	4.39%
QC value within limits for Ca 317.933 Recovery = 101.10%								
Cd 214.440†	3295.6	513.9	ug/L	3.50	513.9	ug/L	3.50	0.68%
QC value within limits for Cd 214.440 Recovery = 102.78%								
Co 228.616†	2703.6	511.4	ug/L	3.65	511.4	ug/L	3.65	0.71%
QC value within limits for Co 228.616 Recovery = 102.28%								
Cr 267.716†	22787.7	2544	ug/L	8.01	2544	ug/L	8.01	0.31%
QC value within limits for Cr 267.716 Recovery = 101.76%								
Cu 324.752†	140034.7	977.0	ug/L	4.38	977.0	ug/L	4.38	0.45%
QC value within limits for Cu 324.752 Recovery = 97.70%								
Fe 238.204†	92276.6	12800	ug/L	507.73	12800	ug/L	507.73	3.97%
QC value within limits for Fe 238.204 Recovery = 102.39%								
K 766.490†	68218.2	25070	ug/L	644.82	25070	ug/L	644.82	2.57%
QC value within limits for K 766.490 Recovery = 100.30%								
Mg 285.213†	236948.8	12700	ug/L	406.25	12700	ug/L	406.25	3.20%
QC value within limits for Mg 285.213 Recovery = 101.60%								
Mn 257.610†	122891.6	1030	ug/L	3.95	1030	ug/L	3.95	0.38%
QC value within limits for Mn 257.610 Recovery = 102.95%								
Mo 202.031†	656.7	506.9	ug/L	1.17	506.9	ug/L	1.17	0.23%
QC value within limits for Mo 202.031 Recovery = 101.38%								
Na 589.592†	137981.7	12560	ug/L	280.48	12560	ug/L	280.48	2.23%
QC value within limits for Na 589.592 Recovery = 100.46%								
Ni 231.604†	10546.5	2559	ug/L	16.81	2559	ug/L	16.81	0.66%
QC value within limits for Ni 231.604 Recovery = 102.36%								
Pb 220.353†	1578.8	2585	ug/L	14.03	2585	ug/L	14.03	0.54%
QC value within limits for Pb 220.353 Recovery = 103.39%								
Sb 206.836†	845.1	2524	ug/L	35.21	2524	ug/L	35.21	1.39%
QC value within limits for Sb 206.836 Recovery = 100.98%								
Se 196.026†	186.1	2579	ug/L	43.34	2579	ug/L	43.34	1.68%
QC value within limits for Se 196.026 Recovery = 103.15%								
SiO2 251.603†	27916.5	10210	ug/L	72.16	10210	ug/L	72.16	0.71%
QC value within limits for SiO2 251.603 Recovery = 102.05%								
Sr 421.552†	481667.7	505.6	ug/L	15.28	505.6	ug/L	15.28	3.02%
QC value within limits for Sr 421.552 Recovery = 101.12%								
Ti 334.940†	80823.5	511.6	ug/L	2.30	511.6	ug/L	2.30	0.45%
QC value within limits for Ti 334.940 Recovery = 102.33%								
Tl 190.801†	947.6	2610	ug/L	30.93	2610	ug/L	30.93	1.18%
QC value within limits for Tl 190.801 Recovery = 104.42%								
V 290.880†	20204.0	1019	ug/L	4.07	1019	ug/L	4.07	0.40%
QC value within limits for V 290.880 Recovery = 101.85%								
Zn 206.200†	4113.7	2599	ug/L	6.23	2599	ug/L	6.23	0.24%
QC value within limits for Zn 206.200 Recovery = 103.96%								

All analyte(s) passed QC.

Sequence No.: 4
Sample ID: SEQ-SCV
Analyst:
Logged In Analyst (Original) : chemistry
Initial Sample Wt:
Dilution:
Wash Time:

Autosampler Location: 10
Date Collected: 7/2/2015 10:55:53 AM
Data Type: Reprocessed on 7/2/2015 12:47:29 PM

Initial Sample Vol:
Sample Prep Vol:

Mean Data: SEQ-SCV

Analyte	Mean Corrected Intensity	Calib. Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Sc Axial	2090569.5	101.0	%	1.21				1.20%
Sc Radial	387020.6	98.67	%	3.191				3.23%
Ag 328.068†	13754.6	248.8	ug/L	1.52	248.8	ug/L	1.52	0.61%
QC value within limits for Ag 328.068 Recovery = 99.50%								
Al 396.153†	4372.3	1048	ug/L	42.31	1048	ug/L	42.31	4.04%
QC value within limits for Al 396.153 Recovery = 104.78%								
As 193.696†	249.2	2013	ug/L	14.50	2013	ug/L	14.50	0.72%
QC value within limits for As 193.696 Recovery = 100.63%								
Ba 233.527†	5800.2	1002	ug/L	38.94	1002	ug/L	38.94	3.89%
QC value within limits for Ba 233.527 Recovery = 100.18%								
Be 313.107†	564570.7	998.3	ug/L	6.82	998.3	ug/L	6.82	0.68%
QC value within limits for Be 313.107 Recovery = 99.83%								
B 249.677†	6681.1	1021	ug/L	5.09	1021	ug/L	5.09	0.50%
QC value within limits for B 249.677 Recovery = 102.10%								
Ca 317.933†	9928.3	1006	ug/L	24.55	1006	ug/L	24.55	2.44%
QC value within limits for Ca 317.933 Recovery = 100.64%								
Cd 214.440†	6323.9	987.9	ug/L	6.49	987.9	ug/L	6.49	0.66%
QC value within limits for Cd 214.440 Recovery = 98.79%								
Co 228.616†	5579.6	1056	ug/L	12.82	1056	ug/L	12.82	1.21%
QC value within limits for Co 228.616 Recovery = 105.59%								
Cr 267.716†	8744.4	982.4	ug/L	10.66	982.4	ug/L	10.66	1.08%
QC value within limits for Cr 267.716 Recovery = 98.24%								
Cu 324.752†	141073.9	984.1	ug/L	5.98	984.1	ug/L	5.98	0.61%
QC value within limits for Cu 324.752 Recovery = 98.41%								
Fe 238.204†	7096.2	1084	ug/L	28.67	1084	ug/L	28.67	2.64%
QC value within limits for Fe 238.204 Recovery = 108.41%								
K 766.490†	14272.2	5243	ug/L	185.25	5243	ug/L	185.25	3.53%
QC value within limits for K 766.490 Recovery = 104.86%								
Mg 285.213†	19594.1	1053	ug/L	38.94	1053	ug/L	38.94	3.70%
QC value within limits for Mg 285.213 Recovery = 105.26%								
Mn 257.610†	123271.3	1033	ug/L	10.10	1033	ug/L	10.10	0.98%
QC value within limits for Mn 257.610 Recovery = 103.26%								
Mo 202.031†	1303.6	1011	ug/L	14.83	1011	ug/L	14.83	1.47%
QC value within limits for Mo 202.031 Recovery = 101.07%								
Na 589.592†	11982.9	1058	ug/L	42.29	1058	ug/L	42.29	4.00%
QC value within limits for Na 589.592 Recovery = 105.82%								
Ni 231.604†	4349.5	1047	ug/L	14.90	1047	ug/L	14.90	1.42%
QC value within limits for Ni 231.604 Recovery = 104.73%								
Pb 220.353†	1247.6	2045	ug/L	13.10	2045	ug/L	13.10	0.64%
QC value within limits for Pb 220.353 Recovery = 102.26%								
Sb 206.836†	616.9	1870	ug/L	10.39	1870	ug/L	10.39	0.56%
QC value within limits for Sb 206.836 Recovery = 93.50%								
Se 196.026†	72.9	1009	ug/L	14.85	1009	ug/L	14.85	1.47%
QC value within limits for Se 196.026 Recovery = 100.94%								
SiO2 251.603†	13583.2	4966	ug/L	58.84	4966	ug/L	58.84	1.18%
QC value within limits for SiO2 251.603 Recovery = 99.31%								
Sr 421.552†	984239.9	1035	ug/L	20.59	1035	ug/L	20.59	1.99%
QC value within limits for Sr 421.552 Recovery = 103.49%								
Ti 334.940†	154557.4	978.4	ug/L	2.39	978.4	ug/L	2.39	0.24%
QC value within limits for Ti 334.940 Recovery = 97.84%								
Tl 190.801†	1905.9	5228	ug/L	19.16	5228	ug/L	19.16	0.37%
QC value within limits for Tl 190.801 Recovery = 104.56%								
V 290.880†	19513.4	986.3	ug/L	9.35	986.3	ug/L	9.35	0.95%
QC value within limits for V 290.880 Recovery = 98.63%								
Zn 206.200†	1608.4	1017	ug/L	16.42	1017	ug/L	16.42	1.62%
QC value within limits for Zn 206.200 Recovery = 101.68%								

All analyte(s) passed QC.