FUGRO CONSULTANTS INC.

Field Operations and Data Report - Vibracoring
Rehoboth Beach Outfall

Offshore Delaware, Atlantic Ocean

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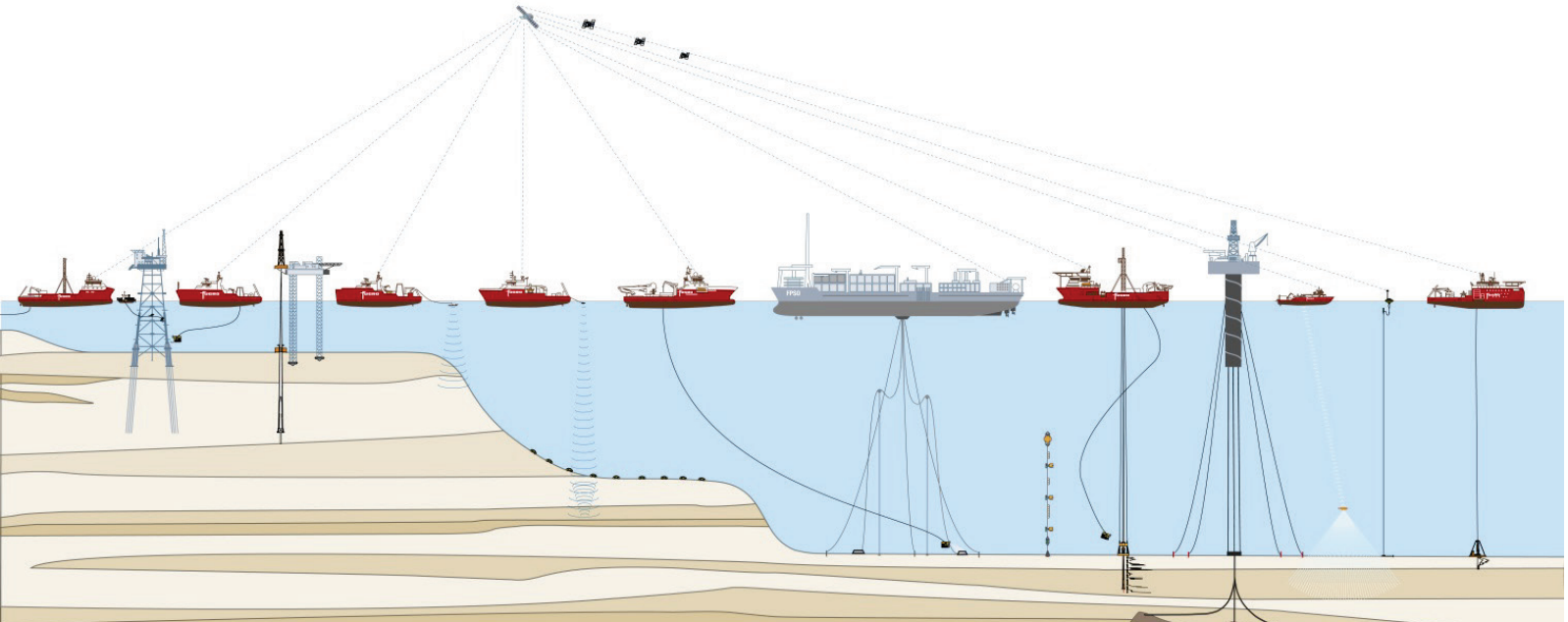
GHD Inc.

Initial Release



Field Operations and Data Report - Vibracoring
Rehoboth Beach Outfall

Vibracore Field Data Report Offshore
Delaware
Atlantic Ocean

Fugro Document No.: J04.81160001-03(01)
Issue Date: 3 May 2016

Ultimate Client:	GHD Inc.
Contract No.:	GHD #8618643
Client Address:	16701 Melford Boulevard Suite 330 Bowie, Maryland 20715 USA
Client Consultant:	N/A

Issue	Description	Prepared	Checked	Approved	Date
1	Initial Release	B. Mack		S. McDonald	3 May 2016

Our ref: J04.81160001-03(01)/BM/SM
Date: 3 May 2016

GHD Inc.
16701 Melford Boulevard
Suite 330
Bowie, Maryland 20715
USA

Attention: **Mr. Brandon Gott**

Dear Mr. Gott:

Field Operations and Data Report -Vibracoring
Rehoboth Beach Outfall
Offshore Delaware, Atlantic Ocean

This report presents field operations and preliminary results for the above project. Please note that this report will be superseded by the site characterization report. Preparation of this report was according to the Contract No. GHD #8618643, between GHD Inc. and Fugro Consultants Inc.

This report was prepared by Bill Mack under the supervision of Sean McDonald.

We thank you for the opportunity to be of service to you during this project. If you require any additional information or clarification please contact those listed below.

Yours faithfully,
Fugro Consultants Inc.

Bill Mack
Senior Engineer

Sean McDonald
Project Manager

Distribution: One electronic copy to Mr. Brandon Gott

CONTENTS

1.	**PROJECT INFORMATION**	**1**
1.1	Introduction	1
1.2	Scope of Report	1
1.3	Summary of Site Work	1
1.4	Summary of Soil Conditions	2
1.5	Data Sources	2
1.6	Geodetic Data	2
1.7	Guidelines on Use of Report	2
2.	**SAMPLING DATA**	**3**
2.1	Overview	3
	2.1.1 Vibracore Unit	3
2.2	Water Quality Monitoring	4
2.3	Operational Constraints	4
2.4	Practice for Sample Handling	4
3.	**LABORATORY TEST DATA**	**6**
3.1	Introduction	6
4.	**LOG OF ACTIVITIES**	**7**
4.1	Log of Activities Overview	7
5.	**HEALTH, SAFETY AND ENVIRONMENT**	**8**

PLATES FOLLOWING THE MAIN TEXT

1. PROJECT INFORMATION

2. PLATES FOLLOWING THE MAIN TEXT

APPENDICES

A. GUIDELINES ON USE OF REPORT

B. CHEMICAL ANALYSES

TABLES IN THE MAIN TEXT

Table 1.1: Vibracore Sampling Summary 1
Table 1.2: Summary of Soil Conditions 2
Table 2.1: Summary of Measured Water Quality Parameters 4
Table 3.1: Summary of Geotechnical Tests 6
Table 3.2: Summary of Chemical Tests 6
Table 5.1: Summary of Operations 7
Table 6.1: Health, Safety and Environment Statistics 8

FIGURES IN THE MAIN TEXT

Figure 2.1: Tiki XIV 3
Figure 2.2: Vibracorer 3

1. PROJECT INFORMATION

1.1 Introduction

GHD Inc. is designing for the City of Rehoboth Beach a sewer outfall that will extend about 6000 feet into the Atlantic Ocean offshore Rehoboth Beach, Delaware. GHD Inc. requested Fugro Consultants Inc. (Fugro) to perform a geotechnical site characterization. Part of this work included vibracore sampling and measuring water parameters in the zone from 3000 to 6000 feet offshore, where a shallow trench (nominal 8-foot depth) may be used to install the outfall pipe. Core samples were subsequently transported to shore and processed and assigned laboratory tests for both physical properties and chemical parameters. The work was performed from the Tiki XIV from 17 March 2016 to 24 March 2016.

Chart 1 presents the general location of the alignment and the vibracore locations along with a cross section view.

1.2 Scope of Report

This report will be superseded by the site characterization report to be issued following completion of the marine drilling and subsequent laboratory testing program. This report presents:

i. Description of the methods employed for the in situ testing and sampling;
ii. Preliminary positioning and water depth measurements;
iii. Results of in situ water parameters (temperature, salinity, dissolved oxygen);
iv. Vibracore logs and descriptions of the soil strata;
v. Results of laboratory testing.

1.3 Summary of Site Work

Table 1.1 summarizes the site work carried out during the vibracore program, the borehole coordinates and water depths.

Table 1.1: Vibracore Sampling Summary

Vibracore Number	Completion Date	Coordinates†, Delaware State Plane (NAD83), feet		Seafloor Elevation‡ (ft) MLLW	Penetration (feet)	Recovery (feet)
		Easting	Northing			
V-1	22 Mar 2016	756440	265620	-39.8	10	6.0
V-2	23 Mar 2016	757353	265770	-41.9	10	6.0
V-3	23 Mar 2016	758361	265970	-38.0	10	10
V-4	23 Mar 2016	758383	265977	-37.7	10	9.5
V-5	23 Mar 2016	758438	265989	-37.6	10	10

Notes:
MLLW = Mean Lower Low Water
NAD83 = North American Datum (1983)
† = Coordinates collected using Fugro Starfix DGPS positioning system with POS M/V.
‡ = Elevations based on single beam bathymetry data collected by Fugro 15 and 16 March 2016.

1.4 Summary of Soil Conditions

Table 1.2 summarizes the soil conditions encountered at investigated locations.

Table 1.2: Summary of Soil Conditions

Zones	Depth Range of Soil [feet BSF]		Soil Description†
	Top	Base	
V-1, V-2	0	3 - 5	Silty Fine to Medium SAND (SM)
	3 - 5	6	Fine SAND with silt (SP-SM)
V-3, 4, 5	0	1 – 1.5	Fine to Medium SAND with silt (SP-SM)
	1 – 1.5	10	Fat CLAY (CH), soft to firm

Notes:
BSF = Below seafloor
† = Soil descriptions based on visual-manual procedure; will be updated as required upon completion of laboratory results.

Vibracore logs showing the soil encountered in detail are presented on Plates at the end of the main text.

1.5 Data Sources

The data used in this report were obtained during an offshore site investigation, including in situ tests and onshore laboratory testing.

1.6 Geodetic Data

Chart 1 graphically presents the vibracore locations for this project. Positions were recorded from a moving vessel from an offset point assumed to be where the vibracore unit landed. Actual position could vary by about 15 feet. The user must consider the accuracy of all measurements, particularly where use may differ from original intentions.

1.7 Guidelines on Use of Report

Appendix A outlines the limitations of this report in terms of a range of considerations including, but not limited to, its purpose, its scope, the data on which it is based, its use by third parties, possible future changes in design procedures and possible changes in the conditions at the site with time. It represents a clear exposition of the constraints which apply to all reports issued by Fugro. It should be noted that these guidelines do not in any way supersede the terms and conditions of the contract between Fugro and GHD.

2. SAMPLING DATA

2.1 Overview

A total of [5] vibracores were recovered from seafloor during the geotechnical site investigation. The vibracorer operated by Fugro Marine Geoservices worked onboard the vessel Tiki XIV under charter to Fugro Pelagos. The work was performed from 22 March to 23 March, 2016. Fugro Pelagos also provided the positioning services during the vibracore program.

Figure 2.1: Tiki XIV

2.1.1 Vibracore Unit

A Rossfelder P5 vibracore was used to obtain the samples. The P5 contains two electric vibrating heads that produces about 3000 vibrations per minute and a centrifugal force of about 6000 pounds. This vibrohead is mounted atop a steel core barrel complete with cutting shoe, sample retainer, and 2.64-inch diameter clear PVC liner. The vibrohead alone weighs about 500 pounds in air; the full unit including rigid ballasted frame weighs about 1700 pounds. Electrical power is supplied via umbilical cable from a 440V generator on the boat deck.

Figure 2.2: Vibracorer

Equipment was lowered to seabed attached to a wire rope (and supporting umbilical cable) using a winch connected to an A-frame at the stern of the vessel. Once at seabed, the test was started and a load of approximately 700 pounds at the head of the vibracore forced the core barrel into the ground. The barrel was then vibrated for the minimum amount of time considered appropriate for penetration by monitoring the outlay of the umbilical cable. Once the test was stopped, the barrel was hoisted back up into the vibracore seabed frame and the whole unit winched back to deck for further processing.

2.2 Water Quality Monitoring

At key vibracore locations along the proposed alignment, a YSI Model 556 MPS multiparameter water quality sensor was lowered into the water to the seafloor, then raised about five feet to measure temperature, salinity and dissolved oxygen (DO) during vibracore sampling operations. Table 2.1 lists the parameters and values measured; Table 1.1 lists the coordinates and water depth at each of the corresponding locations.

Table 2.1: Summary of Measured Water Quality Parameters

Test Location	Date	Time	Water temp (°C)	Salinity (mS/cm)	DO (mg/L)
V-1	22 March 2016	10:00am	7.2	42.3	10.9
V-2	23 March 2016	4:20pm	7.7	42.2	12.0
V-3	23 March 2016	5:45pm	7.6	42.5	11.5
V-5	23 March 2016	2:30pm	7.6	42.1	12.2

2.3 Operational Constraints

Due to the constraint of the A-frame height, the core barrel length was reduced to 10 feet in order to land the sampler onto the back deck. Positioning generally consisted of laying the bow anchor and drifting into position, then setting stern anchors to limit side sway. Positioning difficulty occurred with the vessel on 22 March with shifting current directions and limited restraint with the stern anchors. The sample retainer was most effective in the clay soil in the diffuser area, with near 100 percent recovery, but less sample was recovered in V-1 and V-2 where the barrel terminated in silty file sand. The site work was performed successfully without any major sampling operational issues and more than sufficient volume to conduct the needed chemical testing.

2.4 Practice for Sample Handling

Once on deck, sample recovery was measured and liner was cut to length. Soil descriptions were noted for the top and bottom. Liners with sample were then cut into sections of no more than 5 feet in length. These sections were capped, sealed, and labeled, and transported 24 March 2016 to the Fugro facility in Norfolk, Virginia for processing.

Processing was conducted 29 and 30 March 2016. The core liners were cut lengthwise to expose the core for photographing, logging and sub-sampling for chemical and physical laboratory tests. Prior to

sampling, tools were cleaned using detergent followed by a rinse with tap water then distilled water, and single-use gloves were worn during the process.

Half of the liner sample was used to composite the upper six feet of soil for the chemical testing, and the mixed sample was placed into six 4-ounce glass jars and one 16-ounce glass jar provided by TestAmerica; these samples were delivered to their Virginia Beach, Virginia facility on 30 March 2016.

The other half of the liner sample was used to select discrete samples for moisture content and either grain size analysis for coarse-grained soils (sand) or Atterberg limits for fine-grained soils (silt, clay). These samples were delivered to Engineering and Testing Consultants, Inc. laboratory in Virginia Beach on 30 March 2016.

The remainder of the vibracore samples were secured in their original liners using a cling film wrap and stored in our Norfolk storage facility. The samples will be retained for at least 12 months following issue of the final version of the site characterization report.

3. LABORATORY TEST DATA

3.1 Introduction

Geotechnical laboratory tests were generally performed according to the procedures presented in ASTM International and are considered to be representative of the material tested.

Table 3.1 summarizes the geotechnical laboratory tests performed, and Table 3.2 summarizes the chemical tests.

Table 3.1: Summary of Geotechnical Tests

Sample Number	Sample Depth [feet BSF]	Moisture Content (ASTM D 2216)	Sieve Analysis (ASTM D 422)	Hydrometer Analysis (ASTM D 422)	Percent Finer than #200 sieve (ASTM D 1140)	Atterberg Limits (ASTM D 4318)
V-1	3	X			X	X
V-2	2.2	X	X			
V-3	1	X	X			
V-3	5	X		X		X
V-4	1.3	X	X			
V-5	7	X		X		X
	Note: Tests performed by Engineering and Testing Consultants, Inc.					

Table 3.2: Summary of Chemical Tests

EPA Method	Method Description
4500_P_E	Phosphorus
6010C	Cadmium, Copper Lead, Nickel, Zinc
7471B	Mercury
9034	Sulfide
9045D	pH
9056A	Sulfate
9071B	Oil & Grease
Lloyd Kahn Mod	Organic Carbon
N/A	Total Nitrogen
N/A	Moisture Content
Note: Samples were analyzed by TestAmerica	

The results of the geotechnical and chemical tests are contained in the appendix.

4. LOG OF ACTIVITIES

4.1 Log of Activities Overview

The site work was performed from 17 March to 23 March 2016. Table 4.1 lists the summary of operations for each day.

Table 4.1: Summary of Operations

Date	Description
17 March 2016	Demobilization of geophysical equipment; loading of vibracore equipment
18 March 2016	Complete mobilization of vibracore and wet test
19 March 2016	Weather standby – 20 mph wind, 4-6 ft swell
20 March 2016	Weather standby – 20 mph wind, 7 ft swell
21 March 2016	Weather standby – 20 mph wind, diminishing
22 March 2016	Sail to site, obtain one vibracore, near miss, return to dock
23 March 2016	Sail to site, obtain four vibracores, return to dock
24 March 2016	Demobilization of vibracore and positioning equipment

5. HEALTH, SAFETY AND ENVIRONMENT

The health, safety and environment (HSE) performance during the geotechnical site investigation was generally good. A total of five people contributed to the safe performance of 120 hours of site work on the Tiki XIV.

One near miss was reported with respect to a rope getting bound around the propeller, which caused a 4-hour delay in operations on 22 March 2016. There were zero injuries and zero equipment damage associated with this near miss.

Table 5.1 presents a record of HSE and vessel statistics for the geotechnical site investigation.

Table 5.1: Health, Safety and Environment Statistics

Activity	Total Number
Accident/Incident Reports	0
Near Miss Reports	1
Hazard Observation Cards	0
Vessel Inductions	3
Toolbox Talks	2
Health, Safety and Environment Meetings	1
Spills	0

PLATES FOLLOWING THE MAIN TEXT

1. PROJECT INFORMATION

2. SAMPLING DATA

3. LABORATORY TEST DATA

4. LOG OF ACTIVITIES

5. HEALTH, SAFETY AND ENVIRONMENT

1. PROJECT INFORMATION

Title	Plate No.
Key to Terms and Symbols	1.1
Soil Terminology	1.2
Vibracore Logs	1.3 through 1.7
Sample Photographs	1.8 through 1.12
Outfall Plan and Profile	CHART 1

SOIL TYPES

- Well graded GRAVEL (GW)
- Poorly graded GRAVEL (GP)
- GRAVEL with sand (GP or GW)
- GRAVEL with clay (GP or GW)
- Clayey GRAVEL (GC)
- GRAVEL with silt (GP or GW)
- Silty GRAVEL (GM)
- Well graded SAND (SW)
- Poorly graded SAND (SP)
- SAND with gravel (SP or SW)
- Clayey SAND (SC)
- SAND with clay (SP-SC)
- Silty SAND (SM)
- SAND with silt (SP-SM)
- Fat CLAY (CH)
- Sandy Fat CLAY (CH)
- Lean Clay (CL)
- Sandy Lean CLAY (CL)
- Silty CLAY (CL-ML)
- SHELLS, Shelly Material
- Elastic SILT (MH)
- SILT (ML)
- Sandy SILT (ML)
- PEAT
- High Plasticity ORGANICS (OH)
- Low Plasticity ORGANICS (OL)
- Surficial Soil
- Artificial Fill
- Asphalt Concrete
- Base Material

SAMPLERS

- Thin-Walled Shelby Tube
- Piston Sampler
- Wireline
- Rock Core (interior symbol represents percent recovery)
- Modified California
- Thick-Wall Wireline
- SPT
- Downhole SPT
- Vibracore
- Bulk Bag
- No Recovery

CLASSIFICATION TEST/BLOW COUNTS

- ■ Percent Passing No. 200 Sieve
- ● Water Content (%)
- □ Submerged Unit Weight (KCF)
- ○ Theoretical Submerged Unit Weight (KCF)

Plastic Limit — Liquid Limit

Non-Plastic

Water Level Symbols

- Initial or perched water level
- Final ground water level

STRENGTH TESTS

- ⊗ Pocket Penetrometer
- Torvane
- Remote Vane
- ◆ Miniature Vane
- Residual Vane
- ▲ Unconsolidated Undrained Triaxial
- ▣ Unconfined Compression (soil)
- ◇△ (Open symbols indicate remolded tests)
- CPT (Nk = 15 and 20)

KEY TO TERMS AND SYMBOLS USED ON BORING LOGS

Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

TUBE AND LINER SAMPLERS

DROP	Liner sample advanced with the weight of a 175 pound hammer.
PUSH	Pushed thin-walled 3" tube.
15/24"	Number of blows required to produce the indicated penetration using a 2-1/4" tube sampler. The sampler was driven with a 175-pound downhole hammer dropped approximately 5 ft.

SPT AND MODIFIED CALIFORNIA LINER SAMPLERS

Samplers were driven with a 140 pound above deck hammer dropped approximately 30 inches.

WOR, WOH	Weight of Rod, Weight of Hammer.
20	Number of blows to produce 12" of penetration after the initial 6" of seating.
50/3"	50 blows produced the indicated penetration during the initial 6" interval.

SOIL GRAIN SIZE

U.S. STANDARD SIEVE

12"	3"	3/4"	4	10	40	200

BOULDERS	COBBLES	GRAVEL		SAND			SILT	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		

300	75	19	4.75	2.00	0.425	0.075	0.002

SOIL GRAIN SIZE IN MILLIMETERS

STRENGTH OF COHESIVE SOILS

Consistency	Undrained Shear Strength, Kips Per Sq Ft
Very Soft	less than 0.25
Soft	0.25 to 0.5
Firm	0.5 to 1
Stiff	1 to 2
Very Stiff	2 to 4
Hard	4 to 8
Very Hard	greater than 8

DENSITY OF GRANULAR SOILS

Descriptive Term	Relative Density (%)*
Very Loose	less than 15
Loose	15 to 35
Medium Dense	35 to 65
Dense	65 to 85
Very Dense	greater than 85

* Estimated from sampler driving record and PCPT tip resistance.

SOIL STRUCTURE

Slickensided	Having planes of weakness that appear slick and glossy. The degree of slickensidedness depends upon the spacing of slickensides and the ease of breaking along these planes.
Fissured	Containing shrinkage of relief crack, often filled with fine sand or silt, usually more or less vertical.
Pocket	Inclusion of material of different texture that is smaller than the diameter of the sample.
Parting	Inclusion less than 1/8 inch thick extending through the sample.
Seam	Inclusion 1/8 to 3 inches thick extending through the sample.
Layer	Inclusion greater than 3 inches thick extending through the sample.
Laminated	Soil sample composed of alternating partings or seams of different soil types.
Interlayered	Soil sample composed of alternating layers of different soil types.
Intermixed	Soil sample composed of pockets of different soil types and layered or laminated structure is not evident.
Calcareous	Having appreciable quantities of carbonate.

KEY TO TERMS & SYMBOLS USED ON LOGS
Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 1.2

LOCATION: N 265,620 E 756,440
Delaware State Plane

MUDLINE EL: -39.8 ft +/- (rel. MLLW datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER N-VALUE	MATERIAL DESCRIPTION	SAMPLE DEPTH (ft)	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	D50 (mm)
-40						Silty Fine to Medium SAND (SM): very dark gray (N3).						
						-shell fragments to 1.0' -silty fine sand, very dark greenish gray below 1.0'						
-42	2											
							3	24	15	NP	NP	0.13
-44	4											
						4.7 ft Poorly graded SAND with silt (SP-SM): olive gray (5Y4/2), mottled with dark yellowish brown (10YR4/6).						
-46	6					**TD = 6'**						
-48	8											
-50	10											
-52	12											
-54	14											

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 6.0 ft
DRILLING DATE: March 22, 2016
NOTES:
1)
2)

DRILLING METHOD: 2.64-inch-dia. Vibracore
DRILLED BY: FMGI
LOGGED BY: B. Mack
RIG TYPE: Rossfelder P5

LOG OF VIBRACORE NO. V-1
Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 1.3

LOCATION: N 265,770 E 757,353
Delaware State Plane

MUDLINE EL: -41.9 ft +/- (rel. MLLW datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER N-VALUE	MATERIAL DESCRIPTION	SAMPLE DEPTH (ft)	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	D50 (mm)
-42						Silty Fine to Medium SAND (SM): bluish black (10B2.5/1).						
						-shell fragments to 1.5'						
-44	2					-with sand seams, 1.9' to 3.0'	2.2	14	15	NP	NP	0.62
						3.4 ft						
						Poorly graded Fine SAND (SP): gray (5Y6/1), with silt seams and pockets.						
-46	4											
						4.5 ft						
						Poorly graded Fine SAND (SP): olive gray (5Y4/2). -organic silt seams, very dark brown at 4.6' -organic odor below 5.3' -organic silt layer, 5.3' to 5.6'						
-48	6											
						TD = 6.6'						
-50	8											
-52	10											
-54	12											
-56	14											

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 6.6 ft
DRILLING DATE: March 23, 2016
NOTES:
1)
2)

DRILLING METHOD: 2.64-inch-dia. Vibracore
DRILLED BY: FMGI
LOGGED BY: B. Mack
RIG TYPE: Rossfelder P5

LOG OF VIBRACORE NO. V-2
Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 1.4

LOCATION: N 265,970 E 758,361
Delaware State Plane

MUDLINE EL: -38 ft +/- (rel. MLLW datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER N-VALUE	MATERIAL DESCRIPTION	SAMPLE DEPTH (ft)	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	D50 (mm)
						Poorly graded Fine to Medium SAND (SP): olive gray (5Y4/2), contains shell fragments.	1	20	3	NP	NP	0.41
						1.4 ft						
						Fat CLAY (CH): soft to firm, very dark greenish gray (10Y3/1).						
-40	2					-poorly graded sand with silt and gravel at 1.4'						
						-with sand pockets and fine gravel to 3.3'						
-42	4											
							5	49	86	50	26	
-44	6											
-46	8											
-48	10					TD = 10'						
-50	12											
-52	14											

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 10.0 ft
DRILLING DATE: March 23, 2016
NOTES:
1)
2)

DRILLING METHOD: 2.64-inch-dia. Vibracore
DRILLED BY: FMGI
LOGGED BY: B. Mack
RIG TYPE: Rossfelder P5

LOG OF VIBRACORE NO. V-3
Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 1.5

LOCATION: N 265,977 E 758,383
Delaware State Plane

MUDLINE EL: -37.7 ft +/- (rel. MLLW datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER N-VALUE	MATERIAL DESCRIPTION	SAMPLE DEPTH (ft)	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	D50 (mm)
-38						Poorly graded Fine to Medium SAND with silt (SP-SM): olive gray (5Y5/2).						
						-silty sand with gravel, 1.1' to 1.8'	1.3	15	10	NP	NP	0.97
						1.8 ft						
	2					Fat CLAY (CH): soft to firm, very dark greenish gray (10Y3/1).						
-40						-sand pockets and seams, 1.8' to 2.9'						
						-piece of wood at 2.9'						
	4											
-42												
	6											
-44												
	8											
-46												
	10					TD = 10'						
-48												
	12											
-50												
	14											
-52												

The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 10.0 ft
DRILLING DATE: March 23, 2016
NOTES:
1)
2)

DRILLING METHOD: 2.64-inch-dia. Vibracore
DRILLED BY: FMGI
LOGGED BY: B. Mack
RIG TYPE: Rossfelder P5

LOG OF VIBRACORE NO. V-4
Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 1.6

LOCATION: N 265,989 E 758,438
Delaware State Plane

MUDLINE EL: -37.6 ft +/- (rel. MLLW datum)

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLERS	SAMPLER N-VALUE	MATERIAL DESCRIPTION	SAMPLE DEPTH (ft)	WATER CONTENT, %	% PASSING #200 SIEVE	LIQUID LIMIT, %	PLASTICITY INDEX, %	D50 (mm)
-38						Poorly graded Fine to Medium SAND with silt (SP-SM): olive gray (5Y5/2), contains shell fragments.						
						-color transitioning to dark greenish gray below 0.8'						
						-poorly graded sand with silt and gravel, 1.3' to 1.4' (1.4 ft)						
						Fat CLAY (CH): soft, very dark greenish gray (10Y3/1).						
	2											
-40												
	4											
-42												
						-moderate plasticity, with sand seams and pockets below 5.5'						
	6											
-44							7	44	75	45	24	
	8											
-46						(9.0 ft)						
						TD = 9.5'						
	10											
-48												
	12											
-50												
	14											
-52												

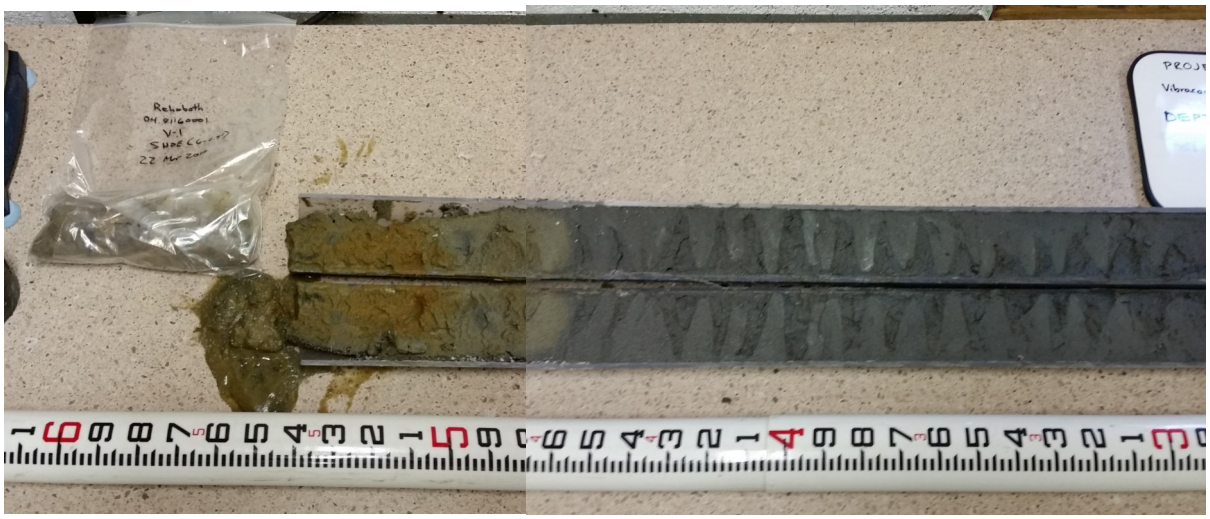
The log and data presented are a simplification of actual conditions encountered at the time of drilling at the drilled location. Subsurface conditions may differ at other locations and with the passage of time.

COMPLETION DEPTH: 9.5 ft
DRILLING DATE: March 23, 2016
NOTES:
1)
2)

DRILLING METHOD: 2.64-inch-dia. Vibracore
DRILLED BY: FMGI
LOGGED BY: B. Mack
RIG TYPE: Rossfelder P5

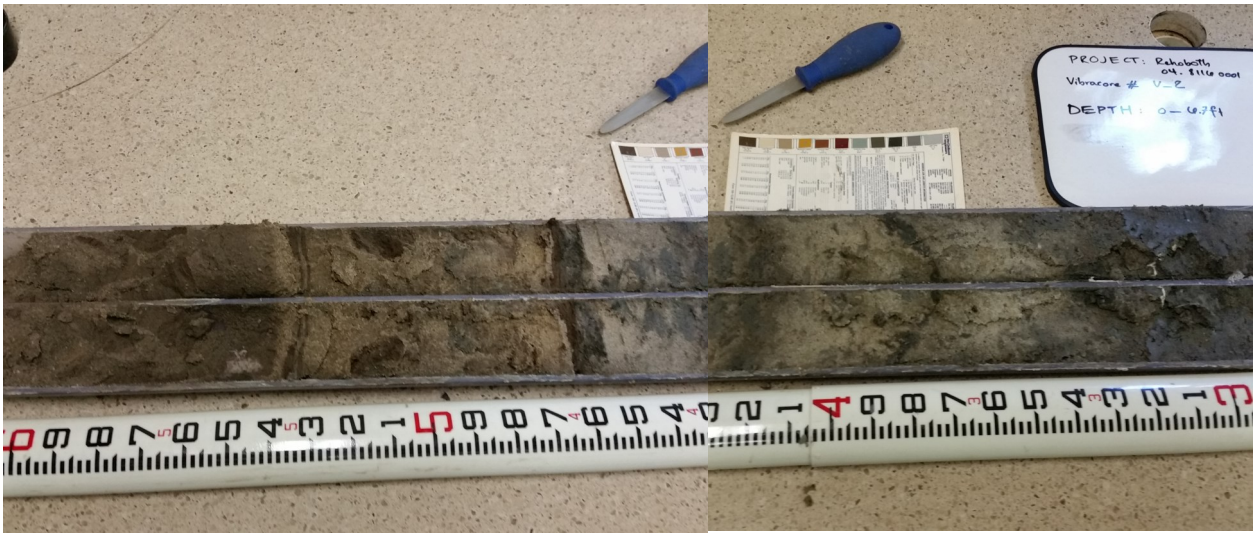
LOG OF VIBRACORE NO. V-5
Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 1.7



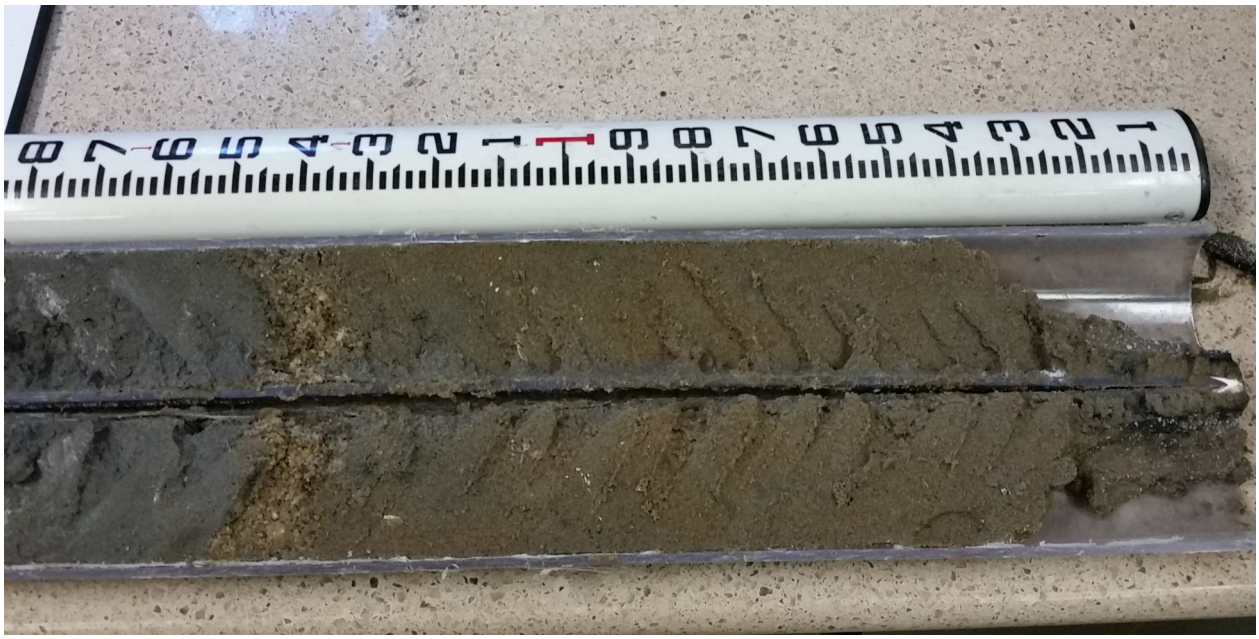
Vibracore V-1
6.0 feet recovery

VIBRACORE SAMPLE PHOTOGRAPHS
Rehoboth Beach Outfall
Atlantic Ocean, Offshore Delaware



Vibracore V-2
6.6 feet recovery

VIBRACORE SAMPLE PHOTOGRAPHS
Rehoboth Beach Outfall
Atlantic Ocean, Offshore Delaware

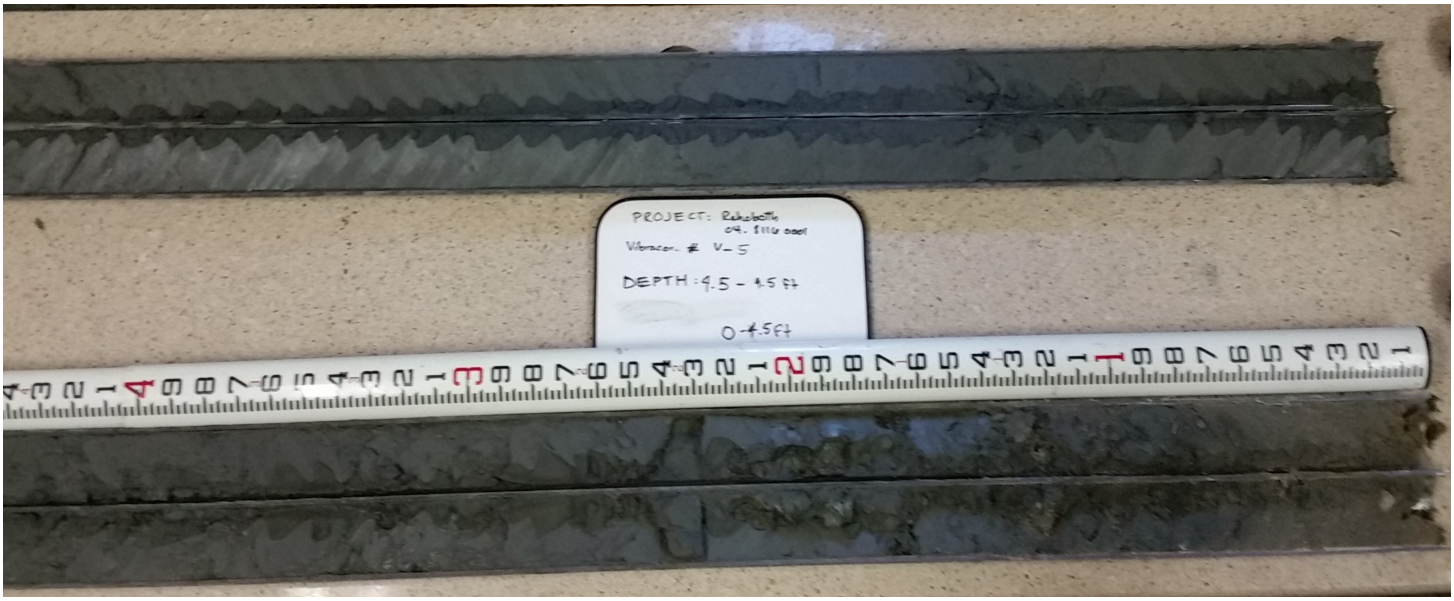


Vibracore V-3
10.0 feet recovery

VIBRACORE SAMPLE PHOTOGRAPHS
Rehoboth Beach Outfall
Atlantic Ocean, Offshore Delaware

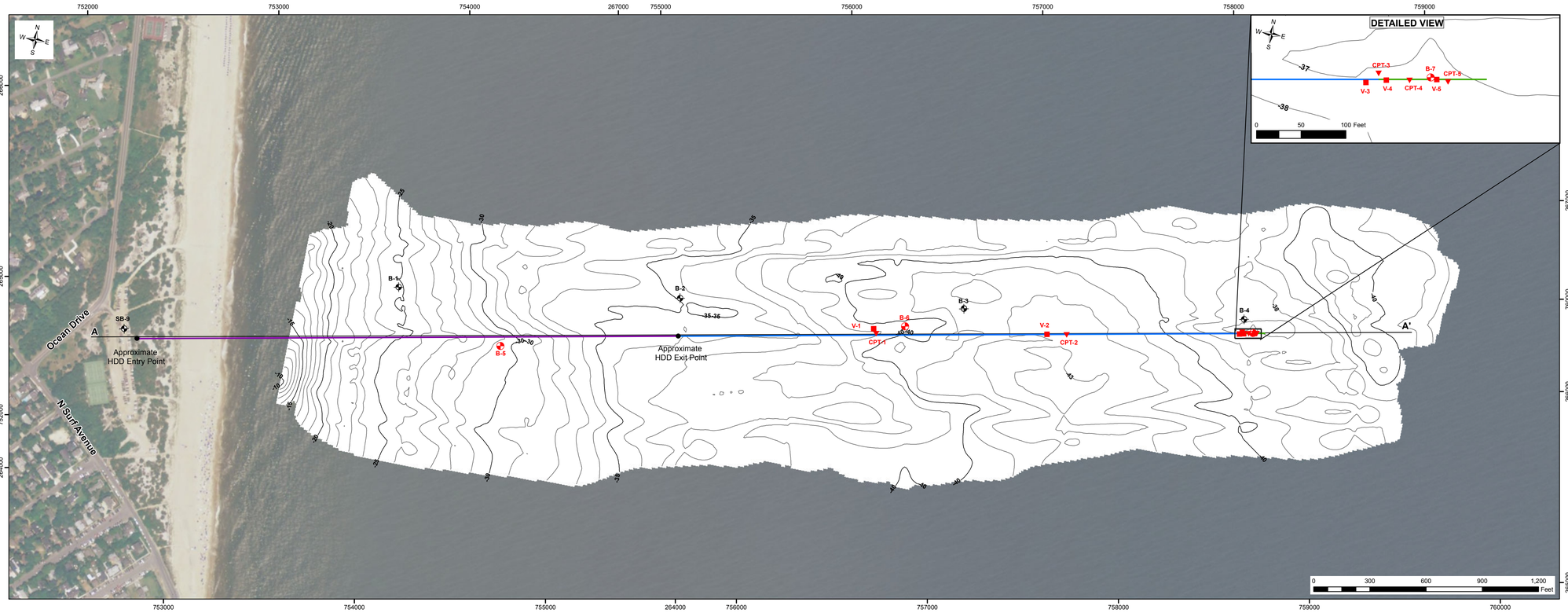
Vibracore V-4
9.5 feet recovery

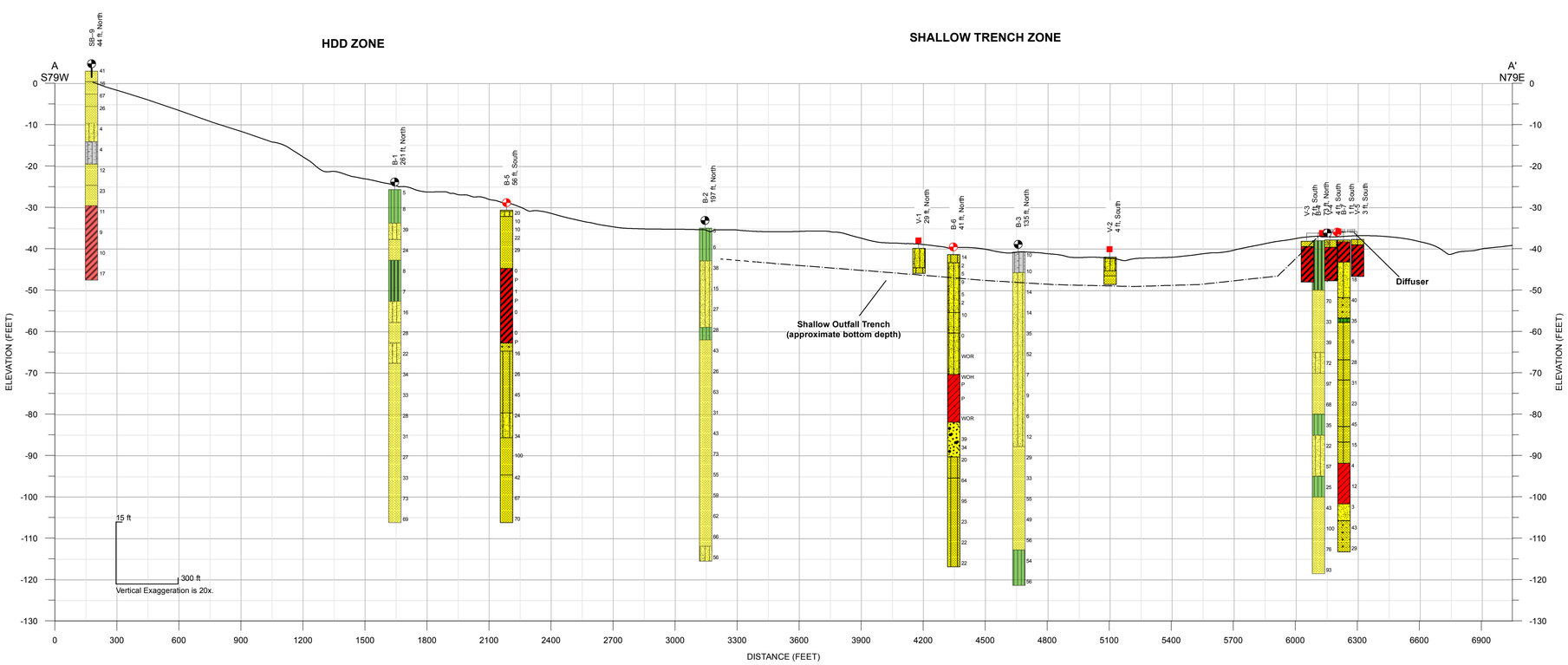
VIBRACORE SAMPLE PHOTOGRAPHS
Rehoboth Beach Outfall
Atlantic Ocean, Offshore Delaware



Vibracore V-5
10.0 feet recovery

VIBRACORE SAMPLE PHOTOGRAPHS
Rehoboth Beach Outfall
Atlantic Ocean, Offshore Delaware





Legend

- B-5 — 2016 Boring
- CPT-1 — 2016 CPT
- V-1 — 2016 Vibracore
- B-6 — Hynes and Associates Boring (2011)
- A A' — Subsurface Profile Line Location

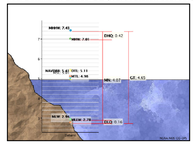
Proposed Outfall Segments

- Diffuser
- HDD
- Open Cut

Bathymetry Contours (Feet, MLLW) (Fugro, 2016)

- Major Contour is 5 Feet
- Minor Contour is 1 Foot

Tidal Datums for Lewes, DE (NOAA Station 8557380)



Soil Descriptions

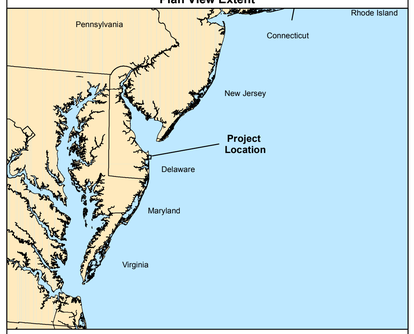
- Lean CLAY (CL)
- Lean CLAY with Sand (CL)
- Fat CLAY (CH)
- Fat CLAY with SAND (CH)
- Silt (ML)
- SILT with Sand (ML)
- Sandy SILT (ML)
- Elastic Silt (MH)
- Poorly-Graded SAND (SP)
- Poorly-Graded SAND with Silt (SP-SM)
- Gravelly Poorly-Graded SAND (SP)
- Well-Graded SAND (SW)
- Well-Graded SAND with Silt (SW-SM)
- Silty SAND (SM)
- Well-Graded GRAVEL (GW)
- Low-Plasticity Organic (OL)
- 13 Field SPT N-Value (uncorrected)

COORDINATE TABLE

Exploration ID	Delaware State Plane, NAD83, Feet		NAD83, Geographic	
LOCATION	Easting	Northing	Latitude	Longitude
HDD				
HDD Entry	752,588	264,809	38.726644	-75.078683
End of Trench	758,368	265,975	38.729786	-75.058420
EXISTING DATA (Hynes and Associates, 2011)				
SB-9	752,516	264,846	38.726748	-75.078949
B-1	753,910	265,348	38.728111	-75.074055
B-2	755,395	265,581	38.728737	-75.068849
B-3	756,882	265,819	38.729374	-75.063597
B-4	758,370	266,053	38.730001	-75.058414
GHD AS-BUILT LOCATIONS				
BORINGS				
B-5	754,503	265,144	38.727547	-75.071981
B-6	756,602	265,665	38.728955	-75.064615
B-7	758,431	265,990	38.729827	-75.058201
CPTs				
CPT-1	756,458	265,596	38.728767	-75.065124
CPT-2	757,457	265,787	38.729281	-75.061619
CPT-3	758,373	265,983	38.729809	-75.058404
CPT-4	758,408	265,982	38.729806	-75.058281
CPT-5	758,451	265,989	38.729824	-75.058131
Vibracores				
V-1	756,440	265,620	38.728833	-75.065185
V-2	757,353	265,770	38.729235	-75.061983
V-3	758,361	265,970	38.729773	-75.058447
V-4	758,383	265,977	38.729792	-75.058369
V-5	758,438	265,989	38.729825	-75.058176

Note: Coordinates shown are for planning purposes only. Not to be used for construction.

Plan View Extent



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OUTFALL PLAN AND PROFILE A-A'

Rehoboth Beach Outfall
Rehoboth Beach, Delaware

0 300 600 900 1,200 Feet

NO:	DATE:	DESCRIPTION:	DRAWN:	CHKD:	APPR:
1	Mar. 2016	Rehoboth Beach Outfall Desktop Study	WBC	WRM	SM
2	Apr. 2016	Data Report - Includes Marine Borings and Vibracores	WBC	WRM	SM
3					

PROJECT NO. 04.81160001 CHART NO.: 1

N:\Projects\04_2016\04.81160_0001_Rehoboth_Beach_Outfall\Outputs\April_2016_Cont\5_Site_Investigations\ArcChart\1_Outfall_Plan_and_Profile_A-A'_Arch30.mxd, 5/3/2016, wcopples

2. PLATES FOLLOWING THE MAIN TEXT

Title	Plate No.
Geotechnical Laboratory Test Summary	2.1
Particle Size Analyses	2.2
Atterberg Limits Graph	2.3

LOCATION	DEPTH, ft	SAMPLE NUMBER	UNIT WEIGHT WET pcf	UNIT WEIGHT DRY pcf	MOISTURE CONTENT (%)	FINES (%)	ATTERBERG LIMITS		DIRECT SHEAR		UU TRIAXIAL		MINIVANE		TORVANE	POCKET PENETROM.	POINT LOAD TEST	UNCONFINED COMPRESSION (ROCK)	CORROSIVITY TESTS				PERMEABILITY (cm/sec)	ORGANIC CONTENT (%)	CARBONATE (%)	SPECIFIC GRAVITY	TEST LISTING
							LL	PI	C ksf	PHI deg	S_u, ksf	Remold S_u, ksf	S_u, ksf	Remold S_u, ksf	S_u, ksf	S_u, ksf	Q_u, psi	Q_u, psi	R	pH	Cl	So_4					
V-1	3.0				24	15	NP	NP																			M, A, S
V-2	2.2				14	15	NP	NP																			M, A, S
V-3	1.0				20	3	NP	NP																			M, A, S
V-3	5.0				49	86	50	26							0.5												M, A, FC, t
V-3	9.5														0.5												t
V-4	1.3				15	10	NP	NP																			M, A, S
V-4	5.0														0.4												t
V-4	9.5														0.5												t
V-5	7.0				44	75	45	24																			M, A, FC

Classification Tests
UWW = Unit Wet Weight
UDW = Unit Dry Weight
MC = Moisture Content
Fines = % Passing #200 Sieve
LL = Liquid Limit
PI = Plasticity Index

Direct Shear Test
C = Assigned Cohesion, ksf
PHI = Assigned Friction Angle, degrees

Compaction Test
MAX DD = Maximum Dry Density
OPT MC = Optimum Moisture Content

Compressive Strength Tests
Qu = Unconfined Compression
Su = Undrained Shear Strength
u = Unconsolidated Undrained
p = Pocket Penetrometer
t = Torvane
m = Miniature Vane

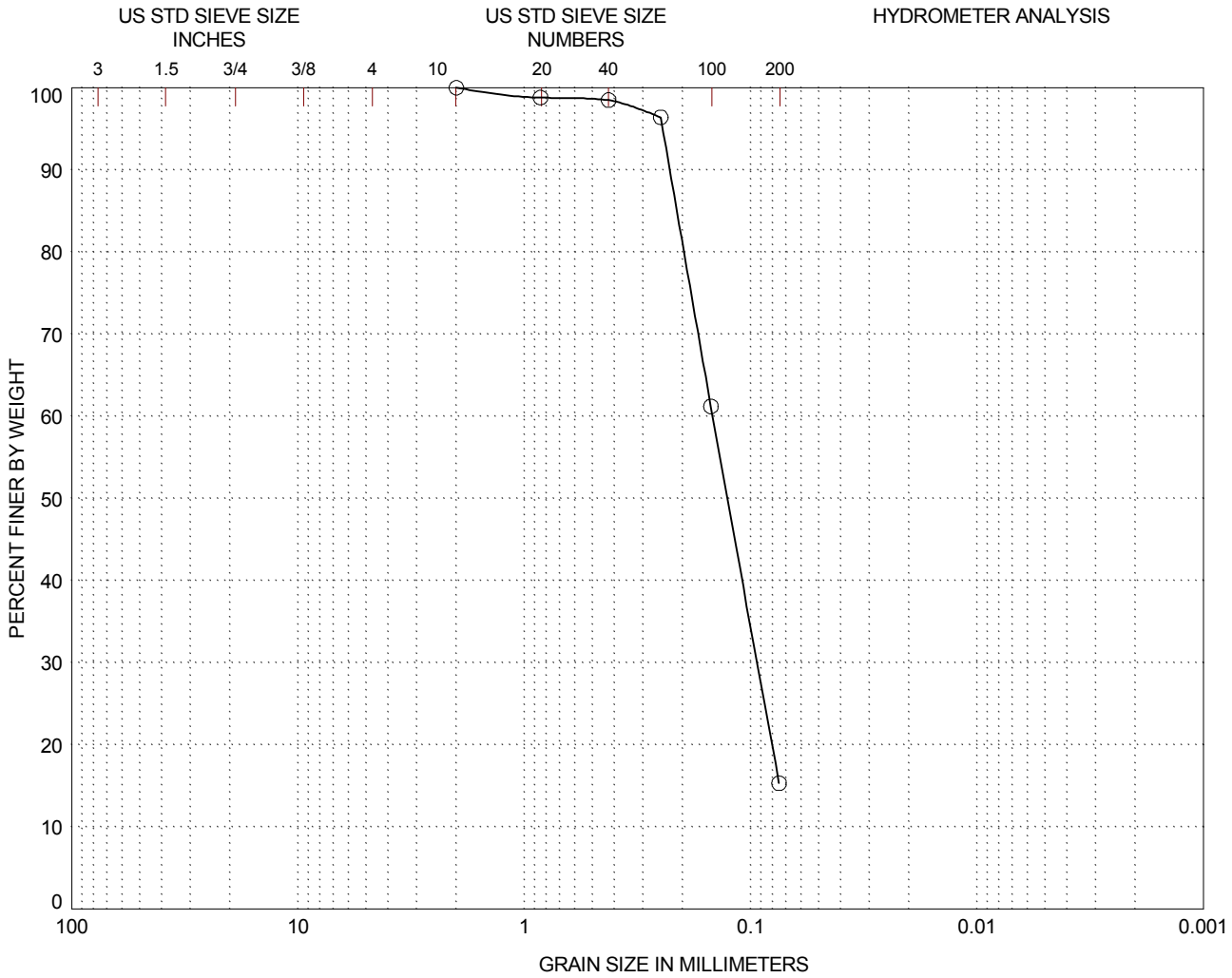
Corrosivity Tests
R = Resistivity, ohm-cm, satur.
pH = pH
Cl = Chloride, ppm
SO_4 = Sulfate, ppm

Test Listing Abbreviations
M = Moisture Content
T = Total & Dry Unit Weight
S = Sieve Analysis
FC = % Passing #200 Sieve
H = Hydrometer Analysis
A = Atterberg Limits
P = Compaction Test
D = Direct Shear Test
C = Consolidation Test
Co = Corrosivity Tests
CU = CU Triaxial
U = UU Triaxial
Pm = Permeability
SG = Specific Gravity
TC = Thermal Conductivity
Cb = Percent Carbonate
OC = Organic Content
MM = Min/Max
X = X-Ray Diffraction

SUMMARY OF LABORATORY TEST RESULTS

Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 2.1



0.0% GRAVEL		84.7% SAND			15.3% FINES	
0% Coarse	0.0% Fine	0.0% Coarse	1.5% Medium	83.2% Fine	% SILT	% CLAY

Sieve Size (mm)	Percent Finer
2	100
0.85	98.8
0.425	98.5
0.25	96.4
0.15	61.2
0.075	15.3

Location: V-1, Depth: 3.0

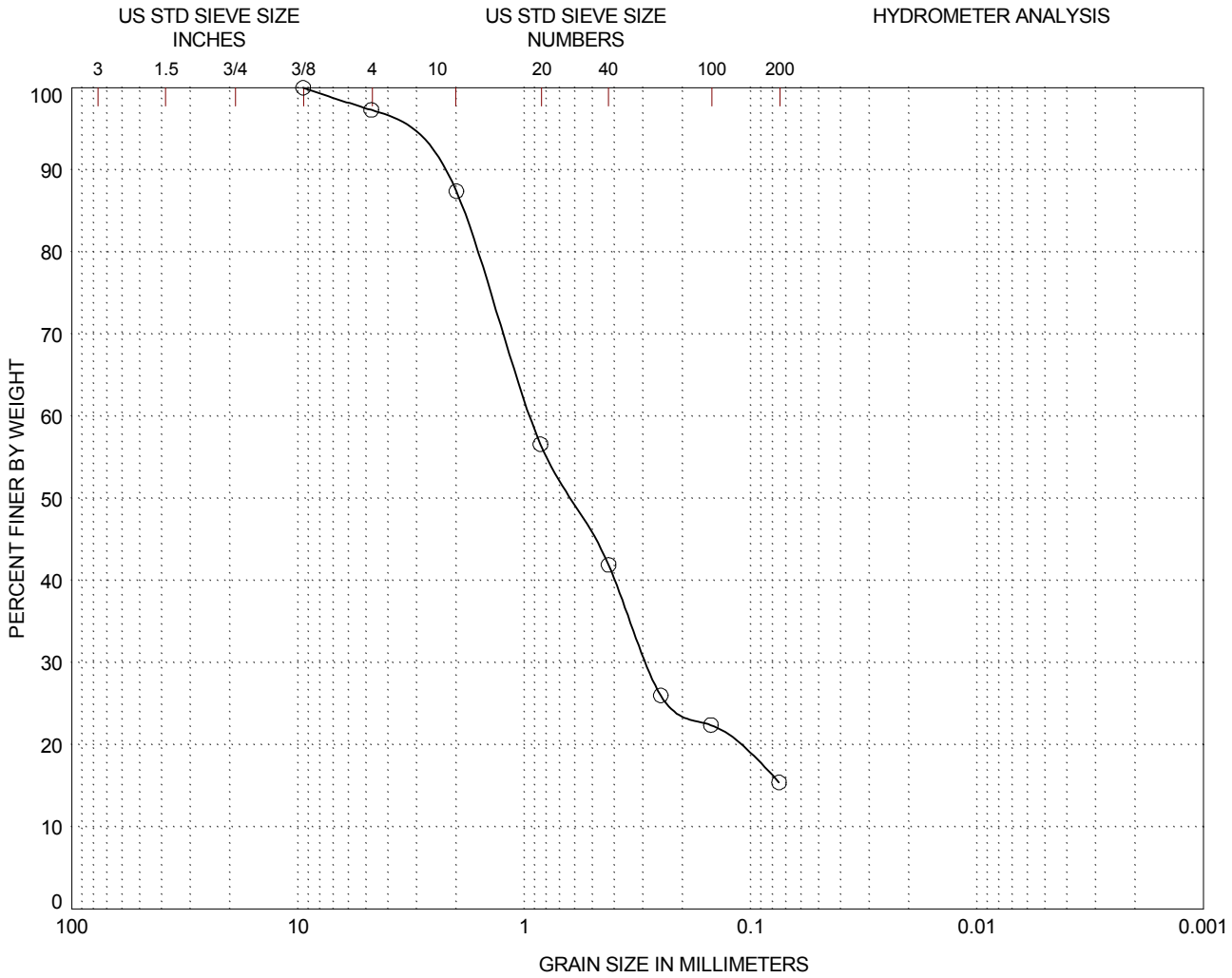
Description: SILTY SAND (SM) fine sand, non-plastic silt

Plastic Limit:	Liquid Limit:	Plasticity Index:	C_c	C_u
0	0	0		

D_{90}	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}
0.228	0.212	0.147	0.127	0.0936		

PARTICLE SIZE DISTRIBUTION
Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 2.2a



2.7% GRAVEL		81.9% SAND			15.4% FINES	
0% Coarse	2.7% Fine	9.9% Coarse	45.5% Medium	26.5% Fine	% SILT	% CLAY

Sieve Size (mm)	Percent Finer
9.5	100
4.75	97.3
2	87.4
0.85	56.6
0.425	41.9
0.25	26
0.15	22.4
0.075	15.4

Location: V-2, Depth: 2.2

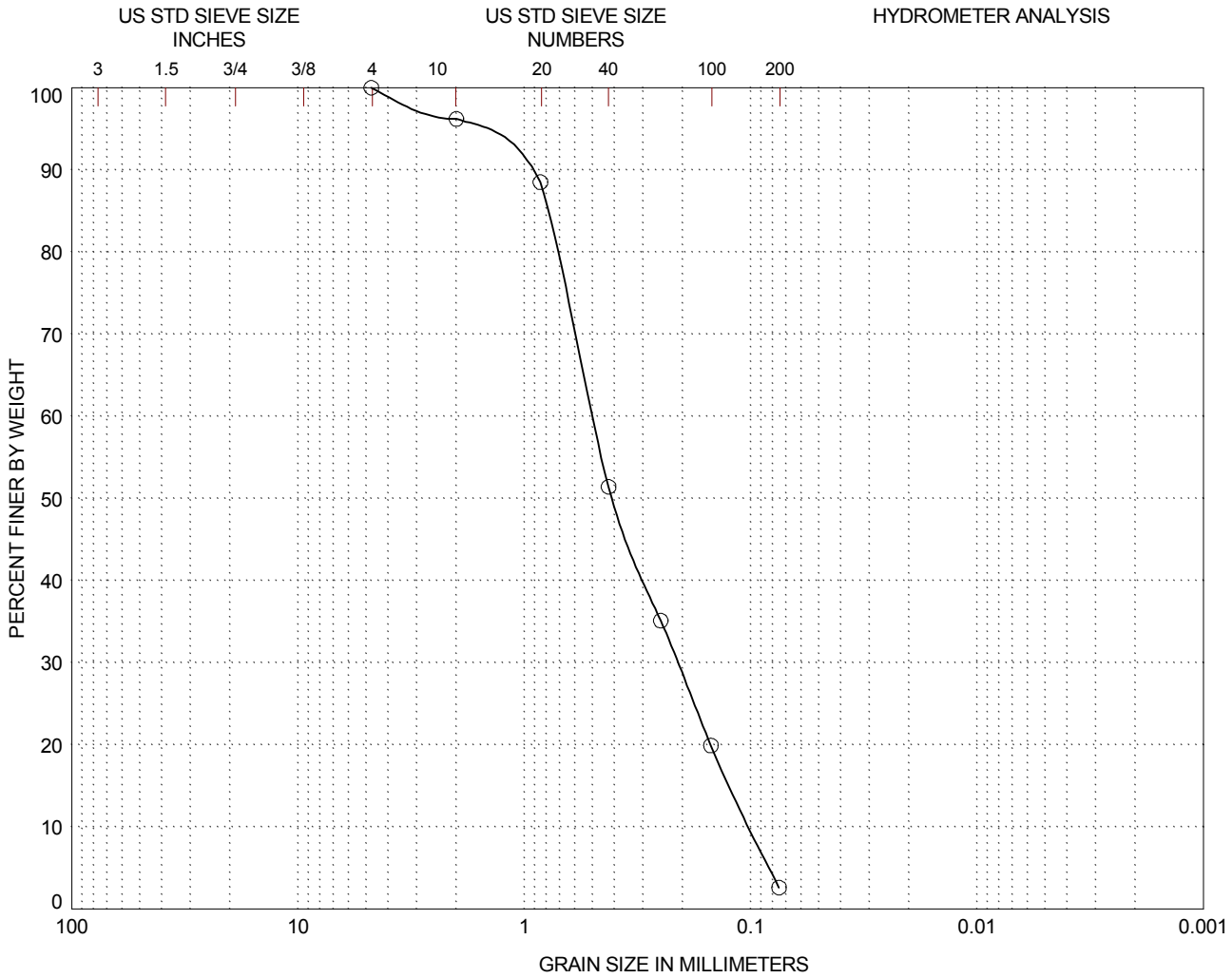
Description: SILTY SAND (SM) fine to medium sand, non-plastic silt

Plastic Limit:	Liquid Limit:	Plasticity Index:	C_c	C_u
0	0	0		

D_{90}	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}
2.51	1.87	0.934	0.623	0.286		

PARTICLE SIZE DISTRIBUTION
Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 2.2b



0.0% GRAVEL		97.4% SAND			2.6% FINES	
0% Coarse	0.0% Fine	3.8% Coarse	44.8% Medium	48.8% Fine	% SILT	% CLAY

Sieve Size (mm)	Percent Finer
4.75	100
2	96.2
0.85	88.5
0.425	51.4
0.25	35.1
0.15	19.9
0.075	2.6

Location: V-3, Depth: 1.0

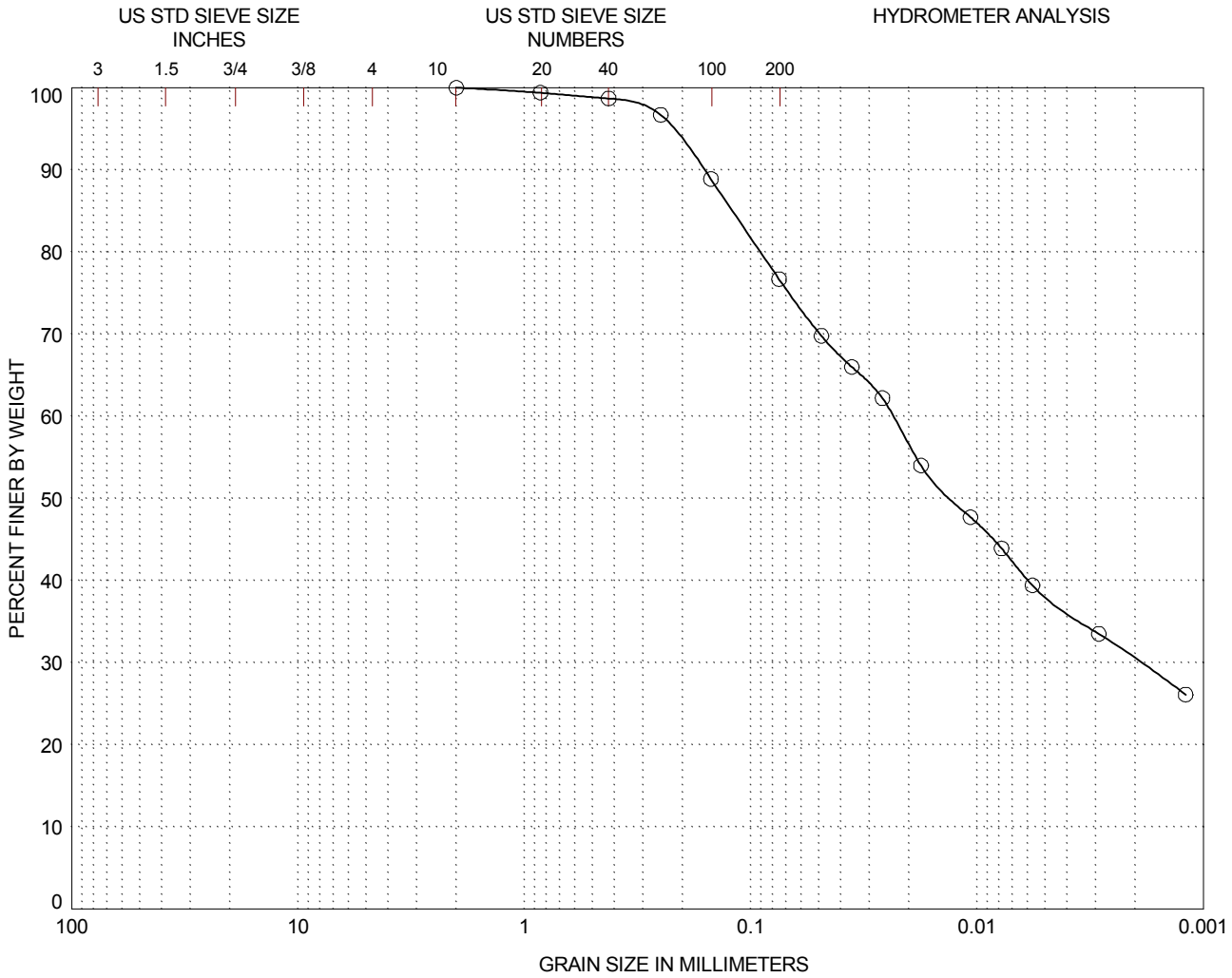
Description: POORLY GRADED SAND (SP) fine to medium sand

Plastic Limit:	Liquid Limit:	Plasticity Index:	C_c	C_u
0	0	0	0.9	4.9

D_{90}	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}
1.00	0.796	0.499	0.406	0.211	0.123	0.101

PARTICLE SIZE DISTRIBUTION
Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 2.2c



0.0% GRAVEL		23.3% SAND			76.7% FINES	
0% Coarse	0.0% Fine	0.0% Coarse	1.3% Medium	22.0% Fine	38.4% SILT	38.3% CLAY

Sieve Size (mm)	Percent Finer
2	100
0.85	99.4
0.425	98.7
0.25	96.7
0.15	88.9
0.075	76.7

Location: V-3, Depth: 5.0

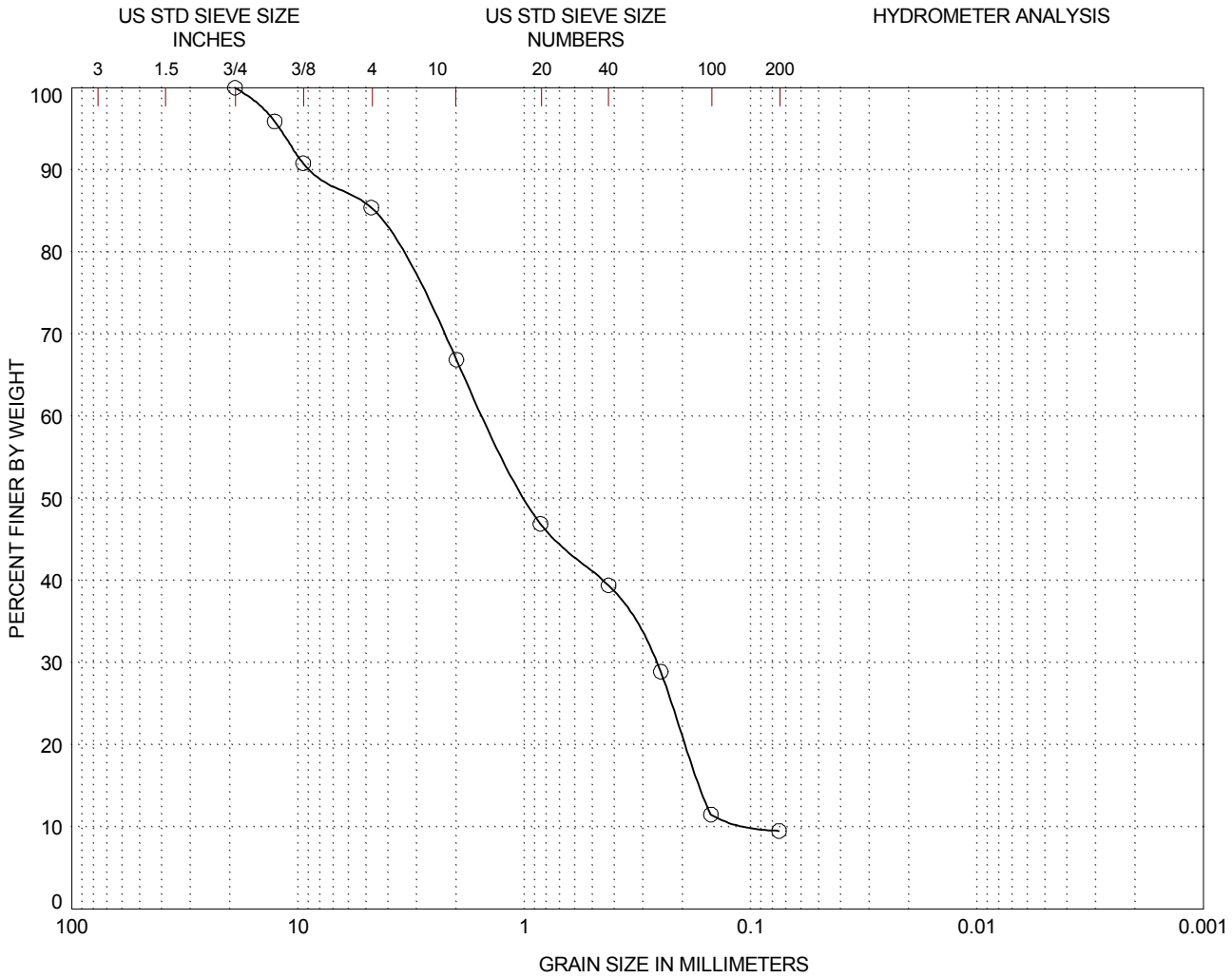
Description: FAT CLAY with SAND (CH) high plasticity clay, fine sand

Plastic Limit:	Liquid Limit:	Plasticity Index:	C_c	C_u
24	50	26		

D_{90}	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}
0.161	0.120	0.0236	0.0129	0.00191		

PARTICLE SIZE DISTRIBUTION
Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 2.2d



14.6% GRAVEL		75.9% SAND			9.5% FINES	
0% Coarse	14.6% Fine	18.5% Coarse	27.5% Medium	29.9% Fine	% SILT	% CLAY

Sieve Size (mm)	Percent Finer
19	100
12.7	95.9
9.5	90.8
4.75	85.4
2	66.9
0.85	46.9
0.425	39.4
0.25	28.9
0.15	11.5
0.075	9.5

Location: V-4, Depth: 1.3

Description: POORLY GRADED SAND with SILT (SP-SM) fine to medium sand, non-plastic silt

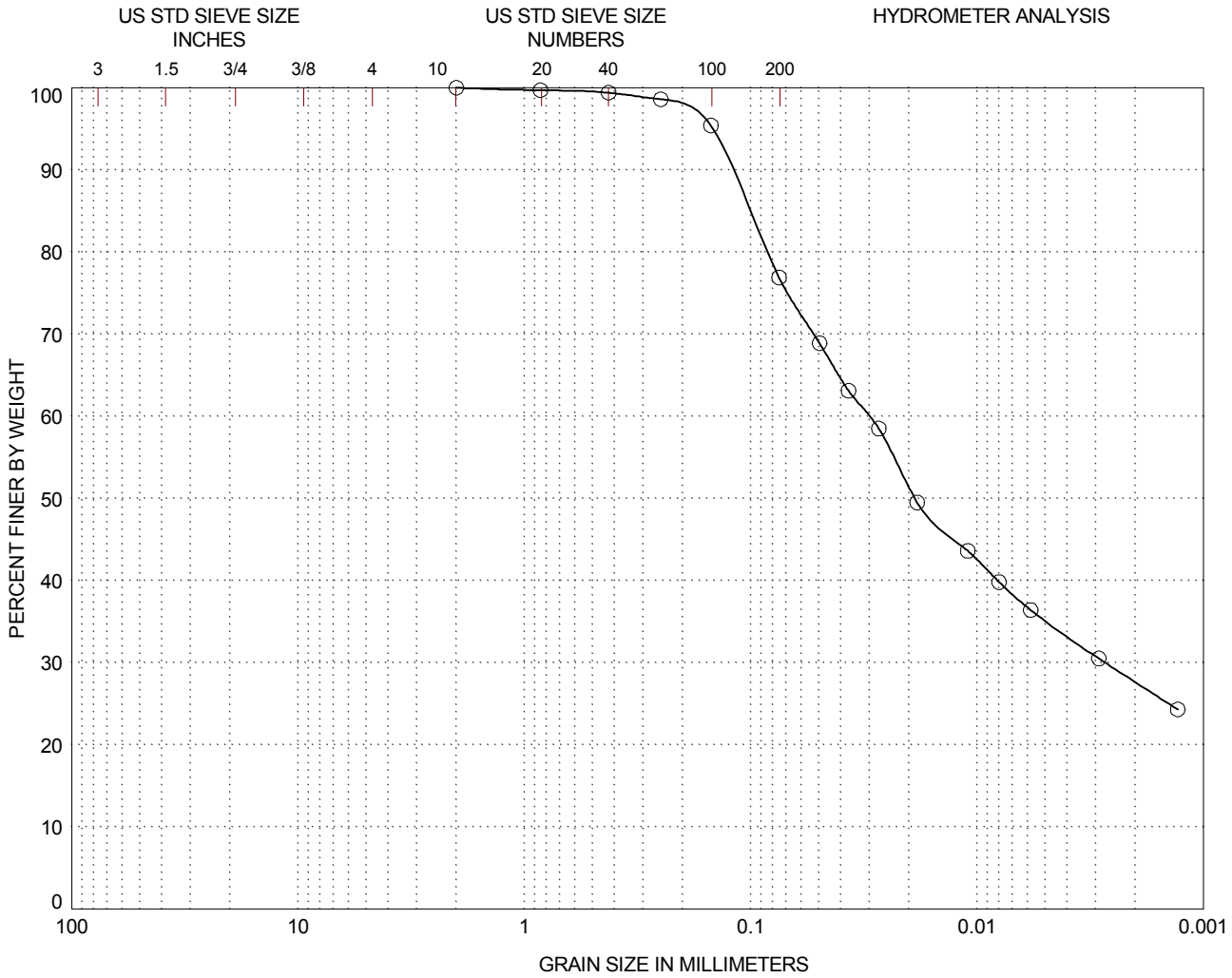
Plastic Limit:	Liquid Limit:	Plasticity Index:
0	0	0

C_c	C_u
0.5	16.7

D_{90}	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}
8.57	4.66	1.49	0.971	0.264	0.166	0.0892

PARTICLE SIZE DISTRIBUTION
Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 2.2e



0.0% GRAVEL		23.1% SAND			76.9% FINES	
0% Coarse	0.0% Fine	0.0% Coarse	0.6% Medium	22.5% Fine	41.8% SILT	35.1% CLAY

Sieve Size (mm)	Percent Finer
2	100
0.85	99.7
0.425	99.4
0.25	98.6
0.15	95.4
0.075	76.9

Location: V-5, Depth: 7.0

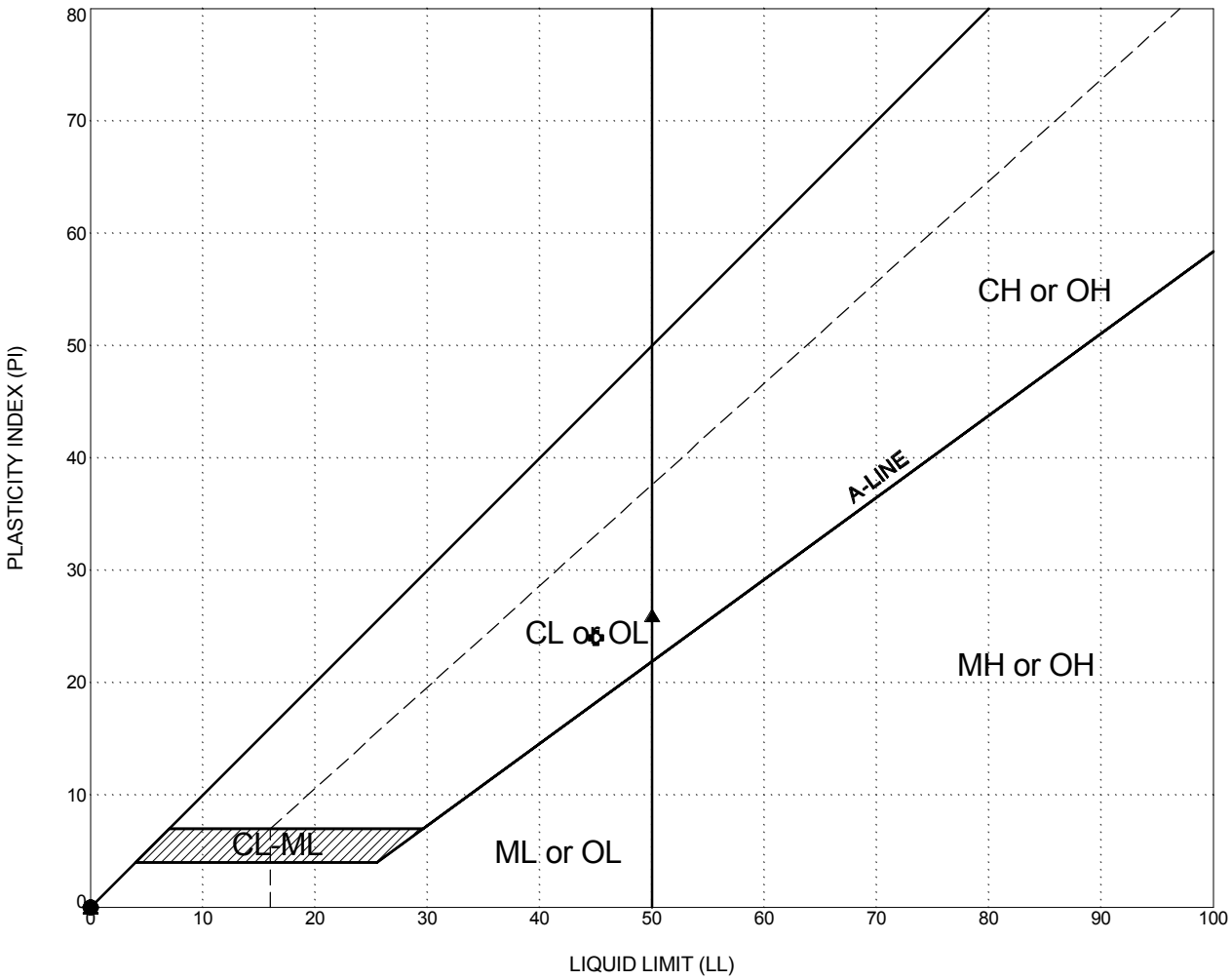
Description: LEAN CLAY with SAND (CL) moderate plasticity clay, fine sand

Plastic Limit:	Liquid Limit:	Plasticity Index:	C_c	C_u
21	45	24		

D_{90}	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}
0.123	0.102	0.0301	0.0188	0.00272		

PARTICLE SIZE DISTRIBUTION
Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 2.2f



LEGEND	location	depth, ft	LIQUID LIMIT(LL)	PLASTIC LIMIT(PL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)	Description
○	V-1	3.0	NP	NP	NP	24	SILTY SAND (SM) fine sand, non-plastic silt
●	V-2	2.2	NP	NP	NP	14	SILTY SAND (SM) fine to medium sand, non-plastic silt
△	V-3	1.0	NP	NP	NP	20	POORLY GRADED SAND (SP) fine to medium sand
▲	V-3	5.0	50	24	26	49	FAT CLAY (CH) high plasticity clay
⊙	V-4	1.3	NP	NP	NP	15	POORLY GRADED SAND with SILT (SP-SM) fine to medium sand, non-plastic silt
✿	V-5	7.0	45	21	24	44	LEAN CLAY with SAND (CL) moderate plasticity clay, fine sand

Descriptions in italic are for samples for which fines content was not measured

PLASTICITY CHART

Rehoboth Beach Ocean Outfall
Atlantic Ocean, offshore Delaware

PLATE 2.3

APPENDICES

A. GUIDELINES ON USE OF REPORT

B. CHEMICAL ANALYSES

A. GUIDELINES ON USE OF REPORT

This report and the assessment carried out in connection with the report (together the 'Services') were compiled and carried out by Fugro Consultants Inc. ('Fugro') for GHD Inc. (the 'Client') in accordance with the terms of a contract between Fugro and the Client. The Services were performed by Fugro with the skill and care ordinarily exercised by a reasonable geotechnical specialist at the time the Services were performed. Further, and in particular, the Services were performed by Fugro taking into account the limits of the scope of works required by the Client, the time scale involved and the resources, including financial and manpower resources, agreed between Fugro and the Client.
Other than that expressly contained in paragraph one above, Fugro provides no other representation or warranty whether express or implied, in relation to the Services.

The Services were performed by Fugro exclusively for the purposes of the Client. Fugro is not aware of any interest of or reliance by any party other than the Client in or on the Services. Unless expressly provided in writing, Fugro does not authorize, consent or condone any party other than the Client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and Fugro disclaims any liability to such party. Any such party would be well advised to seek independent advice from a competent geotechnical specialist and / or lawyer.

It is Fugro's understanding that this report is to be used for the purpose described in Section 1 (Introduction) of this report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, and/or should the Client's proposed development or use of the site change (including in particular any change in any design and/or specification relating to the proposed use or development of the site), this report may no longer be valid or appropriate and any further use of or reliance upon the report in those circumstances by the Client without Fugro's review and advice shall be at the Client's sole and own risk. Should Fugro be requested, and Fugro agree, to review the report after the date hereof, Fugro shall be entitled to additional payment at the then existing rates or such other terms as may be agreed between Fugro and the Client.

The passage of time may result in changes (whether man-made or otherwise) in site conditions and changes in regulatory or other legal provisions, technology, methods of analysis, or economic conditions which could render the report inaccurate or unreliable. The information, recommendations and conclusions contained in this report should not be relied upon if any such changes have taken place or after a period of two years from the date of this report or such other period as maybe expressly stated in the report, without the written agreement of Fugro. In the absence of such written agreement of Fugro, reliance on the report after any such changes have occurred or after the period of two years has expired shall be at the Client's own and sole risk. Should Fugro agree to review the report after the period of two years has expired, Fugro shall be entitled to additional payment at the then existing rates or such other terms as may be agreed between Fugro and the Client.

The observations, recommendations and conclusions in this report are based solely upon the Services which were provided pursuant to the contract between the Client and Fugro. Fugro has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the Client and Fugro. Fugro is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services.

Where the Services have involved Fugro's interpretation and/or other use of any information (including documentation or materials, analysis, recommendations and conclusions) provided by third parties (including independent testing and/or information services or laboratories) or the Client and upon which Fugro was reasonably entitled to rely or involved Fugro's observations of existing physical conditions of any site involved in the Services, then the Services clearly are limited by the accuracy of such information and the observations which were reasonably possible of the said site. Unless otherwise stated, Fugro was not authorized and did not attempt to independently verify the accuracy or completeness of such information, received from the Client or third parties during the performance of the Services. Fugro is not liable for any inaccuracies (including any incompleteness) in the said information, the discovery of which inaccuracies required the doing of any act including the gathering of any information which it was not reasonably possible for Fugro to do including the doing of any independent investigation of the information provided to Fugro save as otherwise provided in the terms of the contract between the Client and Fugro.

The soil and ground conditions information provided in the Services are based solely on evaluations of soil and ground condition samples and in situ tests at determined sample test locations and elevations. That information cannot be extrapolated to any area or elevation outside those locations and elevations unless specifically so stated in the report. In the light of the information available to Fugro, the soil and ground conditions information are considered appropriate for use in relation to the geotechnical design and installation aspects of the structures addressed in the report, but they may not be appropriate for the design of other structures.

B. CHEMICAL ANALYSES

ANALYTICAL REPORT

Job Number: 460-111386-1

Job Description: Delaware Soil Samples

For:
Fugro Consultants Inc
101 West Main Street
Suite 350
Norfolk, VA 23510

Attention: Bill Mack

Approved for release.
Sapna Nayyar
Project Manager I
4/27/2016 8:14 AM

Sapna Nayyar, Project Manager I
777 New Durham Road, Edison, NJ, 08817
sapna.nayyar@testamericainc.com
04/27/2016

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Table of Contents

Cover Title Page 1

Data Summaries 5

Report Narrative 5

Sample Summary 8

Detection Summary 9

Method Summary 10

Client Sample Results 11

QC Sample Results 13

Definitions 19

Chronicle 24

Certification Summary 26

Organic Sample Data 28

HPLC/IC 28

9056A_ORGFM_28D 28

9056A_ORGFM_28D QC Summary 29

9056A_ORGFM_28D Sample Data 34

Standards Data 43

9056A_ORGFM_28D ICAL Data 43

9056A_ORGFM_28D CCAL Data 58

Raw QC Data 74

9056A_ORGFM_28D Blank Data 74

9056A_ORGFM_28D LCS/LCSD Data 77

9056A_ORGFM_28D MS/MSD Data 83

9056A_ORGFM_28D Run Logs 85

9056A_ORGFM_28D Prep Data 87

Inorganic Sample Data 88

Table of Contents

Metals Data 88

Met Cover Page 89

Met Sample Data 90

Met QC Data 93

Met ICV/CCV 93

Met Blanks 99

Met ICSA/ICSAB 105

Met MS/MSD/PDS 107

Met Dup/Trip 110

Met LCS/LCSD 112

Met Serial Dilution 114

Met MDL 116

Met Preparation Log 120

Met Analysis Run Log 122

Met Prep Data 131

General Chemistry Data 133

Gen Chem Cover Page 134

Gen Chem Sample Data 137

Gen Chem QC Data 152

Gen Chem ICV/CCV 152

Gen Chem Blanks 155

Gen Chem MS/MSD/PDS 158

Gen Chem Duplicates 163

Gen Chem LCS/LCSD 166

Gen Chem MDL 170

Gen Chem Preparation Log 182

Table of Contents

Gen Chem Analysis Run Log 185

Gen Chem Prep Data 193

Subcontracted Data 206

Shipping and Receiving Documents 207

Client Chain of Custody 208

Sample Receipt Checklist 214

CASE NARRATIVE

Client: Fugro Consultants Inc

Project: Delaware Soil Samples

Report Number: 460-111386-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 03/31/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 3.6 C.

Sample time on one of the 4 oz. containers for sample #4 is 18:45 not 18:15 like the others.

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. No sample times recorded on the COC. Times taken from containers. No sample dates recorded on the COC for samples 4 + 5. Dates taken from containers.

Method(s) Moisture: The sample duplicate precision for the following sample associated with analytical batch 460-360897 was outside control limits: V-5 (460-111386-5), (460-111360-E-10) and (460-111360-E-10 DU).

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

METALS
Samples V-1 (460-111386-1), V-2 (460-111386-2) and V-4 (460-111386-3) were analyzed for Metals in accordance with EPA SW-846 Methods 6010C. The samples were prepared on 04/03/2016 and analyzed on 04/05/2016.

Samples V-1 (460-111386-1)[4X], V-2 (460-111386-2)[4X] and V-4 (460-111386-3)[4X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the Metals analysis.

All other quality control parameters were within the acceptance limits.

TOTAL MERCURY
Samples V-1 (460-111386-1), V-2 (460-111386-2) and V-4 (460-111386-3) were analyzed for total mercury in accordance with EPA SW-846 Method 7471B. The samples were prepared and analyzed on 04/06/2016.

No difficulties were encountered during the Hg analysis.

All quality control parameters were within the acceptance limits.

TOTAL PHOSPHORUS
Samples V-1 (460-111386-1), V-2 (460-111386-2) and V-4 (460-111386-3) were analyzed for total phosphorus in accordance with SM 4500 P E. The samples were prepared and analyzed on 04/07/2016.

Phosphorus as P failed the recovery criteria low for the MS of sample V-1MS (460-111386-1) in batch 460-361260.

Phosphorus as P failed the recovery criteria low for the MSD of sample V-1MSD (460-111386-1) in batch 460-361260.

Samples V-1 (460-111386-1)[10X], V-2 (460-111386-2)[10X] and V-4 (460-111386-3)[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the phosphorus analysis.

All other quality control parameters were within the acceptance limits.

TOTAL SULFIDE
Samples V-1 (460-111386-1), V-2 (460-111386-2) and V-4 (460-111386-3) were analyzed for total sulfide in accordance with EPA SW-846 Method 9030B/9034. The samples were prepared and analyzed on 04/05/2016.

Sulfide failed the recovery criteria low for the MS of sample V-1MS (460-111386-1) in batch 460-361290.

Sulfide failed the recovery criteria low for the MSD of sample V-1MSD (460-111386-1) in batch 460-361290.

No other difficulties were encountered during the sulfide analysis.

All other quality control parameters were within the acceptance limits.

CORROSIVITY (PH)
Samples V-1 (460-111386-1), V-2 (460-111386-2) and V-4 (460-111386-3) were analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9045D. The samples were analyzed on 04/06/2016.

No difficulties were encountered during the corrosivity (pH) analysis.

All quality control parameters were within the acceptance limits.

ANIONS, ION CHROMATOGRAPHY
Samples V-1 (460-111386-1), V-2 (460-111386-2) and V-4 (460-111386-3) were analyzed for Anions, Ion Chromatography in accordance with EPA SW-846 Method 9056A DI Leach. The samples were leached on 04/07/2016 and analyzed on 04/07/2016.

The following samples was diluted to bring the concentration of target analytes within the calibration range: V-1 (460-111386-1) and V-4 (460-111386-3). Elevated reporting limits (RLs) are provided.

Sulfate failed the recovery criteria low for the MSD of sample 460-111431-2 in batch 460-361005.

The presence of the '4' qualifier in the data indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Samples V-1 (460-111386-1)[2X] and V-4 (460-111386-3)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the Anions, Ion Chromatography analysis.

All other quality control parameters were within the acceptance limits.

OIL AND GREASE
Samples V-1 (460-111386-1), V-2 (460-111386-2) and V-4 (460-111386-3) were analyzed for oil and grease in accordance with EPA SW-846 Method 9017B. The samples were prepared and analyzed on 04/06/2016.

No difficulties were encountered during the oil and grease analysis.

All quality control parameters were within the acceptance limits.

LLOYD KAHN METHOD (TOTAL ORGANIC CARBON)
Samples V-1 (460-111386-1), V-2 (460-111386-2) and V-4 (460-111386-3) were analyzed for Lloyd Kahn Method (total organic carbon) in accordance with Lloyd Kahn Method. The samples were analyzed on 04/12/2016.

Please note that the reporting limit for Lloyd Kahn TOC analysis is a nominal value and does not reflect adjustments in sample mass processed on an individual basis.

Total Organic Carbon - Duplicates failed the recovery criteria high for the MS of sample 460-111618-6 in batch 180-173409.

Total Organic Carbon - Duplicates failed the recovery criteria high for the MSD of sample 460-111618-6 in batch 180-173409. Total Organic Carbon - Duplicates exceeded the RPD limit.

Refer to the QC report for details.

No other difficulties were encountered during the TOC analysis.

All other quality control parameters were within the acceptance limits.

PERCENT SOLIDS/PERCENT MOISTURE

Samples V-1 (460-111386-1), V-2 (460-111386-2) and V-4 (460-111386-3) were analyzed for percent solids/percent moisture in accordance with EPA Method CLPISM01.2 (Exhibit D) Modified. The samples were analyzed on 04/05/2016.

No difficulties were encountered during the %solids/moisture analysis.

All quality control parameters were within the acceptance limits.

TOTAL NITROGEN

Samples V-1 (460-111386-1), V-2 (460-111386-2) and V-4 (460-111386-3) were analyzed for total nitrogen in accordance with Nitrogen (a calculated method). The samples were analyzed on 04/07/2016.

No difficulties were encountered during the Total Nitrogen analysis.

All quality control parameters were within the acceptance limits.

Sample Summary

Client: Fugro Consultants Inc
Project/Site: Delaware Soil Samples

TestAmerica Job ID: 460-111386-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-111386-1	V-1	Solid	03/29/16 12:30	03/31/16 10:00
460-111386-2	V-2	Solid	03/29/16 16:40	03/31/16 10:00
460-111386-3	V-4	Solid	03/30/16 10:00	03/31/16 10:00

Detection Summary

Client: Fugro Consultants Inc
Project/Site: Delaware Soil Samples

TestAmerica Job ID: 460-111386-1

Client Sample ID: V-1 — Lab Sample ID: 460-111386-1

Analyte	Result	Qualifier	NONE	NONE	Unit	Dil Fac	D	Method	Prep Type
pH	8.37	HF			SU	1		9045D	Total/NA
Corrosivity	8.37	HF			SU	1		9045D	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate - DL	627		15.6	3.14	mg/Kg	2	☼	9056A	Soluble
Copper	2.3	J	4.6	1.2	mg/Kg	4	☼	6010C	Total/NA
Nickel	6.2	J	7.3	1.3	mg/Kg	4	☼	6010C	Total/NA
Lead	4.2		1.8	0.72	mg/Kg	4	☼	6010C	Total/NA
Zinc	31.4		5.5	1.3	mg/Kg	4	☼	6010C	Total/NA
Total Organic Carbon - Duplicates	2220		1260	629	mg/Kg	1	☼	Lloyd Kahn	Total/NA
Phosphorus as PO4	432		18.9	6.6	mg/Kg	10	☼	SM 4500 P E	Total/NA
Phosphorus as P	141		18.9	6.6	mg/Kg	10	☼	SM 4500 P E	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Nitrogen, Total	221		34.0	34.0	mg/Kg	1	☼	Total Nitrogen	Total/NA

Client Sample ID: V-2 — Lab Sample ID: 460-111386-2

Analyte	Result	Qualifier	NONE	NONE	Unit	Dil Fac	D	Method	Prep Type
pH	8.11	HF			SU	1		9045D	Total/NA
Corrosivity	8.11	HF			SU	1		9045D	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	325		7.38	1.48	mg/Kg	1	☼	9056A	Soluble
Copper	1.6	J	4.5	1.2	mg/Kg	4	☼	6010C	Total/NA
Nickel	3.0	J	7.1	1.3	mg/Kg	4	☼	6010C	Total/NA
Lead	2.8		1.8	0.70	mg/Kg	4	☼	6010C	Total/NA
Zinc	11.9		5.4	1.3	mg/Kg	4	☼	6010C	Total/NA
Total Organic Carbon - Duplicates	6990		1120	558	mg/Kg	1	☼	Lloyd Kahn	Total/NA
Phosphorus as PO4	353		16.7	5.9	mg/Kg	10	☼	SM 4500 P E	Total/NA
Phosphorus as P	115		16.7	5.9	mg/Kg	10	☼	SM 4500 P E	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Nitrogen, Total	147		30.1	30.1	mg/Kg	1	☼	Total Nitrogen	Total/NA

Client Sample ID: V-4 — Lab Sample ID: 460-111386-3

Analyte	Result	Qualifier	NONE	NONE	Unit	Dil Fac	D	Method	Prep Type
pH	8.25	HF			SU	1		9045D	Total/NA
Corrosivity	8.25	HF			SU	1		9045D	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate - DL	674		18.1	3.64	mg/Kg	2	☼	9056A	Soluble
Copper	7.5		6.2	1.6	mg/Kg	4	☼	6010C	Total/NA
Nickel	21.8		9.9	1.8	mg/Kg	4	☼	6010C	Total/NA
Lead	8.1		2.5	0.97	mg/Kg	4	☼	6010C	Total/NA
Zinc	54.0		7.4	1.8	mg/Kg	4	☼	6010C	Total/NA
Total Organic Carbon - Duplicates	9040		1540	770	mg/Kg	1	☼	Lloyd Kahn	Total/NA
Phosphorus as PO4	1390		46.2	16.2	mg/Kg	20	☼	SM 4500 P E	Total/NA
Phosphorus as P	453		46.2	16.2	mg/Kg	20	☼	SM 4500 P E	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Nitrogen, Total	589		41.6	41.6	mg/Kg	1	☼	Total Nitrogen	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Fugro Consultants Inc
Project/Site: Delaware Soil Samples

TestAmerica Job ID: 460-111386-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL EDI
6010C	Metals (ICP)	SW846	TAL EDI
7471B	Mercury (CVAA)	SW846	TAL EDI
9034	Sulfide, Acid Soluble and Insoluble (Titrimetric)	SW846	TAL EDI
9045D	pH	SW846	TAL EDI
9071B	HEM and SGT-HEM	SW846	TAL NSH
Lloyd Kahn	Organic Carbon, Total (TOC)	EPA	TAL PIT
Moisture	Percent Moisture	EPA	TAL EDI
SM 4500 P E	Phosphorus	SM	TAL EDI
Total Nitrogen	Nitrogen, Total	EPA	TAL NSH

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Client Sample Results

Client: Fugro Consultants Inc
Project/Site: Delaware Soil Samples

TestAmerica Job ID: 460-111386-1

Client Sample ID: V-1

Lab Sample ID: 460-111386-1
Date Collected: 03/29/16 12:30
Matrix: Solid
Date Received: 03/31/16 10:00
Percent Solids: 79.5

Method: 9056A - Anions, Ion Chromatography - Soluble - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	627		15.6	3.14	mg/Kg	☼		04/07/16 15:19	2

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.73	U	0.73	0.38	mg/Kg	☼	04/03/16 19:47	04/05/16 21:30	4
Copper	2.3	J	4.6	1.2	mg/Kg	☼	04/03/16 19:47	04/05/16 21:30	4
Nickel	6.2	J	7.3	1.3	mg/Kg	☼	04/03/16 19:47	04/05/16 21:30	4
Lead	4.2		1.8	0.72	mg/Kg	☼	04/03/16 19:47	04/05/16 21:30	4
Zinc	31.4		5.5	1.3	mg/Kg	☼	04/03/16 19:47	04/05/16 21:30	4

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.019	U	0.019	0.014	mg/Kg	☼	04/06/16 02:40	04/06/16 07:03	1

General Chemistry

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.37	HF			SU			04/06/16 14:02	1
Corrosivity	8.37	HF			SU			04/06/16 14:02	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	10.9	U	10.9	5.1	mg/Kg	☼	04/05/16 10:30	04/05/16 18:30	1
HEM	117	U	117	66.7	mg/Kg	☼	04/06/16 11:20	04/06/16 11:20	1
Total Organic Carbon - Duplicates	2220		1260	629	mg/Kg	☼		04/12/16 18:06	1
Phosphorus as PO4	432		18.9	6.6	mg/Kg	☼	04/07/16 05:30	04/07/16 06:45	10
Phosphorus as P	141		18.9	6.6	mg/Kg	☼	04/07/16 05:30	04/07/16 06:45	10

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrogen, Total	221		34.0	34.0	mg/Kg	☼		04/07/16 11:05	1

Client Sample ID: V-2

Lab Sample ID: 460-111386-2
Date Collected: 03/29/16 16:40
Matrix: Solid
Date Received: 03/31/16 10:00
Percent Solids: 89.6

Method: 9056A - Anions, Ion Chromatography - Soluble

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	325		7.38	1.48	mg/Kg	☼		04/07/16 11:25	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.71	U	0.71	0.37	mg/Kg	☼	04/03/16 19:47	04/05/16 21:34	4
Copper	1.6	J	4.5	1.2	mg/Kg	☼	04/03/16 19:47	04/05/16 21:34	4
Nickel	3.0	J	7.1	1.3	mg/Kg	☼	04/03/16 19:47	04/05/16 21:34	4
Lead	2.8		1.8	0.70	mg/Kg	☼	04/03/16 19:47	04/05/16 21:34	4
Zinc	11.9		5.4	1.3	mg/Kg	☼	04/03/16 19:47	04/05/16 21:34	4

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.018	U	0.018	0.013	mg/Kg	☼	04/06/16 02:40	04/06/16 07:24	1

General Chemistry

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.11	HF			SU			04/06/16 14:04	1

Client Sample ID: V-2

Lab Sample ID: 460-111386-2

Date Collected: 03/29/16 16:40
Matrix: Solid
Date Received: 03/31/16 10:00

General Chemistry (Continued)

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Corrosivity	8.11	HF			SU			04/06/16 14:04	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	9.7	U	9.7	4.5	mg/Kg	☼	04/05/16 10:30	04/05/16 18:30	1
HEM	106	U	106	60.4	mg/Kg	☼	04/06/16 11:20	04/06/16 11:20	1
Total Organic Carbon - Duplicates	6990		1120	558	mg/Kg	☼		04/12/16 18:22	1
Phosphorus as PO4	353		16.7	5.9	mg/Kg	☼	04/07/16 05:30	04/07/16 06:45	10
Phosphorus as P	115		16.7	5.9	mg/Kg	☼	04/07/16 05:30	04/07/16 06:45	10

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrogen, Total	147		30.1	30.1	mg/Kg	☼		04/07/16 11:05	1

Client Sample ID: V-4

Lab Sample ID: 460-111386-3

Date Collected: 03/30/16 10:00
Matrix: Solid
Date Received: 03/31/16 10:00
Percent Solids: 65.0

Method: 9056A - Anions, Ion Chromatography - Soluble - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	674		18.1	3.64	mg/Kg	☼		04/07/16 15:39	2

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.99	U	0.99	0.52	mg/Kg	☼	04/03/16 19:47	04/05/16 21:38	4
Copper	7.5		6.2	1.6	mg/Kg	☼	04/03/16 19:47	04/05/16 21:38	4
Nickel	21.8		9.9	1.8	mg/Kg	☼	04/03/16 19:47	04/05/16 21:38	4
Lead	8.1		2.5	0.97	mg/Kg	☼	04/03/16 19:47	04/05/16 21:38	4
Zinc	54.0		7.4	1.8	mg/Kg	☼	04/03/16 19:47	04/05/16 21:38	4

Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.024	U	0.024	0.017	mg/Kg	☼	04/06/16 02:40	04/06/16 07:26	1

General Chemistry

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.25	HF			SU			04/06/16 14:07	1
Corrosivity	8.25	HF			SU			04/06/16 14:07	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	13.4	U	13.4	6.2	mg/Kg	☼	04/05/16 10:30	04/05/16 18:30	1
HEM	151	U	151	86.2	mg/Kg	☼	04/06/16 11:20	04/06/16 11:20	1
Total Organic Carbon - Duplicates	9040		1540	770	mg/Kg	☼		04/12/16 12:58	1
Phosphorus as PO4	1390		46.2	16.2	mg/Kg	☼	04/07/16 05:30	04/07/16 06:45	20
Phosphorus as P	453		46.2	16.2	mg/Kg	☼	04/07/16 05:30	04/07/16 06:45	20

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrogen, Total	589		41.6	41.6	mg/Kg	☼		04/07/16 11:05	1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 460-361225/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 361005

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	6.00	U	6.00	1.21	mg/Kg			04/07/16 07:38	1

Lab Sample ID: LCS 460-361225/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 361005

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate			75.0	70.53		mg/Kg		94	90 - 110		

Lab Sample ID: LCSD 460-361225/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 361005

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate			75.0	68.87		mg/Kg		92	90 - 110	2	15

Lab Sample ID: 460-111431-A-2-C MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 361005

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	12.3		113	114.2		mg/Kg	☼	90	90 - 110		

Lab Sample ID: 460-111431-A-2-D MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 361005

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	12.3		113	104.0	*	mg/Kg	☼	81	90 - 110	9	15

Lab Sample ID: 460-111431-A-2-B DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Soluble**
Analysis Batch: 361005

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Sulfate	12.3			12.83		mg/Kg	☼			4	15

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 460-360437/1-A ^2 — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 360851 — **Prep Batch: 360437**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	0.40	U	0.40	0.21	mg/Kg		04/03/16 19:47	04/05/16 19:52	2
Copper	2.5	U	2.5	0.65	mg/Kg		04/03/16 19:47	04/05/16 19:52	2
Nickel	4.0	U	4.0	0.73	mg/Kg		04/03/16 19:47	04/05/16 19:52	2
Lead	1.0	U	1.0	0.39	mg/Kg		04/03/16 19:47	04/05/16 19:52	2
Zinc	3.0	U	3.0	0.73	mg/Kg		04/03/16 19:47	04/05/16 19:52	2

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: LCSSRM 460-360437/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 360851 — **Prep Batch: 360437**

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	146	137.7		mg/Kg		94.3	82.9 - 117.8
Copper	106	95.41		mg/Kg		90.0	81.5 - 118.9
Nickel	149	146.4		mg/Kg		98.3	82.6 - 117.4
Lead	130	124.4		mg/Kg		95.7	82.3 - 117.7
Zinc	191	185.4		mg/Kg		97.1	83.2 - 116.8

Lab Sample ID: 460-111434-A-31-C MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 360851 — **Prep Batch: 360437**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	0.69	U	4.17	3.88		mg/Kg	☼	93	75 - 125
Copper	4.8		20.8	25.05		mg/Kg	☼	97	75 - 125
Nickel	3.3	J	41.7	45.30		mg/Kg	☼	101	75 - 125
Lead	5.2		41.7	45.75		mg/Kg	☼	97	75 - 125
Zinc	4.1	J	41.7	46.26		mg/Kg	☼	101	75 - 125

Lab Sample ID: 460-111434-A-31-B DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 360851 — **Prep Batch: 360437**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cadmium	0.69	U	0.69	U	mg/Kg	☼	NC	20
Copper	4.8		4.80		mg/Kg	☼	0.2	20
Nickel	3.3	J	3.27	J	mg/Kg	☼	0.5	20
Lead	5.2		5.58		mg/Kg	☼	7	20
Zinc	4.1	J	4.14	J	mg/Kg	☼	0.05	20

Method: 7471B - Mercury (CVAA)

Lab Sample ID: MB 460-360954/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361033 — **Prep Batch: 360954**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.017	U	0.017	0.012	mg/Kg		04/06/16 02:40	04/06/16 06:59	1

Lab Sample ID: LCSSRM 460-360954/2-A ^20 — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361033 — **Prep Batch: 360954**

Analyte	Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	12.3	12.38		mg/Kg		100.7	71.5 - 128.5

Method: 7471B - Mercury (CVAA) (Continued)

Lab Sample ID: 460-111386-1 MS — **Client Sample ID: V-1**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361033 — **Prep Batch: 360954**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.019	U	0.0953	0.114		mg/Kg	☼	120	75 - 125

Lab Sample ID: 460-111386-1 DU — **Client Sample ID: V-1**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361033 — **Prep Batch: 360954**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Mercury	0.019	U	0.019	U	mg/Kg	☼	NC	20

Method: 9034 - Sulfide, Acid Soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 460-361289/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361290 — **Prep Batch: 361289**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	8.7	U	8.7	4.0	mg/Kg		04/05/16 10:30	04/05/16 18:30	1

Lab Sample ID: LCS 460-361289/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361290 — **Prep Batch: 361289**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	76.4	58.40		mg/Kg		76	70 - 130

Lab Sample ID: 460-111386-1 MS — **Client Sample ID: V-1**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361290 — **Prep Batch: 361289**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	10.9	U	73.4	48.23	N	mg/Kg	☼	66	70 - 130

Lab Sample ID: 460-111386-1 MSD — **Client Sample ID: V-1**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361290 — **Prep Batch: 361289**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfide	10.9	U	73.4	46.37	N	mg/Kg	☼	63	70 - 130	4	15

Method: 9045D - pH

Lab Sample ID: MB 460-361101/2 — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361101

Analyte	MB Result	MB Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
pH	6.050				SU			04/06/16 13:33	1
Corrosivity	6.050				SU			04/06/16 13:33	1

Method: 9045D - pH (Continued)

Lab Sample ID: LCSSRM 460-361101/3 — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361101

Analyte			Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits		
pH			6.06	6.040		SU		99.7	98.2 - 102.0		
Corrosivity			6.06	6.040		SU		99.7	98.2 - 102.0		

Lab Sample ID: 460-111370-F-1 DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361101

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	6.38			6.360		SU				0.3	10
Corrosivity	6.38			6.360		SU				0.3	10

Method: 9071B - HEM and SGT-HEM

Lab Sample ID: MB 490-329483/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 329579 — **Prep Batch: 329483**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	100	U	100	57.0	mg/Kg		04/06/16 11:20	04/06/16 11:20	1

Lab Sample ID: LCS 490-329483/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 329579 — **Prep Batch: 329483**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
HEM			4000	3500		mg/Kg		87	75 - 117		

Lab Sample ID: 460-111386-A-5-B MS — **Client Sample ID: 460-111386-A-5-B MS**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 329579 — **Prep Batch: 329483**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
HEM	148	U	5560	5333		mg/Kg	☼	96	66 - 117		

Lab Sample ID: 460-111386-A-5-D DU — **Client Sample ID: 460-111386-A-5-D DU**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 329579 — **Prep Batch: 329483**

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
HEM	148	U		146	U	mg/Kg	☼			NC	50

Method: Lloyd Kahn - Organic Carbon, Total (TOC)

Lab Sample ID: MB 180-173409/3 — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 173409

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	1000	U	1000	500	mg/Kg			04/12/16 09:00	1

Lab Sample ID: LCS 180-173409/4 — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 173409

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	35000	35180		mg/Kg		101	75 - 125

Lab Sample ID: 180-53499-A-1 MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 173409

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	4990		49300	46870		mg/Kg	☼	85	75 - 125

Lab Sample ID: 180-53499-A-1 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 173409

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Duplicates	4990		53300	47540		mg/Kg	☼	80	75 - 125	1	20

Lab Sample ID: 460-111618-E-6 MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 173409

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	91000		74.4	130200	4	mg/Kg	☼	52648	75 - 125

Lab Sample ID: 460-111618-E-6 MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 173409

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Duplicates	91000		67.6	164800	4 N	mg/Kg	☼	109164	75 - 125	23	20

Lab Sample ID: 180-53499-A-1 DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 173409

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon - Duplicates	4990		4918		mg/Kg	☼	1	20

Method: Lloyd Kahn - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: 460-111618-E-6 DU — **Client Sample ID: Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 173409

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Organic Carbon - Duplicates	91000			103200		mg/Kg	☼			13	20

Method: SM 4500 P E - Phosphorus

Lab Sample ID: MB 460-361257/3-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361260 — **Prep Batch: 361257**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phosphorus as P	1.5	U	1.5	0.53	mg/Kg		04/07/16 05:30	04/07/16 06:45	1

Lab Sample ID: LCSSRM 460-361257/4-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361260 — **Prep Batch: 361257**

Analyte			Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec. Limits		
Phosphorus as P			9.20	9.14		mg/Kg		99.4	88.3 - 113.0		

Lab Sample ID: 460-111386-1 MS — **Client Sample ID: V-1**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361260 — **Prep Batch: 361257**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Phosphorus as P	141		12.6	144.4	4	mg/Kg	☼	28	85 - 115		

Lab Sample ID: 460-111386-1 MSD — **Client Sample ID: V-1**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 361260 — **Prep Batch: 361257**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Phosphorus as P	141		12.6	130.6	4	mg/Kg	☼	-83	85 - 115	10	10

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
*	MS or MSD is outside acceptance limits.
U	Analyzed for but not detected.

Metals

Qualifier	Qualifier Description
U	Indicates analyzed for but not detected.
J	Sample result is greater than the MDL but below the CRDL

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
U	Indicates analyzed for but not detected.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
N	Spiked sample recovery is not within control limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Association Summary

Client: Fugro Consultants Inc
Project/Site: Delaware Soil Samples

TestAmerica Job ID: 460-111386-1

HPLC/IC

Analysis Batch: 361005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1 - DL	V-1	Soluble	Solid	9056A	361225
460-111386-2	V-2	Soluble	Solid	9056A	361225
460-111386-3 - DL	V-4	Soluble	Solid	9056A	361225
460-111431-A-2-B DU	Duplicate	Soluble	Solid	9056A	361225
460-111431-A-2-C MS	Matrix Spike	Soluble	Solid	9056A	361225
460-111431-A-2-D MSD	Matrix Spike Duplicate	Soluble	Solid	9056A	361225
LCS 460-361225/2-A	Lab Control Sample	Soluble	Solid	9056A	361225
LCSD 460-361225/3-A	Lab Control Sample Dup	Soluble	Solid	9056A	361225
MB 460-361225/1-A	Method Blank	Soluble	Solid	9056A	361225

Leach Batch: 361225

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1 - DL	V-1	Soluble	Solid	DI Leach	
460-111386-2	V-2	Soluble	Solid	DI Leach	
460-111386-3 - DL	V-4	Soluble	Solid	DI Leach	
460-111431-A-2-B DU	Duplicate	Soluble	Solid	DI Leach	
460-111431-A-2-C MS	Matrix Spike	Soluble	Solid	DI Leach	
460-111431-A-2-D MSD	Matrix Spike Duplicate	Soluble	Solid	DI Leach	
LCS 460-361225/2-A	Lab Control Sample	Soluble	Solid	DI Leach	
LCSD 460-361225/3-A	Lab Control Sample Dup	Soluble	Solid	DI Leach	
MB 460-361225/1-A	Method Blank	Soluble	Solid	DI Leach	

Metals

Prep Batch: 360437

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1	V-1	Total/NA	Solid	3050B	
460-111386-2	V-2	Total/NA	Solid	3050B	
460-111386-3	V-4	Total/NA	Solid	3050B	
460-111434-A-31-A PDS	Post Spike	Total/NA	Solid	3050B	
460-111434-A-31-A SD	SD	Total/NA	Solid	3050B	
460-111434-A-31-B DU	Duplicate	Total/NA	Solid	3050B	
460-111434-A-31-C MS	Matrix Spike	Total/NA	Solid	3050B	
LCSSRM 460-360437/2-A	Lab Control Sample	Total/NA	Solid	3050B	
MB 460-360437/1-A ^2	Method Blank	Total/NA	Solid	3050B	

Analysis Batch: 360851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1	V-1	Total/NA	Solid	6010C	360437
460-111386-2	V-2	Total/NA	Solid	6010C	360437
460-111386-3	V-4	Total/NA	Solid	6010C	360437
460-111434-A-31-A PDS	Post Spike	Total/NA	Solid	6010C	360437
460-111434-A-31-A SD	SD	Total/NA	Solid	6010C	360437
460-111434-A-31-B DU	Duplicate	Total/NA	Solid	6010C	360437
460-111434-A-31-C MS	Matrix Spike	Total/NA	Solid	6010C	360437
ICSA 460-360851/10	ICS		Solid	6010C	
ICSAB 460-360851/11	ICS		Solid	6010C	
LCSSRM 460-360437/2-A	Lab Control Sample	Total/NA	Solid	6010C	360437
MB 460-360437/1-A ^2	Method Blank	Total/NA	Solid	6010C	360437

Metals (Continued)

Prep Batch: 360954

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1	V-1	Total/NA	Solid	7471B	
460-111386-1 DU	V-1	Total/NA	Solid	7471B	
460-111386-1 MS	V-1	Total/NA	Solid	7471B	
460-111386-1 SD	V-1	Total/NA	Solid	7471B	
460-111386-2	V-2	Total/NA	Solid	7471B	
460-111386-3	V-4	Total/NA	Solid	7471B	
LCSSRM 460-360954/2-A ^2	Lab Control Sample	Total/NA	Solid	7471B	
MB 460-360954/1-A	Method Blank	Total/NA	Solid	7471B	

Analysis Batch: 361033

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1	V-1	Total/NA	Solid	7471B	360954
460-111386-1 DU	V-1	Total/NA	Solid	7471B	360954
460-111386-1 MS	V-1	Total/NA	Solid	7471B	360954
460-111386-1 SD	V-1	Total/NA	Solid	7471B	360954
460-111386-2	V-2	Total/NA	Solid	7471B	360954
460-111386-3	V-4	Total/NA	Solid	7471B	360954
LCSSRM 460-360954/2-A ^2	Lab Control Sample	Total/NA	Solid	7471B	360954
MB 460-360954/1-A	Method Blank	Total/NA	Solid	7471B	360954

General Chemistry

Analysis Batch: 173409

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-53499-A-1 DU	Duplicate	Total/NA	Solid	Lloyd Kahn	
180-53499-A-1 MS	Matrix Spike	Total/NA	Solid	Lloyd Kahn	
180-53499-A-1 MSD	Matrix Spike Duplicate	Total/NA	Solid	Lloyd Kahn	
460-111386-1	V-1	Total/NA	Solid	Lloyd Kahn	
460-111386-2	V-2	Total/NA	Solid	Lloyd Kahn	
460-111386-3	V-4	Total/NA	Solid	Lloyd Kahn	
460-111618-E-6 DU	Duplicate	Total/NA	Solid	Lloyd Kahn	
460-111618-E-6 MS	Matrix Spike	Total/NA	Solid	Lloyd Kahn	
460-111618-E-6 MSD	Matrix Spike Duplicate	Total/NA	Solid	Lloyd Kahn	
LCS 180-173409/4	Lab Control Sample	Total/NA	Solid	Lloyd Kahn	
MB 180-173409/3	Method Blank	Total/NA	Solid	Lloyd Kahn	

Prep Batch: 329483

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1	V-1	Total/NA	Solid	9071B	
460-111386-2	V-2	Total/NA	Solid	9071B	
460-111386-3	V-4	Total/NA	Solid	9071B	
460-111386-A-5-B MS	460-111386-A-5-B MS	Total/NA	Solid	9071B	
460-111386-A-5-D DU	460-111386-A-5-D DU	Total/NA	Solid	9071B	
LCS 490-329483/2-A	Lab Control Sample	Total/NA	Solid	9071B	
MB 490-329483/1-A	Method Blank	Total/NA	Solid	9071B	

Analysis Batch: 329579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1	V-1	Total/NA	Solid	9071B	329483
460-111386-2	V-2	Total/NA	Solid	9071B	329483

General Chemistry (Continued)

Analysis Batch: 329579 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-3	V-4	Total/NA	Solid	9071B	329483
460-111386-A-5-B MS	460-111386-A-5-B MS	Total/NA	Solid	9071B	329483
460-111386-A-5-D DU	460-111386-A-5-D DU	Total/NA	Solid	9071B	329483
LCS 490-329483/2-A	Lab Control Sample	Total/NA	Solid	9071B	329483
MB 490-329483/1-A	Method Blank	Total/NA	Solid	9071B	329483

Analysis Batch: 331741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1	V-1	Total/NA	Solid	Total Nitrogen	
460-111386-2	V-2	Total/NA	Solid	Total Nitrogen	
460-111386-3	V-4	Total/NA	Solid	Total Nitrogen	

Analysis Batch: 360896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1	V-1	Total/NA	Solid	Moisture	
460-111386-2	V-2	Total/NA	Solid	Moisture	
460-111386-3	V-4	Total/NA	Solid	Moisture	
460-111386-E-4 DU	460-111386-E-4 DU	Total/NA	Solid	Moisture	

Analysis Batch: 361101

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111370-F-1 DU	Duplicate	Total/NA	Solid	9045D	
460-111386-1	V-1	Total/NA	Solid	9045D	
460-111386-2	V-2	Total/NA	Solid	9045D	
460-111386-3	V-4	Total/NA	Solid	9045D	
LCSSRM 460-361101/3	Lab Control Sample	Total/NA	Solid	9045D	
MB 460-361101/2	Method Blank	Total/NA	Solid	9045D	

Prep Batch: 361257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1	V-1	Total/NA	Solid	SM 4500 P B	
460-111386-1 MS	V-1	Total/NA	Solid	SM 4500 P B	
460-111386-1 MSD	V-1	Total/NA	Solid	SM 4500 P B	
460-111386-2	V-2	Total/NA	Solid	SM 4500 P B	
460-111386-3	V-4	Total/NA	Solid	SM 4500 P B	
LCSSRM 460-361257/4-A	Lab Control Sample	Total/NA	Solid	SM 4500 P B	
MB 460-361257/3-A	Method Blank	Total/NA	Solid	SM 4500 P B	

Analysis Batch: 361260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1	V-1	Total/NA	Solid	SM 4500 P E	361257
460-111386-1 MS	V-1	Total/NA	Solid	SM 4500 P E	361257
460-111386-1 MSD	V-1	Total/NA	Solid	SM 4500 P E	361257
460-111386-2	V-2	Total/NA	Solid	SM 4500 P E	361257
460-111386-3	V-4	Total/NA	Solid	SM 4500 P E	361257
LCSSRM 460-361257/4-A	Lab Control Sample	Total/NA	Solid	SM 4500 P E	361257
MB 460-361257/3-A	Method Blank	Total/NA	Solid	SM 4500 P E	361257

Prep Batch: 361289

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1	V-1	Total/NA	Solid	9030B	

General Chemistry (Continued)

Prep Batch: 361289 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1 MS	V-1	Total/NA	Solid	9030B	
460-111386-1 MSD	V-1	Total/NA	Solid	9030B	
460-111386-2	V-2	Total/NA	Solid	9030B	
460-111386-3	V-4	Total/NA	Solid	9030B	
LCS 460-361289/3-A	Lab Control Sample	Total/NA	Solid	9030B	
MB 460-361289/1-A	Method Blank	Total/NA	Solid	9030B	

Analysis Batch: 361290

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-111386-1	V-1	Total/NA	Solid	9034	361289
460-111386-1 MS	V-1	Total/NA	Solid	9034	361289
460-111386-1 MSD	V-1	Total/NA	Solid	9034	361289
460-111386-2	V-2	Total/NA	Solid	9034	361289
460-111386-3	V-4	Total/NA	Solid	9034	361289
LCS 460-361289/3-A	Lab Control Sample	Total/NA	Solid	9034	361289
MB 460-361289/1-A	Method Blank	Total/NA	Solid	9034	361289

Lab Chronicle

Client: Fugro Consultants Inc
Project/Site: Delaware Soil Samples

TestAmerica Job ID: 460-111386-1

Client Sample ID: V-1

Lab Sample ID: 460-111386-1

Date Collected: 03/29/16 12:30
Date Received: 03/31/16 10:00

Matrix: Solid
Percent Solids: 79.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach	DL		361225	04/07/16 06:09	CBB	TAL EDI
Soluble	Analysis	9056A	DL	2	361005	04/07/16 15:19	CBB	TAL EDI
Total/NA	Prep	3050B			360437	04/03/16 19:47	EAE	TAL EDI
Total/NA	Analysis	6010C		4	360851	04/05/16 21:30	YZH	TAL EDI
Total/NA	Prep	7471B			360954	04/06/16 02:40	TJS	TAL EDI
Total/NA	Analysis	7471B		1	361033	04/06/16 07:03	TJS	TAL EDI
Total/NA	Prep	9030B			361289	04/05/16 10:30	HTV	TAL EDI
Total/NA	Analysis	9034		1	361290	04/05/16 18:30	HTV	TAL EDI
Total/NA	Analysis	9045D		1	361101	04/06/16 14:02	YAH	TAL EDI
Total/NA	Analysis	9071B		1	329579	04/06/16 11:20	LOJ	TAL NSH
Total/NA	Prep	9071B			329483	04/06/16 11:20	LOJ	TAL NSH
Total/NA	Analysis	Lloyd Kahn		1	173409	04/12/16 18:06	JDD	TAL PIT
Total/NA	Analysis	Moisture		1	360896	04/05/16 18:12	JDH	TAL EDI
Total/NA	Prep	SM 4500 P B			361257	04/07/16 05:30	IAA	TAL EDI
Total/NA	Analysis	SM 4500 P E		10	361260	04/07/16 06:45	IAA	TAL EDI
Total/NA	Analysis	Total Nitrogen		1	331741	04/07/16 11:05	SOG	TAL NSH

Client Sample ID: V-2

Lab Sample ID: 460-111386-2

Date Collected: 03/29/16 16:40
Date Received: 03/31/16 10:00

Matrix: Solid
Percent Solids: 89.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach			361225	04/07/16 06:09	CBB	TAL EDI
Soluble	Analysis	9056A		1	361005	04/07/16 11:25	CBB	TAL EDI
Total/NA	Prep	3050B			360437	04/03/16 19:47	EAE	TAL EDI
Total/NA	Analysis	6010C		4	360851	04/05/16 21:34	YZH	TAL EDI
Total/NA	Prep	7471B			360954	04/06/16 02:40	TJS	TAL EDI
Total/NA	Analysis	7471B		1	361033	04/06/16 07:24	TJS	TAL EDI
Total/NA	Prep	9030B			361289	04/05/16 10:30	HTV	TAL EDI
Total/NA	Analysis	9034		1	361290	04/05/16 18:30	HTV	TAL EDI
Total/NA	Analysis	9045D		1	361101	04/06/16 14:04	YAH	TAL EDI
Total/NA	Analysis	9071B		1	329579	04/06/16 11:20	LOJ	TAL NSH
Total/NA	Prep	9071B			329483	04/06/16 11:20	LOJ	TAL NSH
Total/NA	Analysis	Lloyd Kahn		1	173409	04/12/16 18:22	JDD	TAL PIT
Total/NA	Analysis	Moisture		1	360896	04/05/16 18:12	JDH	TAL EDI
Total/NA	Prep	SM 4500 P B			361257	04/07/16 05:30	IAA	TAL EDI
Total/NA	Analysis	SM 4500 P E		10	361260	04/07/16 06:45	IAA	TAL EDI
Total/NA	Analysis	Total Nitrogen		1	331741	04/07/16 11:05	SOG	TAL NSH

Lab Chronicle

Client: Fugro Consultants Inc
Project/Site: Delaware Soil Samples

TestAmerica Job ID: 460-111386-1

Client Sample ID: V-4

Date Collected: 03/30/16 10:00
Date Received: 03/31/16 10:00

Lab Sample ID: 460-111386-3

Matrix: Solid
Percent Solids: 65.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Leach	DI Leach	DL		361225	04/07/16 06:09	CBB	TAL EDI
Soluble	Analysis	9056A	DL	2	361005	04/07/16 15:39	CBB	TAL EDI
Total/NA	Prep	3050B			360437	04/03/16 19:47	EAE	TAL EDI
Total/NA	Analysis	6010C		4	360851	04/05/16 21:38	YZH	TAL EDI
Total/NA	Prep	7471B			360954	04/06/16 02:40	TJS	TAL EDI
Total/NA	Analysis	7471B		1	361033	04/06/16 07:26	TJS	TAL EDI
Total/NA	Prep	9030B			361289	04/05/16 10:30	HTV	TAL EDI
Total/NA	Analysis	9034		1	361290	04/05/16 18:30	HTV	TAL EDI
Total/NA	Analysis	9045D		1	361101	04/06/16 14:07	YAH	TAL EDI
Total/NA	Analysis	9071B		1	329579	04/06/16 11:20	LOJ	TAL NSH
Total/NA	Prep	9071B			329483	04/06/16 11:20	LOJ	TAL NSH
Total/NA	Analysis	Lloyd Kahn		1	173409	04/12/16 12:58	JDD	TAL PIT
Total/NA	Analysis	Moisture		1	360896	04/05/16 18:12	JDH	TAL EDI
Total/NA	Prep	SM 4500 P B			361257	04/07/16 05:30	IAA	TAL EDI
Total/NA	Analysis	SM 4500 P E		20	361260	04/07/16 06:45	IAA	TAL EDI
Total/NA	Analysis	Total Nitrogen		1	331741	04/07/16 11:05	SOG	TAL NSH

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900
TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177
TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Certification Summary

Client: Fugro Consultants Inc
Project/Site: Delaware Soil Samples

TestAmerica Job ID: 460-111386-1

Laboratory: TestAmerica Edison

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Connecticut	State Program	1	PH-0200	09-30-16
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	N/A	12-31-15 *
New Jersey	NELAP	2	12028	06-30-16
New York	NELAP	2	11452	03-31-17
Pennsylvania	NELAP	3	68-00522	02-28-17
Rhode Island	State Program	1	LAO00132	12-30-16 *
USDA	Federal		NJCA-003-08	04-04-17

Laboratory: TestAmerica Nashville

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	A2LA		NA: NELAP & A2LA	12-31-16
A2LA	ISO/IEC 17025		0453.07	12-31-17
Alaska (UST)	State Program	10	UST-087	07-24-16
Arizona	State Program	9	AZ0473	05-05-17
Arkansas DEQ	State Program	6	88-0737	04-25-17
California	State Program	9	2938	10-31-16
Connecticut	State Program	1	PH-0220	12-31-17
Florida	NELAP	4	E87358	06-30-16
Georgia	State Program	4	N/A	06-30-16
Illinois	NELAP	5	200010	12-09-16
Iowa	State Program	7	131	04-01-16 *
Kansas	NELAP	7	E-10229	05-31-16 *
Kentucky (UST)	State Program	4	19	06-30-16
Kentucky (WW)	State Program	4	90038	12-31-16
Louisiana	NELAP	6	30613	06-30-16
Maine	State Program	1	TN00032	11-03-17
Maryland	State Program	3	316	03-31-17
Massachusetts	State Program	1	M-TN032	06-30-16
Minnesota	NELAP	5	047-999-345	12-31-16
Mississippi	State Program	4	N/A	06-30-16
Montana (UST)	State Program	8	NA	02-24-20
Nevada	State Program	9	TN00032	07-31-16
New Hampshire	NELAP	1	2963	10-09-16
New Jersey	NELAP	2	TN965	06-30-16
New York	NELAP	2	11342	03-31-17
North Carolina (WW/SW)	State Program	4	387	12-31-16
North Dakota	State Program	8	R-146	06-30-16
Ohio VAP	State Program	5	CL0033	07-10-17
Oklahoma	State Program	6	9412	08-31-16
Oregon	NELAP	10	TN200001	04-27-16 *
Pennsylvania	NELAP	3	68-00585	06-30-16
Rhode Island	State Program	1	LAO00268	12-30-15 *
South Carolina	State Program	4	84009 (001)	02-28-16 *
South Carolina (Do Not Use - DW)	State Program	4	84009 (002)	12-16-17
Tennessee	State Program	4	2008	02-23-17
Texas	NELAP	6	T104704077	08-31-16
USDA	Federal		S-48469	10-30-16
Utah	NELAP	8	TN00032	07-31-16

* Certification renewal pending - certification considered valid.

Certification Summary

Client: Fugro Consultants Inc
Project/Site: Delaware Soil Samples

TestAmerica Job ID: 460-111386-1

Laboratory: TestAmerica Nashville (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Virginia	NELAP	3	460152	06-14-16
Washington	State Program	10	C789	07-19-16
West Virginia DEP	State Program	3	219	02-28-17
Wisconsin	State Program	5	998020430	08-31-16
Wyoming (UST)	A2LA	8	453.07	12-31-17

Laboratory: TestAmerica Pittsburgh

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Arkansas DEQ	State Program	6	88-0690	06-27-16
California	State Program	9	2891	03-31-18
Connecticut	State Program	1	PH-0688	09-30-16
Florida	NELAP	4	E871008	06-30-16
Illinois	NELAP	5	200005	06-30-16
Kansas	NELAP	7	E-10350	05-31-16
Louisiana	NELAP	6	04041	06-30-16
New Hampshire	NELAP	1	2030	04-04-17
New Jersey	NELAP	2	PA005	06-30-16
New York	NELAP	2	11182	03-31-17
North Carolina (WW/SW)	State Program	4	434	12-31-16
Pennsylvania	NELAP	3	02-00416	04-30-16
South Carolina	State Program	4	89014	04-30-16 *
Texas	NELAP	6	T104704528-15-2	03-31-17
US Fish & Wildlife	Federal		LE94312A-1	10-31-16
USDA	Federal		P-Soil-01	05-23-16 *
Utah	NELAP	8	PA001462015-4	05-31-16
Virginia	NELAP	3	460189	09-14-16
West Virginia DEP	State Program	3	142	01-31-17
Wisconsin	State Program	5	998027800	08-31-16

* Certification renewal pending - certification considered valid.

9056A_ORGFM_28D

Anions, Ion Chromatography

FORM III
HPLC/IC LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Matrix: Solid (Soluble) Level: Low Lab File ID: YA2016-04-07-08-18.d

Lab ID: LCS 460-361225/2-A Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	LCS CONCENTRATION (mg/Kg)	LCS % REC	QC LIMITS REC	#
Sulfate	75.0	70.53	94	90-110	

Column to be used to flag recovery and RPD values

FORM III 9056A

FORM III
HPLC/IC LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Matrix: Solid (Soluble) Level: Low Lab File ID: YA2016-04-07-08-38.d

Lab ID: LCSD 460-361225/3-A Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	LCSD CONCENTRATION (mg/Kg)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Sulfate	75.0	68.87	92	2	15	90-110	

Column to be used to flag recovery and RPD values

FORM III 9056A

FORM III
HPLC/IC MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Matrix: Solid (Soluble) Level: Low Lab File ID: YA2016-04-07-10-20.d

Lab ID: 460-111431-A-2-C MS Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	MS CONCENTRATION (mg/Kg)	MS % REC	QC LIMITS REC	#
Sulfate	113	12.3	114.2	90	90-110	

Column to be used to flag recovery and RPD values

FORM III 9056A

FORM III
HPLC/IC MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Matrix: Solid (Soluble) Level: Low Lab File ID: YA2016-04-07-10-40.d

Lab ID: 460-111431-A-2-D MSD Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	MSD CONCENTRATION (mg/Kg)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Sulfate	113	104.0	81	9	15	90-110	*

Column to be used to flag recovery and RPD values

FORM III 9056A

FORM IV
HPLC/IC METHOD BLANK SUMMARY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Lab File ID: YA2016-04-07-07-38.d Lab Sample ID: MB 460-361225/1-A

Matrix: Solid (Soluble) Date Extracted:

Instrument ID: IC A Date Analyzed: 04/07/2016 07:38

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	CCB 460-361005/2	YA2016-04-07-07-17.d	04/07/2016 07:17
	LCS 460-361225/2-A	YA2016-04-07-08-18.d	04/07/2016 08:18
	LCSD 460-361225/3-A	YA2016-04-07-08-38.d	04/07/2016 08:38
	CCB 460-361005/8	YA2016-04-07-09-19.d	04/07/2016 09:19
	460-111431-A-2-B DU	YA2016-04-07-10-00.d	04/07/2016 10:00
	460-111431-A-2-C MS	YA2016-04-07-10-20.d	04/07/2016 10:20
	460-111431-A-2-D MSD	YA2016-04-07-10-40.d	04/07/2016 10:40
V-2	460-111386-2	YA2016-04-07-11-25.d	04/07/2016 11:25
	CCB 460-361005/19	YA2016-04-07-14-19.d	04/07/2016 14:19
V-1 DL	460-111386-1 DL	YA2016-04-07-15-19.d	04/07/2016 15:19
V-4 DL	460-111386-3 DL	YA2016-04-07-15-39.d	04/07/2016 15:39

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG No.:
Client Sample ID: V-1 DL
Lab Sample ID: 460-111386-1 DL
Matrix: Solid (Soluble)
Lab File ID: YA2016-04-07-15-19.d
Analysis Method: 9056A
Date Collected: 03/29/2016 12:30
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 04/07/2016 15:19
Con. Extract Vol.:
Dilution Factor: 2
Injection Volume: 10(uL)
GC Column: ID:
% Moisture: 20.5
GPC Cleanup:(Y/N) N
Analysis Batch No.: 361005
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	627		15.6	3.14

TestAmerica Edison
Target Compound Quantitation Report

Data File: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-15-19.d
Lims ID: 460-111386-D-1-B Lab Sample ID:
Client ID: V-1
Sample Type: Client
Inject. Date: 07-Apr-2016 15:19:00 ALS Bottle#: 0 Worklist Smp#: 20
Injection Vol: 10.0 ul Dil. Factor: 2.0000
Sample Info: 460-111386-d-1-b
Misc. Info.: 16
Operator ID: testamerica Instrument ID: IC A

Method: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\anions-ica.m
Limit Group: SV - Anions 28 days
Last Update: 07-Apr-2016 22:50:17 Calib Date: 20-Mar-2016 21:45:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d

Column 1 : Det: GC IC0
Process Host: XAWRK002

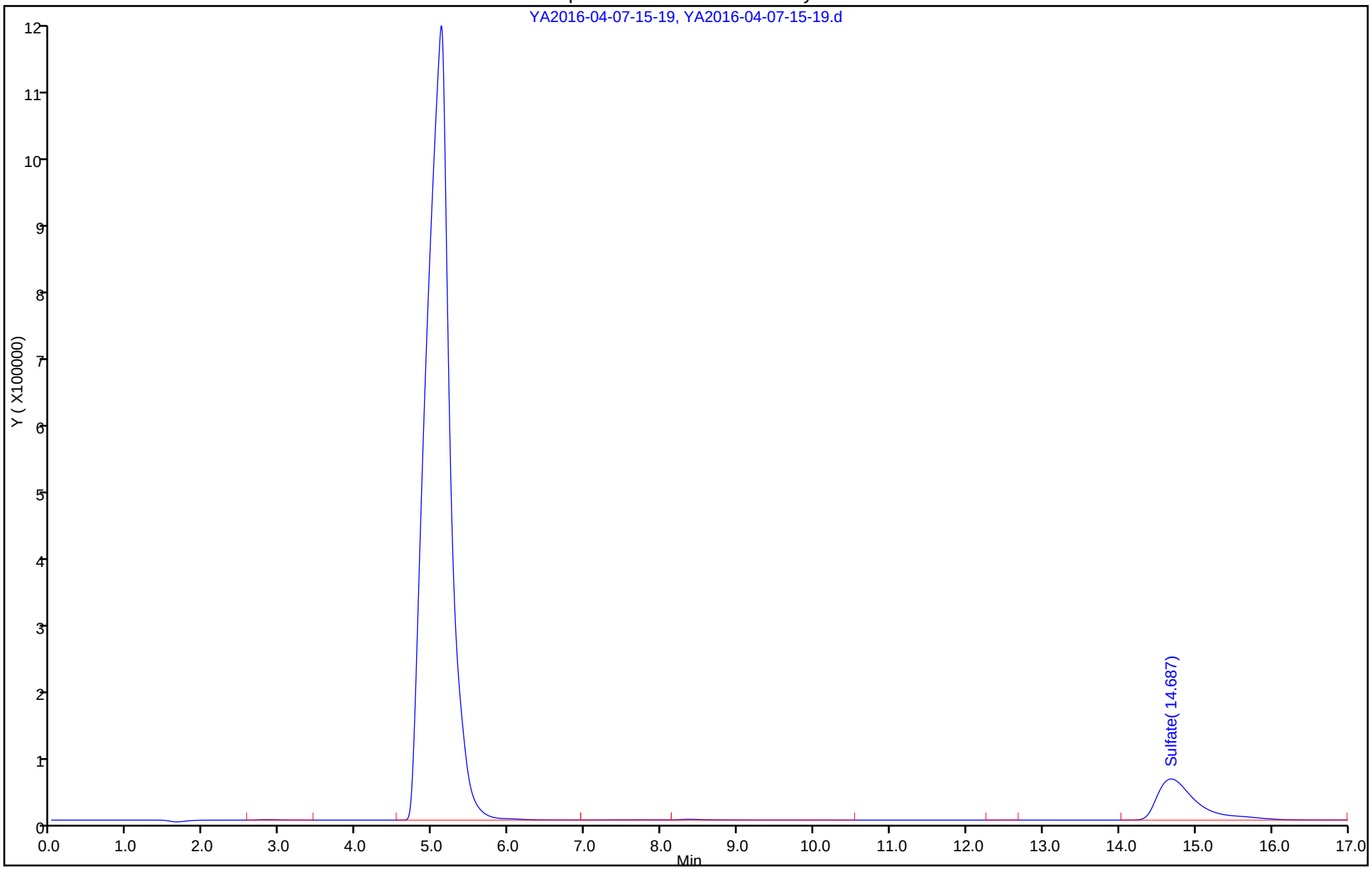
First Level Reviewer: adoum Date: 07-Apr-2016 19:42:58

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
5 Sulfate					
14.687	14.735	-0.048	1956994	24.1	

Report Date: 07-Apr-2016 22:50:21 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-15-19.d				
Injection Date:	07-Apr-2016 15:19:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	460-111386-D-1-B	Lab Sample ID:		Worklist Smp#:	20
Client ID:	V-1				
Injection Vol:	10.0 ul	Dil. Factor:	2.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG No.:
Client Sample ID: V-2
Lab Sample ID: 460-111386-2
Matrix: Solid (Soluble)
Lab File ID: YA2016-04-07-11-25.d
Analysis Method: 9056A
Date Collected: 03/29/2016 16:40
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 04/07/2016 11:25
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: ID:
% Moisture: 10.4
GPC Cleanup:(Y/N) N
Analysis Batch No.: 361005
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	325		7.38	1.48

TestAmerica Edison
Target Compound Quantitation Report

Data File:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-11-25.d				
Lims ID:	460-111386-D-2-B	Lab Sample ID:	460-111386-2		
Client ID:	V-2				
Sample Type:	Client				
Inject. Date:	07-Apr-2016 11:25:00	ALS Bottle#:	0	Worklist Smp#:	14
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Sample Info:	460-111386-d-2-b				
Misc. Info.:	17				
Operator ID:	testamerica	Instrument ID:	IC A		

Method:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\anions-ica.m		
Limit Group:	SV - Anions 28 days		
Last Update:	07-Apr-2016 22:49:56	Calib Date:	20-Mar-2016 21:45:00
Integrator:	Falcon		
Quant Method:	External Standard	Quant By:	Initial Calibration
Last ICal File:	\\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d		

Column 1 :			Det: GC IC0
Process Host:	XAWRK002		

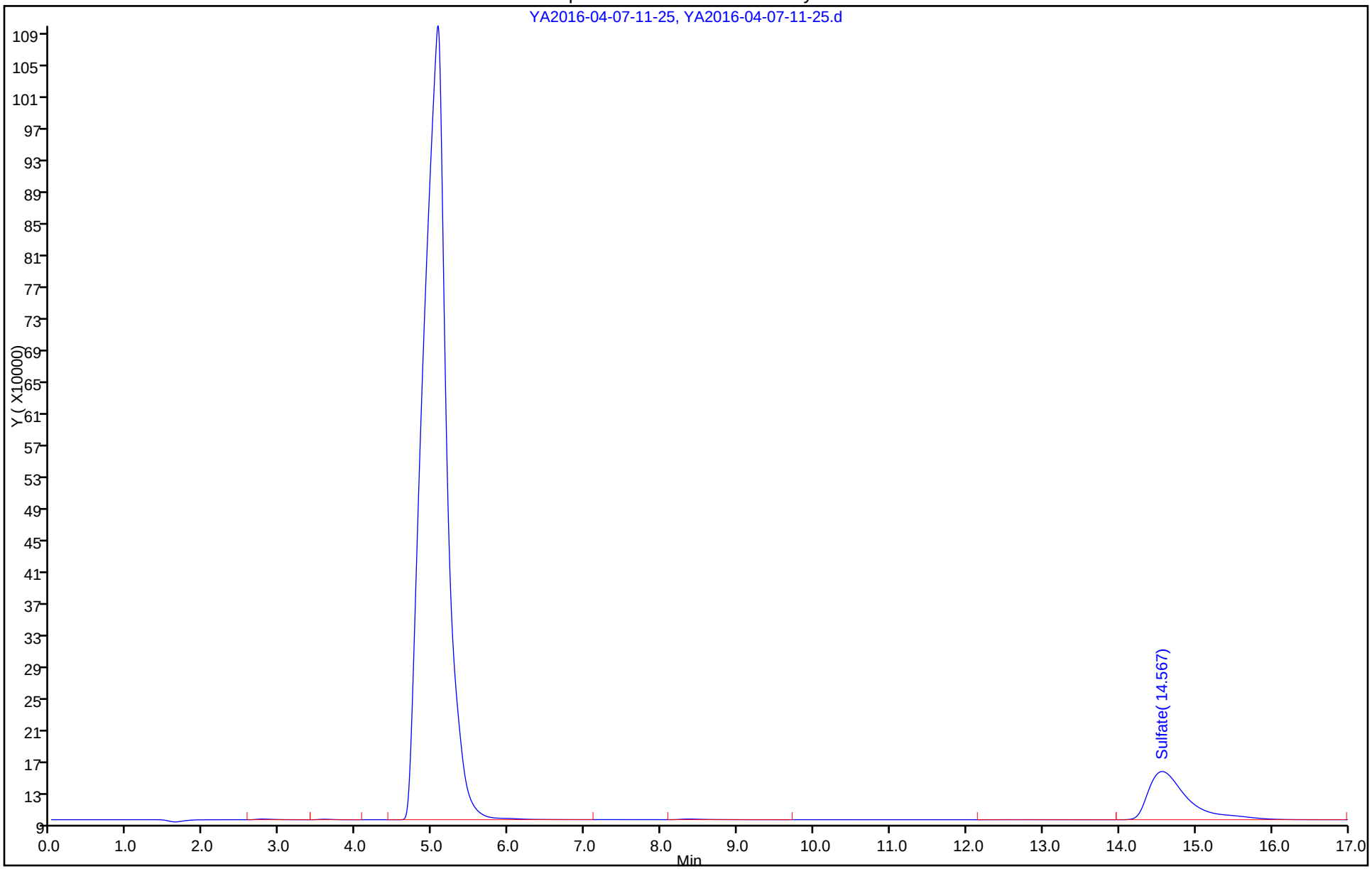
First Level Reviewer: adoum		Date:	07-Apr-2016 14:14:41

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
5 Sulfate					
14.567	14.610	-0.043	2153277	26.4	

Report Date: 07-Apr-2016 22:50:11 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-11-25.d				
Injection Date:	07-Apr-2016 11:25:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	460-111386-D-2-B	Lab Sample ID:	460-111386-2	Worklist Smp#:	14
Client ID:	V-2				
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG No.:
Client Sample ID: V-4 DL
Lab Sample ID: 460-111386-3 DL
Matrix: Solid (Soluble)
Lab File ID: YA2016-04-07-15-39.d
Analysis Method: 9056A
Date Collected: 03/30/2016 10:00
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 04/07/2016 15:39
Con. Extract Vol.:
Dilution Factor: 2
Injection Volume: 10(uL)
GC Column: ID:
% Moisture: 35.0
GPC Cleanup:(Y/N) N
Analysis Batch No.: 361005
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	674		18.1	3.64

TestAmerica Edison
Target Compound Quantitation Report

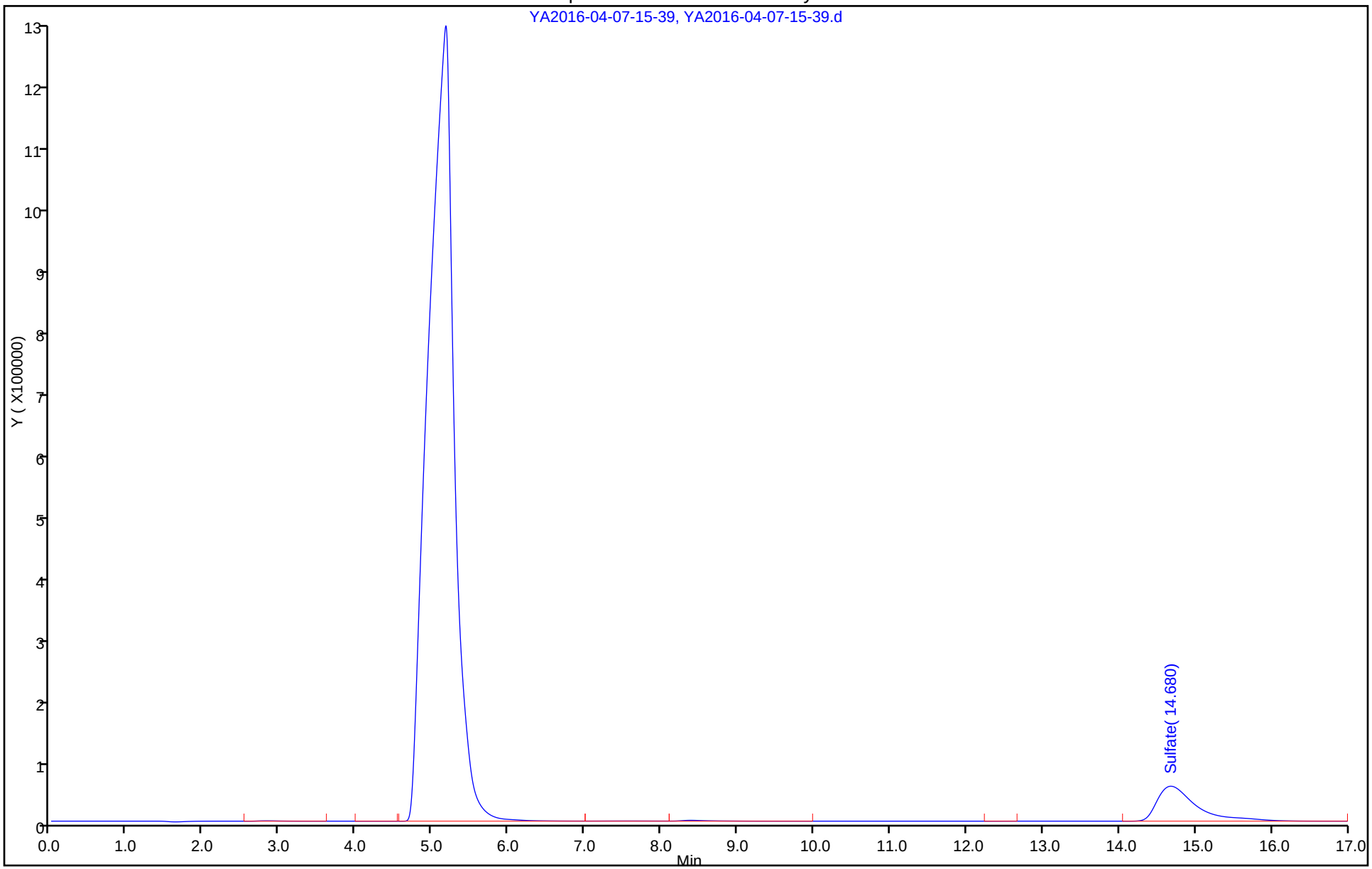
Data File:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-15-39.d				
Lims ID:	460-111386-B-3-A	Lab Sample ID:			
Client ID:	V-4				
Sample Type:	Client				
Inject. Date:	07-Apr-2016 15:39:00	ALS Bottle#:	0	Worklist Smp#:	21
Injection Vol:	10.0 ul	Dil. Factor:	2.0000		
Sample Info:	460-111386-b-3-a				
Misc. Info.:	18				
Operator ID:	testamerica	Instrument ID:	IC A		
Method:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\anions-ica.m				
Limit Group:	SV - Anions 28 days				
Last Update:	07-Apr-2016 22:50:17	Calib Date:	20-Mar-2016 21:45:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d				
Column 1 :			Det: GC IC0		
Process Host:	XAWRK002				
First Level Reviewer: adoum		Date:	07-Apr-2016 19:43:05		

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
5 Sulfate					
14.680	14.735	-0.055	1809725	22.3	

Report Date: 07-Apr-2016 22:50:24 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-15-39.d				
Injection Date:	07-Apr-2016 15:39:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	460-111386-B-3-A	Lab Sample ID:		Worklist Smp#:	21
Client ID:	V-4				
Injection Vol:	10.0 ul	Dil. Factor:	2.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Edison Job No.: 460-111386-1 Analy Batch No.: 357566

SDG No.:

Instrument ID: IC A GC Column: ID: Heated Purge: (Y/N) N

Calibration Start Date: 03/20/2016 19:11 Calibration End Date: 03/20/2016 21:45 Calibration ID: 54991

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 460-357566/4	ya2016-03-20-20-09.d
Level 2	IC 460-357566/5	YA2016-03-20-20-28.d
Level 3	IC 460-357566/6	YA2016-03-20-20-47.d
Level 4	IC 460-357566/7	YA2016-03-20-21-07.d
Level 5	IC 460-357566/8	YA2016-03-20-21-26.d
Level 6	IC 460-357566/9	YA2016-03-20-21-45.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6					RT WINDOW	AVG RT
Fluoride	2.845	2.847	2.850	2.853	2.862	2.865					2.598 - 3.098	2.854
Chloride	5.017	5.015	5.003	4.998	4.987	4.980					4.757 - 5.257	5.000
Bromide	8.528	8.505	8.442	8.408	8.387	8.368					8.212 - 8.712	8.440
Sulfate	15.103	15.090	15.050	15.020	14.985	14.948					14.825 - 15.325	15.033

FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Edison Job No.: 460-111386-1 Analy Batch No.: 357566

SDG No.:

Instrument ID: IC A GC Column: ID: Heated Purge: (Y/N) N

Calibration Start Date: 03/20/2016 19:11 Calibration End Date: 03/20/2016 21:45 Calibration ID: 54991

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 460-357566/4	ya2016-03-20-20-09.d
Level 2	IC 460-357566/5	YA2016-03-20-20-28.d
Level 3	IC 460-357566/6	YA2016-03-20-20-47.d
Level 4	IC 460-357566/7	YA2016-03-20-21-07.d
Level 5	IC 460-357566/8	YA2016-03-20-21-26.d
Level 6	IC 460-357566/9	YA2016-03-20-21-45.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3	LVL 4		B	M1	M2								
Fluoride	144875 152035	139360 152671	142831	144349	Lin	-5946.5284	153060.231							0.9990		0.9900
Chloride	93333 101668	89020 104367	90188	93811	Lin	-11779.541	104345.476							0.9970		0.9900
Bromide	34290 45522	36282 47211	39652	42030	Lin	-22459.411	47283.5110							0.9970		0.9900
Sulfate	68100 80942	63559 83300	69993	74599	Lin	-57161.813	83570.6988							0.9970		0.9900

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
HPLC/IC BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Edison Job No.: 460-111386-1 Analy Batch No.: 357566

SDG No.:

Instrument ID: IC A GC Column: ID: Heated Purge: (Y/N) N

Calibration Start Date: 03/20/2016 19:11 Calibration End Date: 03/20/2016 21:45 Calibration ID: 54991

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 460-357566/4	ya2016-03-20-20-09.d
Level 2	IC 460-357566/5	YA2016-03-20-20-28.d
Level 3	IC 460-357566/6	YA2016-03-20-20-47.d
Level 4	IC 460-357566/7	YA2016-03-20-21-07.d
Level 5	IC 460-357566/8	YA2016-03-20-21-26.d
Level 6	IC 460-357566/9	YA2016-03-20-21-45.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (UG/ML)				
		LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2	LVL 3	LVL 4	LVL 5
Fluoride	Lin	11590 610683	27872	142831	288698	456106	0.0800 4.00	0.200	1.00	2.00	3.00
Chloride	Lin	11200 626202	26706	135282	281432	457508	0.120 6.00	0.300	1.50	3.00	4.50
Bromide	Lin	13716 944224	36282	198258	420302	682834	0.400 20.0	1.00	5.00	10.0	15.0
Sulfate	Lin	40860 2499012	95338	524949	1118980	1821191	0.600 30.0	1.50	7.50	15.0	22.5

Curve Type Legend:
Lin = Linear

TestAmerica Edison
Target Compound Quantitation Report

Data File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\ya2016-03-20-20-09.d
Lims ID: ic 2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 20-Mar-2016 20:09:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: l2
Misc. Info.: 15
Operator ID: testamerica Instrument ID: IC A
Sublist: chrom-anions-ica*sub1

Method: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\anions-ica.m
Limit Group: SV - Anions 28 days
Last Update: 21-Mar-2016 23:07:20 Calib Date: 20-Mar-2016 21:45:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d

Column 1 : Det: GC IC0
Process Host: XAWRK023

First Level Reviewer: boykinc Date: 21-Mar-2016 05:56:05

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
7 Fluoride						
2.845	2.848	-0.003	11590	0.0800	0.1146	
2 Chloride						
5.017	5.007	0.010	11200	0.1200	0.2202	
8 Nitrite as N						
6.523	6.563	-0.040	18051	NC	NC	
1 Bromide						
8.528	8.462	0.066	13716	0.4000	0.7651	
3 Nitrate as N						
10.238	10.100	0.138	17443	NC	NC	
9 Orthophosphate as P						
12.862	12.765	0.097	28892	NC	NC	
5 Sulfate						
15.103	15.075	0.028	40860	0.6000	1.17	

QC Flag Legend

Processing Flags
NC - Not Calibrated

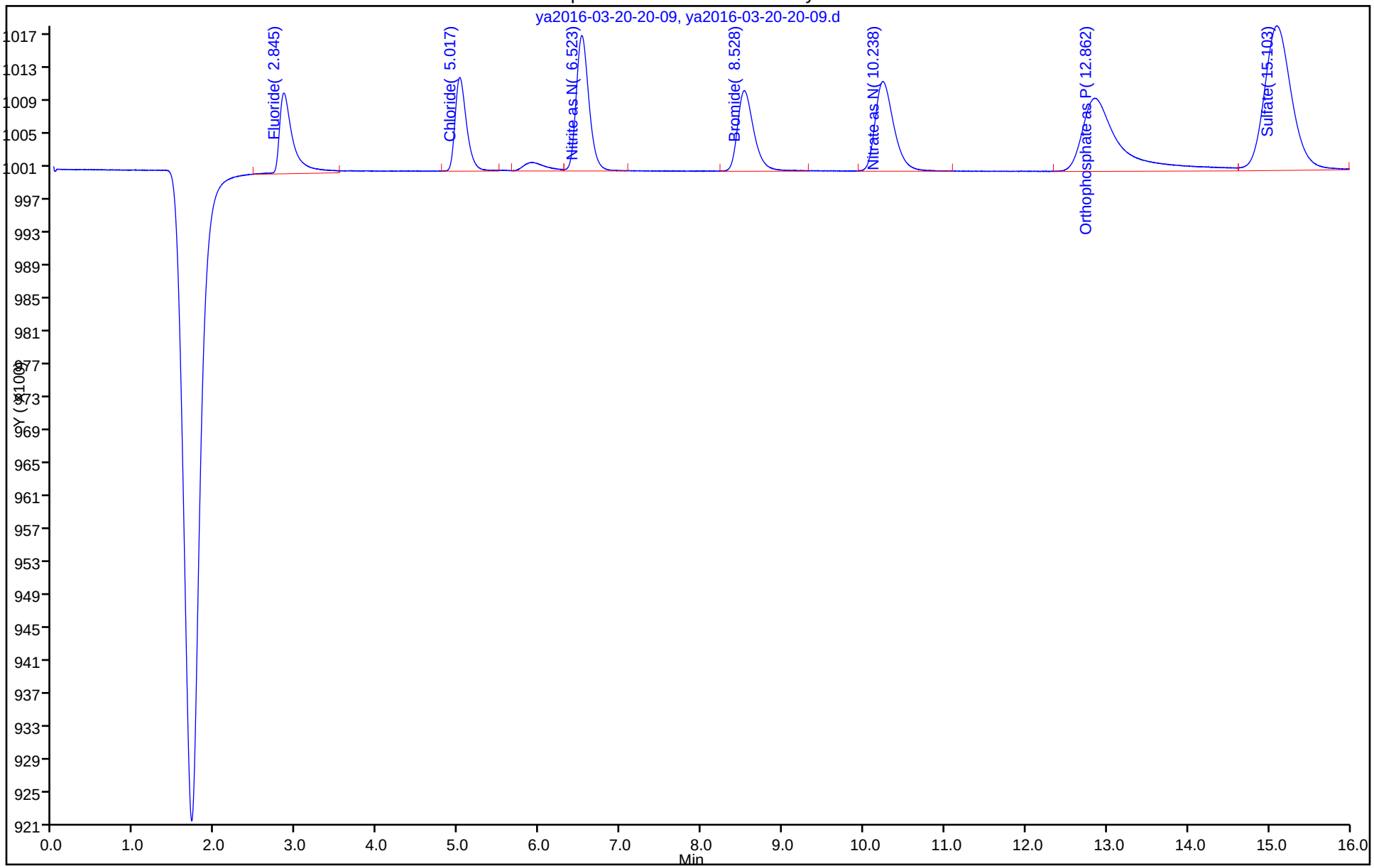
Reagents:

SGANIONSL2_00053 Amount Added: 1.00 Units: mL

Report Date: 21-Mar-2016 23:07:21 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160321-38748.b\ya2016-03-20-20-09.d				
Injection Date:	20-Mar-2016 20:09:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	ic 2			Worklist Smp#:	4
Client ID:					
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



TestAmerica Edison
Target Compound Quantitation Report

Data File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-20-28.d
Lims ID: ic 3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 20-Mar-2016 20:28:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: l3
Misc. Info.: 16
Operator ID: testamerica Instrument ID: IC A
Sublist: chrom-anions-ica*sub1

Method: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\anions-ica.m
Limit Group: SV - Anions 28 days
Last Update: 21-Mar-2016 23:07:21 Calib Date: 20-Mar-2016 21:45:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d

Column 1 : Det: GC IC0
Process Host: XAWRK023

First Level Reviewer: boykinc Date: 21-Mar-2016 05:14:20

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
7 Fluoride						
2.847	2.848	-0.001	27872	0.2000	0.2209	
2 Chloride						
5.015	5.007	0.008	26706	0.3000	0.3688	
8 Nitrite as N						
6.528	6.563	-0.035	52020	NC	NC	
1 Bromide						
8.505	8.462	0.043	36282	1.00	1.24	
3 Nitrate as N						
10.195	10.100	0.095	49090	NC	NC	
9 Orthophosphate as P						
12.823	12.765	0.058	66050	NC	NC	
5 Sulfate						
15.090	15.075	0.015	95338	1.50	1.82	

QC Flag Legend

Processing Flags
NC - Not Calibrated

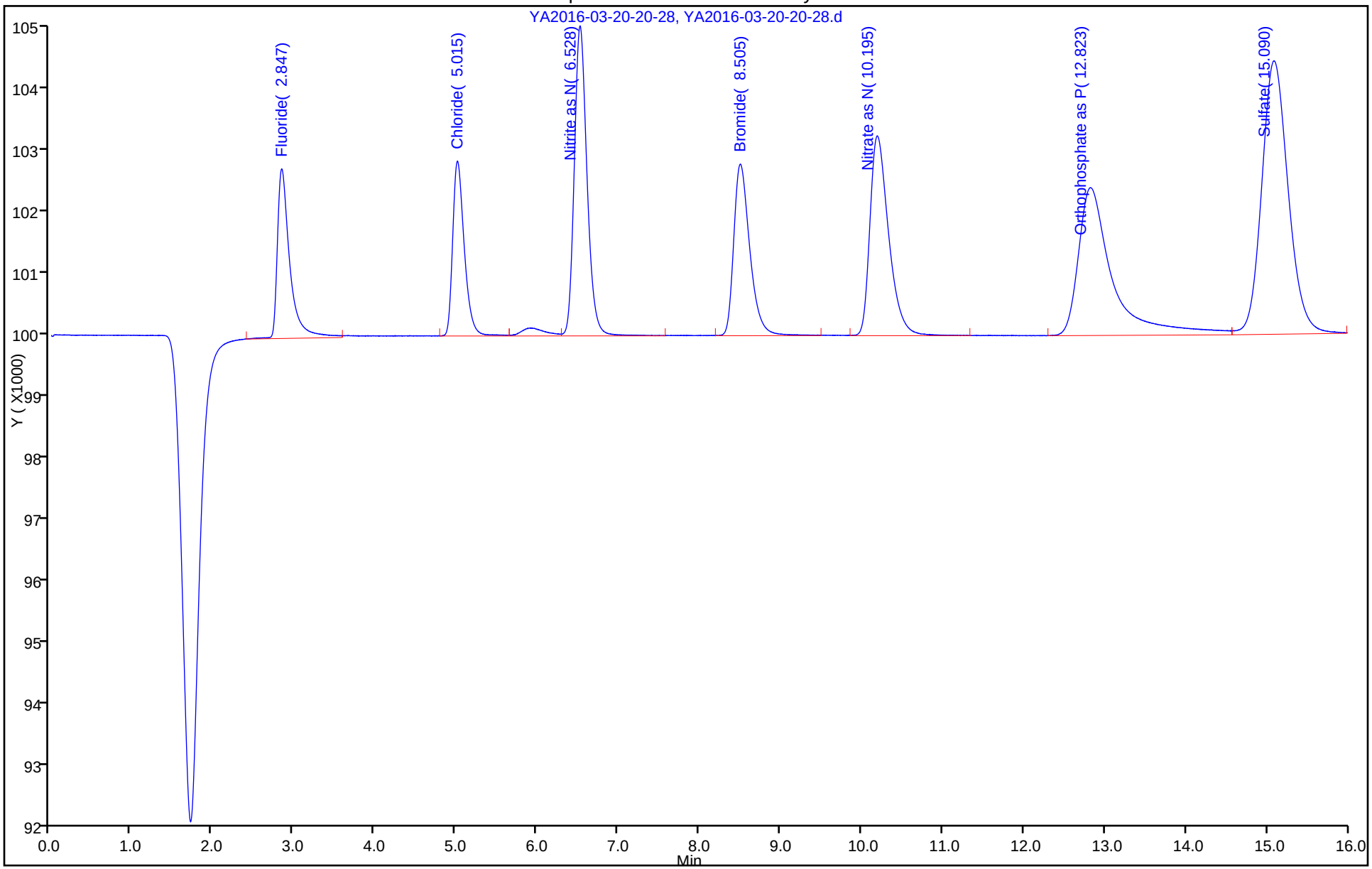
Reagents:

SGANIONSL3_00053 Amount Added: 1.00 Units: mL

Report Date: 21-Mar-2016 23:07:22 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-20-28.d				
Injection Date:	20-Mar-2016 20:28:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	ic 3			Worklist Smp#:	5
Client ID:					
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



TestAmerica Edison
Target Compound Quantitation Report

Data File:	\\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-20-47.d				
Lims ID:	ic 4				
Client ID:					
Sample Type:	IC	Calib Level:	4		
Inject. Date:	20-Mar-2016 20:47:00	ALS Bottle#:	0	Worklist Smp#:	6
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Sample Info:	l4				
Misc. Info.:	17				
Operator ID:	testamerica	Instrument ID:	IC A		
Sublist:	chrom-anions-ica*sub1				
Method:	\\ChromNA\Edison\ChromData\ICA\20160321-38748.b\anions-ica.m				
Limit Group:	SV - Anions 28 days				
Last Update:	21-Mar-2016 23:07:23	Calib Date:	20-Mar-2016 21:45:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d				
Column 1 :			Det: GC IC0		
Process Host:	XAWRK023				
First Level Reviewer: boykinc		Date:	21-Mar-2016 05:10:29		

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
7 Fluoride						
2.850	2.850	0.000	142831	1.00	0.9720	
2 Chloride						
5.003	5.003	0.000	135282	1.50	1.41	
8 Nitrite as N						
6.558	6.558	0.000	305467	NC	NC	
1 Bromide						
8.442	8.442	0.000	198258	5.00	4.67	
3 Nitrate as N						
10.072	10.072	0.000	276658	NC	NC	
9 Orthophosphate as P						
12.762	12.762	0.000	235368	NC	NC	
5 Sulfate						
15.050	15.050	0.000	524949	7.50	6.97	

QC Flag Legend

Processing Flags

NC - Not Calibrated

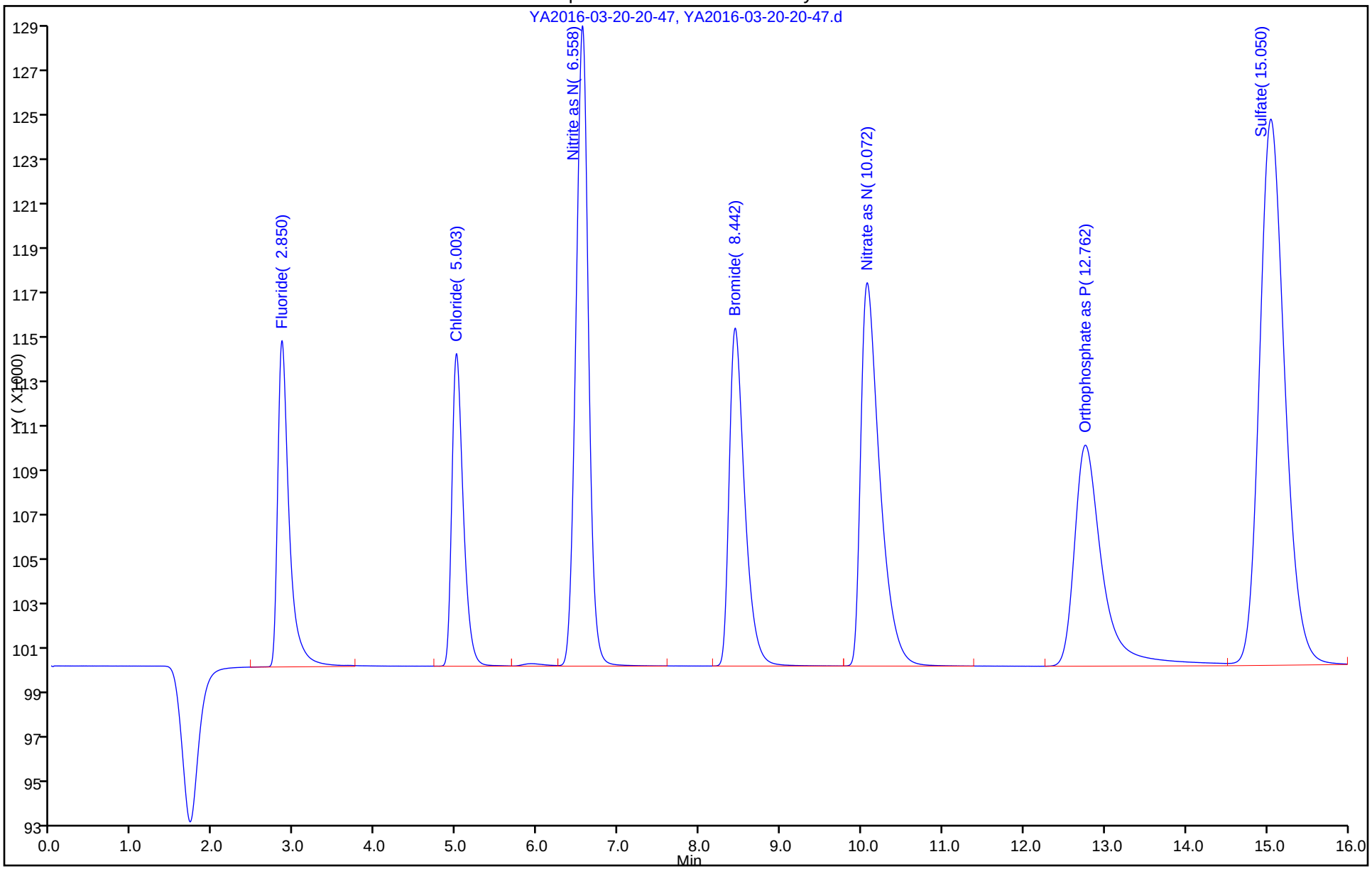
Reagents:

SGANIONSL4_00180 Amount Added: 1.00 Units: mL

Report Date: 21-Mar-2016 23:07:24 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-20-47.d				
Injection Date:	20-Mar-2016 20:47:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	ic 4			Worklist Smp#:	6
Client ID:					
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



TestAmerica Edison
Target Compound Quantitation Report

Data File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-07.d
Lims ID: ic 5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 20-Mar-2016 21:07:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: l5
Misc. Info.: 18
Operator ID: testamerica Instrument ID: IC A
Sublist: chrom-anions-ica*sub1

Method: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\anions-ica.m
Limit Group: SV - Anions 28 days
Last Update: 21-Mar-2016 23:07:24 Calib Date: 20-Mar-2016 21:45:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d

Column 1 : Det: GC IC0
Process Host: XAWRK023

First Level Reviewer: boykinc Date: 21-Mar-2016 05:15:47

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
7 Fluoride						
2.853	2.850	0.003	288698	2.00	1.93	
2 Chloride						
4.998	5.003	-0.005	281432	3.00	2.81	
8 Nitrite as N						
6.600	6.558	0.042	634291	NC	NC	
1 Bromide						
8.408	8.442	-0.034	420302	10.0	9.36	
3 Nitrate as N						
9.993	10.072	-0.079	586332	NC	NC	
9 Orthophosphate as P						
12.725	12.762	-0.037	449715	NC	NC	
5 Sulfate						
15.020	15.050	-0.030	1118980	15.0	14.1	

QC Flag Legend

Processing Flags
NC - Not Calibrated

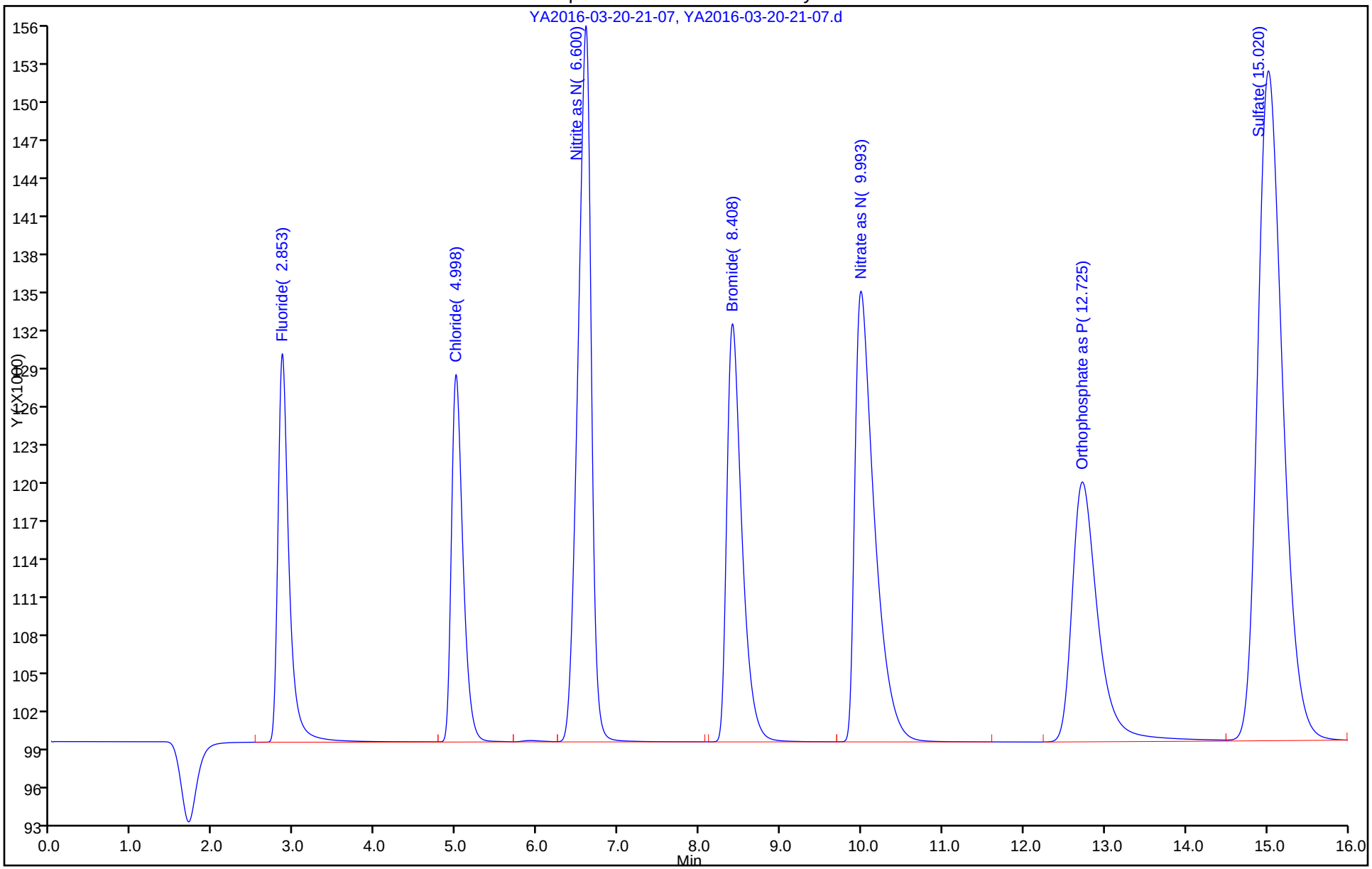
Reagents:

SGANIONSL5_00054 Amount Added: 1.00 Units: mL

Report Date: 21-Mar-2016 23:07:25 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-07.d				
Injection Date:	20-Mar-2016 21:07:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	ic 5			Worklist Smp#:	7
Client ID:					
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



TestAmerica Edison
Target Compound Quantitation Report

Data File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-26.d
Lims ID: ic 6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 20-Mar-2016 21:26:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: l6
Misc. Info.: 19
Operator ID: testamerica Instrument ID: IC A
Sublist: chrom-anions-ica*sub1

Method: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\anions-ica.m
Limit Group: SV - Anions 28 days
Last Update: 21-Mar-2016 23:07:25 Calib Date: 20-Mar-2016 21:45:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d

Column 1 : Det: GC IC0
Process Host: XAWRK023

First Level Reviewer: boykinc Date: 21-Mar-2016 05:16:05

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
7 Fluoride						
2.862	2.850	0.012	456106	3.00	3.02	
2 Chloride						
4.987	5.003	-0.016	457508	4.50	4.50	
8 Nitrite as N						
6.640	6.558	0.082	988742	NC	NC	
1 Bromide						
8.387	8.442	-0.055	682834	15.0	14.9	
3 Nitrate as N						
9.937	10.072	-0.135	949347	NC	NC	
9 Orthophosphate as P						
12.685	12.762	-0.077	711519	NC	NC	
5 Sulfate						
14.985	15.050	-0.065	1821191	22.5	22.5	

QC Flag Legend

Processing Flags
NC - Not Calibrated

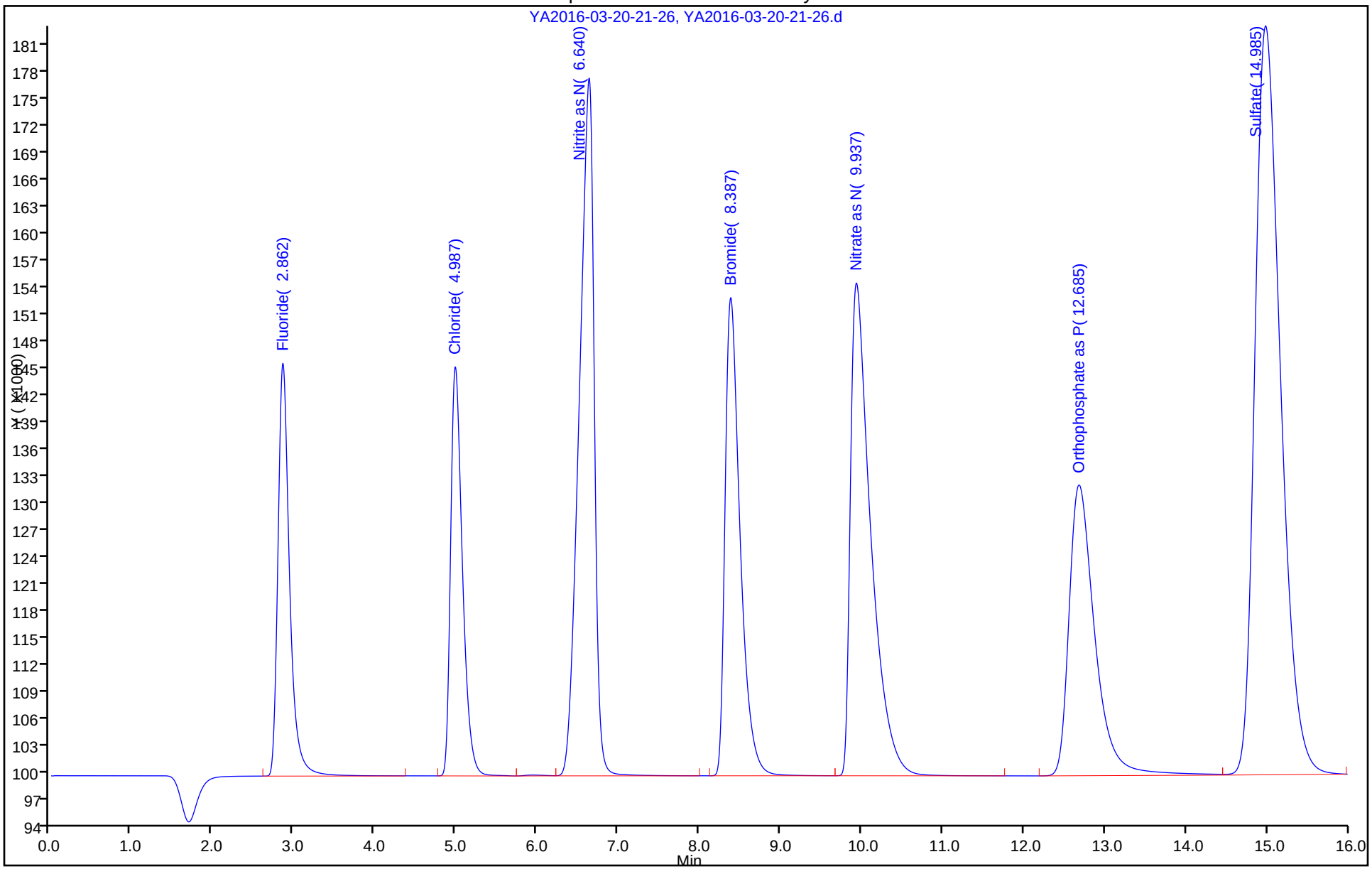
Reagents:

SGANIONSL6_00056 Amount Added: 1.00 Units: mL

Report Date: 21-Mar-2016 23:07:26 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-26.d				
Injection Date:	20-Mar-2016 21:26:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	ic 6			Worklist Smp#:	8
Client ID:					
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



TestAmerica Edison
Target Compound Quantitation Report

Data File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d
Lims ID: ic 7
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 20-Mar-2016 21:45:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: l7
Misc. Info.: 20
Operator ID: testamerica Instrument ID: IC A
Sublist: chrom-anions-ica*sub1

Method: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\anions-ica.m
Limit Group: SV - Anions 28 days
Last Update: 21-Mar-2016 23:07:27 Calib Date: 20-Mar-2016 21:45:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d

Column 1 : Det: GC IC0
Process Host: XAWRK023

First Level Reviewer: boykinc Date: 21-Mar-2016 05:16:28

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
7 Fluoride						
2.865	2.850	0.015	610683	4.00	4.03	
2 Chloride						
4.980	5.003	-0.023	626202	6.00	6.11	
8 Nitrite as N						
6.660	6.558	0.102	1327823	NC	NC	
1 Bromide						
8.368	8.442	-0.074	944224	20.0	20.4	
3 Nitrate as N						
9.897	10.072	-0.175	1303023	NC	NC	
9 Orthophosphate as P						
12.643	12.762	-0.119	965070	NC	NC	
5 Sulfate						
14.948	15.050	-0.102	2499012	30.0	30.6	

QC Flag Legend

Processing Flags
NC - Not Calibrated

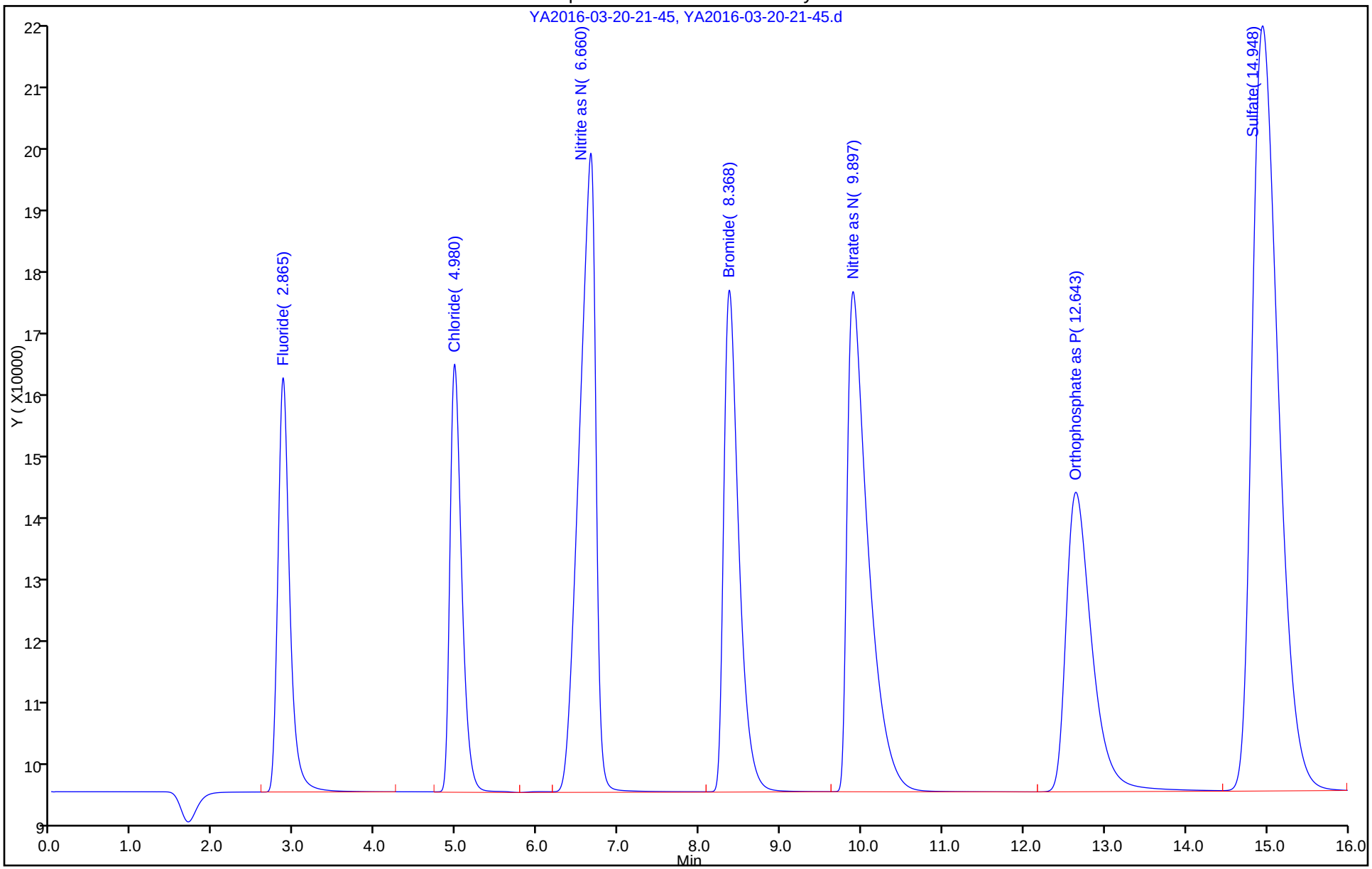
Reagents:

SGANIONSL7_00055 Amount Added: 1.00 Units: mL

Report Date: 21-Mar-2016 23:07:27 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d				
Injection Date:	20-Mar-2016 21:45:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	ic 7			Worklist Smp#:	9
Client ID:					
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Lab Sample ID: CCV 460-361005/1 Calibration Date: 04/07/2016 06:57

Instrument ID: IC A Calib Start Date: 03/20/2016 19:11

GC Column: ID: Calib End Date: 03/20/2016 21:45

Lab File ID: YA2016-04-07-06-57.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	Lin		184843		1.25	1.00	24.6*	10.0
Chloride	Lin		91612		1.43	1.50	-4.7	10.0
Bromide	Lin		40695		4.78	5.00	-4.4	10.0
Sulfate	Lin		70740		7.03	7.50	-6.2	10.0

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Lab Sample ID: CCV 460-361005/1 Calibration Date: 04/07/2016 06:57

Instrument ID: IC A Calib Start Date: 03/20/2016 19:11

GC Column: ID: Calib End Date: 03/20/2016 21:45

Lab File ID: YA2016-04-07-06-57.d

Analyte	RT	RT WINDOW	
		FROM	TO
Fluoride	2.81	2.56	3.06
Chloride	4.94	4.69	5.19
Bromide	8.32	8.07	8.57
Sulfate	14.71	14.46	14.96

TestAmerica Edison
Target Compound Quantitation Report

Data File: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-06-57.d
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 07-Apr-2016 06:57:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: ccv
Operator ID: testamerica Instrument ID: IC A
Sublist: chrom-anions-ica*sub1

Method: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\anions-ica.m
Limit Group: SV - Anions 28 days
Last Update: 07-Apr-2016 22:49:44 Calib Date: 20-Mar-2016 21:45:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d

Column 1 : Det: GC IC0
Process Host: XAWRK002

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
7 Fluoride						
2.805	2.805	0.000	184843	1.00	1.25	
2 Chloride						
4.937	4.937	0.000	137418	1.50	1.43	
8 Nitrite as N						
6.473	6.473	0.000	260932	NC	NC	
1 Bromide						
8.323	8.323	0.000	203475	5.00	4.78	
3 Nitrate as N						
9.965	9.965	0.000	282574	NC	NC	
9 Orthophosphate as P						
12.468	12.468	0.000	208352	NC	NC	
5 Sulfate						
14.710	14.710	0.000	530551	7.50	7.03	

QC Flag Legend

Processing Flags
NC - Not Calibrated

Reagents:

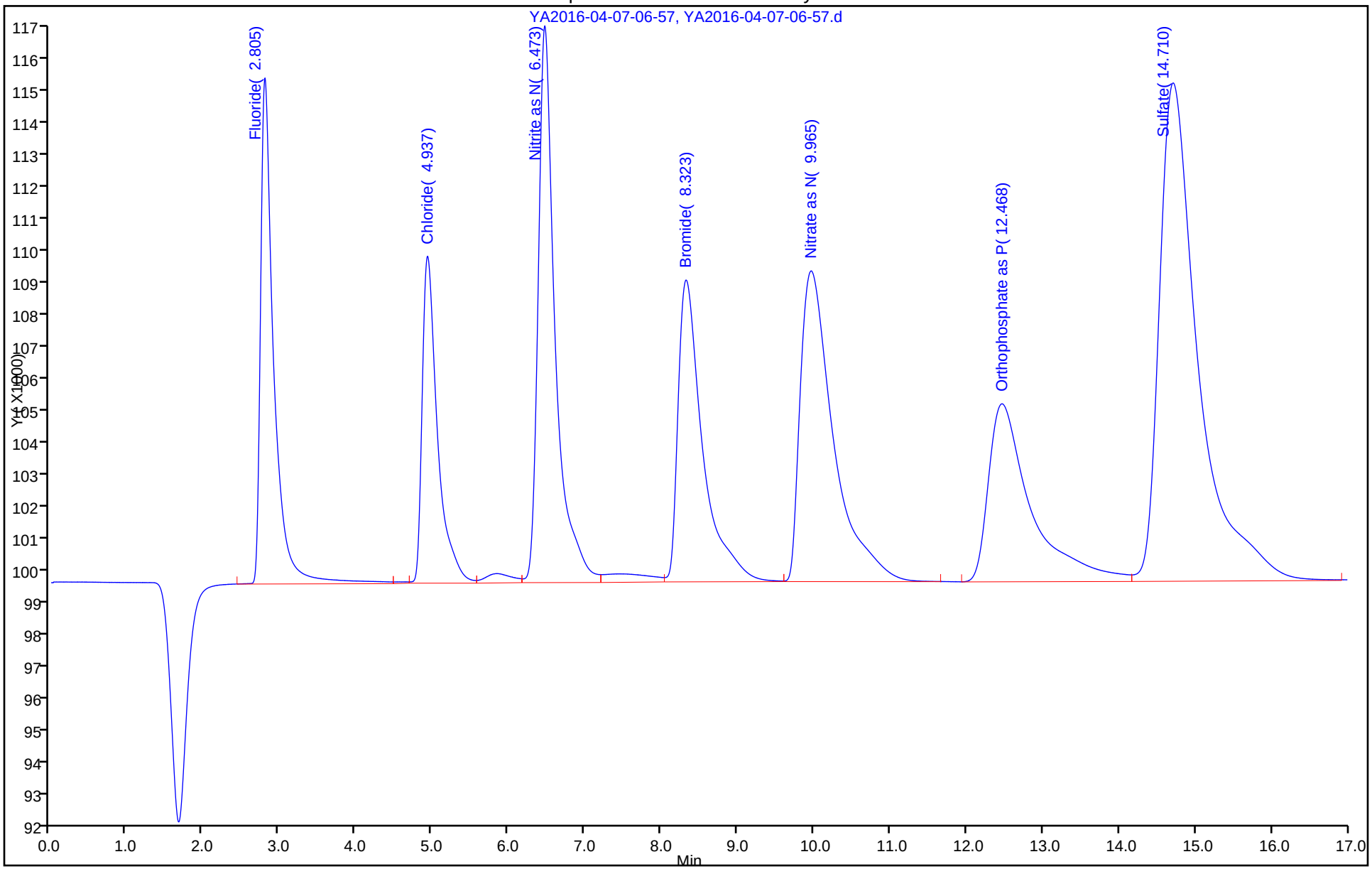
SGANIONSL4_00192 Amount Added: 1.00 Units: mL

Report Date: 07-Apr-2016 22:49:44 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-06-57.d

Injection Date:	07-Apr-2016 06:57:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	ccv			Worklist Smp#:	1
Client ID:					
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Lab Sample ID: CCV 460-361005/7 Calibration Date: 04/07/2016 08:59

Instrument ID: IC A Calib Start Date: 03/20/2016 19:11

GC Column: ID: Calib End Date: 03/20/2016 21:45

Lab File ID: YA2016-04-07-08-59.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	Lin		160683		1.09	1.00	8.9	10.0
Chloride	Lin		89133		1.39	1.50	-7.1	10.0
Bromide	Lin		39635		4.67	5.00	-6.7	10.0
Sulfate	Lin		68782		6.86	7.50	-8.6	10.0

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Lab Sample ID: CCV 460-361005/7 Calibration Date: 04/07/2016 08:59

Instrument ID: IC A Calib Start Date: 03/20/2016 19:11

GC Column: ID: Calib End Date: 03/20/2016 21:45

Lab File ID: YA2016-04-07-08-59.d

Analyte	RT	RT WINDOW	
		FROM	TO
Fluoride	2.78	2.53	3.03
Chloride	4.90	4.65	5.15
Bromide	8.28	8.03	8.53
Sulfate	14.61	14.36	14.86

TestAmerica Edison
Target Compound Quantitation Report

Data File: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-08-59.d
Lims ID: CCV
Client ID:
Sample Type: CCV
Inject. Date: 07-Apr-2016 08:59:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: ccv
Misc. Info.: 10
Operator ID: testamerica Instrument ID: IC A
Sublist: chrom-anions-ica*sub1

Method: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\anions-ica.m
Limit Group: SV - Anions 28 days
Last Update: 07-Apr-2016 22:49:56 Calib Date: 20-Mar-2016 21:45:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d

Column 1 : Det: GC IC0
Process Host: XAWRK002

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
7 Fluoride						
2.780	2.780	0.000	160683	1.00	1.09	
2 Chloride						
4.900	4.900	0.000	133700	1.50	1.39	
8 Nitrite as N						
6.435	6.435	0.000	298440	NC	NC	
1 Bromide						
8.283	8.283	0.000	198173	5.00	4.67	
3 Nitrate as N						
9.877	9.877	0.000	266521	NC	NC	
9 Orthophosphate as P						
12.405	12.405	0.000	220886	NC	NC	
5 Sulfate						
14.610	14.610	0.000	515864	7.50	6.86	

QC Flag Legend

Processing Flags
NC - Not Calibrated

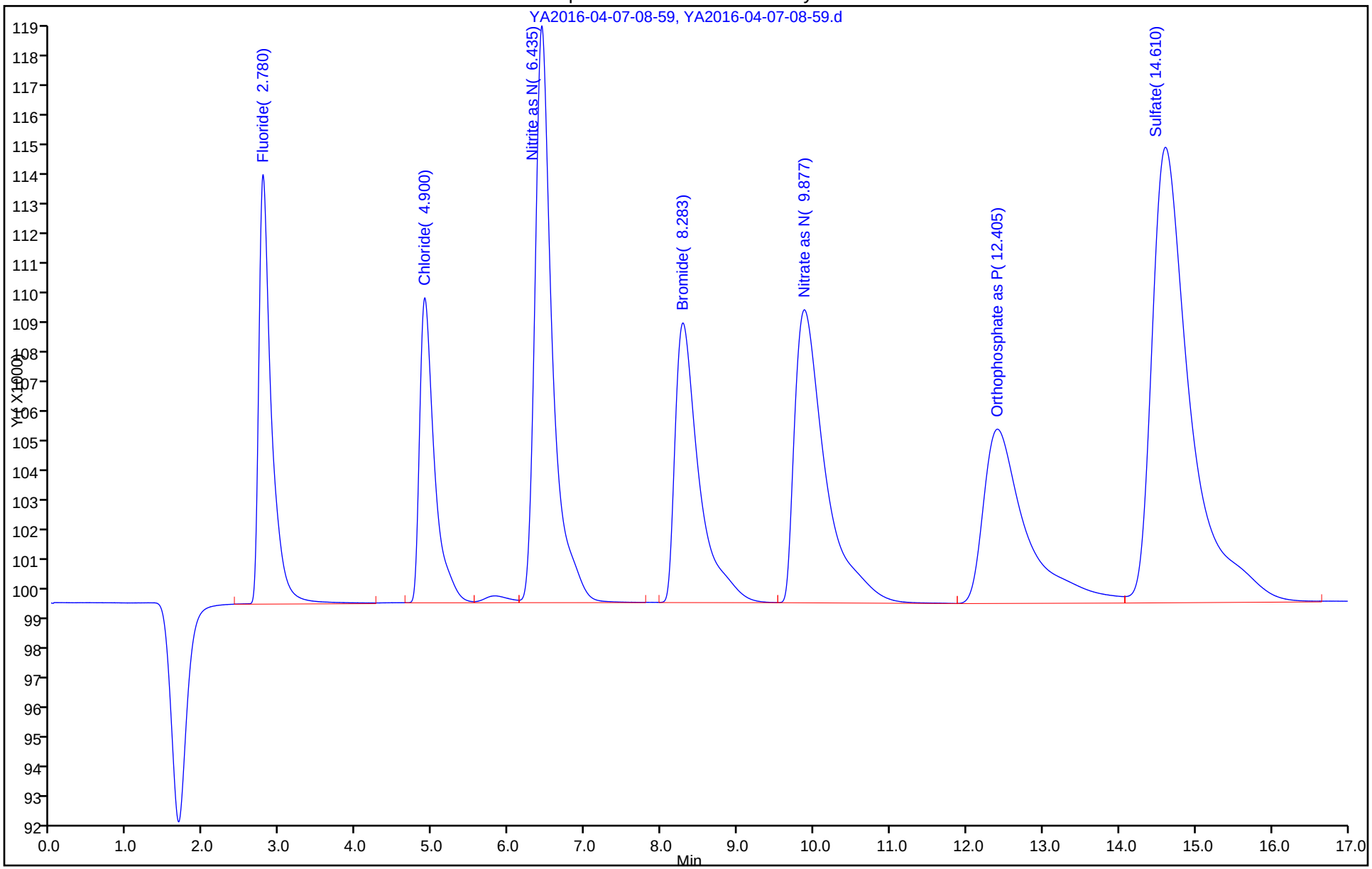
Reagents:

SGANIONSL4_00191 Amount Added: 1.00 Units: mL

Report Date: 07-Apr-2016 22:49:56 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-08-59.d				
Injection Date:	07-Apr-2016 08:59:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	CCV			Worklist Smp#:	7
Client ID:					
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Lab Sample ID: CCV 460-361005/18 Calibration Date: 04/07/2016 13:27

Instrument ID: IC A Calib Start Date: 03/20/2016 19:11

GC Column: ID: Calib End Date: 03/20/2016 21:45

Lab File ID: YA2016-04-07-13-27.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	Lin		166015		1.12	1.00	12.3*	10.0
Chloride	Lin		89835		1.40	1.50	-6.4	10.0
Bromide	Lin		39784		4.68	5.00	-6.4	10.0
Sulfate	Lin		68564		6.84	7.50	-8.8	10.0

FORM VII 9056A

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Lab Sample ID: CCV 460-361005/18 Calibration Date: 04/07/2016 13:27

Instrument ID: IC A Calib Start Date: 03/20/2016 19:11

GC Column: ID: Calib End Date: 03/20/2016 21:45

Lab File ID: YA2016-04-07-13-27.d

Analyte	RT	RT WINDOW	
		FROM	TO
Fluoride	2.81	2.56	3.06
Chloride	4.92	4.67	5.17
Bromide	8.30	8.05	8.55
Sulfate	14.74	14.49	14.99

TestAmerica Edison
Target Compound Quantitation Report

Data File: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-13-27.d
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 07-Apr-2016 13:27:00 ALS Bottle#: 0 Worklist Smp#: 18
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: ccv
Misc. Info.: 21
Operator ID: testamerica Instrument ID: IC A
Sublist: chrom-anions-ica*sub1

Method: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\anions-ica.m
Limit Group: SV - Anions 28 days
Last Update: 07-Apr-2016 22:50:17 Calib Date: 20-Mar-2016 21:45:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d

Column 1 : Det: GC IC0
Process Host: XAWRK002

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
7 Fluoride						
2.812	2.812	0.000	166015	1.00	1.12	
2 Chloride						
4.918	4.918	0.000	134752	1.50	1.40	
8 Nitrite as N						
6.463	6.463	0.000	299491	NC	NC	
1 Bromide						
8.302	8.302	0.000	198919	5.00	4.68	
3 Nitrate as N						
9.903	9.903	0.000	274923	NC	NC	
9 Orthophosphate as P						
12.507	12.507	0.000	201472	NC	NC	
5 Sulfate						
14.735	14.735	0.000	514227	7.50	6.84	

QC Flag Legend

Processing Flags
NC - Not Calibrated

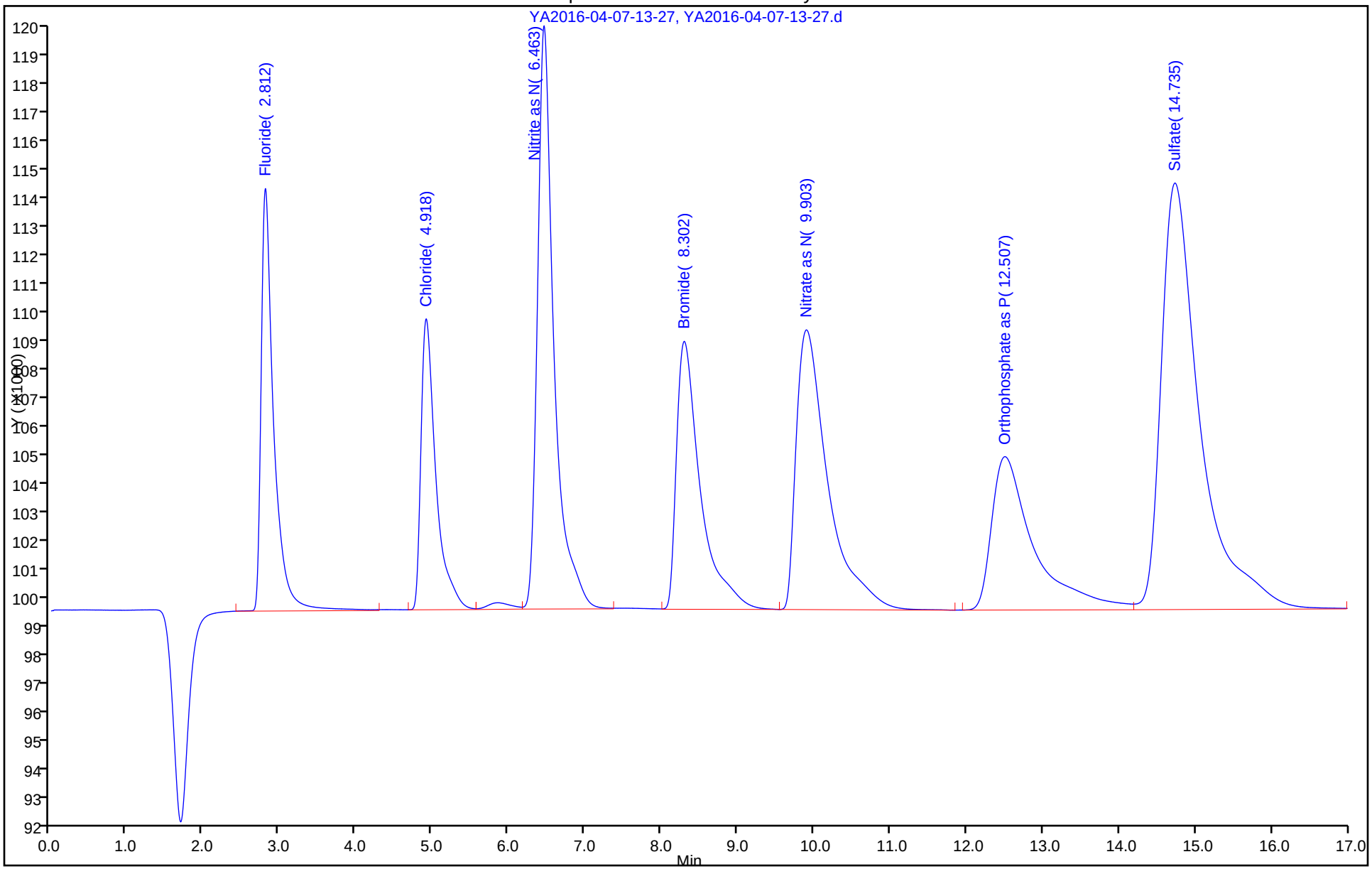
Reagents:

SGANIONSL4_00192 Amount Added: 1.00 Units: mL

Report Date: 07-Apr-2016 22:50:17 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-13-27.d				
Injection Date:	07-Apr-2016 13:27:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	ccv			Worklist Smp#:	18
Client ID:					
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



FORM VII
HPLC/IC CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Lab Sample ID: CCV 460-361005/24 Calibration Date: 04/07/2016 16:40

Instrument ID: IC A Calib Start Date: 03/20/2016 19:11

GC Column: ID: Calib End Date: 03/20/2016 21:45

Lab File ID: YA2016-04-07-16-40.d Conc. Units: mg/L

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Fluoride	Lin		153937		1.05	1.00	4.5	10.0
Chloride	Lin		93587		1.46	1.50	-2.8	10.0
Bromide	Lin		39877		4.69	5.00	-6.2	10.0
Sulfate	Lin		71038		7.06	7.50	-5.9	10.0

FORM VII
HPLC/IC CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Lab Sample ID: CCV 460-361005/24 Calibration Date: 04/07/2016 16:40

Instrument ID: IC A Calib Start Date: 03/20/2016 19:11

GC Column: ID: Calib End Date: 03/20/2016 21:45

Lab File ID: YA2016-04-07-16-40.d

Analyte	RT	RT WINDOW	
		FROM	TO
Fluoride	2.83	2.58	3.08
Chloride	4.91	4.66	5.16
Bromide	8.30	8.05	8.55
Sulfate	14.77	14.52	15.02

TestAmerica Edison
Target Compound Quantitation Report

Data File: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-16-40.d
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 07-Apr-2016 16:40:00 ALS Bottle#: 0 Worklist Smp#: 24
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: ccv
Misc. Info.: 21
Operator ID: testamerica Instrument ID: IC A
Sublist: chrom-anions-ica*sub1

Method: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\anions-ica.m
Limit Group: SV - Anions 28 days
Last Update: 07-Apr-2016 22:50:26 Calib Date: 20-Mar-2016 21:45:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d

Column 1 : Det: GC IC0
Process Host: XAWRK002

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
7 Fluoride						
2.830	2.830	0.000	153937	1.00	1.04	
2 Chloride						
4.913	4.913	0.000	140380	1.50	1.46	
8 Nitrite as N						
6.458	6.458	0.000	312925	NC	NC	
1 Bromide						
8.298	8.298	0.000	199387	5.00	4.69	
3 Nitrate as N						
9.880	9.880	0.000	262556	NC	NC	
9 Orthophosphate as P						
12.533	12.533	0.000	183233	NC	NC	
5 Sulfate						
14.767	14.767	0.000	532784	7.50	7.06	

QC Flag Legend

Processing Flags
NC - Not Calibrated

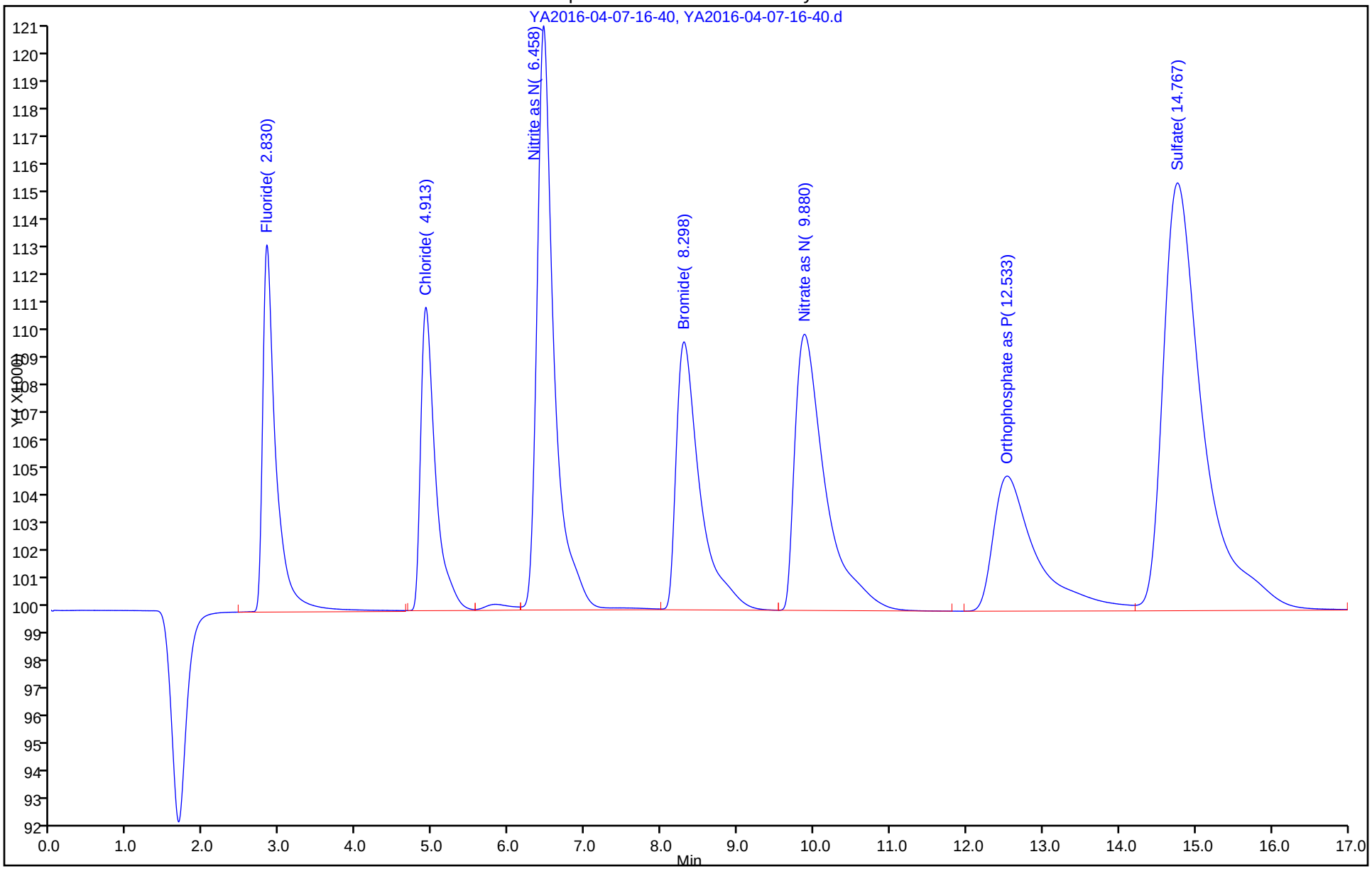
Reagents:

SGANIONSL4_00192 Amount Added: 1.00 Units: mL

Report Date: 07-Apr-2016 22:50:26 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-16-40.d				
Injection Date:	07-Apr-2016 16:40:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	ccv			Worklist Smp#:	24
Client ID:					
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 460-361225/1-A
Matrix: Solid (Soluble)
Lab File ID: YA2016-04-07-07-38.d
Analysis Method: 9056A
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 04/07/2016 07:38
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 361005
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	6.00	U	6.00	1.21

TestAmerica Edison
Target Compound Quantitation Report

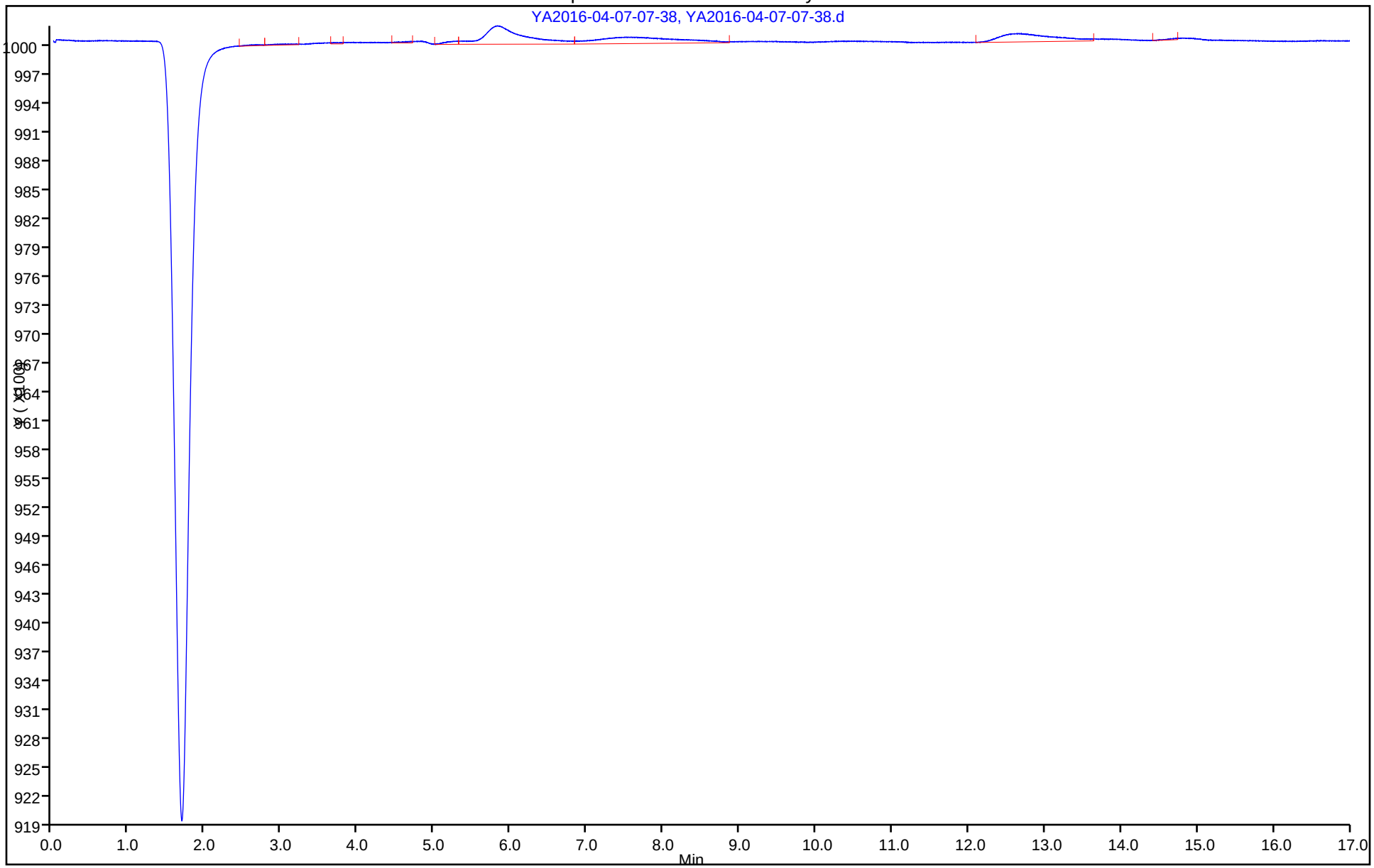
Data File:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-07-38.d				
Lims ID:	MB 460-361225/1-A				
Client ID:					
Sample Type:	MB				
Inject. Date:	07-Apr-2016 07:38:00	ALS Bottle#:	0	Worklist Smp#:	3
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Sample Info:	mb 460-361225/1-a				
Operator ID:	testamerica	Instrument ID:	IC A		
Method:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\anions-ica.m				
Limit Group:	SV - Anions 28 days				
Last Update:	07-Apr-2016 22:49:44	Calib Date:	20-Mar-2016 21:45:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d				
Column 1 :			Det: GC IC0		
Process Host:	XAWRK002				
First Level Reviewer: adoum		Date:	07-Apr-2016 13:05:03		

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

Report Date: 07-Apr-2016 22:49:50 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-07-38.d				
Injection Date:	07-Apr-2016 07:38:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	MB 460-361225/1-A			Worklist Smp#:	3
Client ID:					
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 460-361225/2-A
Matrix: Solid (Soluble)
Lab File ID: YA2016-04-07-08-18.d
Analysis Method: 9056A
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 04/07/2016 08:18
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 361005
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	70.53		6.00	1.21

TestAmerica Edison
Target Compound Quantitation Report

Data File: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-08-18.d
Lims ID: LCS 460-361225/2-A
Client ID:
Sample Type: LCS
Inject. Date: 07-Apr-2016 08:18:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: lcs 460-361225/2-a
Operator ID: testamerica Instrument ID: IC A

Method: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\anions-ica.m
Limit Group: SV - Anions 28 days
Last Update: 07-Apr-2016 22:49:44 Calib Date: 20-Mar-2016 21:45:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d

Column 1 : Det: GC IC0
Process Host: XAWRK002

First Level Reviewer: adoum Date: 07-Apr-2016 13:04:40

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
7 Fluoride						
2.767	2.805	-0.038	179741	1.00	1.21	
2 Chloride						
4.933	4.937	-0.004	135557	1.50	1.41	
8 Nitrite as N						
6.458	6.473	-0.015	289960	NC	NC	
1 Bromide						
8.322	8.323	-0.001	201859	5.00	4.74	
3 Nitrate as N						
9.917	9.965	-0.048	264113	NC	NC	
9 Orthophosphate as P						
12.410	12.468	-0.058	214085	NC	NC	
5 Sulfate						
14.587	14.710	-0.123	532236	7.50	7.05	

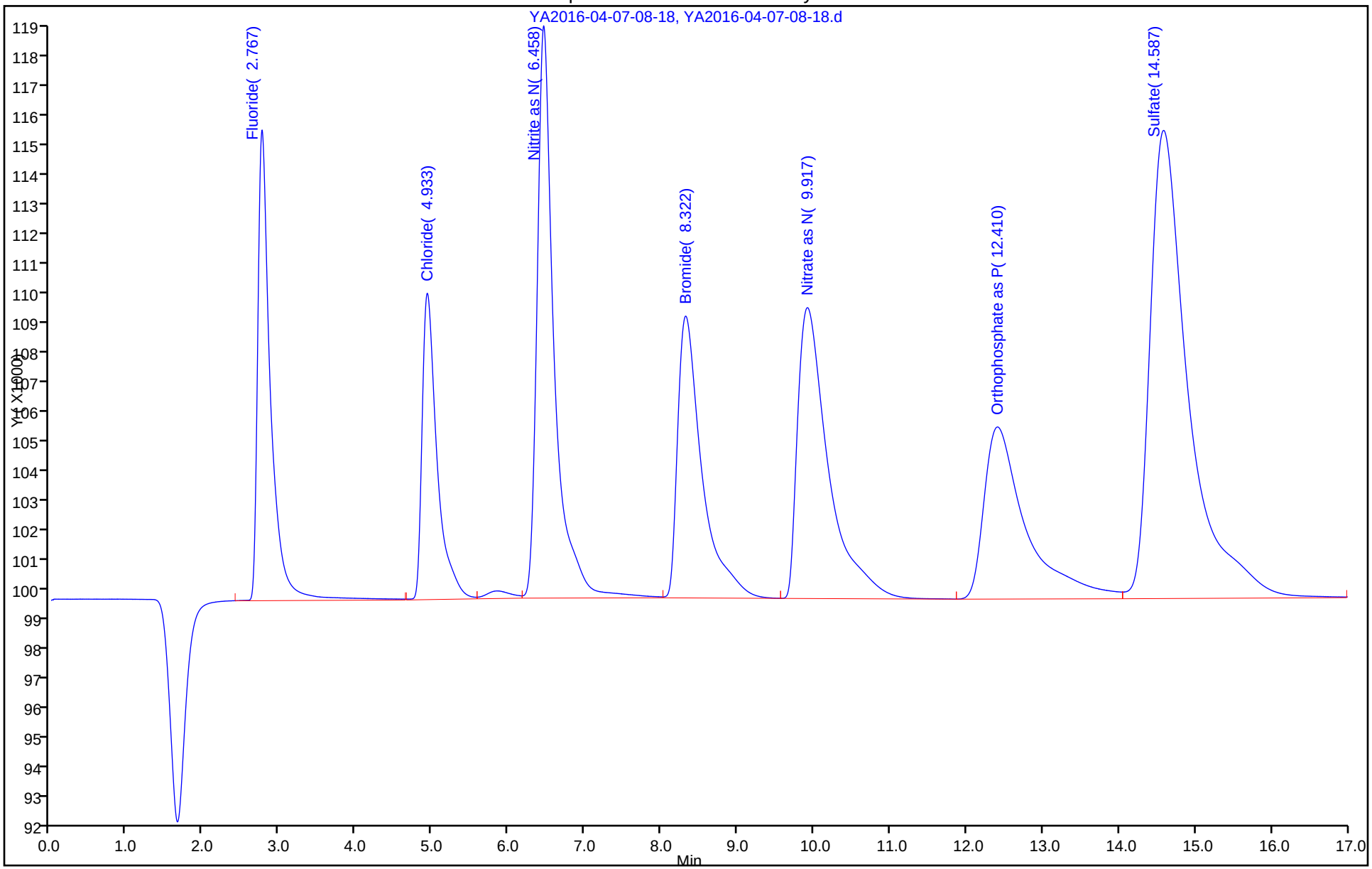
QC Flag Legend

Processing Flags
NC - Not Calibrated

Report Date: 07-Apr-2016 22:49:54 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-08-18.d				
Injection Date:	07-Apr-2016 08:18:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	LCS 460-361225/2-A			Worklist Smp#:	5
Client ID:					
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 460-361225/3-A
Matrix: Solid (Soluble)
Lab File ID: YA2016-04-07-08-38.d
Analysis Method: 9056A
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 04/07/2016 08:38
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: ID:
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 361005
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	68.87		6.00	1.21

TestAmerica Edison
Target Compound Quantitation Report

Data File: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-08-38.d
Lims ID: LCSD 460-361225/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 07-Apr-2016 08:38:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 460-361225/3-a
Operator ID: testamerica Instrument ID: IC A

Method: \\ChromNA\Edison\ChromData\ICA\20160406-39522.b\anions-ica.m
Limit Group: SV - Anions 28 days
Last Update: 07-Apr-2016 22:49:44 Calib Date: 20-Mar-2016 21:45:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Edison\ChromData\ICA\20160321-38748.b\YA2016-03-20-21-45.d

Column 1 : Det: GC IC0
Process Host: XAWRK002

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
7 Fluoride						
2.765	2.805	-0.040	155584	1.00	1.06	
2 Chloride						
4.868	4.937	-0.069	133556	1.50	1.39	
8 Nitrite as N						
6.430	6.473	-0.043	293541	NC	NC	
1 Bromide						
8.263	8.323	-0.060	198621	5.00	4.68	
3 Nitrate as N						
9.885	9.965	-0.080	272012	NC	NC	
9 Orthophosphate as P						
12.350	12.468	-0.118	209692	NC	NC	
5 Sulfate						
14.547	14.710	-0.163	518407	7.50	6.89	

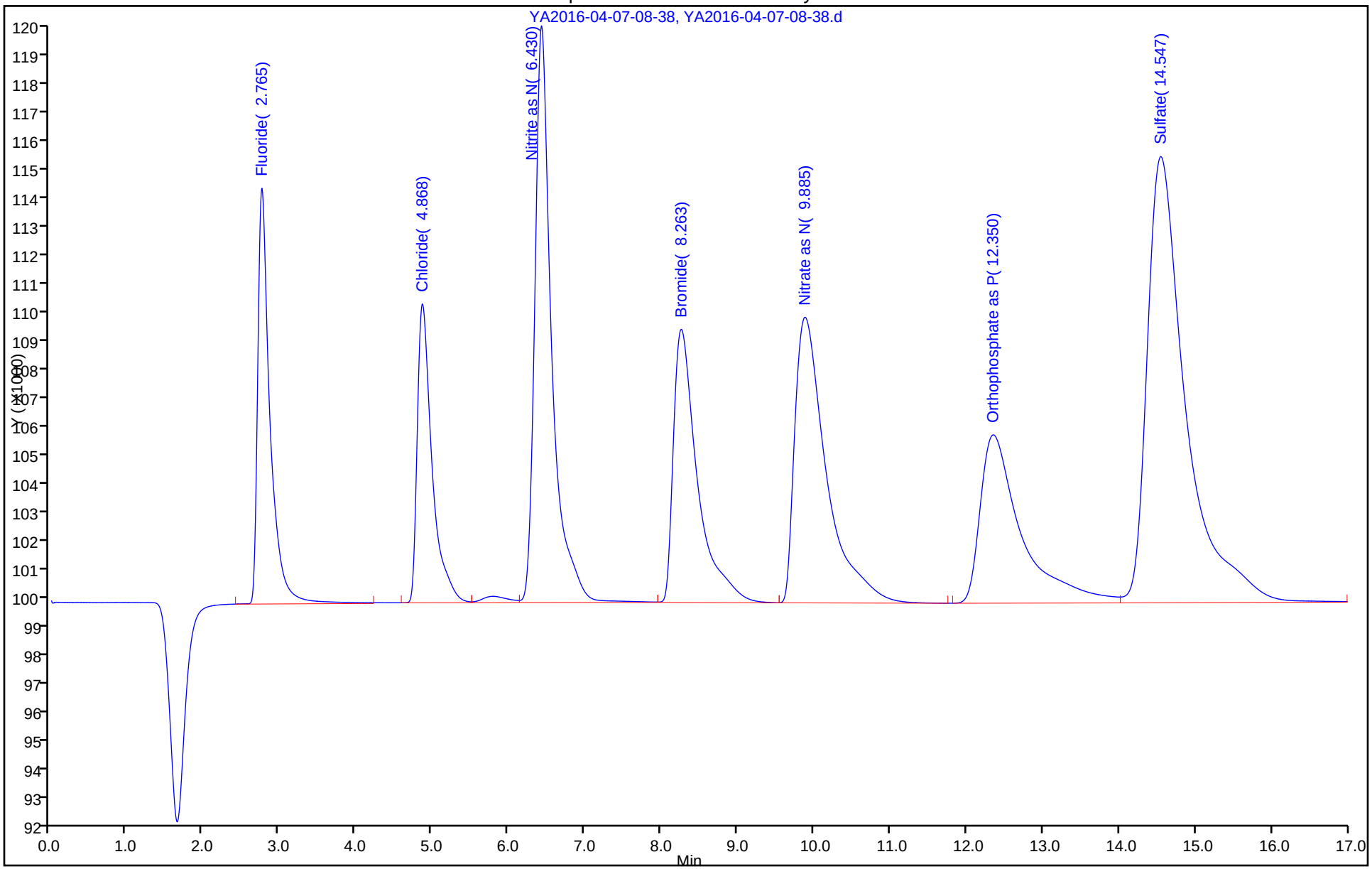
QC Flag Legend

Processing Flags
NC - Not Calibrated

Report Date: 07-Apr-2016 22:49:55 Chrom Revision: 2.2 04-Mar-2016 14:36:24

TestAmerica Edison

Data File:	\\ChromNA\Edison\ChromData\ICA\20160406-39522.b\YA2016-04-07-08-38.d				
Injection Date:	07-Apr-2016 08:38:00	Instrument ID:	IC A	Operator ID:	testamerica
Lims ID:	LCSD 460-361225/3-A			Worklist Smp#:	6
Client ID:					
Injection Vol:	10.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	anions-ica	Limit Group:	SV - Anions 28 days		



FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG No.:
Client Sample ID:
Lab Sample ID: 460-111431-A-2-C MS
Matrix: Solid (Soluble)
Lab File ID: YA2016-04-07-10-20.d
Analysis Method: 9056A
Date Collected: 03/30/2016 00:00
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 04/07/2016 10:20
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: ID:
% Moisture: 31.7
GPC Cleanup:(Y/N) N
Analysis Batch No.: 361005
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	114.2		9.01	1.81

FORM I
HPLC/IC ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG No.:
Client Sample ID:
Lab Sample ID: 460-111431-A-2-D MSD
Matrix: Solid (Soluble)
Lab File ID: YA2016-04-07-10-40.d
Analysis Method: 9056A
Date Collected: 03/30/2016 00:00
Extraction Method:
Date Extracted:
Sample wt/vol: 10(mL)
Date Analyzed: 04/07/2016 10:40
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: ID:
% Moisture: 31.7
GPC Cleanup:(Y/N) N
Analysis Batch No.: 361005
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
14808-79-8	Sulfate	104.0		9.01	1.81

HPLC/IC ANALYSIS RUN LOG

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: IC A Start Date: 03/20/2016 19:11

Analysis Batch Number: 357566 End Date: 03/20/2016 22:04

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 460-357566/3		03/20/2016 19:11	1		
IC 460-357566/4		03/20/2016 20:09	1	ya2016-03-20-20-09.d	
IC 460-357566/5		03/20/2016 20:28	1	YA2016-03-20-20-28.d	
IC 460-357566/6		03/20/2016 20:47	1	YA2016-03-20-20-47.d	
IC 460-357566/7		03/20/2016 21:07	1	YA2016-03-20-21-07.d	
IC 460-357566/8		03/20/2016 21:26	1	YA2016-03-20-21-26.d	
IC 460-357566/9		03/20/2016 21:45	1	YA2016-03-20-21-45.d	
ICV 460-357566/10		03/20/2016 22:04	1		

9056A

HPLC/IC ANALYSIS RUN LOG

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: IC A Start Date: 04/07/2016 06:57

Analysis Batch Number: 361005 End Date: 04/07/2016 17:20

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 460-361005/1		04/07/2016 06:57	1	YA2016-04-07-06-57.d	
CCB 460-361005/2		04/07/2016 07:17	1	YA2016-04-07-07-17.d	
MB 460-361225/1-A		04/07/2016 07:38	1	YA2016-04-07-07-38.d	
ZZZZZ		04/07/2016 07:58	1		
LCS 460-361225/2-A		04/07/2016 08:18	1	YA2016-04-07-08-18.d	
LCSD 460-361225/3-A		04/07/2016 08:38	1	YA2016-04-07-08-38.d	
CCV 460-361005/7		04/07/2016 08:59	1	YA2016-04-07-08-59.d	
CCB 460-361005/8		04/07/2016 09:19	1	YA2016-04-07-09-19.d	
ZZZZZ		04/07/2016 09:39	1		
460-111431-A-2-B DU		04/07/2016 10:00	1	YA2016-04-07-10-00.d	
460-111431-A-2-C MS		04/07/2016 10:20	1	YA2016-04-07-10-20.d	
460-111431-A-2-D MSD		04/07/2016 10:40	1	YA2016-04-07-10-40.d	
460-111386-1		04/07/2016 11:05	1	YA2016-04-07-11-05.d	
460-111386-2		04/07/2016 11:25	1	YA2016-04-07-11-25.d	
460-111386-3		04/07/2016 11:46	1	YA2016-04-07-11-46.d	
ZZZZZ		04/07/2016 12:06	1		
ZZZZZ		04/07/2016 12:26	1		
CCV 460-361005/18		04/07/2016 13:27	1	YA2016-04-07-13-27.d	
CCB 460-361005/19		04/07/2016 14:19	1	YA2016-04-07-14-19.d	
460-111386-1 DL		04/07/2016 15:19	2	YA2016-04-07-15-19.d	
460-111386-3 DL		04/07/2016 15:39	2	YA2016-04-07-15-39.d	
ZZZZZ		04/07/2016 15:59	2		
ZZZZZ		04/07/2016 16:19	2		
CCV 460-361005/24		04/07/2016 16:40	1	YA2016-04-07-16-40.d	
CCB 460-361005/25		04/07/2016 17:20	1		

9056A

HPLC/IC BATCH WORKSHEET

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Batch Number: 361225 Batch Start Date: 04/07/16 06:09 Batch Analyst: Boykin, Carol B

Batch Method: DI Leach Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	SGAnionsSS 00008			
MB 460-361225/1		DI Leach, 9056A		10 g	100 mL				
LCS 460-361225/2		DI Leach, 9056A		10 g	100 mL	5 mL			
LCSD 460-361225/3		DI Leach, 9056A		10 g	100 mL	5 mL			
460-111431-A-2 DU		DI Leach, 9056A	S	9.75 g	100 mL				
460-111431-A-2 MS		DI Leach, 9056A	S	9.75 g	100 mL	5 mL			
460-111431-A-2 MSD		DI Leach, 9056A	S	9.75 g	100 mL	5 mL			
460-111386-D-1	V-1	DI Leach, 9056A	S	9.67 g	100 mL				
460-111386-D-2	V-2	DI Leach, 9056A	S	9.08 g	100 mL				
460-111386-B-3	V-4	DI Leach, 9056A	S	10.21 g	100 mL				

Batch Notes	
Balance ID	27

Basis	Basis Description
S	Soluble

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS

COVER PAGE
METALS

Lab Name: TestAmerica Edison Job Number: 460-111386-1

SDG No.:

Project: Delaware Soil Samples

Client Sample ID	Lab Sample ID
V-1	460-111386-1
V-2	460-111386-2
V-4	460-111386-3

Comments:

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: V-1
Lab Sample ID: 460-111386-1
Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/29/2016 12:30
Reporting Basis: DRY
Date Received: 03/31/2016 10:00
% Solids: 79.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-43-9	Cadmium	0.73	0.73	0.38	mg/Kg	U		4	6010C
7440-50-8	Copper	2.3	4.6	1.2	mg/Kg	J		4	6010C
7440-02-0	Nickel	6.2	7.3	1.3	mg/Kg	J		4	6010C
7439-92-1	Lead	4.2	1.8	0.72	mg/Kg			4	6010C
7440-66-6	Zinc	31.4	5.5	1.3	mg/Kg			4	6010C
7439-97-6	Mercury	0.019	0.019	0.014	mg/Kg	U		1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: V-2

Lab Sample ID: 460-111386-2

Lab Name: TestAmerica Edison

Job No.: 460-111386-1

SDG ID.:

Matrix: Solid

Date Sampled: 03/29/2016 16:40

Reporting Basis: DRY

Date Received: 03/31/2016 10:00

% Solids: 89.6

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-43-9	Cadmium	0.71	0.71	0.37	mg/Kg	U		4	6010C
7440-50-8	Copper	1.6	4.5	1.2	mg/Kg	J		4	6010C
7440-02-0	Nickel	3.0	7.1	1.3	mg/Kg	J		4	6010C
7439-92-1	Lead	2.8	1.8	0.70	mg/Kg			4	6010C
7440-66-6	Zinc	11.9	5.4	1.3	mg/Kg			4	6010C
7439-97-6	Mercury	0.018	0.018	0.013	mg/Kg	U		1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: V-4

Lab Sample ID: 460-111386-3

Lab Name: TestAmerica Edison

Job No.: 460-111386-1

SDG ID.:

Matrix: Solid

Date Sampled: 03/30/2016 10:00

Reporting Basis: DRY

Date Received: 03/31/2016 10:00

% Solids: 65.0

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-43-9	Cadmium	0.99	0.99	0.52	mg/Kg	U		4	6010C
7440-50-8	Copper	7.5	6.2	1.6	mg/Kg			4	6010C
7440-02-0	Nickel	21.8	9.9	1.8	mg/Kg			4	6010C
7439-92-1	Lead	8.1	2.5	0.97	mg/Kg			4	6010C
7440-66-6	Zinc	54.0	7.4	1.8	mg/Kg			4	6010C
7439-97-6	Mercury	0.024	0.024	0.017	mg/Kg	U		1	7471B

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

ICV Source: ME_CCV_DUO_00155 Concentration Units: ug/L

CCV Source: ME_CCV_DUO_00155

Analyte	ICV 460-360851/7 04/05/2016 10:17				CCV 460-360851/137 04/05/2016 19:22				CCV 460-360851/150 04/05/2016 20:16			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Cadmium	1252		1250	100	1193		1250	95	1171		1250	94
Copper	12360		12500	99	11680		12500	93	11540		12500	92
Lead	7527		7500	100	7119		7500	95	6941		7500	93
Nickel	2509		2500	100	2373		2500	95	2322		2500	93
Zinc	2514		2500	101	2424		2500	97	2394		2500	96

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

ICV Source: ME_CCV_DUO_00155 Concentration Units: ug/L

CCV Source: ME_CCV_DUO_00155

Analyte	CCV 460-360851/163 04/05/2016 21:15				CCV 460-360851/176 04/05/2016 22:12							
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Cadmium	1158		1250	93	1146		1250	92				
Copper	11600		12500	93	11330		12500	91				
Lead	6851		7500	91	6795		7500	91				
Nickel	2311		2500	92	2273		2500	91				
Zinc	2357		2500	94	2343		2500	94				

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

ICV Source: ME_Cal2_BC_00009 Concentration Units: ug/L

CCV Source: ME_Cal2_BC_00009

Analyte	ICVL 460-360851/9 04/05/2016 10:25				CCVL 460-360851/139 04/05/2016 19:30				CCVL 460-360851/152 04/05/2016 20:25			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Cadmium	4.14		4.00	104	4.09		4.00	102	4.03		4.00	101
Copper	26.72		25.0	107	25.34		25.0	101	24.58	J	25.0	98
Lead	11.97		10.0	120	11.74		10.0	117	11.54		10.0	115
Nickel	43.38		40.0	108	41.14		40.0	103	41.17		40.0	103
Zinc	32.31		30.0	108	30.89		30.0	103	30.84		30.0	103

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

ICV Source: ME_Cal2_BC_00009 Concentration Units: ug/L

CCV Source: ME_Cal2_BC_00009

Analyte	CCVL 460-360851/165 04/05/2016 21:24				CCVL 460-360851/178 04/05/2016 22:20							
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Cadmium	3.89	J	4.00	97	3.97	J	4.00	99				
Copper	23.06	J	25.0	92	25.30		25.0	101				
Lead	10.94		10.0	109	10.93		10.0	109				
Nickel	40.20		40.0	101	39.36	J	40.0	98				
Zinc	29.94	J	30.0	100	29.94	J	30.0	100				

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

ICV Source: ME_DQCS-INT_02167 Concentration Units: ug/L

CCV Source: ME_DQCS-INT_02167

Analyte	ICV 460-361033/7 04/06/2016 05:35				CCV 460-361033/43 04/06/2016 06:55				CCV 460-361033/55 04/06/2016 07:20			
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Mercury	5.01		5.00	100	5.29		5.00	106	5.34		5.00	107

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

2A-IN
CALIBRATION VERIFICATIONS
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

ICV Source: ME_DQCS-INT_02167 Concentration Units: ug/L

CCV Source: ME_DQCS-INT_02167

Analyte	CCV 460-361033/67 04/06/2016 07:45				CCV 460-361033/75 04/06/2016 08:02							
	Found	C	True	%R	Found	C	True	%R	Found	C	True	%R
Mercury	5.28		5.00	106	5.36		5.00	107				

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	ICB 460-360851/8 04/05/2016 10:21		CCB 460-360851/138 04/05/2016 19:26		CCB 460-360851/151 04/05/2016 20:20		CCB 460-360851/164 04/05/2016 21:19	
		Found	C	Found	C	Found	C	Found	C
Cadmium	4.0	4.0	U	4.0	U	4.0	U	4.0	U
Copper	25.0	25.0	U	25.0	U	25.0	U	25.0	U
Lead	10.0	10.0	U	10.0	U	10.0	U	10.0	U
Nickel	40.0	40.0	U	40.0	U	40.0	U	40.0	U
Zinc	30.0	30.0	U	30.0	U	30.0	U	30.0	U

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	CCB 460-360851/177 04/05/2016 22:16							
		Found	C	Found	C	Found	C	Found	C
Cadmium	4.0	4.0	U						
Copper	25.0	25.0	U						
Lead	10.0	10.0	U						
Nickel	40.0	40.0	U						
Zinc	30.0	30.0	U						

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	ICB 460-361033/8 04/06/2016 05:37		CCB 460-361033/44 04/06/2016 06:57		CCB 460-361033/56 04/06/2016 07:22		CCB 460-361033/68 04/06/2016 07:47	
		Found	C	Found	C	Found	C	Found	C
Mercury	0.20	0.20	U	0.20	U	0.20	U	0.20	U

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Concentration Units: ug/L

Analyte	RL	CCB 460-361033/76 04/06/2016 08:04							
		Found	C	Found	C	Found	C	Found	C
Mercury	0.20	0.20	U						

Italicized analytes were not requested for this sequence.

3-IN
METHOD BLANK
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Concentration Units: mg/Kg Lab Sample ID: MB 460-360437/1-A ^2

Instrument Code: ICP4 Batch No.: 360851

CAS No.	Analyte	Concentration	C	Q	Method
7440-43-9	Cadmium	0.40	U		6010C
7440-50-8	Copper	2.5	U		6010C
7440-02-0	Nickel	4.0	U		6010C
7439-92-1	Lead	1.0	U		6010C
7440-66-6	Zinc	3.0	U		6010C

3-IN
METHOD BLANK
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Concentration Units: mg/Kg Lab Sample ID: MB 460-360954/1-A

Instrument Code: LEEMAN5 Batch No.: 361033

CAS No.	Analyte	Concentration	C	Q	Method
7439-97-6	Mercury	0.017	U		7471B

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Lab Sample ID: ICSA 460-360851/10 Instrument ID: ICP4

Lab File ID: 360453.asc ICS Source: ME_ICSA_Duo_00071

Concentration Units: ug/L

Analyte	True Solution A	Found Solution A	Percent Recovery
Cadmium		**0.335**	
Copper		**-1.16**	
Lead		**0.829**	
Nickel		**-4.29**	
Zinc		**-2.35**	
Aluminum	*500000*	*495800*	*99*
Antimony		*5.11*	
Arsenic		*-0.680*	
Barium		*-0.141*	
Beryllium		*0.0244*	
Boron		*-10.4*	
Calcium	*500000*	*498500*	*100*
Chromium		*-1.12*	
Cobalt		*-3.39*	
Iron	*200000*	*194800*	*97*
Magnesium	*500000*	*497100*	*99*
Manganese		*-4.16*	
Molybdenum		*-1.31*	
Potassium		*-76.0*	
Selenium		*-1.24*	
Silver		*-0.853*	
Sodium		*-40.2*	
Strontium		*-1.57*	
Thallium		*3.40*	
Tin		*4.54*	
Titanium		*-0.802*	
Vanadium		*0.357*	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Lab Sample ID: ICSAB 460-360851/11 Instrument ID: ICP4

Lab File ID: 360453.asc ICS Source: ME_ICSAB_DUO_00085

Concentration Units: ug/L

Analyte	True Solution AB	Found Solution AB	Percent Recovery
Cadmium	**100**	**98.3**	**98**
Copper	**100**	**105**	**105**
Lead	**100**	**96.9**	**97**
Nickel	**100**	**91.9**	**92**
Zinc	**100**	**96.8**	**97**
Aluminum	*500000*	*525000*	*105*
Antimony	*100*	*103*	*103*
Arsenic	*100*	*95.7*	*96*
Barium	*100*	*103*	*103*
Beryllium	*100*	*101*	*101*
Boron	*100*	*90.4*	*90*
Calcium	*500000*	*536800*	*107*
Chromium	*100*	*102*	*102*
Cobalt	*100*	*94.9*	*95*
Iron	*200000*	*208600*	*104*
Magnesium	*500000*	*533400*	*107*
Manganese	*100*	*102*	*102*
Molybdenum	*100*	*97.1*	*97*
Potassium	*10000*	*10390*	*104*
Selenium	*100*	*108*	*108*
Silver	*100*	*110*	*110*
Sodium	*10000*	*10630*	*106*
Strontium	*100*	*102*	*102*
Thallium	*100*	*102*	*102*
Tin	*100*	*104*	*104*
Titanium	*100*	*105*	*105*
Vanadium	*100*	*104*	*104*

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS

Client ID: V-1 MS

Lab ID: 460-111386-1 MS

Lab Name: TestAmerica Edison

Job No.: 460-111386-1

SDG No.:

Matrix: Solid

Concentration Units: mg/Kg

% Solids: 79.5

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Mercury	0.114		0.019	U	0.0953	120	75-125		7471B

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VA - IN

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS

Client ID:
Lab ID: 460-111434-A-31-C MS
Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG No.:
Matrix: Solid
Concentration Units: mg/Kg
% Solids: 93.0

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Cadmium	3.88		0.69	U	4.17	93	75-125		6010C
Copper	25.05		4.8		20.8	97	75-125		6010C
Nickel	45.30		3.3	J	41.7	101	75-125		6010C
Lead	45.75		5.2		41.7	97	75-125		6010C
Zinc	46.26		4.1	J	41.7	101	75-125		6010C

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VA - IN

5B-IN
POST DIGESTION SPIKE SAMPLE RECOVERY
METALS

Client ID: _____ Lab ID: 460-111434-A-31-A PDS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.: _____

Matrix: Solid Concentration Units: mg/Kg

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Cadmium	7.64		0.69	U	8.60	89	80-120		6010C
Copper	42.20		4.8		43.0	87	80-120		6010C
Nickel	81.68		3.3	J	86.0	91	80-120		6010C
Lead	82.81		5.2		86.0	90	80-120		6010C
Zinc	83.41		4.1	J	86.0	92	80-120		6010C

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VB - IN

6-IN
DUPLICATES
METALS

Client ID: V-1 DU

Lab ID: 460-111386-1 DU

Lab Name: TestAmerica Edison

Job No.: 460-111386-1

SDG No.:

% Solids for Sample: 79.5

% Solids for Duplicate: 79.5

Matrix: Solid

Concentration Units: mg/Kg

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Mercury	0.019	0.019	U	0.019	U	NC		7471B

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VI-IN

6-IN
DUPLICATES
METALS

Client ID:

Lab ID: 460-111434-A-31-B DU

Lab Name: TestAmerica Edison

Job No.: 460-111386-1

SDG No.:

% Solids for Sample: 93.0

% Solids for Duplicate: 93.0

Matrix: Solid

Concentration Units: mg/Kg

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	Method
Cadmium	0.69	0.69	U	0.69	U	NC		6010C
Copper	4.3	4.8		4.80		0.2		6010C
Nickel	6.9	3.3	J	3.27	J	0.5		6010C
Lead	1.7	5.2		5.58		7		6010C
Zinc	5.2	4.1	J	4.14	J	0.05		6010C

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VI-IN

7A-IN
LCS-CERTIFIED REFERENCE MATERIAL
METALS

Lab ID: LCSSRM 460-360437/2-A

Lab Name: TestAmerica Edison Job No.: 460-111386-1

Sample Matrix: Solid LCS Source: ME_LCSS_87_00006

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Cadmium	146	137.7		94.3	82.9	117.8		6010C
Copper	106	95.41		90.0	81.5	118.9		6010C
Nickel	149	146.4		98.3	82.6	117.4		6010C
Lead	130	124.4		95.7	82.3	117.7		6010C
Zinc	191	185.4		97.1	83.2	116.8		6010C

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7A-IN
LCS-CERTIFIED REFERENCE MATERIAL
METALS

Lab ID: LCSSRM 460-360954/2-A ^20

Lab Name: TestAmerica Edison Job No.: 460-111386-1

Sample Matrix: Solid LCS Source: ME_LCSS_91_00001

Analyte	Solid(mg/Kg)							
	True	Found	C	%R	Limits		Q	Method
Mercury	12.3	12.38		100.7	71.5	128.5		7471B

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

8-IN
ICP-AES AND ICP-MS SERIAL DILUTIONS
METALS

Lab ID: 460-111434-A-31-A SD

SDG No:

Lab Name: TestAmerica Edison Job No: 460-111386-1

Matrix: Solid Concentration Units: mg/Kg

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	Method
Cadmium	0.69	U	3.4	U	NC		6010C
Copper	4.8		5.86	J	NC		6010C
Nickel	3.3	J	34.4	U	NC		6010C
Lead	5.2		5.24	J	NC		6010C
Zinc	4.1	J	25.8	U	NC		6010C

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIII-IN

8-IN
ICP-AES AND ICP-MS SERIAL DILUTIONS
METALS

Lab ID: 460-111386-1

SDG No:

Lab Name: TestAmerica Edison Job No: 460-111386-1

Matrix: Solid Concentration Units: mg/Kg

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	Method
Mercury	0.019	U	0.097	U	NC		7471B

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIII-IN

9-IN
DETECTION LIMITS
METALS

Lab Name: TestAmerica Edison Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: ICP4

Method: 6010C MDL Date: 05/05/2015 13:01

Prep Method: 3050B

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Cadmium		0.8	0.417
Copper		5	1.3
Lead		2	0.785
Nickel		8	1.46
Zinc		6	1.46

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS

Lab Name: TestAmerica Edison Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: ICP4

Method: 6010C XMDL Date: 05/05/2015 12:52

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Cadmium		4	2.32
Copper		25	5.02
Lead		10	4.16
Nickel		40	5.39
Zinc		30	5.9

9-IN
DETECTION LIMITS
METALS

Lab Name: TestAmerica Edison Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: LEEMAN5

Method: 7471B MDL Date: 04/17/2015 14:04

Prep Method: 7471B

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Mercury		0.017	0.012

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS

Lab Name: TestAmerica Edison Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: LEEMAN5

Method: 7471B XMDL Date: 04/17/2015 14:05

Analyte	Wavelength/ Mass	XRL (ug/L)	XMDL (ug/L)
Mercury		0.2	0.14

12-IN
PREPARATION LOG
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Prep Method: 3050B

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight (g)	Initial Volume	Final Volume (mL)
MB 460-360437/1-A ^2	04/03/2016 19:47	360437	1.00		50
LCSSRM 460-360437/2-A	04/03/2016 19:47	360437	1.01		50
460-111434-A-31-B DU	04/03/2016 19:47	360437	1.24		50
460-111434-A-31-C MS	04/03/2016 19:47	360437	1.29		50
460-111386-1	04/03/2016 19:47	360437	1.38		50
460-111386-2	04/03/2016 19:47	360437	1.25		50
460-111386-3	04/03/2016 19:47	360437	1.24		50

FORM XII-IN

12-IN
PREPARATION LOG
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Prep Method: 7471B

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight (g)	Initial Volume	Final Volume (mL)
MB 460-360954/1-A	04/06/2016 02:40	360954	0.60		50
LCSSRM 460-360954/2-A ^20	04/06/2016 02:40	360954	0.60		50
460-111386-1	04/06/2016 02:40	360954	0.66		50
460-111386-1 DU	04/06/2016 02:40	360954	0.66		50
460-111386-1 MS	04/06/2016 02:40	360954	0.66		50
460-111386-2	04/06/2016 02:40	360954	0.64		50
460-111386-3	04/06/2016 02:40	360954	0.65		50

FORM XII-IN

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: ICP4 Method: 6010C

Start Date: 04/05/2016 09:53 End Date: 04/06/2016 03:00

Lab Sample ID	D/F	Type	Time	Analytes																			
				Cd	Cu	Ni	Pb	Zn															
ICIS 460-360851/1	1		09:53	X	X	X	X	X															
ZZZZZZ			09:57																				
ZZZZZZ			10:01																				
ZZZZZZ			10:05																				
ZZZZZZ			10:09																				
ZZZZZZ			10:13																				
ICV 460-360851/7	1		10:17	X	X	X	X	X															
ICB 460-360851/8	1		10:21	X	X	X	X	X															
ICVL 460-360851/9	1		10:25	X	X	X	X	X															
ICSA 460-360851/10	1		10:29	X	X	X	X	X															
ICSAB 460-360851/11	1		10:33	X	X	X	X	X															
ZZZZZZ			10:37																				
ZZZZZZ			10:41																				
ZZZZZZ			10:45																				
ZZZZZZ			10:49																				
ZZZZZZ			10:53																				
ZZZZZZ			10:57																				
ZZZZZZ			11:01																				
ZZZZZZ			11:05																				
CCV 460-360851/20			11:09																				
CCB 460-360851/21			11:13																				
CCVL 460-360851/22			11:17																				
ZZZZZZ			11:21																				
ZZZZZZ			11:25																				
ZZZZZZ			11:29																				
ZZZZZZ			11:33																				
ZZZZZZ			11:36																				
ZZZZZZ			11:41																				
ZZZZZZ			11:44																				
ZZZZZZ			11:48																				
ZZZZZZ			11:52																				
ZZZZZZ			11:56																				
CCV 460-360851/33			12:00																				
CCB 460-360851/34			12:04																				
CCVL 460-360851/35			12:08																				
ZZZZZZ			12:12																				
ZZZZZZ			12:16																				
ZZZZZZ			12:20																				
ZZZZZZ			12:24																				
ZZZZZZ			12:28																				
ZZZZZZ			12:32																				
ZZZZZZ			12:36																				

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: ICP4 Method: 6010C

Start Date: 04/05/2016 09:53 End Date: 04/06/2016 03:00

Lab Sample ID	D/F	Type	Time	Analytes																			
				Cd	Cu	Ni	Pb	Zn															
ZZZZZZ			12:40																				
ZZZZZZ			12:44																				
ZZZZZZ			12:48																				
CCV 460-360851/46			12:52																				
CCB 460-360851/47			12:56																				
CCVL 460-360851/48			13:00																				
ZZZZZZ			13:04																				
ZZZZZZ			13:09																				
ZZZZZZ			13:13																				
ZZZZZZ			13:17																				
ZZZZZZ			13:21																				
ZZZZZZ			13:26																				
ZZZZZZ			13:30																				
ZZZZZZ			13:34																				
ZZZZZZ			13:38																				
ZZZZZZ			13:42																				
CCV 460-360851/59			13:47																				
CCB 460-360851/60			13:50																				
CCVL 460-360851/61			13:55																				
ZZZZZZ			14:05																				
ZZZZZZ			14:09																				
ZZZZZZ			14:14																				
ZZZZZZ			14:18																				
ZZZZZZ			14:22																				
ZZZZZZ			14:26																				
ZZZZZZ			14:30																				
ZZZZZZ			14:34																				
ZZZZZZ			14:38																				
ZZZZZZ			14:41																				
CCV 460-360851/72			14:45																				
CCB 460-360851/73			14:49																				
CCVL 460-360851/74			14:53																				
ZZZZZZ			14:57																				
ZZZZZZ			15:01																				
ZZZZZZ			15:05																				
ZZZZZZ			15:09																				
ZZZZZZ			15:13																				
ZZZZZZ			15:17																				
ZZZZZZ			15:21																				
ZZZZZZ			15:25																				
ZZZZZZ			15:29																				
ZZZZZZ			15:33																				

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: ICP4 Method: 6010C

Start Date: 04/05/2016 09:53 End Date: 04/06/2016 03:00

Lab Sample ID	D/F	Type	Time	Analytes																			
				Cd	Cu	Ni	Pb	Zn															
CCV 460-360851/85			15:37																				
CCB 460-360851/86			15:41																				
CCVL 460-360851/87			15:45																				
ZZZZZZ			15:58																				
ZZZZZZ			16:02																				
ZZZZZZ			16:06																				
ZZZZZZ			16:10																				
ZZZZZZ			16:14																				
ZZZZZZ			16:18																				
ZZZZZZ			16:22																				
ZZZZZZ			16:26																				
ZZZZZZ			16:30																				
ZZZZZZ			16:34																				
CCV 460-360851/98			16:38																				
CCB 460-360851/99			16:42																				
CCVL 460-360851/100			16:46																				
ZZZZZZ			16:52																				
ZZZZZZ			16:56																				
ZZZZZZ			17:00																				
ZZZZZZ			17:04																				
ZZZZZZ			17:08																				
ZZZZZZ			17:12																				
ZZZZZZ			17:16																				
ZZZZZZ			17:20																				
ZZZZZZ			17:24																				
ZZZZZZ			17:28																				
CCV 460-360851/111			17:33																				
CCB 460-360851/112			17:36																				
CCVL 460-360851/113			17:41																				
ZZZZZZ			17:45																				
ZZZZZZ			17:49																				
ZZZZZZ			17:53																				
ZZZZZZ			17:57																				
ZZZZZZ			18:01																				
ZZZZZZ			18:05																				
ZZZZZZ			18:10																				
ZZZZZZ			18:14																				
ZZZZZZ			18:18																				
ZZZZZZ			18:23																				
CCV 460-360851/124			18:27																				
CCB 460-360851/125			18:31																				
CCVL 460-360851/126			18:35																				

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: ICP4 Method: 6010C

Start Date: 04/05/2016 09:53 End Date: 04/06/2016 03:00

Lab Sample ID	D/F	Type	Time	Analytes																			
				Cd	Cu	Ni	Pb	Zn															
ZZZZZZ			18:39																				
ZZZZZZ			18:43																				
ZZZZZZ			18:48																				
ZZZZZZ			18:52																				
ZZZZZZ			18:56																				
ZZZZZZ			19:01																				
ZZZZZZ			19:05																				
ZZZZZZ			19:09																				
ZZZZZZ			19:13																				
ZZZZZZ			19:18																				
CCV 460-360851/137	1		19:22	X	X	X	X	X															
CCB 460-360851/138	1		19:26	X	X	X	X	X															
CCVL 460-360851/139	1		19:30	X	X	X	X	X															
ZZZZZZ			19:34																				
ZZZZZZ			19:39																				
ZZZZZZ			19:43																				
ZZZZZZ			19:47																				
MB 460-360437/1-A ^2	2	T	19:52	X	X	X	X	X															
LCSSRM 460-360437/2-A	4	T	19:56	X	X	X	X	X															
460-111434-A-31-B DU	4	T	20:00	X	X	X	X	X															
ZZZZZZ			20:04																				
460-111434-A-31-A SD	20	T	20:08	X	X	X	X	X															
460-111434-A-31-C MS	4	T	20:12	X	X	X	X	X															
CCV 460-360851/150	1		20:16	X	X	X	X	X															
CCB 460-360851/151	1		20:20	X	X	X	X	X															
CCVL 460-360851/152	1		20:25	X	X	X	X	X															
460-111434-A-31-A PDS	4	T	20:34	X	X	X	X	X															
ZZZZZZ			20:38																				
ZZZZZZ			20:42																				
ZZZZZZ			20:47																				
ZZZZZZ			20:51																				
ZZZZZZ			20:55																				
ZZZZZZ			20:59																				
ZZZZZZ			21:03																				
ZZZZZZ			21:07																				
ZZZZZZ			21:11																				
CCV 460-360851/163	1		21:15	X	X	X	X	X															
CCB 460-360851/164	1		21:19	X	X	X	X	X															
CCVL 460-360851/165	1		21:24	X	X	X	X	X															
460-111386-1	4	T	21:30	X	X	X	X	X															
460-111386-2	4	T	21:34	X	X	X	X	X															
460-111386-3	4	T	21:38	X	X	X	X	X															

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: ICP4 Method: 6010C

Start Date: 04/05/2016 09:53 End Date: 04/06/2016 03:00

Lab Sample ID	D/F	Type	Time	Analytes																			
				Cd	Cu	Ni	Pb	Zn															
ZZZZZZ			21:42																				
ZZZZZZ			21:47																				
ZZZZZZ			21:51																				
ZZZZZZ			21:55																				
ZZZZZZ			21:59																				
ZZZZZZ			22:03																				
ZZZZZZ			22:07																				
CCV 460-360851/176	1		22:12	X	X	X	X	X															
CCB 460-360851/177	1		22:16	X	X	X	X	X															
CCVL 460-360851/178	1		22:20	X	X	X	X	X															
ZZZZZZ			22:24																				
ZZZZZZ			22:29																				
ZZZZZZ			22:33																				
ZZZZZZ			22:37																				
ZZZZZZ			22:41																				
ZZZZZZ			22:45																				
ZZZZZZ			22:49																				
ZZZZZZ			22:53																				
ZZZZZZ			22:57																				
ZZZZZZ			23:01																				
CCV 460-360851/189			23:06																				
CCB 460-360851/190			23:10																				
CCVL 460-360851/191			23:14																				
ZZZZZZ			23:18																				
ZZZZZZ			23:22																				
ZZZZZZ			23:27																				
ZZZZZZ			23:31																				
ZZZZZZ			23:35																				
ZZZZZZ			23:39																				
ZZZZZZ			23:43																				
ZZZZZZ			23:47																				
ZZZZZZ			23:52																				
ZZZZZZ			23:56																				
CCV 460-360851/202			00:00																				
CCB 460-360851/203			00:04																				
CCVL 460-360851/204			00:08																				
ZZZZZZ			00:12																				
ZZZZZZ			00:16																				
ZZZZZZ			00:20																				
ZZZZZZ			00:24																				
ZZZZZZ			00:28																				
ZZZZZZ			00:32																				

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: ICP4 Method: 6010C

Start Date: 04/05/2016 09:53 End Date: 04/06/2016 03:00

Lab Sample ID	D/F	Type	Time	Analytes																			
				Cd	Cu	Ni	Pb	Zn															
ZZZZZZ			00:36																				
ZZZZZZ			00:40																				
ZZZZZZ			00:44																				
ZZZZZZ			00:48																				
CCV 460-360851/215			00:52																				
CCB 460-360851/216			00:56																				
CCVL 460-360851/217			01:00																				
ZZZZZZ			01:04																				
ZZZZZZ			01:08																				
ZZZZZZ			01:11																				
ZZZZZZ			01:15																				
ZZZZZZ			01:19																				
ZZZZZZ			01:23																				
ZZZZZZ			01:27																				
ZZZZZZ			01:31																				
ZZZZZZ			01:35																				
ZZZZZZ			01:38																				
CCV 460-360851/228			01:42																				
CCB 460-360851/229			01:46																				
CCVL 460-360851/230			01:50																				
ZZZZZZ			01:54																				
ZZZZZZ			01:58																				
ZZZZZZ			02:02																				
ZZZZZZ			02:06																				
ZZZZZZ			02:10																				
ZZZZZZ			02:14																				
ZZZZZZ			02:18																				
ZZZZZZ			02:22																				
ZZZZZZ			02:25																				
ZZZZZZ			02:29																				
CCV 460-360851/241			02:33																				
CCB 460-360851/242			02:37																				
CCVL 460-360851/243			02:41																				
ZZZZZZ			02:45																				
ZZZZZZ			02:49																				
CCV 460-360851/246			02:53																				
CCB 460-360851/247			02:56																				
CCVL 460-360851/248			03:00																				

Prep Types

T = Total/NA

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: LEEMAN5 Method: 7471B

Start Date: 04/06/2016 05:23 End Date: 04/06/2016 09:15

Lab Sample ID	D/F	Type	Time	Analytes																			
				Hg																			
ICIS 460-361033/1			05:23	X																			
IC 460-360953/2-A			05:25	X																			
IC 460-360953/3-A			05:27	X																			
IC 460-360953/4-A			05:29	X																			
IC 460-360953/5-A			05:31	X																			
IC 460-360953/6-A			05:33	X																			
ICV 460-361033/7	1		05:35	X																			
ICB 460-361033/8	1		05:37	X																			
ZZZZZZ			05:39																				
ZZZZZZ			05:41																				
ZZZZZZ			05:43																				
ZZZZZZ			05:46																				
ZZZZZZ			05:48																				
ZZZZZZ			05:50																				
ZZZZZZ			05:52																				
ZZZZZZ			05:54																				
ZZZZZZ			05:57																				
ZZZZZZ			05:59																				
CCV 460-361033/19			06:00																				
CCB 460-361033/20			06:02																				
ZZZZZZ			06:04																				
ZZZZZZ			06:08																				
ZZZZZZ			06:13																				
ZZZZZZ			06:14																				
ZZZZZZ			06:16																				
ZZZZZZ			06:18																				
ZZZZZZ			06:21																				
ZZZZZZ			06:23																				
ZZZZZZ			06:25																				
ZZZZZZ			06:27																				
CCV 460-361033/31			06:29																				
CCB 460-361033/32			06:31																				
ZZZZZZ			06:34																				
ZZZZZZ			06:36																				
ZZZZZZ			06:38																				
ZZZZZZ			06:40																				
ZZZZZZ			06:42																				
ZZZZZZ			06:44																				
ZZZZZZ			06:46																				
ZZZZZZ			06:49																				
ZZZZZZ			06:50																				
ZZZZZZ			06:53																				

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: LEEMAN5 Method: 7471B

Start Date: 04/06/2016 05:23 End Date: 04/06/2016 09:15

Lab Sample ID	D/F	Type	Time	Analytes																			
				Hg																			
CCV 460-361033/43	1		06:55	X																			
CCB 460-361033/44	1		06:57	X																			
MB 460-360954/1-A	1	T	06:59	X																			
LCSSRM 460-360954/2-A ^20	20	T	07:01	X																			
460-111386-1	1	T	07:03	X																			
460-111386-1 DU	1	T	07:05	X																			
460-111386-1 MS	1	T	07:07	X																			
ZZZZZZ			07:09																				
ZZZZZZ			07:11																				
ZZZZZZ			07:13																				
ZZZZZZ			07:15																				
ZZZZZZ			07:17																				
CCV 460-361033/55	1		07:20	X																			
CCB 460-361033/56	1		07:22	X																			
460-111386-2	1	T	07:24	X																			
460-111386-3	1	T	07:26	X																			
ZZZZZZ			07:28																				
ZZZZZZ			07:30																				
ZZZZZZ			07:32																				
ZZZZZZ			07:35																				
ZZZZZZ			07:37																				
ZZZZZZ			07:39																				
ZZZZZZ			07:41																				
ZZZZZZ			07:43																				
CCV 460-361033/67	1		07:45	X																			
CCB 460-361033/68	1		07:47	X																			
ZZZZZZ			07:50																				
ZZZZZZ			07:52																				
ZZZZZZ			07:54																				
ZZZZZZ			07:56																				
ZZZZZZ			07:58																				
460-111386-1 SD	5	T	08:01	X																			
CCV 460-361033/75	1		08:02	X																			
CCB 460-361033/76	1		08:04	X																			
ZZZZZZ			08:06																				
ZZZZZZ			08:08																				
ZZZZZZ			08:10																				
ZZZZZZ			08:12																				
ZZZZZZ			08:15																				
ZZZZZZ			08:17																				
ZZZZZZ			08:20																				

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: LEEMAN5 Method: 7471B

Start Date: 04/06/2016 05:23 End Date: 04/06/2016 09:15

Lab Sample ID	D/F	Type	Time	Analytes																			
				Hg																			
ZZZZZZ			08:22																				
ZZZZZZ			08:24																				
ZZZZZZ			08:26																				
CCV 460-361033/87			08:28																				
CCB 460-361033/88			08:30																				
ZZZZZZ			08:32																				
ZZZZZZ			08:34																				
ZZZZZZ			08:36																				
ZZZZZZ			08:38																				
ZZZZZZ			08:41																				
ZZZZZZ			08:43																				
ZZZZZZ			08:45																				
ZZZZZZ			08:48																				
ZZZZZZ			08:50																				
ZZZZZZ			08:52																				
CCV 460-361033/99			08:54																				
CCB 460-361033/100			08:56																				
ZZZZZZ			08:58																				
ZZZZZZ			09:00																				
ZZZZZZ			09:02																				
ZZZZZZ			09:04																				
ZZZZZZ			09:06																				
ZZZZZZ			09:08																				
ZZZZZZ			09:10																				
CCV 460-361033/108			09:12																				
CCB 460-361033/109			09:15																				

Prep Types

T = Total/NA

METALS BATCH WORKSHEET

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Batch Number: 360437 Batch Start Date: 04/03/16 19:47 Batch Analyst: Esteban, Edgardo A

Batch Method: 3050B Batch End Date: 04/04/16 00:50

Lab Sample ID	Client Sample ID	Method Chain	Basis	CalcMsg	InitialAmount	FinalAmount	ME_LCS-int 00055	ME_LCSS_87 00006	
MB 460-360437/1		3050B, 6010C		CALC NOT SET TO RUN	1.00 g	50 mL			
LCSSRM 460-360437/2		3050B, 6010C		CALC NOT SET TO RUN	1.01 g	50 mL		1.01 g	
460-111434-A-31 DU		3050B, 6010C	T	CALC NOT SET TO RUN	1.24 g	50 mL			
460-111434-A-31 MS		3050B, 6010C	T	CALC NOT SET TO RUN	1.29 g	50 mL	2 mL		
460-111386-D-1	V-1	3050B, 6010C	T	CALC NOT SET TO RUN	1.38 g	50 mL			
460-111386-D-2	V-2	3050B, 6010C	T	CALC NOT SET TO RUN	1.25 g	50 mL			
460-111386-F-3	V-4	3050B, 6010C	T	CALC NOT SET TO RUN	1.24 g	50 mL			

Batch Notes	
Balance ID	#35
Hydrogen Peroxide ID	0000135237
Logbook ID for diluted Nitric	MPR278
Lot # of Nitric Acid	0000129810
Hot Block ID	#3
Oven, Bath or Block Temperature 1	95c Degrees C
Pipette ID	#42
Thermometer ID	ICP-4 (CF -1)
Digestion Tube/Cup ID	J227204-6407 (50 ml Dg tube)
Uncorrected Temperature	96c Celsius

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Batch Number: 360954 Batch Start Date: 04/06/16 02:40 Batch Analyst: Staib, Thomas

Batch Method: 7471B Batch End Date: 04/06/16 05:40

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	ME_DCAL-IN 02441	ME_LCSS_91 00001		
MB 460-360954/1		7471B, 7471B		0.60 g	50 mL				
LCSSRM 460-360954/2		7471B, 7471B		0.60 g	50 mL		0.6 g		
460-111386-B-1	V-1	7471B, 7471B	T	0.66 g	50 mL				
460-111386-B-1 DU	V-1	7471B, 7471B	T	0.66 g	50 mL				
460-111386-B-1 MS	V-1	7471B, 7471B	T	0.66 g	50 mL	0.5 mL			
460-111386-B-2	V-2	7471B, 7471B	T	0.64 g	50 mL				
460-111386-D-3	V-4	7471B, 7471B	T	0.65 g	50 mL				

Batch Notes	
Hydroxylamine Hydrochloride ID	ME_NaClHYDlHCl_00023
Balance ID	#35
Batch Comment	10%HCL - ME_10%HCl_00022
Lot # of hydrochloric acid	4115100
Lot # of Nitric Acid	0000129810
Hot Block ID	#3
Potassium Permanganate ID	ME_PotPermSol_00019
NaCl ID	ME_NaClHYDlHCl_00023
Oven, Bath or Block Temperature 1	98 uncorr 95 corr Celsius
Pipette ID	#42
Stannous Chloride ID	ME_StannousCl_00028
Thermometer ID	Prep-2 (CF -3)
Digestion Tube/Cup ID	1509104-8C-6054-KN

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job Number: 460-111386-1

SDG No.:

Project: Delaware Soil Samples

Client Sample ID	Lab Sample ID
V-1	460-111386-1
V-2	460-111386-2
V-4	460-111386-3

Comments:

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Nashville Job Number: 460-111386-1

SDG No.:

Project: Delaware Soil Samples

Client Sample ID	Lab Sample ID
V-1	460-111386-1
V-2	460-111386-2
V-4	460-111386-3

Comments:

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job Number: 460-111386-1

SDG No.:

Project: Delaware Soil Samples

Client Sample ID	Lab Sample ID
V-1	460-111386-1
V-2	460-111386-2
V-4	460-111386-3

Comments:

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-1
Lab Sample ID: 460-111386-1
Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/29/2016 12:30
Reporting Basis: DRY
Date Received: 03/31/2016 10:00
% Solids: 79.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Phosphorus as PO4	432	18.9	6.6	mg/Kg			10	SM 4500 P E
7723-14-0	Phosphorus as P	141	18.9	6.6	mg/Kg			10	SM 4500 P E
18496-25-8	Sulfide	10.9	10.9	5.1	mg/Kg	U		1	9034

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-1
Lab Sample ID: 460-111386-1
Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/29/2016 12:30
Reporting Basis: WET
Date Received: 03/31/2016 10:00

CAS No.	Analyte	Result			Units	C	Q	DIL	Method
	pH	8.37			SU		HF	1	9045D
	Corrosivity	8.37			SU		HF	1	9045D

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-2
Lab Sample ID: 460-111386-2
Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/29/2016 16:40
Reporting Basis: DRY
Date Received: 03/31/2016 10:00
% Solids: 89.6

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Phosphorus as PO4	353	16.7	5.9	mg/Kg			10	SM 4500 P E
7723-14-0	Phosphorus as P	115	16.7	5.9	mg/Kg			10	SM 4500 P E
18496-25-8	Sulfide	9.7	9.7	4.5	mg/Kg	U		1	9034

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-2
Lab Sample ID: 460-111386-2
Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/29/2016 16:40
Reporting Basis: WET
Date Received: 03/31/2016 10:00

CAS No.	Analyte	Result			Units	C	Q	DIL	Method
	pH	8.11			SU		HF	1	9045D
	Corrosivity	8.11			SU		HF	1	9045D

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-4
Lab Sample ID: 460-111386-3
Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/30/2016 10:00
Reporting Basis: DRY
Date Received: 03/31/2016 10:00
% Solids: 65.0

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Phosphorus as PO4	1390	46.2	16.2	mg/Kg			20	SM 4500 P E
7723-14-0	Phosphorus as P	453	46.2	16.2	mg/Kg			20	SM 4500 P E
18496-25-8	Sulfide	13.4	13.4	6.2	mg/Kg	U		1	9034

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-4
Lab Sample ID: 460-111386-3
Lab Name: TestAmerica Edison
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/30/2016 10:00
Reporting Basis: WET
Date Received: 03/31/2016 10:00

CAS No.	Analyte	Result			Units	C	Q	DIL	Method
	pH	8.25			SU		HF	1	9045D
	Corrosivity	8.25			SU		HF	1	9045D

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-1
Lab Sample ID: 460-111386-1
Lab Name: TestAmerica Nashville
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/29/2016 12:30
Reporting Basis: DRY
Date Received: 03/31/2016 10:00
% Solids: 79.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	HEM	117	117	66.7	mg/Kg	U		1	9071B

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-1
Lab Sample ID: 460-111386-1
Lab Name: TestAmerica Nashville
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/29/2016 12:30
Reporting Basis: DRY
Date Received: 03/31/2016 10:00
% Solids: 79.5

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
	Nitrogen, Total	221	34.0		mg/Kg			1	Total Nitrogen

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-2
Lab Sample ID: 460-111386-2
Lab Name: TestAmerica Nashville
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/29/2016 16:40
Reporting Basis: DRY
Date Received: 03/31/2016 10:00
% Solids: 89.6

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	HEM	106	106	60.4	mg/Kg	U		1	9071B

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-2
Lab Sample ID: 460-111386-2
Lab Name: TestAmerica Nashville
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/29/2016 16:40
Reporting Basis: DRY
Date Received: 03/31/2016 10:00
% Solids: 89.6

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
	Nitrogen, Total	147	30.1		mg/Kg			1	Total Nitrogen

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-4
Lab Sample ID: 460-111386-3
Lab Name: TestAmerica Nashville
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/30/2016 10:00
Reporting Basis: DRY
Date Received: 03/31/2016 10:00
% Solids: 65.0

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	HEM	151	151	86.2	mg/Kg	U		1	9071B

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-4
Lab Sample ID: 460-111386-3
Lab Name: TestAmerica Nashville
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/30/2016 10:00
Reporting Basis: DRY
Date Received: 03/31/2016 10:00
% Solids: 65.0

CAS No.	Analyte	Result	RL		Units	C	Q	DIL	Method
	Nitrogen, Total	589	41.6		mg/Kg			1	Total Nitrogen

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-1
Lab Sample ID: 460-111386-1
Lab Name: TestAmerica Pittsburgh
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/29/2016 12:30
Reporting Basis: DRY
Date Received: 03/31/2016 10:00
% Solids: 79.5

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-44-0	Total Organic Carbon - Duplicates	2220	1260	629	mg/Kg			1	Lloyd Kahn

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-2
Lab Sample ID: 460-111386-2
Lab Name: TestAmerica Pittsburgh
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/29/2016 16:40
Reporting Basis: DRY
Date Received: 03/31/2016 10:00
% Solids: 89.6

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-44-0	Total Organic Carbon - Duplicates	6990	1120	558	mg/Kg			1	Lloyd Kahn

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: V-4
Lab Sample ID: 460-111386-3
Lab Name: TestAmerica Pittsburgh
Job No.: 460-111386-1
SDG ID.:
Matrix: Solid
Date Sampled: 03/30/2016 10:00
Reporting Basis: DRY
Date Received: 03/31/2016 10:00
% Solids: 65.0

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7440-44-0	Total Organic Carbon - Duplicates	9040	1540	770	mg/Kg			1	Lloyd Kahn

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Analyst: IAA Batch Start Date: 04/07/2016

Reporting Units: mg/L Analytical Batch No.: 361260

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	ICV	06:45	Phosphorus as P	10.04	10.0	100	90-110		WTphosSS1_00025
2	ICB	06:45	Phosphorus as P	1.5				U	
13	CCV	06:45	Phosphorus as P	10.11	10.0	101	90-110		WTphosSS1_00025
14	CCB	06:45	Phosphorus as P	1.5				U	
17	CCV	06:45	Phosphorus as P	10.11	10.0	101	90-110		WTphosSS1_00025
18	CCB	06:45	Phosphorus as P	1.5				U	

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Analyst: YAH Batch Start Date: 04/06/2016

Reporting Units: SU Analytical Batch No.: 361101

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	CCV	13:29	pH	7.020	7.00	100	99-101		WTpHCCV_00033
			Corrosivity	7.020	7.00	100	99-101		WTpHCCV_00033
11	CCV	13:45	pH	7.010	7.00	100	99-101		WTpHCCV_00033
			Corrosivity	7.010	7.00	100	99-101		WTpHCCV_00033
19	CCV	14:00	pH	7.020	7.00	100	99-101		WTpHCCV_00033
			Corrosivity	7.020	7.00	100	99-101		WTpHCCV_00033
25	CCV	14:12	pH	7.000	7.00	100	99-101		WTpHCCV_00033
			Corrosivity	7.000	7.00	100	99-101		WTpHCCV_00033

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job No.: 460-111386-1

SDG No.:

Analyst: JDD Batch Start Date: 04/12/2016

Reporting Units: mg/Kg Analytical Batch No.: 173409

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	CCV	08:50	Total Organic Carbon - Duplicates	10820	10000	108	85-115		LKTOCKHPL1_00015
2	CCB	08:55	Total Organic Carbon - Duplicates	1000				U	
15	CCV	13:45	Total Organic Carbon - Duplicates	9007	10000	90	85-115		LKTOCKHPL1_00015
16	CCB	13:50	Total Organic Carbon - Duplicates	1000				U	
29	CCV	16:11	Total Organic Carbon - Duplicates	9054	10000	90	85-115		LKTOCKHPL1_00015
30	CCB	16:16	Total Organic Carbon - Duplicates	1000				U	
43	CCV	17:56	Total Organic Carbon - Duplicates	9020	10000	90	85-115		LKTOCKHPL1_00015
44	CCB	18:01	Total Organic Carbon - Duplicates	1000				U	
49	CCV	18:38	Total Organic Carbon - Duplicates	9004	10000	90	85-115		LKTOCKHPL1_00015
50	CCB	18:43	Total Organic Carbon - Duplicates	1000				U	

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM II-IN

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Method	Lab Sample ID	Analyte	Result	Qual	Units	RL	Dil
Batch ID: 361290	Date: 04/05/2016 18:30	Prep Batch: 361289	Date: 04/05/2016 10:30				
9034	MB 460-361289/1-A	Sulfide	8.7	U	mg/Kg	8.7	1
Batch ID: 361101	Date: 04/06/2016 13:33						
9045D	MB 460-361101/2	pH	6.050		SU		1
9045D	MB 460-361101/2	Corrosivity	6.050		SU		1
Batch ID: 361260	Date: 04/07/2016 06:45	Prep Batch: 361257	Date: 04/07/2016 05:30				
SM 4500 P E	MB 460-361257/3-A	Phosphorus as P	1.5	U	mg/Kg	1.5	1

FORM III-IN

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: TestAmerica Nashville Job No.: 460-111386-1

SDG No.:

Method	Lab Sample ID	Analyte	Result	Qual	Units	RL	Dil
Batch ID: 329579	Date: 04/06/2016 11:20	Prep Batch: 329483	Date: 04/06/2016 11:20				
9071B	MB 490-329483/1-A	HEM	100	U	mg/Kg	100	1

FORM III-IN

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job No.: 460-111386-1

SDG No.:

Method	Lab Sample ID	Analyte	Result	Qual	Units	RL	Dil
Batch ID: 173409 Date: 04/12/2016 09:00							
Lloyd Kahn	MB 180-173409/3	Total Organic Carbon - Duplicates	1000	U	mg/Kg	1000	1

FORM III-IN

5-IN
MATRIX SPIKE SAMPLE RECOVERY
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Matrix: Solid

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 361290	Date: 04/05/2016 18:30		Prep Batch: 361289			Date: 04/05/2016 10:30					
9034	460-111386-1	Sulfide	10.9	U	mg/Kg						
9034	460-111386-1 MS	Sulfide	48.23		mg/Kg	73.4	66	70-130			N
Batch ID: 361260	Date: 04/07/2016 06:45		Prep Batch: 361257			Date: 04/07/2016 05:30					
SM 4500 P E	460-111386-1	Phosphorus as P	141		mg/Kg						
SM 4500 P E	460-111386-1 MS	Phosphorus as P	144.4		mg/Kg	12.6	28	85-115			4

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM V-IN

5-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Matrix: Solid

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 361290	Date: 04/05/2016 18:30		Prep Batch: 361289			Date: 04/05/2016 10:30					
9034	460-111386-1 MSD	Sulfide	46.37		mg/Kg	73.4	63	70-130	4	15	N
Batch ID: 361260	Date: 04/07/2016 06:45		Prep Batch: 361257			Date: 04/07/2016 05:30					
SM 4500 P E	460-111386-1 MSD	Phosphorus as P	130.6		mg/Kg	12.6	-83	85-115	10	10	4

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM V-IN

5-IN
MATRIX SPIKE SAMPLE RECOVERY
GENERAL CHEMISTRY

Lab Name: TestAmerica Nashville Job No.: 460-111386-1

SDG No.:

Matrix: Solid

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 329579	Date: 04/06/2016 11:20		Prep Batch: 329483			Date: 04/06/2016 11:20					
9071B	460-111386-A-5-B	HEM	148	U	mg/Kg						
9071B	460-111386-A-5-B MS	HEM	5333		mg/Kg	5560	96	66-117			

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM V-IN

5-IN
MATRIX SPIKE SAMPLE RECOVERY
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job No.: 460-111386-1

SDG No.:

Matrix: Solid

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 173409 Date: 04/12/2016 14:52											
Lloyd Kahn	180-53499-A-1	Total Organic Carbon - Duplicates	4990		mg/Kg						
Lloyd Kahn	180-53499-A-1 MS	Total Organic Carbon - Duplicates	46870		mg/Kg	49300	85	75-125			
Batch ID: 173409 Date: 04/12/2016 16:53											
Lloyd Kahn	460-111618-E-6	Total Organic Carbon - Duplicates	91000		mg/Kg						
Lloyd Kahn	460-111618-E-6 MS	Total Organic Carbon - Duplicates	130200		mg/Kg	74.4	52648	75-125			4

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM V-IN

5-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job No.: 460-111386-1

SDG No.:

Matrix: Solid

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 173409 Date: 04/12/2016 15:08											
Lloyd Kahn	180-53499-A-1 MSD	Total Organic Carbon - Duplicates	47540		mg/Kg	53300	80	75-125	1	20	
Batch ID: 173409 Date: 04/12/2016 17:09											
Lloyd Kahn	460-111618-E-6 MSD	Total Organic Carbon - Duplicates	164800		mg/Kg	67.6	109164	75-125	23	20	4 N

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM V-IN

6-IN
DUPLICATE
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Matrix: Solid

Method	Client Sample ID	Lab Sample ID	Analyte	Result	Unit	RPD	RPD Limit	Qual
Batch ID: 361101 Date: 04/06/2016 13:37								
9045D		460-111370-F-1	pH	6.38	SU			
9045D		460-111370-F-1 DU	pH	6.360	SU	0.3	10	
9045D		460-111370-F-1	Corrosivity	6.38	SU			
9045D		460-111370-F-1 DU	Corrosivity	6.360	SU	0.3	10	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VI-IN

6-IN
DUPLICATE
GENERAL CHEMISTRY

Lab Name: TestAmerica Nashville Job No.: 460-111386-1

SDG No.:

Matrix: Solid

Method	Client Sample ID	Lab Sample ID	Analyte	Result	Unit	RPD	RPD Limit	Qual
Batch ID: 329579	Date: 04/06/2016 11:20		Prep Batch: 329483	Date: 04/06/2016 11:20				
9071B		460-111386-A-5-D	HEM	148	mg/Kg			U
9071B		460-111386-A-5-D DU	HEM	146	mg/Kg	NC	50	U

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VI-IN

6-IN
DUPLICATE
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job No.: 460-111386-1

SDG No.:

Matrix: Solid

Method	Client Sample ID	Lab Sample ID	Analyte	Result	Unit	RPD	RPD Limit	Qual
Batch ID: 173409 Date: 04/12/2016 15:24								
Lloyd Kahn		180-53499-A-1	Total Organic Carbon - Duplicates	4990	mg/Kg			
Lloyd Kahn		180-53499-A-1 DU	Total Organic Carbon - Duplicates	4918	mg/Kg	1	20	
Batch ID: 173409 Date: 04/12/2016 17:24								
Lloyd Kahn		460-111618-E-6	Total Organic Carbon - Duplicates	91000	mg/Kg			
Lloyd Kahn		460-111618-E-6 DU	Total Organic Carbon - Duplicates	103200	mg/Kg	13	20	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VI-IN

7A-IN
LAB CONTROL SAMPLE
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Matrix: Solid

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 361290	Date: 04/05/2016 18:30		Prep Batch: 361289			Date: 04/05/2016 10:30					
						LCS Source: WTsfideSOLSPK_00284					
9034	LCS 460-361289/3-A	Sulfide	58.40		mg/Kg	76.4	76	70-130			

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA-IN

7A-IN
LCS-CERTIFIED REFERENCE MATERIAL
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Matrix: Solid

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 361101	Date: 04/06/2016 13:35										
						LCS Source: WTpHLCS_00019					
9045D	LCSSRM 460-361101/3	pH	6.040		SU	6.06	99.7	98.2-10 2.0			
9045D	LCSSRM 460-361101/3	Corrosivity	6.040		SU	6.06	99.7	98.2-10 2.0			
Batch ID: 361260	Date: 04/07/2016 06:45	Prep Batch: 361257			Date: 04/07/2016 05:30						
						LCS Source: WTtphosLCS_00010					
SM 4500 P E	LCSSRM 460-361257/4-A	Phosphorus as P	9.14		mg/Kg	9.20	99.4	88.3-11 3.0			

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA-IN

7A-IN
LAB CONTROL SAMPLE
GENERAL CHEMISTRY

Lab Name: TestAmerica Nashville Job No.: 460-111386-1

SDG No.:

Matrix: Solid

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 329579	Date: 04/06/2016 11:20		Prep Batch: 329483			Date: 04/06/2016 11:20					
						LCS Source: OP_HEM_spike_00004					
9071B	LCS 490-329483/2-A	HEM	3500		mg/Kg	4000	87	75-117			

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA-IN

7A-IN
LAB CONTROL SAMPLE
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job No.: 460-111386-1

SDG No.:

Matrix: Solid

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 173409	Date: 04/12/2016 09:11										
						LCS Source: LKTOCSRM_00019					
Lloyd Kahn	LCS 180-173409/4	Total Organic Carbon - Duplicates	35180		mg/Kg	35000	101	75-125			

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA-IN

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: WetPhosSpec

Method: SM 4500 P E MDL Date: 02/23/2015 11:17

Prep Method: SM 4500 P B

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Phosphorus as P		1.5	0.525
Phosphorus as PO4		1.5	0.525

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: WetPhosSpec

Method: SM 4500 P E XMDL Date: 03/17/2015 13:21

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
Phosphorus as P		0.03	0.005
Phosphorus as PO4		0.03	0.005

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: 9034 MDL Date: 03/19/2015 09:39

Prep Method: 9030B

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Sulfide		10	4.64

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: 9034 XMDL Date: 03/20/2015 07:49

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
Sulfide		1	0.816

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: Moisture RL Date: 02/15/2007 17:07

Analyte	Wavelength/ Mass	RL (%)	
Percent Moisture		1	
Percent Solids		1	

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: Moisture XRL Date: 01/01/2007 16:49

Analyte	Wavelength/ Mass	XRL (%)	
Percent Moisture		1	
Percent Solids		1	

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Nashville Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: 9071B MDL Date: 01/23/2014 14:09

Prep Method: 9071B

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
HEM		100	57

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Nashville Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: 9071B XMDL Date: 01/26/2012 13:00

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
HEM		4	1.4

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Nashville Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: Total Nitrogen RL Date: 01/16/2012 13:16

Analyte	Wavelength/ Mass	RL (mg/Kg)	
Nitrogen, Total		27	

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Nashville Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: Total Nitrogen XMDL Date: 01/16/2012 12:37

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
Nitrogen, Total		0.1	0.1

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: FLASHEA

Method: Lloyd Kahn MDL Date: 11/25/2015 11:20

Analyte	Wavelength/ Mass	RL (mg/Kg)	MDL (mg/Kg)
Total Organic Carbon - Duplicates		1000	500

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job Number: 460-111386-1

SDG Number:

Matrix: Solid Instrument ID: FLASHEA

Method: Lloyd Kahn XMDL Date: 11/25/2015 11:20

Analyte	Wavelength/ Mass	XRL (mg/Kg)	XMDL (mg/Kg)
Total Organic Carbon - Duplicates		1000	500

12-IN
PREPARATION LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Prep Method: SM 4500 P B

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight (g)	Initial Volume	Final Volume (mL)
MB 460-361257/3-A	04/07/2016 05:30	361257	1.0		50.0
LCSSRM 460-361257/4-A	04/07/2016 05:30	361257	1.0		50.0
460-111386-1	04/07/2016 05:30	361257	1.0		50.0
460-111386-1 MS	04/07/2016 05:30	361257	1.0		50.0
460-111386-1 MSD	04/07/2016 05:30	361257	1.0		50.0
460-111386-2	04/07/2016 05:30	361257	1.0		50.0
460-111386-3	04/07/2016 05:30	361257	1.0		50.0

FORM XII-IN

12-IN
PREPARATION LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Prep Method: 9030B

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight (g)	Initial Volume	Final Volume (mL)
MB 460-361289/1-A	04/05/2016 10:30	361289	25		100
LCS 460-361289/3-A	04/05/2016 10:30	361289	25		100
460-111386-1	04/05/2016 10:30	361289	25		100
460-111386-1 MS	04/05/2016 10:30	361289	25		100
460-111386-1 MSD	04/05/2016 10:30	361289	25		100
460-111386-2	04/05/2016 10:30	361289	25		100
460-111386-3	04/05/2016 10:30	361289	25		100

FORM XII-IN

12-IN
PREPARATION LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Nashville Job No.: 460-111386-1

SDG No.:

Prep Method: 9071B

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight (g)	Initial Volume	Final Volume (mL)
MB 490-329483/1-A	04/06/2016 11:20	329483	10.00		10
LCS 490-329483/2-A	04/06/2016 11:20	329483	10.00		10
460-111386-1	04/06/2016 11:20	329483	10.74		10
460-111386-2	04/06/2016 11:20	329483	10.54		10
460-111386-3	04/06/2016 11:20	329483	10.18		10
460-111386-A-5-B MS	04/06/2016 11:20	329483	10.80		10
460-111386-A-5-D DU	04/06/2016 11:20	329483	10.25		10

FORM XII-IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: WetPhosSpec Method: SM 4500 P E

Start Date: 04/07/2016 06:45 End Date: 04/07/2016 06:45

Lab Sample ID	D/F	Type	Time	Analytes																			
				P	P-PO4																		
ICV 460-361257/1-A	1		06:45	X																			
ICB 460-361257/2-A	1		06:45	X																			
MB 460-361257/3-A	1	T	06:45	X																			
LCSSRM 460-361257/4-A	1	T	06:45	X																			
ZZZZZZ			06:45																				
460-111386-1	10	T	06:45	X	X																		
ZZZZZZ			06:45																				
460-111386-1 MS	10	T	06:45	X																			
ZZZZZZ			06:45																				
460-111386-1 MSD	10	T	06:45	X																			
ZZZZZZ			06:45																				
460-111386-2	10	T	06:45	X	X																		
CCV 460-361257/13-A	1		06:45	X																			
CCB 460-361257/14-A	1		06:45	X																			
ZZZZZZ			06:45																				
460-111386-3	20	T	06:45	X	X																		
CCV 460-361257/17-A	1		06:45	X																			
CCB 460-361257/18-A	1		06:45	X																			

Prep Types

T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: NOEQUIP Method: 9034

Start Date: 04/05/2016 18:30 End Date: 04/05/2016 18:30

Lab Sample ID	D/F	Type	Time	Analytes																			
				S2																			
MB 460-361289/1-A	1	T	18:30	X																			
ZZZZZZ			18:30																				
LCS 460-361289/3-A	1	T	18:30	X																			
460-111386-1	1	T	18:30	X																			
460-111386-1 MS	1	T	18:30	X																			
460-111386-1 MSD	1	T	18:30	X																			
460-111386-2	1	T	18:30	X																			
460-111386-3	1	T	18:30	X																			
ZZZZZZ			18:30																				
ZZZZZZ			18:30																				
ZZZZZZ			18:30																				
ZZZZZZ			18:30																				
ZZZZZZ			18:30																				
ZZZZZZ			18:30																				
ZZZZZZ			18:30																				

Prep Types
T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: NOEQUIP Method: 9045D

Start Date: 04/06/2016 13:29 End Date: 04/06/2016 14:12

Lab Sample ID	D/F	Type	Time	Analytes																			
				Corr	pH																		
CCV 460-361101/1	1		13:29	X	X																		
MB 460-361101/2	1	T	13:33	X	X																		
LCSSRM 460-361101/3	1	T	13:35	X	X																		
ZZZZZZ			13:36																				
460-111370-F-1 DU	1	T	13:37	X	X																		
ZZZZZZ			13:38																				
ZZZZZZ			13:39																				
ZZZZZZ			13:40																				
ZZZZZZ			13:41																				
ZZZZZZ			13:43																				
CCV 460-361101/11	1		13:45	X	X																		
ZZZZZZ			13:46																				
ZZZZZZ			13:48																				
ZZZZZZ			13:51																				
ZZZZZZ			13:53																				
ZZZZZZ			13:55																				
ZZZZZZ			13:56																				
ZZZZZZ			13:58																				
CCV 460-361101/19	1		14:00	X	X																		
460-111386-1	1	T	14:02	X	X																		
460-111386-2	1	T	14:04	X	X																		
460-111386-3	1	T	14:07	X	X																		
ZZZZZZ			14:09																				
ZZZZZZ			14:10																				
CCV 460-361101/25	1		14:12	X	X																		

Prep Types
T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Instrument ID: NOEQUIP Method: Moisture

Start Date: 04/05/2016 18:12 End Date: 04/05/2016 18:12

Lab Sample ID	D/F	Type	Time	Analytes																			
				% Sol	Moist																		
ZZZZZZ			18:12																				
ZZZZZZ			18:12																				
ZZZZZZ			18:12																				
ZZZZZZ			18:12																				
ZZZZZZ			18:12																				
ZZZZZZ			18:12																				
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ZZZZZZ			18:12																				
ZZZZZZ			18:12																				
ZZZZZZ			18:12																				
ZZZZZZ			18:12																				
460-111386-1	1	T	18:12	X	X																		
460-111386-2	1	T	18:12	X	X																		
460-111386-3	1	T	18:12	X	X																		
ZZZZZZ			18:12																				
460-111386-E-4 DU	1	T	18:12	X	X																		

Prep Types
T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Nashville Job No.: 460-111386-1

SDG No.:

Instrument ID: NOEQUIP Method: 9071B

Start Date: 04/06/2016 11:20 End Date: 04/06/2016 11:20

Lab Sample ID	D/F	Type	Time	Analytes																			
				HEM																			
MB 490-329483/1-A	1	T	11:20	X																			
LCS 490-329483/2-A	1	T	11:20	X																			
460-111386-1	1	T	11:20	X																			
460-111386-2	1	T	11:20	X																			
460-111386-3	1	T	11:20	X																			
ZZZZZZ			11:20																				
ZZZZZZ			11:20																				
460-111386-A-5-B MS	1	T	11:20	X																			
460-111386-A-5-D DU	1	T	11:20	X																			

Prep Types
T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Nashville Job No.: 460-111386-1

SDG No.:

Instrument ID: NOEQUIP Method: Total Nitrogen

Start Date: 04/07/2016 11:05 End Date: 04/07/2016 11:05

Lab Sample ID	D/F	Type	Time	Analytes																			
				N2																			
460-111386-1	1	T	11:05	X																			
460-111386-2	1	T	11:05	X																			
460-111386-3	1	T	11:05	X																			
ZZZZZZ			11:05																				
ZZZZZZ			11:05																				

Prep Types

T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job No.: 460-111386-1

SDG No.:

Instrument ID: FLASHEA Method: Lloyd Kahn

Start Date: 04/12/2016 08:50 End Date: 04/12/2016 18:43

Lab Sample ID	D/F	Type	Time	Analytes																			
				TOCD																			
CCV 180-173409/1	1		08:50	X																			
CCB 180-173409/2	1		08:55	X																			
MB 180-173409/3	1	T	09:00	X																			
LCS 180-173409/4	1	T	09:11	X																			
ZZZZZZ			09:27																				
RINSE 180-173409/6			09:40																				
ZZZZZZ			09:45																				
RINSE 180-173409/8			12:52																				
460-111386-3	1	T	12:58	X																			
RINSE 180-173409/10			13:08																				
ZZZZZZ			13:13																				
RINSE 180-173409/12			13:24																				
ZZZZZZ			13:29																				
RINSE 180-173409/14			13:40																				
CCV 180-173409/15	1		13:45	X																			
CCB 180-173409/16	1		13:50	X																			
ZZZZZZ			14:36																				
RINSE 180-173409/18			14:47																				
180-53499-A-1 MS	1	T	14:52	X																			
RINSE 180-173409/20			15:03																				
180-53499-A-1 MSD	1	T	15:08	X																			
RINSE 180-173409/22			15:18																				
180-53499-A-1 DU	1	T	15:24	X																			
RINSE 180-173409/24			15:34																				
ZZZZZZ			15:39																				
RINSE 180-173409/26			15:50																				
ZZZZZZ			15:55																				
RINSE 180-173409/28			16:06																				
CCV 180-173409/29	1		16:11	X																			
CCB 180-173409/30	1		16:16	X																			
ZZZZZZ			16:22																				
RINSE 180-173409/32			16:32																				
ZZZZZZ			16:37																				
RINSE 180-173409/34			16:48																				
460-111618-E-6 MS	1	T	16:53	X																			
RINSE 180-173409/36			17:03																				
460-111618-E-6 MSD	1	T	17:09	X																			
RINSE 180-173409/38			17:19																				
460-111618-E-6 DU	1	T	17:24	X																			
RINSE 180-173409/40			17:35																				
ZZZZZZ			17:40																				
RINSE 180-173409/42			17:51																				

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Pittsburgh Job No.: 460-111386-1

SDG No.:

Instrument ID: FLASHEA Method: Lloyd Kahn

Start Date: 04/12/2016 08:50 End Date: 04/12/2016 18:43

Lab Sample ID	D/F	Type	Time	Analytes																			
				TOCD																			
CCV 180-173409/43	1		17:56	X																			
CCB 180-173409/44	1		18:01	X																			
460-111386-1	1	T	18:06	X																			
RINSE 180-173409/46			18:17																				
460-111386-2	1	T	18:22	X																			
RINSE 180-173409/48			18:33																				
CCV 180-173409/49	1		18:38	X																			
CCB 180-173409/50	1		18:43	X																			

Prep Types
T = Total/NA

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Batch Number: 353160 Batch Start Date: 02/29/16 09:30 Batch Analyst: Afremova, Izabella

Batch Method: SM 4500 P B Batch End Date: 02/29/16 10:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	WTphosSP1 00026			
IC 460-353160/1		SM 4500 P B, SM 4500 P E		50.0 mL	50.0 mL				
IC 460-353160/2		SM 4500 P B, SM 4500 P E		50.0 mL	50.0 mL	0.03 mL			
IC 460-353160/3		SM 4500 P B, SM 4500 P E		50.0 mL	50.0 mL	0.05 mL			
IC 460-353160/4		SM 4500 P B, SM 4500 P E		50.0 mL	50.0 mL	0.1 mL			
IC 460-353160/5		SM 4500 P B, SM 4500 P E		50.0 mL	50.0 mL	0.2 mL			
IC 460-353160/6		SM 4500 P B, SM 4500 P E		50.0 mL	50.0 mL	0.5 mL			

Batch Notes	
Ammonium Persulfate ID	# b - 3991-15 exp.05/19/16
Sulfuric Acid Reagent ID Number	11N H2SO4 # B - 4043-15 exp.06/30/16

Basis	Basis Description

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Batch Number: 353168 Batch Start Date: 02/29/16 11:00 Batch Analyst: Afremova, Izabella

Batch Method: SM 4500 P E Batch End Date: 02/29/16 13:00

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	CalcMsg	WTphosSP1 00026			
IC 460-353160/1-A		SM 4500 P E		50 mL	OK				
IC 460-353160/2-A		SM 4500 P E		50 mL	OK	0.03 mL			
IC 460-353160/3-A		SM 4500 P E		50 mL	OK	0.05 mL			
IC 460-353160/4-A		SM 4500 P E		50 mL	OK	0.1 mL			
IC 460-353160/5-A		SM 4500 P E		50 mL	OK	0.2 mL			
IC 460-353160/6-A		SM 4500 P E		50 mL	OK	0.5 mL			

Batch Notes	
Ammonium Molybdate ID	# B - 4007-15 exp.06/03/16
Ascorbic Acid ID	B- 0021-16 exp.03/07/16
Batch Comment	See batch # 353168 for Cal.inf./ Cal. curve exp.08/29/16
Potassium Antimonyl Tartrate ID	# B - 4022-15 exp.06/14/16
Pipette ID	10 N NaOH # B - 3967-15 exp.05/02/16
Perform Calculation (0=No, 1=Yes)	1
Sulfuric Acid Reagent ID Number	5N H2SO4 3 B - 3927-15 exp.04/05/16

Basis	Basis Description

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Batch Number: 361257 Batch Start Date: 04/07/16 05:30 Batch Analyst: Afremova, Izabella

Batch Method: SM 4500 P B Batch End Date: 04/07/16 06:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	WTphosSP1 00026	WTphosSS1 00025	WTtphosLCS 00010	
ICV 460-361257/1		SM 4500 P B, SM 4500 P E		1.0 g	50.0 mL		0.2 mL		
ICB 460-361257/2		SM 4500 P B, SM 4500 P E		1.0 g	50.0 mL				
MB 460-361257/3		SM 4500 P B, SM 4500 P E		1.0 g	50.0 mL				
LCSSRM 460-361257/4		SM 4500 P B, SM 4500 P E		1.0 g	50.0 mL			2.5 mL	
460-111386-B-1	V-1	SM 4500 P B, SM 4500 P E	T	1.0 g	50.0 mL				
460-111386-B-1 MS	V-1	SM 4500 P B, SM 4500 P E	T	1.0 g	50.0 mL	0.2 mL			
460-111386-B-1 MSD	V-1	SM 4500 P B, SM 4500 P E	T	1.0 g	50.0 mL	0.2 mL			
460-111386-B-2	V-2	SM 4500 P B, SM 4500 P E	T	1.0 g	50.0 mL				
CCV 460-361257/13		SM 4500 P B, SM 4500 P E		1.0 g	50.0 mL		0.2 mL		
CCB 460-361257/14		SM 4500 P B, SM 4500 P E		1.0 g	50.0 mL				
460-111386-D-3	V-4	SM 4500 P B, SM 4500 P E	T	1.0 g	50.0 mL				
CCV 460-361257/17		SM 4500 P B, SM 4500 P E		1.0 g	50.0 mL		0.2 mL		
CCB 460-361257/18		SM 4500 P B, SM 4500 P E		1.0 g	50.0 mL				

Batch Notes	
Ammonium Persulfate ID	# B - 0027-16 exp.09/03/16
Sulfuric Acid Reagent ID Number	11 N H2SO4 # B - 4043-16 exp.06/31-16

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Batch Number: 361260 Batch Start Date: 04/07/16 06:45 Batch Analyst: Afremova, Izabella

Batch Method: SM 4500 P E Batch End Date: 04/07/16 08:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	CalcMsg					
ICV 460-361257/1-A		SM 4500 P E		OK					
ICB 460-361257/2-A		SM 4500 P E		OK					
MB 460-361257/3-A		SM 4500 P E		OK					
LCSSRM 460-361257/4-A		SM 4500 P E		OK					
460-111386-B-1-E	V-1	SM 4500 P E	T	OK					
460-111386-B-1-G MS	V-1	SM 4500 P E	T	OK					
460-111386-B-1-I MSD	V-1	SM 4500 P E	T	OK					
460-111386-B-2-C	V-2	SM 4500 P E	T	OK					
CCV 460-361257/13-A		SM 4500 P E		OK					
CCB 460-361257/14-A		SM 4500 P E		OK					
460-111386-D-3-C	V-4	SM 4500 P E	T	OK					
CCV 460-361257/17-A		SM 4500 P E		OK					
CCB 460-361257/18-A		SM 4500 P E		OK					

Batch Notes	
Ammonium Molybdate ID	# B - 0030-16 exp.09/04/16
Ascorbic Acid ID	# B - 0089-16 exp.04/14/16
Batch Comment	See batch #353168 for Cal. inf./ Cal. curve exp.08/29/16
Potassium Antimonyl Tartrate ID	# B - 4022-15 exp.06/14/16
Pipette ID	10 N NaOH # B - 3967-16 exp.05/02/16
Perform Calculation (0=No, 1=Yes)	1
Sulfuric Acid Reagent ID Number	5 N H2SO4 # B - 0090-16 exp.10/07/16

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Batch Number: 361260 Batch Start Date: 04/07/16 06:45 Batch Analyst: Afremova, Izabella

Batch Method: SM 4500 P E Batch End Date: 04/07/16 08:30

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Batch Number: 361289 Batch Start Date: 04/05/16 10:30 Batch Analyst: Vu, Huan

Batch Method: 9030B Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	WTsfideSOLSPK 00284	WTsulfdeSoLCS 00006		
MB 460-361289/1		9030B, 9034		25 g	100 mL				
LCS 460-361289/3		9030B, 9034		25 g	100 mL	2 mL			
460-111386-G-1	V-1	9030B, 9034	T	25 g	100 mL				
460-111386-G-1 MS	V-1	9030B, 9034	T	25 g	100 mL		2 mL		
460-111386-G-1 MSD	V-1	9030B, 9034	T	25 g	100 mL		2 mL		
460-111386-G-2	V-2	9030B, 9034	T	25 g	100 mL				
460-111386-G-3	V-4	9030B, 9034	T	25 g	100 mL				

Batch Notes	
Formaldehyde ID	-Macron/108517 exp;04/01/19
Zinc Acetate Buffer ID	Macron/B-4026-15 exp;06/14/16

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Batch Number: 361290 Batch Start Date: 04/05/16 18:30 Batch Analyst: Vu, Huan

Batch Method: 9034 Batch End Date: 04/07/16 10:49

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount					
MB 460-361289/1-A		9034		100 mL					
LCS 460-361289/3-A		9034		100 mL					
460-111386-G-1-A	V-1	9034	T	100 mL					
460-111386-G-1-B MS	V-1	9034	T	100 mL					
460-111386-G-1-C MSD	V-1	9034	T	100 mL					
460-111386-G-2-A	V-2	9034	T	100 mL					
460-111386-G-3-A	V-4	9034	T	100 mL					

Batch Notes	
First End time	Aqua Solution/5101283 : Starch exp:10/30/16
Iodine Lot Number	118981
Iodine Vendor	Macron
Normality of Iodine Solution	0.0266 N
Sodium Thiosulfate ID	153815
Sodium Thiosulfate Vendor	Fisher
Nominal Amount Used	100 mL
Perform Calculation (0=No, 1=Yes)	1
First Start time	Fisher/B-0077-16 : N HCl exp:09/29/16
Normality of First Titrant	0.0236 N

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Batch Number: 361101 Batch Start Date: 04/06/16 13:29 Batch Analyst: Hu, Youhao

Batch Method: 9045D Batch End Date: 04/06/16 14:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	SampleTemp	WTpHCCV 00033	WTpHLCS 00019	
CCV 460-361101/1		9045D		20 mL	20 mL	21.0 Celsius	20 mL		
MB 460-361101/2		9045D		20 mL	20 mL	20.7 Celsius			
LCSSRM 460-361101/3		9045D		20 mL	20 mL	20.8 Celsius		20 mL	
460-111370-F-1 DU		9045D	T	20 g	20 mL	20.4 Celsius			
CCV 460-361101/11		9045D		20 mL	20 mL	21.1 Celsius	20 mL		
CCV 460-361101/19		9045D		20 mL	20 mL	21.1 Celsius	20 mL		
460-111386-D-1	V-1	9045D	T	20 g	20 mL	19.9 Celsius			
460-111386-D-2	V-2	9045D	T	20 g	20 mL	20.0 Celsius			
460-111386-D-3	V-4	9045D	T	20 g	20 mL	20.1 Celsius			
CCV 460-361101/25		9045D		20 mL	20 mL	20.7 Celsius	20 mL		

Batch Notes	
pH Buffer 1 ID	Buffer 4 : Orion/TT2/910104 exp;07/31/17
pH Buffer 2 ID	Buffer 7 : Fisher/153075 exp;06/30/17
pH Buffer 3 ID	Buffer 10 : Fisher/155290 exp;08/2017
Instrument ID	pH meter: H

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Edison Job No.: 460-111386-1

SDG No.:

Batch Number: 360896 Batch Start Date: 04/05/16 18:12 Batch Analyst: Hodge, Joshua D

Batch Method: Moisture Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry		
460-111386-B-1	V-1	Moisture	T	172	1.00 g	6.08 g	5.04 g		
460-111386-D-2	V-2	Moisture	T	173	1.01 g	7.33 g	6.67 g		
460-111386-D-3	V-4	Moisture	T	174	1.02 g	6.30 g	4.45 g		
460-111386-E-4 DU		Moisture	T	176	1.00 g	5.49 g	4.22 g		

Batch Notes	
Balance ID	104 No Unit
Date samples were placed in the oven	4/5/16
Oven Temp In	97 Degrees C
Time samples were place in the oven	18:31
Date samples were removed from oven	4/6/16
Oven Temp Out	106 Degrees C
Time Samples were removed from oven	08:24
Oven ID	2
Thermometer ID	116941
Uncorrected In Temperature	97 Celsius
Uncorrected Out Temperature	106 Celsius

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Nashville Job No.: 460-111386-1

SDG No.:

Batch Number: 329483 Batch Start Date: 04/06/16 11:20 Batch Analyst: Jackson, Laterio O

Batch Method: 9071B Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	op_cell thim 00001	OP_HEM_spike 00004	OP_Hexane 00073	OP_NaSO4 00046
MB 490-329483/1		9071B, 9071B		10.00 g	10 mL	1 mL		150 mL	10 g
LCS 490-329483/2		9071B, 9071B		10.00 g	10 mL	1 mL	4 mL	150 mL	10 g
460-111386-A-1	V-1	9071B, 9071B	T	10.74 g	10 mL	1 mL		150 mL	10 g
460-111386-A-2	V-2	9071B, 9071B	T	10.54 g	10 mL	1 mL		150 mL	10 g
460-111386-A-3	V-4	9071B, 9071B	T	10.18 g	10 mL	1 mL		150 mL	10 g
460-111386-A-5 MS		9071B, 9071B	T	10.80 g	10 mL	1 mL	4 mL	150 mL	10 g
460-111386-A-5 DU		9071B, 9071B	T	10.25 g	10 mL	1 mL		150 mL	10 g

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
MB 490-329483/1		9071B, 9071B		4072969-1					
LCS 490-329483/2		9071B, 9071B		4072969-2					
460-111386-A-1	V-1	9071B, 9071B	T	4072969-3					
460-111386-A-2	V-2	9071B, 9071B	T	4072969-4					
460-111386-A-3	V-4	9071B, 9071B	T	4072969-5					
460-111386-A-5 MS		9071B, 9071B	T	4051583-2					
460-111386-A-5 DU		9071B, 9071B	T	4051583-3					

Batch Notes	
Balance ID	B2-1118381704
Batch Comment	4072969, 4051582, 4051583
Filter Paper ID	2782553
Hexane ID	2666152

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Nashville Job No.: 460-111386-1

SDG No.:

Batch Number: 329579 Batch Start Date: 04/06/16 14:33 Batch Analyst: Jackson, Laterio O

Batch Method: 9071B Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	ReceiverTube	HEMWgt1	HEMWgt2	Weight2OK	Residue
MB 490-329483/1-A		9071B		10 mL	2.2787 g	2.2789 g	2.2787 g	Pass 0.0005g	0.0002 g
LCS 490-329483/2-A		9071B		10 mL	2.2623 g	2.2974 g	2.2973 g	Pass 0.0005g	0.0351 g
460-111386-A-1-A	V-1	9071B	T	10 mL	2.3124 g	2.3124 g	2.3125 g	Pass 0.0005g	0 g
460-111386-A-2-A	V-2	9071B	T	10 mL	2.2941 g	2.2944 g	2.2943 g	Pass 0.0005g	0.0003 g
460-111386-A-3-A	V-4	9071B	T	10 mL	2.3109 g	2.3110 g	2.3109 g	Pass 0.0005g	0.0001 g
460-111386-A-5-B MS		9071B	T	10 mL	2.2865 g	2.3246 g	2.3249 g	Pass 0.0005g	0.0381 g
460-111386-A-5-D DU		9071B	T	10 mL	2.3274 g	2.3274 g	2.3275 g	Pass 0.0005g	0 g

Lab Sample ID	Client Sample ID	Method Chain	Basis	Residue2	CalcMsg	AnalysisComment			
MB 490-329483/1-A		9071B		0 g	HEM OK. SGT-HEM not calculated.	4072969-1			
LCS 490-329483/2-A		9071B		0.035 g	HEM OK. SGT-HEM not calculated.	4072969-2			
460-111386-A-1-A	V-1	9071B	T	0.0001 g	HEM OK. SGT-HEM not calculated.	4072969-3			
460-111386-A-2-A	V-2	9071B	T	0.0002 g	HEM OK. SGT-HEM not calculated.	4072969-4			
460-111386-A-3-A	V-4	9071B	T	0 g	HEM OK. SGT-HEM not calculated.	4072969-5			
460-111386-A-5-B MS		9071B	T	0.0384 g	HEM OK. SGT-HEM not calculated.	4051583-2			
460-111386-A-5-D DU		9071B	T	0.0001 g	HEM OK. SGT-HEM not calculated.	4051583-3			

Batch Notes	
Balance ID	AG204-1122173241
Batch Comment	4072969, 4051582, 4051583
Filter Paper ID	2782553

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Nashville Job No.: 460-111386-1

SDG No.:

Batch Number: 331741 Batch Start Date: 04/14/16 20:42 Batch Analyst: Overton-Gray, Sessily

Batch Method: Total Nitrogen Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount					
460-111386-A-1	V-1	Total Nitrogen	T	20 mL					
460-111386-A-2	V-2	Total Nitrogen	T	20 mL					
460-111386-A-3	V-4	Total Nitrogen	T	20 mL					

Batch Notes	

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Pittsburgh Job No.: 460-111386-1

SDG No.:

Batch Number: 173409 Batch Start Date: 04/12/16 08:50 Batch Analyst: DeRubeis, James D

Batch Method: Lloyd Kahn Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	LKTOCKHPL1 00015	LKTOCSRM 00019		
CCV 180-173409/1		Lloyd Kahn				0.1 mL			
LCS 180-173409/4		Lloyd Kahn		11.1 mg	11.1 mg		11.1 mg		
CCV 180-173409/15		Lloyd Kahn				0.1 mL			
180-53499-A-1 MS		Lloyd Kahn	T	11.35 mg	11.35 mg		11.2 mg		
180-53499-A-1 MSD		Lloyd Kahn	T	10.6 mg	10.6 mg		11.3 mg		
180-53499-A-1 DU		Lloyd Kahn	T	11.15 mg	11.15 mg				
CCV 180-173409/29		Lloyd Kahn				0.1 mL			
460-111618-E-6 MS		Lloyd Kahn	T	12.1 mg	12.1 g		11.05 mg		
460-111618-E-6 MSD		Lloyd Kahn	T	12.6 g	12.6 g		10.45 mg		
460-111618-E-6 DU		Lloyd Kahn	T	12.5 g	12.5 g				
CCV 180-173409/43		Lloyd Kahn				0.1 mL			
CCV 180-173409/49		Lloyd Kahn				0.1 mL			

Batch Notes	
Phosphoric Acid ID	1656099

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Subcontract Data

Shipping and Receiving Documents

TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Phone (732) 549-3900 Fax (732) 549-3679

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Bill Mack	Lab PM: Nayyar, Sapna	Carrier Tracking No(s):	COC No: 460-70432-43148.1
Client Contact: Mr. ~~Manuel De Gracia~~ Bill Mack	Phone: 757-362-8245	E-Mail: sapna.nayyar@testamericainc.com		Page: Page 1 of 2
Company: Fugro Consultants Inc				Job #: 111386
Address: 101 West Main Street Suite 350	Due Date Requested:			
City: Norfolk	TAT Requested (days): 5			
State, Zip: VA, 23510				
Phone: 757-625-3350	PO #: 04.81160001 Purchase Order not required			
Email: ~~mdegracia@fugro.com~~ bmack@fugro.com	WO #:			
Project Name: Delaware Soil Samples	Project #: 46020011			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9034, 9045D, 9056A_ORGFM_28D	Lloyd_Kahn_Mod - TOC Result 1	4500_P_E, 6010C, 7471B	351.2, 9071B, Nitrogen,Total	9056_ORGFM_48Hr - Nitrate-Nitrite	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	N	N	N	N	N	X	
V-1	3/29/16		C	Solid	N		/	/	/	/	/		-1
V-2	3/29/16		C	Solid			/	/	/	/	/		-2
V-4	3/30/16		C	Solid			/	/	/	/	/		-3
				Solid									
V-3				Solid									Hold as spare -4
V-5				Solid									Hold as spare -5
				Solid									
				Solid									
				Solid									
				Solid									
				Solid									

5-Day RUSH

460-111386 Chain of Custody

Possible Hazard Identification
☒ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☒ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	3/30/2016 1600	Fugro		3/30/16 1600	TA
Relinquished by:	Date/Time: 3/30/2016 1605	Company TA	Received by:	Date/Time:	Company
Relinquished by:	Date/Time: 3/31/16 1000	Company	Received by:	Date/Time: 3/31/16 1000	Company TA Edison

COF#945745 2.6 / 36°C IR#6

TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 111386

Number of Coolers: 1 IR Gun # 6

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	2.6 °C	3.6 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

**Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: [illegible] Date: 3/31/16

EDS-WI-038, Rev 4, 06/09/2014

(732) 549 – 3900
SEVERN TRENT LABS
777 NEW DURHAM ROAD
EDISON NJ 08837

20 LBS

1 OF 1

SHIP TO:
SAMPLE RECEIVING
(412) 963 – 7058
TEST AMERICA PITTSBURGH
RIDC PARK
301 ALPHA DRIVE
PITTSBURGH PA 15238 – 2907

PA 152 9 – 22

UPS NEX

460-111386 Waybill

6650 9764

Uncorrected temp 5.4 °C
Thermometer ID
CF 0
Initials

PT-WI-SR-001 effective 7/26/13

BILLING: F/C BILL RECEIVER

WS 10.0.24 Zebra ZP 450 72.0A 01/2010

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RRD R 0216

TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Phone (732) 549-3900 Fax (732) 549-3679

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Nayyar, Sapna	Carrier Tracking No(s):	COC No: 460-45140.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: sapna.nayyar@testamericainc.com		Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Job #: 460-111386-1
Address: 301 Alpha Drive, RIDC Park,	Due Date Requested: 4/12/2016			
City: Pittsburgh	TAT Requested (days):			
State, Zip: PA, 15238				
Phone: 412-963-7058(Tel) 412-963-2468(Fax)	PO #:			
Email:	WO #:			
Project Name: Delaware Soil Samples	Project #: 46020011			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Lloyd_Kahn_Mod	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
V-1 (460-111386-1)	3/29/16	12:30 Eastern		Solid			X	1	
V-2 (460-111386-2)	3/29/16	16:40 Eastern		Solid			X	1	
V-4 (460-111386-3)	3/30/16	10:00 Eastern		Solid			X	1	
V-3 (460-111386-4)	3/29/16	18:15 Eastern		Solid			X	1	
V-5 (460-111386-5)	3/30/16	11:30 Eastern		Solid			X	1	

460-111386 Chain of Custody

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:		Method of Shipment:	
Relinquished by:	Date/Time: 4/7/16 1800	Company: TAED	Received by:	Date/Time: 4/8/16 0855	Company: TAE
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

TestAmerica Edison
777 New Durham Road
Edison, NJ 08817
Phone (732) 549-3900 Fax (732) 549-3679

Chain of Custody Record

460-111386 Chain of Custody

TestAmerica

04/27/2016

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Nayyar, Sapna	COC No: 460-45084.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: sapna.nayyar@testamericainc.com	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc			Job #: 460-111386-1
Address: 2960 Foster Creighton Drive, ,	Due Date Requested: 4/7/2016		
City: Nashville	TAT Requested (days):		
State, Zip: TN, 37204			
Phone: 615-726-0177(Tel) 615-726-3404(Fax)	PO #:		
Email:	WO #:		
Project Name: Delaware Soil Samples	Project #: 46020011		
Site:	SSOW#:		

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Nitrogen,Total/ Total Nitrogen	9071B/9071B_P_Sox Oil & Grease (HEM)	351.2/351.2_Prep Total Kjeldahl Nitrogen	9056_ORGFM_48Hr/DI_LEACH Nitrate-Nitrite	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
V-1 (460-111386-1)	3/29/16	12:30 Eastern		Solid			X	X	X	X	1	
V-2 (460-111386-2)	3/29/16	16:40 Eastern		Solid			X	X	X	X	1	
V-4 (460-111386-3)	3/30/16	10:00 Eastern		Solid			X	X	X	X	1	
V-3 (460-111386-4)	3/29/16	18:15 Eastern		Solid			X	X	X	X	1	
V-5 (460-111386-5)	3/30/16	11:30 Eastern		Solid			X	X	X	X	1	

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 4/1/16 1800	Company: TAEI	Received by:	Date/Time: 4/2/16 9:30	Company: TAN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 0.2

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
Nashville, TN

Loc: 460
111386

COOLER RECEIPT FORM

Cooler Received/Opened On 4/2/2016 @ 0930

Time Samples Removed From Cooler 1128 Time Samples Placed In Storage 1139 (2 Hour Window)

1. Tracking # 3354 (last 4 digits, FedEx) Courier: FedEx

IR Gun ID 18290455 pH Strip Lot HC564992 Chlorine Strip Lot 041514A

2. Temperature of rep. sample or temp blank when opened: 0.2 *Degrees Celsius*

3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO..NA

4. Were custody seals on outside of cooler? YES..NO..NA

If yes, how many and where: _____

5. Were the seals intact, signed, and dated correctly? YES...NO..NA

6. Were custody papers inside cooler? YES..NO...NA

I certify that I opened the cooler and answered questions 1-6 (intial) MMK

7. Were custody seals on containers: YES NO and Intact YES...NO..NA

Were these signed and dated correctly? YES...NO..NA

8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None

9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None

10. Did all containers arrive in good condition (unbroken)? YES...NO...NA

11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA

12. Did all container labels and tags agree with custody papers? YES...NO...NA

13a. Were VOA vials received? YES..NO...NA

b. Was there any observable headspace present in any VOA vial? YES...NO..NA

14. Was there a Trip Blank in this cooler? YES...NO..NA If multiple coolers, sequence #_____

I certify that I unloaded the cooler and answered questions 7-14 (intial) SW

15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES..NO..NA

b. Did the bottle labels indicate that the correct preservatives were used YES...NO..NA

16. Was residual chlorine present? YES...NO...NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (intial) SW

17. Were custody papers properly filled out (ink, signed, etc)? YES..NO...NA

18. Did you sign the custody papers in the appropriate place? YES..NO...NA

19. Were correct containers used for the analysis requested? YES...NO...NA

20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (intial) SW

I certify that I attached a label with the unique LIMS number to each container (intial) SW

21. Were there Non-Conformance issues at login? YES..NO Was a NCM generated? YES...NO...#_____

BIS = Broken in shipment
Cooler Receipt Form.doc

LF-1
End of Form

Revised 12/15/15

Login Sample Receipt Checklist

Client: Fugro Consultants Inc

Job Number: 460-111386-1

Login Number: 111386
List Number: 1
Creator: Lysy, Susan

List Source: TestAmerica Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	945745
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.6°C IR#6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	See NCM
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	See NCM
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	No analysis requiring residual chlorine check assigned.

Login Sample Receipt Checklist

Client: Fugro Consultants Inc

Job Number: 460-111386-1

Login Number: 111386
List Number: 2
Creator: Vest, Laura E

List Source: TestAmerica Nashville
List Creation: 04/02/16 11:32 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.2
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Fugro Consultants Inc

Job Number: 460-111386-1

Login Number: 111386
List Number: 3
Creator: Butcher, Ryan M

List Source: TestAmerica Pittsburgh
List Creation: 04/08/16 10:07 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	