

DATA PACKAGE

METALS

PROJECT NAME : NSFIIH - INDIAN HEAD - 502082.01020000

APTIM

17 Princess Road

Lawrenceville, NJ - 08648

Phone No: 609-895-5340

ORDER ID : Q1543

ATTENTION : Mark Fuller



Laboratory Certification ID # 20012



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Cover Page

Order ID : Q1543

Project ID : NSFIIH - Indian Head - 502082.01020000

Client : APTIM

Lab Sample Number

Q1543-01
Q1543-02

Client Sample Number

ISB878MW02
ISB878MW05

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Signature : _____

Date: 3/18/2025

NYDOH CERTIFICATION NO - 11376

NJDEP CERTIFICATION NO - 20012



284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

CASE NARRATIVE

APTIM

Project Name: NSFIIH - Indian Head - 502082.01020000

Project # N/A

Chemtech Project # Q1543

Test Name: Metals ICP-TAL

A. Number of Samples and Date of Receipt:

2 Water samples were received on 03/11/2025.

B. Parameters:

According to the Chain of Custody document, the following analyses were requested: Metals ICP-TAL. This data package contains results for Metals ICP-TAL.

C. Analytical Techniques:

The analysis of Metals ICP-TAL was based on method 6010D and digestion based on method 3010 (waters).

D. QA/ QC Samples:

The Holding Times were met for all analysis.

The Blank Spike met requirements for all samples.

The Duplicate analysis met criteria for all samples.

The Matrix Spike (ISB878MW05MS) analysis met criteria for all samples except for Aluminum, Iron, Manganese due to matrix interference.

The Matrix Spike Duplicate (ISB878MW05MSD) analysis met criteria for all samples except for Aluminum, Iron, Manganese due to matrix interference.

The Blank analysis did not indicate the presence of lab contamination.

The Calibration met the requirements.

The Serial Dilution (ISB878MW05L) met criteria for all samples except for Iron due to unknown interference.

E. Additional Comments:

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. The laboratory manager or his designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Signature_____

DATA REPORTING QUALIFIERS- INORGANIC

For reporting results, the following “ Results Qualifiers” are used:

J	Indicates the reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL), but greater than or equal to the Instrument Detection Limit (IDL).
U	Indicates the analyte was analyzed for, but not detected.
ND	Indicates the analyte was analyzed for, but not detected
E	Indicates the reported value is estimated because of the presence of interference
M	Indicates Duplicate injection precision not met.
N	Indicates the spiked sample recovery is not within control limits.
S	Indicates the reported value was determined by the Method of Standard Addition (MSA).
*	Indicates that the duplicate analysis is not within control limits.
+	Indicates the correlation coefficient for the MSA is less than 0.995.
D	Indicates the reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.
M	Method qualifiers “P” for ICP instrument “PM” for ICP when Microwave Digestion is used “CV” for Manual Cold Vapor AA “AV” for automated Cold Vapor AA “CA” for MIDI-Distillation Spectrophotometric “AS” for Semi -Automated Spectrophotometric “C” for Manual Spectrophotometric “T” for Titrimetric “NR” for analyte not required to be analyzed
OR	Indicates the analyte’s concentration exceeds the calibrated range of the instrument for that specific analysis.
Q	Indicates the LCS did not meet the control limits requirements
H	Sample Analysis Out Of Hold Time

APPENDIX A

QA REVIEW GENERAL DOCUMENTATION

Project #: Q1543

Completed

For thorough review, the report must have the following:

GENERAL:

Are all original paperwork present (chain of custody, record of communication,airbill, sample management lab chronicle, login page)

✓

Check chain-of-custody for proper relinquish/return of samples

✓

Is the chain of custody signed and complete

✓

Check internal chain-of-custody for proper relinquish/return of samples /sample extracts

✓

Collect information for each project id from server. Were all requirements followed

✓

COVER PAGE:

Do numbers of samples correspond to the number of samples in the Chain of Custody on login page

✓

Do lab numbers and client Ids on cover page agree with the Chain of Custody

✓

CHAIN OF CUSTODY:

Do requested analyses on Chain of Custody agree with form I results

✓

Do requested analyses on Chain of Custody agree with the log-in page

✓

Were the correct method log-in for analysis according to the Analytical Request and Chain of Custody

✓

Were the samples received within hold time

✓

Were any problems found with the samples at arrival recorded in the Sample Management Laboratory Chronicle

✓

ANALYTICAL:

Was method requirement followed?

✓

Was client requirement followed?

✓

Does the case narrative summarize all QC failure?

✓

All runlogs and manual integration are reviewed for requirements

✓

All manual calculations and /or hand notations verified

✓

QA Review Signature: SOHIL JODHANI

Date: 03/18/2025

LAB CHRONICLE

OrderID:	Q1543	OrderDate:	3/11/2025 11:26:20 AM
Client:	APTIM	Project:	NSFIH - Indian Head - 502082.01020000
Contact:	Mark Fuller	Location:	I31

LabID	ClientID	Matrix	Test	Method	Sample Date	Prep Date	Anal Date	Received
Q1543-01	ISB878MW02	Water	Metals ICP-TAL	6010D	02/27/25	03/13/25	03/17/25	03/11/25
Q1543-02	ISB878MW05	Water	Metals ICP-TAL	6010D	02/27/25	03/13/25	03/17/25	03/11/25

Hit Summary Sheet
SW-846

SDG No.: Q1543 **Order ID:** Q1543
Client: APTIM **Project ID:** NSFIIH - Indian Head - 502082.01020000

Sample ID	Client ID	Matrix	Parameter	Concentration	C	MDL	RDL	Units
Client ID : ISB878MW02								
Q1543-01	ISB878MW02	Water	Aluminum	205		28.3	50.0	ug/L
Q1543-01	ISB878MW02	Water	Barium	25.4	J	6.28	50.0	ug/L
Q1543-01	ISB878MW02	Water	Calcium	7580		33.0	1000	ug/L
Q1543-01	ISB878MW02	Water	Chromium	1.31	J	0.66	5.00	ug/L
Q1543-01	ISB878MW02	Water	Cobalt	4.55	J	0.50	15.0	ug/L
Q1543-01	ISB878MW02	Water	Iron	501		18.5	50.0	ug/L
Q1543-01	ISB878MW02	Water	Magnesium	5400		39.4	1000	ug/L
Q1543-01	ISB878MW02	Water	Manganese	36.5		1.46	10.0	ug/L
Q1543-01	ISB878MW02	Water	Nickel	2.90	J	0.85	20.0	ug/L
Q1543-01	ISB878MW02	Water	Sodium	14300		237	1000	ug/L
Q1543-01	ISB878MW02	Water	Zinc	4.99	J	1.75	20.0	ug/L
Client ID : ISB878MW05								
Q1543-02	ISB878MW05	Water	Aluminum	841		28.3	50.0	ug/L
Q1543-02	ISB878MW05	Water	Barium	165		6.28	50.0	ug/L
Q1543-02	ISB878MW05	Water	Beryllium	0.40	J	0.13	3.00	ug/L
Q1543-02	ISB878MW05	Water	Calcium	27500		33.0	1000	ug/L
Q1543-02	ISB878MW05	Water	Chromium	1.42	J	0.66	5.00	ug/L
Q1543-02	ISB878MW05	Water	Cobalt	14.5	J	0.50	15.0	ug/L
Q1543-02	ISB878MW05	Water	Iron	3290		18.5	50.0	ug/L
Q1543-02	ISB878MW05	Water	Magnesium	16400		39.4	1000	ug/L
Q1543-02	ISB878MW05	Water	Manganese	143		1.46	10.0	ug/L
Q1543-02	ISB878MW05	Water	Nickel	7.44	J	0.85	20.0	ug/L
Q1543-02	ISB878MW05	Water	Potassium	2280		685	1000	ug/L
Q1543-02	ISB878MW05	Water	Sodium	140000		237	1000	ug/L
Q1543-02	ISB878MW05	Water	Vanadium	3.55	J	3.06	20.0	ug/L
Q1543-02	ISB878MW05	Water	Zinc	18.1	J	1.75	20.0	ug/L



SAMPLE DATA

Report of Analysis

Client:	APTIM	Date Collected:	02/27/25
Project:	NSFIH - Indian Head - 502082.01020000	Date Received:	03/11/25
Client Sample ID:	ISB878MW02	SDG No.:	Q1543
Lab Sample ID:	Q1543-01	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7429-90-5	Aluminum	205	N	1	28.3	50.0	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-36-0	Antimony	2.06	U	1	2.06	25.0	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-38-2	Arsenic	3.48	U	1	3.48	10.0	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-39-3	Barium	25.4	J	1	6.28	50.0	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-41-7	Beryllium	0.13	U	1	0.13	3.00	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-43-9	Cadmium	0.094	U	1	0.094	3.00	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-70-2	Calcium	7580		1	33.0	1000	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-47-3	Chromium	1.31	J	1	0.66	5.00	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-48-4	Cobalt	4.55	J	1	0.50	15.0	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-50-8	Copper	7.07	U	1	7.07	10.0	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7439-89-6	Iron	501	N	1	18.5	50.0	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7439-92-1	Lead	3.51	U	1	3.51	6.00	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7439-95-4	Magnesium	5400		1	39.4	1000	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7439-96-5	Manganese	36.5	N	1	1.46	10.0	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-02-0	Nickel	2.90	J	1	0.85	20.0	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-09-7	Potassium	685	U	1	685	1000	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7782-49-2	Selenium	5.88	U	1	5.88	10.0	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-22-4	Silver	0.58	U	1	0.58	5.00	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-23-5	Sodium	14300		1	237	1000	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-28-0	Thallium	2.32	U	1	2.32	20.0	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-62-2	Vanadium	3.06	U	1	3.06	20.0	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010
7440-66-6	Zinc	4.99	J	1	1.75	20.0	ug/L	03/13/25 10:30	03/17/25 15:48	SW6010	SW3010

Color Before:	Colorless	Clarity Before:	Clear	Texture:
Color After:	Colorless	Clarity After:	Clear	Artifacts:
Comments:	Metals ICP-TAL			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution
Q = indicates LCS control criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
* = indicates the duplicate analysis is not within control limits.
E = Indicates the reported value is estimated because of the presence of interference.
OR = Over Range
N = Spiked sample recovery not within control limits

Report of Analysis

Client:	APTIM	Date Collected:	02/27/25
Project:	NSFIH - Indian Head - 502082.01020000	Date Received:	03/11/25
Client Sample ID:	ISB878MW05	SDG No.:	Q1543
Lab Sample ID:	Q1543-02	Matrix:	Water
Level (low/med):	low	% Solid:	0

Cas	Parameter	Conc.	Qua.	DF	MDL	LOQ / CRQL	Units	Prep Date	Date Ana.	Ana Met.	Prep Met.
7429-90-5	Aluminum	841	N	1	28.3	50.0	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-36-0	Antimony	2.06	U	1	2.06	25.0	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-38-2	Arsenic	3.48	U	1	3.48	10.0	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-39-3	Barium	165		1	6.28	50.0	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-41-7	Beryllium	0.40	J	1	0.13	3.00	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-43-9	Cadmium	0.094	U	1	0.094	3.00	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-70-2	Calcium	27500		1	33.0	1000	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-47-3	Chromium	1.42	J	1	0.66	5.00	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-48-4	Cobalt	14.5	J	1	0.50	15.0	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-50-8	Copper	7.07	U	1	7.07	10.0	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7439-89-6	Iron	3290	N	1	18.5	50.0	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7439-92-1	Lead	3.51	U	1	3.51	6.00	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7439-95-4	Magnesium	16400		1	39.4	1000	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7439-96-5	Manganese	143	N	1	1.46	10.0	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-02-0	Nickel	7.44	J	1	0.85	20.0	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-09-7	Potassium	2280		1	685	1000	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7782-49-2	Selenium	5.88	U	1	5.88	10.0	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-22-4	Silver	0.58	U	1	0.58	5.00	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-23-5	Sodium	140000		1	237	1000	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-28-0	Thallium	2.32	U	1	2.32	20.0	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-62-2	Vanadium	3.55	J	1	3.06	20.0	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010
7440-66-6	Zinc	18.1	J	1	1.75	20.0	ug/L	03/13/25 10:30	03/17/25 15:52	SW6010	SW3010

Color Before:	Colorless	Clarity Before:	Clear	Texture:
Color After:	Colorless	Clarity After:	Clear	Artifacts:
Comments:	Metals ICP-TAL			

U = Not Detected
LOQ = Limit of Quantitation
MDL = Method Detection Limit
LOD = Limit of Detection
D = Dilution
Q = indicates LCS control criteria did not meet requirements

J = Estimated Value
B = Analyte Found in Associated Method Blank
* = indicates the duplicate analysis is not within control limits.
E = Indicates the reported value is estimated because of the presence of interference.
OR = Over Range
N = Spiked sample recovery not within control limits



METAL CALIBRATION DATA

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: APTIM SDG No.: Q1543
Contract: SHAW18 Lab Code: CHEM Case No.: Q1543 SAS No.: Q1543
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
ICV01	Aluminum	2520	2500	101	90 - 110	P	03/17/2025	14:31	LB135063
	Antimony	1020	1000	102	90 - 110	P	03/17/2025	14:31	LB135063
	Arsenic	1020	1000	102	90 - 110	P	03/17/2025	14:31	LB135063
	Barium	533	520	102	90 - 110	P	03/17/2025	14:31	LB135063
	Beryllium	540	510	106	90 - 110	P	03/17/2025	14:31	LB135063
	Cadmium	504	510	99	90 - 110	P	03/17/2025	14:31	LB135063
	Calcium	9860	10000	99	90 - 110	P	03/17/2025	14:31	LB135063
	Chromium	529	520	102	90 - 110	P	03/17/2025	14:31	LB135063
	Cobalt	510	520	98	90 - 110	P	03/17/2025	14:31	LB135063
	Copper	528	510	104	90 - 110	P	03/17/2025	14:31	LB135063
	Iron	10100	10000	101	90 - 110	P	03/17/2025	14:31	LB135063
	Lead	996	1000	100	90 - 110	P	03/17/2025	14:31	LB135063
	Magnesium	5840	6000	97	90 - 110	P	03/17/2025	14:31	LB135063
	Manganese	499	520	96	90 - 110	P	03/17/2025	14:31	LB135063
	Nickel	512	530	97	90 - 110	P	03/17/2025	14:31	LB135063
	Potassium	9780	9900	99	90 - 110	P	03/17/2025	14:31	LB135063
	Selenium	1050	1000	105	90 - 110	P	03/17/2025	14:31	LB135063
	Silver	257	250	103	90 - 110	P	03/17/2025	14:31	LB135063
	Sodium	9920	10000	99	90 - 110	P	03/17/2025	14:31	LB135063
	Thallium	1040	1000	104	90 - 110	P	03/17/2025	14:31	LB135063
	Vanadium	519	500	104	90 - 110	P	03/17/2025	14:31	LB135063
	Zinc	1040	1000	104	90 - 110	P	03/17/2025	14:31	LB135063

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: APTIM SDG No.: Q1543
Contract: SHAW18 Lab Code: CHEM Case No.: Q1543 SAS No.: Q1543
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
LLICV01	Aluminum	93.8	100	94	80 - 120	P	03/17/2025	14:38	LB135063
	Antimony	49.8	50.0	100	80 - 120	P	03/17/2025	14:38	LB135063
	Arsenic	19.4	20.0	97	80 - 120	P	03/17/2025	14:38	LB135063
	Barium	93.6	100	94	80 - 120	P	03/17/2025	14:38	LB135063
	Beryllium	5.93	6.0	99	80 - 120	P	03/17/2025	14:38	LB135063
	Cadmium	5.89	6.0	98	80 - 120	P	03/17/2025	14:38	LB135063
	Calcium	1970	2000	98	80 - 120	P	03/17/2025	14:38	LB135063
	Chromium	10.3	10.0	103	80 - 120	P	03/17/2025	14:38	LB135063
	Cobalt	29.3	30.0	98	80 - 120	P	03/17/2025	14:38	LB135063
	Copper	22.1	20.0	110	80 - 120	P	03/17/2025	14:38	LB135063
	Iron	99.8	100	100	80 - 120	P	03/17/2025	14:38	LB135063
	Lead	12.3	12.0	103	80 - 120	P	03/17/2025	14:38	LB135063
	Magnesium	2090	2000	104	80 - 120	P	03/17/2025	14:38	LB135063
	Manganese	21.9	20.0	110	80 - 120	P	03/17/2025	14:38	LB135063
	Nickel	39.3	40.0	98	80 - 120	P	03/17/2025	14:38	LB135063
	Potassium	1960	2000	98	80 - 120	P	03/17/2025	14:38	LB135063
	Selenium	18.2	20.0	91	80 - 120	P	03/17/2025	14:38	LB135063
	Silver	10.5	10.0	105	80 - 120	P	03/17/2025	14:38	LB135063
	Sodium	2000	2000	100	80 - 120	P	03/17/2025	14:38	LB135063
	Thallium	42.4	40.0	106	80 - 120	P	03/17/2025	14:38	LB135063
	Vanadium	39.2	40.0	98	80 - 120	P	03/17/2025	14:38	LB135063
	Zinc	42.5	40.0	106	80 - 120	P	03/17/2025	14:38	LB135063

Metals

- 2a -

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: APTIM SDG No.: Q1543
Contract: SHAW18 Lab Code: CHEM Case No.: Q1543 SAS No.: Q1543
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV01	Aluminum	10000	10000	100	90 - 110	P	03/17/2025	15:15	LB135063
	Antimony	5170	5000	103	90 - 110	P	03/17/2025	15:15	LB135063
	Arsenic	5160	5000	103	90 - 110	P	03/17/2025	15:15	LB135063
	Barium	9740	10000	97	90 - 110	P	03/17/2025	15:15	LB135063
	Beryllium	250	250	100	90 - 110	P	03/17/2025	15:15	LB135063
	Cadmium	2510	2500	100	90 - 110	P	03/17/2025	15:15	LB135063
	Calcium	24700	25000	99	90 - 110	P	03/17/2025	15:15	LB135063
	Chromium	1030	1000	103	90 - 110	P	03/17/2025	15:15	LB135063
	Cobalt	2500	2500	100	90 - 110	P	03/17/2025	15:15	LB135063
	Copper	1270	1250	102	90 - 110	P	03/17/2025	15:15	LB135063
	Iron	5180	5000	104	90 - 110	P	03/17/2025	15:15	LB135063
	Lead	5080	5000	102	90 - 110	P	03/17/2025	15:15	LB135063
	Magnesium	24700	25000	99	90 - 110	P	03/17/2025	15:15	LB135063
	Manganese	2410	2500	96	90 - 110	P	03/17/2025	15:15	LB135063
	Nickel	2490	2500	100	90 - 110	P	03/17/2025	15:15	LB135063
	Potassium	25700	25000	103	90 - 110	P	03/17/2025	15:15	LB135063
	Selenium	5080	5000	102	90 - 110	P	03/17/2025	15:15	LB135063
	Silver	1310	1250	104	90 - 110	P	03/17/2025	15:15	LB135063
	Sodium	26200	25000	105	90 - 110	P	03/17/2025	15:15	LB135063
	Thallium	5180	5000	104	90 - 110	P	03/17/2025	15:15	LB135063
CCV02	Vanadium	2500	2500	100	90 - 110	P	03/17/2025	15:15	LB135063
	Zinc	2620	2500	105	90 - 110	P	03/17/2025	15:15	LB135063
	Aluminum	9980	10000	100	90 - 110	P	03/17/2025	16:13	LB135063
	Antimony	5260	5000	105	90 - 110	P	03/17/2025	16:13	LB135063
	Arsenic	5220	5000	104	90 - 110	P	03/17/2025	16:13	LB135063
	Barium	9760	10000	98	90 - 110	P	03/17/2025	16:13	LB135063
	Beryllium	244	250	98	90 - 110	P	03/17/2025	16:13	LB135063
	Cadmium	2500	2500	100	90 - 110	P	03/17/2025	16:13	LB135063
	Calcium	24300	25000	97	90 - 110	P	03/17/2025	16:13	LB135063
	Chromium	1040	1000	104	90 - 110	P	03/17/2025	16:13	LB135063
	Cobalt	2480	2500	99	90 - 110	P	03/17/2025	16:13	LB135063
	Copper	1280	1250	102	90 - 110	P	03/17/2025	16:13	LB135063
	Iron	5090	5000	102	90 - 110	P	03/17/2025	16:13	LB135063
	Lead	5070	5000	101	90 - 110	P	03/17/2025	16:13	LB135063

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: APTIM SDG No.: Q1543
Contract: SHAW18 Lab Code: CHEM Case No.: Q1543 SAS No.: Q1543
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV02	Magnesium	24200	25000	97	90 - 110	P	03/17/2025	16:13	LB135063
	Manganese	2350	2500	94	90 - 110	P	03/17/2025	16:13	LB135063
	Nickel	2470	2500	99	90 - 110	P	03/17/2025	16:13	LB135063
	Potassium	25600	25000	102	90 - 110	P	03/17/2025	16:13	LB135063
	Selenium	5140	5000	103	90 - 110	P	03/17/2025	16:13	LB135063
	Silver	1290	1250	103	90 - 110	P	03/17/2025	16:13	LB135063
	Sodium	26400	25000	106	90 - 110	P	03/17/2025	16:13	LB135063
	Thallium	5230	5000	105	90 - 110	P	03/17/2025	16:13	LB135063
	Vanadium	2470	2500	99	90 - 110	P	03/17/2025	16:13	LB135063
	Zinc	2590	2500	104	90 - 110	P	03/17/2025	16:13	LB135063
CCV03	Aluminum	10400	10000	104	90 - 110	P	03/17/2025	17:05	LB135063
	Antimony	5370	5000	107	90 - 110	P	03/17/2025	17:05	LB135063
	Arsenic	5320	5000	106	90 - 110	P	03/17/2025	17:05	LB135063
	Barium	9780	10000	98	90 - 110	P	03/17/2025	17:05	LB135063
	Beryllium	260	250	104	90 - 110	P	03/17/2025	17:05	LB135063
	Cadmium	2570	2500	103	90 - 110	P	03/17/2025	17:05	LB135063
	Calcium	25100	25000	101	90 - 110	P	03/17/2025	17:05	LB135063
	Chromium	1090	1000	109	90 - 110	P	03/17/2025	17:05	LB135063
	Cobalt	2540	2500	102	90 - 110	P	03/17/2025	17:05	LB135063
	Copper	1310	1250	104	90 - 110	P	03/17/2025	17:05	LB135063
	Iron	5130	5000	103	90 - 110	P	03/17/2025	17:05	LB135063
	Lead	5200	5000	104	90 - 110	P	03/17/2025	17:05	LB135063
	Magnesium	25600	25000	102	90 - 110	P	03/17/2025	17:05	LB135063
	Manganese	2430	2500	97	90 - 110	P	03/17/2025	17:05	LB135063
	Nickel	2530	2500	101	90 - 110	P	03/17/2025	17:05	LB135063
	Potassium	25500	25000	102	90 - 110	P	03/17/2025	17:05	LB135063
	Selenium	5220	5000	104	90 - 110	P	03/17/2025	17:05	LB135063
	Silver	1330	1250	106	90 - 110	P	03/17/2025	17:05	LB135063
	Sodium	26400	25000	106	90 - 110	P	03/17/2025	17:05	LB135063
	Thallium	5350	5000	107	90 - 110	P	03/17/2025	17:05	LB135063
CCV04	Vanadium	2560	2500	103	90 - 110	P	03/17/2025	17:05	LB135063
	Zinc	2680	2500	107	90 - 110	P	03/17/2025	17:05	LB135063
	Aluminum	9640	10000	96	90 - 110	P	03/17/2025	17:51	LB135063
	Antimony	5070	5000	101	90 - 110	P	03/17/2025	17:51	LB135063

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: APTIM SDG No.: Q1543
Contract: SHAW18 Lab Code: CHEM Case No.: Q1543 SAS No.: Q1543
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV04	Arsenic	5020	5000	100	90 - 110	P	03/17/2025	17:51	LB135063
	Barium	9270	10000	93	90 - 110	P	03/17/2025	17:51	LB135063
	Beryllium	238	250	95	90 - 110	P	03/17/2025	17:51	LB135063
	Cadmium	2390	2500	96	90 - 110	P	03/17/2025	17:51	LB135063
	Calcium	23600	25000	94	90 - 110	P	03/17/2025	17:51	LB135063
	Chromium	1010	1000	101	90 - 110	P	03/17/2025	17:51	LB135063
	Cobalt	2370	2500	95	90 - 110	P	03/17/2025	17:51	LB135063
	Copper	1230	1250	98	90 - 110	P	03/17/2025	17:51	LB135063
	Iron	4880	5000	98	90 - 110	P	03/17/2025	17:51	LB135063
	Lead	4870	5000	97	90 - 110	P	03/17/2025	17:51	LB135063
	Magnesium	23600	25000	94	90 - 110	P	03/17/2025	17:51	LB135063
	Manganese	2270	2500	91	90 - 110	P	03/17/2025	17:51	LB135063
	Nickel	2360	2500	94	90 - 110	P	03/17/2025	17:51	LB135063
	Potassium	24300	25000	97	90 - 110	P	03/17/2025	17:51	LB135063
	Selenium	4900	5000	98	90 - 110	P	03/17/2025	17:51	LB135063
	Silver	1240	1250	100	90 - 110	P	03/17/2025	17:51	LB135063
	Sodium	25000	25000	100	90 - 110	P	03/17/2025	17:51	LB135063
	Thallium	4970	5000	99	90 - 110	P	03/17/2025	17:51	LB135063
	Vanadium	2400	2500	96	90 - 110	P	03/17/2025	17:51	LB135063
	Zinc	2510	2500	100	90 - 110	P	03/17/2025	17:51	LB135063
CCV05	Aluminum	9710	10000	97	90 - 110	P	03/17/2025	18:18	LB135063
	Antimony	5140	5000	103	90 - 110	P	03/17/2025	18:18	LB135063
	Arsenic	5050	5000	101	90 - 110	P	03/17/2025	18:18	LB135063
	Barium	9500	10000	95	90 - 110	P	03/17/2025	18:18	LB135063
	Beryllium	236	250	94	90 - 110	P	03/17/2025	18:18	LB135063
	Cadmium	2390	2500	96	90 - 110	P	03/17/2025	18:18	LB135063
	Calcium	23600	25000	94	90 - 110	P	03/17/2025	18:18	LB135063
	Chromium	1020	1000	102	90 - 110	P	03/17/2025	18:18	LB135063
	Cobalt	2380	2500	95	90 - 110	P	03/17/2025	18:18	LB135063
	Copper	1240	1250	99	90 - 110	P	03/17/2025	18:18	LB135063
	Iron	4960	5000	99	90 - 110	P	03/17/2025	18:18	LB135063
	Lead	4870	5000	97	90 - 110	P	03/17/2025	18:18	LB135063
	Magnesium	23400	25000	93	90 - 110	P	03/17/2025	18:18	LB135063
	Manganese	2260	2500	90	90 - 110	P	03/17/2025	18:18	LB135063

Metals

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INITIAL AND CONTINUING CALIBRATION VERIFICATION

Client: APTIM **SDG No.:** Q1543
Contract: SHAW18 **Lab Code:** CHEM **Case No.:** Q1543 **SAS No.:** Q1543
Initial Calibration Source: EPA
Continuing Calibration Source: Inorganic Ventures

Sample ID	Analyte	Result ug/L	True Value	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CCV05	Nickel	2360	2500	94	90 - 110	P	03/17/2025	18:18	LB135063
	Potassium	25100	25000	100	90 - 110	P	03/17/2025	18:18	LB135063
	Selenium	4960	5000	99	90 - 110	P	03/17/2025	18:18	LB135063
	Silver	1260	1250	101	90 - 110	P	03/17/2025	18:18	LB135063
	Sodium	25900	25000	103	90 - 110	P	03/17/2025	18:18	LB135063
	Thallium	4940	5000	99	90 - 110	P	03/17/2025	18:18	LB135063
	Vanadium	2400	2500	96	90 - 110	P	03/17/2025	18:18	LB135063
	Zinc	2540	2500	102	90 - 110	P	03/17/2025	18:18	LB135063

Metals

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CRDL STANDARD FOR AA & ICP

Client: APTIM **SDG No.:** Q1543
Contract: SHAW18 **Lab Code:** CHEM **Case No.:** Q1543 **SAS No.:** Q1543
Initial Calibration Source: _____
Continuing Calibration Source: _____

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Acceptance Window (%R)	M	Analysis Date	Analysis Time	Run Number
CRI01	Aluminum	98.4	100	98	40 - 160	P	03/17/2025	14:47	LB135063
	Antimony	50.1	50.0	100	40 - 160	P	03/17/2025	14:47	LB135063
	Arsenic	19.6	20.0	98	40 - 160	P	03/17/2025	14:47	LB135063
	Barium	92.8	100	93	40 - 160	P	03/17/2025	14:47	LB135063
	Beryllium	6.02	6.0	100	40 - 160	P	03/17/2025	14:47	LB135063
	Cadmium	5.88	6.0	98	40 - 160	P	03/17/2025	14:47	LB135063
	Calcium	1980	2000	99	40 - 160	P	03/17/2025	14:47	LB135063
	Chromium	10.3	10.0	103	40 - 160	P	03/17/2025	14:47	LB135063
	Cobalt	29.5	30.0	98	40 - 160	P	03/17/2025	14:47	LB135063
	Copper	22.2	20.0	111	40 - 160	P	03/17/2025	14:47	LB135063
	Iron	98.2	100	98	40 - 160	P	03/17/2025	14:47	LB135063
	Lead	12.6	12.0	105	40 - 160	P	03/17/2025	14:47	LB135063
	Magnesium	2110	2000	105	40 - 160	P	03/17/2025	14:47	LB135063
	Manganese	21.5	20.0	107	40 - 160	P	03/17/2025	14:47	LB135063
	Nickel	39.4	40.0	98	40 - 160	P	03/17/2025	14:47	LB135063
	Potassium	1960	2000	98	40 - 160	P	03/17/2025	14:47	LB135063
	Selenium	18.9	20.0	94	40 - 160	P	03/17/2025	14:47	LB135063
	Silver	10.3	10.0	103	40 - 160	P	03/17/2025	14:47	LB135063
	Sodium	2000	2000	100	40 - 160	P	03/17/2025	14:47	LB135063
	Thallium	43.2	40.0	108	40 - 160	P	03/17/2025	14:47	LB135063
	Vanadium	40.5	40.0	101	40 - 160	P	03/17/2025	14:47	LB135063
	Zinc	42.9	40.0	107	40 - 160	P	03/17/2025	14:47	LB135063

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: <u>APTIM</u>		SDG No.: <u>Q1543</u>							
Contract: <u>SHAW18</u>	Lab Code: <u>CHEM</u>	Case No.: <u>Q1543</u>	SAS No.: <u>Q1543</u>						
Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
ICB01	Aluminum	100	+/-100	U	100	P	03/17/2025	14:43	LB135063
	Antimony	50.0	+/-50.0	U	50.0	P	03/17/2025	14:43	LB135063
	Arsenic	20.0	+/-20.0	U	20.0	P	03/17/2025	14:43	LB135063
	Barium	100	+/-100	U	100	P	03/17/2025	14:43	LB135063
	Beryllium	6.00	+/-6.00	U	6.00	P	03/17/2025	14:43	LB135063
	Cadmium	6.00	+/-6.00	U	6.00	P	03/17/2025	14:43	LB135063
	Calcium	2000	+/-2000	U	2000	P	03/17/2025	14:43	LB135063
	Chromium	10.0	+/-10.0	U	10.0	P	03/17/2025	14:43	LB135063
	Cobalt	30.0	+/-30.0	U	30.0	P	03/17/2025	14:43	LB135063
	Copper	20.0	+/-20.0	U	20.0	P	03/17/2025	14:43	LB135063
	Iron	100	+/-100	U	100	P	03/17/2025	14:43	LB135063
	Lead	12.0	+/-12.0	U	12.0	P	03/17/2025	14:43	LB135063
	Magnesium	2000	+/-2000	U	2000	P	03/17/2025	14:43	LB135063
	Manganese	20.0	+/-20.0	U	20.0	P	03/17/2025	14:43	LB135063
	Nickel	40.0	+/-40.0	U	40.0	P	03/17/2025	14:43	LB135063
	Potassium	2000	+/-2000	U	2000	P	03/17/2025	14:43	LB135063
	Selenium	20.0	+/-20.0	U	20.0	P	03/17/2025	14:43	LB135063
	Silver	10.0	+/-10.0	U	10.0	P	03/17/2025	14:43	LB135063
	Sodium	2000	+/-2000	U	2000	P	03/17/2025	14:43	LB135063
	Thallium	40.0	+/-40.0	U	40.0	P	03/17/2025	14:43	LB135063
	Vanadium	40.0	+/-40.0	U	40.0	P	03/17/2025	14:43	LB135063
	Zinc	40.0	+/-40.0	U	40.0	P	03/17/2025	14:43	LB135063

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: APTIM SDG No.: Q1543
Contract: SHAW18 Lab Code: CHEM Case No.: Q1543 SAS No.: Q1543

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB01	Aluminum	100	+/-100	U	100	P	03/17/2025	15:27	LB135063
	Antimony	50.0	+/-50.0	U	50.0	P	03/17/2025	15:27	LB135063
	Arsenic	20.0	+/-20.0	U	20.0	P	03/17/2025	15:27	LB135063
	Barium	100	+/-100	U	100	P	03/17/2025	15:27	LB135063
	Beryllium	6.00	+/-6.00	U	6.00	P	03/17/2025	15:27	LB135063
	Cadmium	6.00	+/-6.00	U	6.00	P	03/17/2025	15:27	LB135063
	Calcium	2000	+/-2000	U	2000	P	03/17/2025	15:27	LB135063
	Chromium	10.0	+/-10.0	U	10.0	P	03/17/2025	15:27	LB135063
	Cobalt	30.0	+/-30.0	U	30.0	P	03/17/2025	15:27	LB135063
	Copper	20.0	+/-20.0	U	20.0	P	03/17/2025	15:27	LB135063
	Iron	100	+/-100	U	100	P	03/17/2025	15:27	LB135063
	Lead	12.0	+/-12.0	U	12.0	P	03/17/2025	15:27	LB135063
	Magnesium	2000	+/-2000	U	2000	P	03/17/2025	15:27	LB135063
	Manganese	20.0	+/-20.0	U	20.0	P	03/17/2025	15:27	LB135063
	Nickel	40.0	+/-40.0	U	40.0	P	03/17/2025	15:27	LB135063
	Potassium	2000	+/-2000	U	2000	P	03/17/2025	15:27	LB135063
	Selenium	20.0	+/-20.0	U	20.0	P	03/17/2025	15:27	LB135063
	Silver	10.0	+/-10.0	U	10.0	P	03/17/2025	15:27	LB135063
	Sodium	2000	+/-2000	U	2000	P	03/17/2025	15:27	LB135063
	Thallium	40.0	+/-40.0	U	40.0	P	03/17/2025	15:27	LB135063
	Vanadium	40.0	+/-40.0	U	40.0	P	03/17/2025	15:27	LB135063
	Zinc	40.0	+/-40.0	U	40.0	P	03/17/2025	15:27	LB135063
CCB02	Aluminum	100	+/-100	U	100	P	03/17/2025	16:17	LB135063
	Antimony	50.0	+/-50.0	U	50.0	P	03/17/2025	16:17	LB135063
	Arsenic	20.0	+/-20.0	U	20.0	P	03/17/2025	16:17	LB135063
	Barium	100	+/-100	U	100	P	03/17/2025	16:17	LB135063
	Beryllium	6.00	+/-6.00	U	6.00	P	03/17/2025	16:17	LB135063
	Cadmium	6.00	+/-6.00	U	6.00	P	03/17/2025	16:17	LB135063
	Calcium	2000	+/-2000	U	2000	P	03/17/2025	16:17	LB135063
	Chromium	10.0	+/-10.0	U	10.0	P	03/17/2025	16:17	LB135063
	Cobalt	30.0	+/-30.0	U	30.0	P	03/17/2025	16:17	LB135063
	Copper	20.0	+/-20.0	U	20.0	P	03/17/2025	16:17	LB135063
	Iron	100	+/-100	U	100	P	03/17/2025	16:17	LB135063
	Lead	12.0	+/-12.0	U	12.0	P	03/17/2025	16:17	LB135063
	Magnesium	2000	+/-2000	U	2000	P	03/17/2025	16:17	LB135063
	Manganese	20.0	+/-20.0	U	20.0	P	03/17/2025	16:17	LB135063
	Nickel	40.0	+/-40.0	U	40.0	P	03/17/2025	16:17	LB135063
	Potassium	2000	+/-2000	U	2000	P	03/17/2025	16:17	LB135063
	Selenium	20.0	+/-20.0	U	20.0	P	03/17/2025	16:17	LB135063

Metals

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INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: <u>APTIM</u>		SDG No.: <u>Q1543</u>							
Contract: <u>SHAW18</u>	Lab Code: <u>CHEM</u>	Case No.: <u>Q1543</u>	SAS No.: <u>Q1543</u>						
Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB02	Silver	10.0	+/-10.0	U	10.0	P	03/17/2025	16:17	LB135063
	Sodium	2000	+/-2000	U	2000	P	03/17/2025	16:17	LB135063
	Thallium	40.0	+/-40.0	U	40.0	P	03/17/2025	16:17	LB135063
	Vanadium	40.0	+/-40.0	U	40.0	P	03/17/2025	16:17	LB135063
	Zinc	40.0	+/-40.0	U	40.0	P	03/17/2025	16:17	LB135063
CCB03	Aluminum	100	+/-100	U	100	P	03/17/2025	17:09	LB135063
	Antimony	50.0	+/-50.0	U	50.0	P	03/17/2025	17:09	LB135063
	Arsenic	20.0	+/-20.0	U	20.0	P	03/17/2025	17:09	LB135063
	Barium	100	+/-100	U	100	P	03/17/2025	17:09	LB135063
	Beryllium	6.00	+/-6.00	U	6.00	P	03/17/2025	17:09	LB135063
	Cadmium	6.00	+/-6.00	U	6.00	P	03/17/2025	17:09	LB135063
	Calcium	2000	+/-2000	U	2000	P	03/17/2025	17:09	LB135063
	Chromium	10.0	+/-10.0	U	10.0	P	03/17/2025	17:09	LB135063
	Cobalt	30.0	+/-30.0	U	30.0	P	03/17/2025	17:09	LB135063
	Copper	20.0	+/-20.0	U	20.0	P	03/17/2025	17:09	LB135063
	Iron	100	+/-100	U	100	P	03/17/2025	17:09	LB135063
	Lead	12.0	+/-12.0	U	12.0	P	03/17/2025	17:09	LB135063
	Magnesium	2000	+/-2000	U	2000	P	03/17/2025	17:09	LB135063
	Manganese	20.0	+/-20.0	U	20.0	P	03/17/2025	17:09	LB135063
	Nickel	40.0	+/-40.0	U	40.0	P	03/17/2025	17:09	LB135063
	Potassium	2000	+/-2000	U	2000	P	03/17/2025	17:09	LB135063
	Selenium	20.0	+/-20.0	U	20.0	P	03/17/2025	17:09	LB135063
	Silver	10.0	+/-10.0	U	10.0	P	03/17/2025	17:09	LB135063
	Sodium	2000	+/-2000	U	2000	P	03/17/2025	17:09	LB135063
	Thallium	40.0	+/-40.0	U	40.0	P	03/17/2025	17:09	LB135063
	Vanadium	40.0	+/-40.0	U	40.0	P	03/17/2025	17:09	LB135063
	Zinc	40.0	+/-40.0	U	40.0	P	03/17/2025	17:09	LB135063
CCB04	Aluminum	100	+/-100	U	100	P	03/17/2025	17:55	LB135063
	Antimony	50.0	+/-50.0	U	50.0	P	03/17/2025	17:55	LB135063
	Arsenic	20.0	+/-20.0	U	20.0	P	03/17/2025	17:55	LB135063
	Barium	100	+/-100	U	100	P	03/17/2025	17:55	LB135063
	Beryllium	6.00	+/-6.00	U	6.00	P	03/17/2025	17:55	LB135063
	Cadmium	6.00	+/-6.00	U	6.00	P	03/17/2025	17:55	LB135063
	Calcium	2000	+/-2000	U	2000	P	03/17/2025	17:55	LB135063
	Chromium	10.0	+/-10.0	U	10.0	P	03/17/2025	17:55	LB135063
	Cobalt	30.0	+/-30.0	U	30.0	P	03/17/2025	17:55	LB135063
	Copper	20.0	+/-20.0	U	20.0	P	03/17/2025	17:55	LB135063
	Iron	100	+/-100	U	100	P	03/17/2025	17:55	LB135063
	Lead	12.0	+/-12.0	U	12.0	P	03/17/2025	17:55	LB135063

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: APTIM SDG No.: Q1543
Contract: SHAW18 Lab Code: CHEM Case No.: Q1543 SAS No.: Q1543

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
CCB04	Magnesium	2000	+/-2000	U	2000	P	03/17/2025	17:55	LB135063
	Manganese	20.0	+/-20.0	U	20.0	P	03/17/2025	17:55	LB135063
	Nickel	40.0	+/-40.0	U	40.0	P	03/17/2025	17:55	LB135063
	Potassium	2000	+/-2000	U	2000	P	03/17/2025	17:55	LB135063
	Selenium	20.0	+/-20.0	U	20.0	P	03/17/2025	17:55	LB135063
	Silver	10.0	+/-10.0	U	10.0	P	03/17/2025	17:55	LB135063
	Sodium	2000	+/-2000	U	2000	P	03/17/2025	17:55	LB135063
	Thallium	40.0	+/-40.0	U	40.0	P	03/17/2025	17:55	LB135063
	Vanadium	40.0	+/-40.0	U	40.0	P	03/17/2025	17:55	LB135063
	Zinc	40.0	+/-40.0	U	40.0	P	03/17/2025	17:55	LB135063
CCB05	Aluminum	100	+/-100	U	100	P	03/17/2025	18:22	LB135063
	Antimony	50.0	+/-50.0	U	50.0	P	03/17/2025	18:22	LB135063
	Arsenic	20.0	+/-20.0	U	20.0	P	03/17/2025	18:22	LB135063
	Barium	100	+/-100	U	100	P	03/17/2025	18:22	LB135063
	Beryllium	6.00	+/-6.00	U	6.00	P	03/17/2025	18:22	LB135063
	Cadmium	6.00	+/-6.00	U	6.00	P	03/17/2025	18:22	LB135063
	Calcium	2000	+/-2000	U	2000	P	03/17/2025	18:22	LB135063
	Chromium	10.0	+/-10.0	U	10.0	P	03/17/2025	18:22	LB135063
	Cobalt	30.0	+/-30.0	U	30.0	P	03/17/2025	18:22	LB135063
	Copper	20.0	+/-20.0	U	20.0	P	03/17/2025	18:22	LB135063
	Iron	100	+/-100	U	100	P	03/17/2025	18:22	LB135063
	Lead	12.0	+/-12.0	U	12.0	P	03/17/2025	18:22	LB135063
	Magnesium	2000	+/-2000	U	2000	P	03/17/2025	18:22	LB135063
	Manganese	20.0	+/-20.0	U	20.0	P	03/17/2025	18:22	LB135063
	Nickel	40.0	+/-40.0	U	40.0	P	03/17/2025	18:22	LB135063
	Potassium	2000	+/-2000	U	2000	P	03/17/2025	18:22	LB135063
	Selenium	20.0	+/-20.0	U	20.0	P	03/17/2025	18:22	LB135063
	Silver	10.0	+/-10.0	U	10.0	P	03/17/2025	18:22	LB135063
	Sodium	2000	+/-2000	U	2000	P	03/17/2025	18:22	LB135063
	Thallium	40.0	+/-40.0	U	40.0	P	03/17/2025	18:22	LB135063
	Vanadium	40.0	+/-40.0	U	40.0	P	03/17/2025	18:22	LB135063
	Zinc	40.0	+/-40.0	U	40.0	P	03/17/2025	18:22	LB135063

Metals

- 3a -

INITIAL AND CONTINUING CALIBRATION BLANK SUMMARY

Client: APTIM **SDG No.:** Q1543
Contract: SHAW18 **Lab Code:** CHEM **Case No.:** Q1543 **SAS No.:** Q1543

Sample ID	Analyte	Result ug/L	Acceptance Limit	Conc Qual	CRQL	M	Analysis Date	Analysis Time	Run Number
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A

B

C

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E

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G

H

Metals
- 3b -
PREPARATION BLANK SUMMARY

Client: APTIM

SDG No.: Q1543

Instrument: P4

Sample ID	Analyte	Result (ug/L)	Acceptance Limit	Conc Qual	CRQL ug/L	M	Analysis Date	Analysis Time	Run
PB167119BL	WATER			Batch Number:	PB167119		Prep Date:	03/13/2025	
	Aluminum	50.0	<50.0	U	50.0	P	03/17/2025	15:39	LB135063
	Antimony	25.0	<25.0	U	25.0	P	03/17/2025	15:39	LB135063
	Arsenic	10.0	<10.0	U	10.0	P	03/17/2025	15:39	LB135063
	Barium	50.0	<50.0	U	50.0	P	03/17/2025	15:39	LB135063
	Beryllium	3.00	<3.00	U	3.00	P	03/17/2025	15:39	LB135063
	Cadmium	3.00	<3.00	U	3.00	P	03/17/2025	15:39	LB135063
	Calcium	1000	<1000	U	1000	P	03/17/2025	15:39	LB135063
	Chromium	5.00	<5.00	U	5.00	P	03/17/2025	15:39	LB135063
	Cobalt	15.0	<15.0	U	15.0	P	03/17/2025	15:39	LB135063
	Copper	10.0	<10.0	U	10.0	P	03/17/2025	15:39	LB135063
	Iron	50.0	<50.0	U	50.0	P	03/17/2025	15:39	LB135063
	Lead	6.00	<6.00	U	6.00	P	03/17/2025	15:39	LB135063
	Magnesium	1000	<1000	U	1000	P	03/17/2025	15:39	LB135063
	Manganese	10.0	<10.0	U	10.0	P	03/17/2025	15:39	LB135063
	Nickel	20.0	<20.0	U	20.0	P	03/17/2025	15:39	LB135063
	Potassium	1000	<1000	U	1000	P	03/17/2025	15:39	LB135063
	Selenium	10.0	<10.0	U	10.0	P	03/17/2025	15:39	LB135063
	Silver	5.00	<5.00	U	5.00	P	03/17/2025	15:39	LB135063
	Sodium	1000	<1000	U	1000	P	03/17/2025	15:39	LB135063
	Thallium	20.0	<20.0	U	20.0	P	03/17/2025	15:39	LB135063
	Vanadium	20.0	<20.0	U	20.0	P	03/17/2025	15:39	LB135063
	Zinc	20.0	<20.0	U	20.0	P	03/17/2025	15:39	LB135063

Metals
- 4 -
INTERFERENCE CHECK SAMPLE

Client: <u>APTIM</u>	SDG No.: <u>Q1543</u>
Contract: <u>SHAW18</u>	Lab Code: <u>CHEM</u>
ICS Source: <u>EPA</u>	Case No.: <u>Q1543</u>
	SAS No.: <u>Q1543</u>
	Instrument ID: <u>P4</u>

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Low Limit (ug/L)	High Limit (ug/L)	Analysis Date	Analysis Time	Run Number
ICSA01	Aluminum	252000	255000	99	216000	294000	03/17/2025	14:51	LB135063
	Antimony	-2.92			-50	50	03/17/2025	14:51	LB135063
	Arsenic	4.68			-20	20	03/17/2025	14:51	LB135063
	Barium	3.10	6.0	52	-94	106	03/17/2025	14:51	LB135063
	Beryllium	1.30			-6	6	03/17/2025	14:51	LB135063
	Cadmium	-4.02	1.0	402	-5	7	03/17/2025	14:51	LB135063
	Calcium	237000	245000	97	208000	282000	03/17/2025	14:51	LB135063
	Chromium	60.2	52.0	116	42	62	03/17/2025	14:51	LB135063
	Cobalt	1.67			-30	30	03/17/2025	14:51	LB135063
	Copper	17.5	2.0	875	-18	22	03/17/2025	14:51	LB135063
	Iron	101000	101000	100	85600	116500	03/17/2025	14:51	LB135063
	Lead	7.22			-12	12	03/17/2025	14:51	LB135063
	Magnesium	256000	255000	100	216000	294000	03/17/2025	14:51	LB135063
	Manganese	10.7	7.0	152	-13	27	03/17/2025	14:51	LB135063
	Nickel	2.20	2.0	110	-38	42	03/17/2025	14:51	LB135063
	Potassium	-4.64			0	0	03/17/2025	14:51	LB135063
	Selenium	-0.91			-20	20	03/17/2025	14:51	LB135063
	Silver	-2.37			-10	10	03/17/2025	14:51	LB135063
	Sodium	54.5			0	0	03/17/2025	14:51	LB135063
	Thallium	9.33			-40	40	03/17/2025	14:51	LB135063
	Vanadium	4.10			-40	40	03/17/2025	14:51	LB135063
	Zinc	3.55			-40	40	03/17/2025	14:51	LB135063
ICSAB01	Aluminum	252000	247000	102	209000	285000	03/17/2025	15:02	LB135063
	Antimony	644	618	104	525	711	03/17/2025	15:02	LB135063
	Arsenic	95.9	104	92	88.4	120	03/17/2025	15:02	LB135063
	Barium	491	537	91	437	637	03/17/2025	15:02	LB135063
	Beryllium	509	495	103	420	570	03/17/2025	15:02	LB135063
	Cadmium	1030	972	106	826	1120	03/17/2025	15:02	LB135063
	Calcium	235000	235000	100	199000	271000	03/17/2025	15:02	LB135063
	Chromium	588	542	108	460	624	03/17/2025	15:02	LB135063
	Cobalt	525	476	110	404	548	03/17/2025	15:02	LB135063
	Copper	534	511	104	434	588	03/17/2025	15:02	LB135063
	Iron	100000	99300	101	84400	114500	03/17/2025	15:02	LB135063
	Lead	58.7	49.0	120	37	61	03/17/2025	15:02	LB135063
	Magnesium	254000	248000	102	210000	286000	03/17/2025	15:02	LB135063
	Manganese	492	507	97	430	584	03/17/2025	15:02	LB135063
	Nickel	1030	954	108	810	1100	03/17/2025	15:02	LB135063
	Potassium	-21.1			0	0	03/17/2025	15:02	LB135063
	Selenium	57.1	46.0	124	26	66	03/17/2025	15:02	LB135063
	Silver	224	201	111	170	232	03/17/2025	15:02	LB135063
	Sodium	40.5			0	0	03/17/2025	15:02	LB135063
	Thallium	108	108	100	68	148	03/17/2025	15:02	LB135063

Metals
- 4 -
INTERFERENCE CHECK SAMPLE

Client: <u>APTIM</u>	SDG No.: <u>Q1543</u>
Contract: <u>SHAW18</u>	Lab Code: <u>CHEM</u>
ICS Source: <u>EPA</u>	Case No.: <u>Q1543</u>
	SAS No.: <u>Q1543</u>
	Instrument ID: <u>P4</u>

Sample ID	Analyte	Result ug/L	True Value ug/L	% Recovery	Low Limit (ug/L)	High Limit (ug/L)	Analysis Date	Analysis Time	Run Number
ICSAB01	Vanadium	488	491	99	417	565	03/17/2025	15:02	LB135063
	Zinc	827	952	87	809	1095	03/17/2025	15:02	LB135063



METAL QC DATA

metals
- 5a -
MATRIX SPIKE SUMMARY

client: <u>APTIM</u>	level: <u>low</u>	sdg no.: <u>Q1543</u>
contract: <u>SHAW18</u>	lab code: <u>CHEM</u>	case no.: <u>Q1543</u> sas no.: <u>Q1543</u>
matrix: <u>Water</u>	sample id: <u>Q1543-02</u>	client id: <u>ISB878MW05MS</u>
Percent Solids for Sample: <u>NA</u>	Spiked ID: <u>Q1543-02MS</u>	Percent Solids for Spike Sample: <u>NA</u>

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Aluminum	ug/L	75 - 125	1200		841		1000	36	N	P
Antimony	ug/L	75 - 125	408		25.0	U	400	102		P
Arsenic	ug/L	75 - 125	397		10.0	U	400	99		P
Barium	ug/L	75 - 125	249		165		100	84		P
Beryllium	ug/L	75 - 125	91.3		0.40	J	100	91		P
Cadmium	ug/L	75 - 125	93.7		3.00	U	100	94		P
Calcium	ug/L	75 - 125	27700		27500		500	27		P
Chromium	ug/L	75 - 125	198		1.42	J	200	98		P
Cobalt	ug/L	75 - 125	106		14.5	J	100	91		P
Copper	ug/L	75 - 125	143		10.0	U	150	95		P
Iron	ug/L	75 - 125	2170		3290		1500	-74	N	P
Lead	ug/L	75 - 125	455		6.00	U	500	91		P
Magnesium	ug/L	75 - 125	17000		16400		1000	58		P
Manganese	ug/L	75 - 125	215		143		100	72	N	P
Nickel	ug/L	75 - 125	240		7.44	J	250	93		P
Potassium	ug/L	75 - 125	7570		2280		5000	106		P
Selenium	ug/L	75 - 125	938		10.0	U	1000	94		P
Silver	ug/L	75 - 125	36.0		5.00	U	37.5	96		P
Sodium	ug/L	75 - 125	141000		140000		1500	61		P
Thallium	ug/L	75 - 125	925		20.0	U	1000	92		P
Vanadium	ug/L	75 - 125	141		3.55	J	150	92		P
Zinc	ug/L	75 - 125	117		18.1	J	100	99		P

metals
- 5a -
MATRIX SPIKE DUPLICATE SUMMARY

client: <u>APTIM</u>	level: <u>low</u>	sdg no.: <u>Q1543</u>
contract: <u>SHAW18</u>	lab code: <u>CHEM</u>	case no.: <u>Q1543</u> sas no.: <u>Q1543</u>
matrix: <u>Water</u>	sample id: <u>Q1543-02</u>	client id: <u>ISB878MW05MSD</u>
Percent Solids for Sample: <u>NA</u>	Spiked ID: <u>Q1543-02MSD</u>	Percent Solids for Spike Sample: <u>NA</u>

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Aluminum	ug/L	75 - 125	1200		841		1000	36	N	P
Antimony	ug/L	75 - 125	407		25.0	U	400	102		P
Arsenic	ug/L	75 - 125	395		10.0	U	400	99		P
Barium	ug/L	75 - 125	245		165		100	80		P
Beryllium	ug/L	75 - 125	89.1		0.40	J	100	89		P
Cadmium	ug/L	75 - 125	93.2		3.00	U	100	93		P
Calcium	ug/L	75 - 125	27200		27500		500	-61		P
Chromium	ug/L	75 - 125	196		1.42	J	200	97		P
Cobalt	ug/L	75 - 125	105		14.5	J	100	91		P
Copper	ug/L	75 - 125	142		10.0	U	150	95		P
Iron	ug/L	75 - 125	2140		3290		1500	-77	N	P
Lead	ug/L	75 - 125	453		6.00	U	500	91		P
Magnesium	ug/L	75 - 125	16700		16400		1000	27		P
Manganese	ug/L	75 - 125	211		143		100	68	N	P
Nickel	ug/L	75 - 125	239		7.44	J	250	93		P
Potassium	ug/L	75 - 125	7430		2280		5000	103		P
Selenium	ug/L	75 - 125	935		10.0	U	1000	94		P
Silver	ug/L	75 - 125	35.4		5.00	U	37.5	94		P
Sodium	ug/L	75 - 125	139000		140000		1500	-83		P
Thallium	ug/L	75 - 125	902		20.0	U	1000	90		P
Vanadium	ug/L	75 - 125	139		3.55	J	150	90		P
Zinc	ug/L	75 - 125	115		18.1	J	100	97		P

Metals
- 5b -
POST DIGEST SPIKE SUMMARY

Client: <u>APTIM</u>	SDG No.: <u>Q1543</u>	
Contract: <u>SHAW18</u>	Lab Code: <u>CHEM</u>	Case No.: <u>Q1543</u> SAS No.: <u>Q1543</u>
Matrix: <u>Water</u>	Level: <u>LOW</u>	Client ID: <u>ISB878MW05A</u>
Sample ID: <u>Q1543-02</u>	Spiked ID: <u>Q1543-02A</u>	

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Aluminum	ug/L	75 - 125	1820		841		10000	10		P
Iron	ug/L	75 - 125	4710		3290		1500	95		P
Manganese	ug/L	75 - 125	224		143		100	81		P

Metals

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DUPLICATE SAMPLE SUMMARY

Client: APTIM **Level:** LOW **SDG No.:** Q1543
Contract: SHAW18 **Lab Code:** CHEM **Case No.:** Q1543 **SAS No.:** Q1543
Matrix: Water **Sample ID:** Q1543-02 **Client ID:** ISB878MW05DUP
Percent Solids for Sample: NA **Duplicate ID** Q1543-02DUP **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Aluminum	ug/L	20	841		874		4		P
Antimony	ug/L	20	25.0	U	25.0	U			P
Arsenic	ug/L	20	10.0	U	10.0	U			P
Barium	ug/L	20	165		166		1		P
Beryllium	ug/L	20	0.40	J	0.38	J	6		P
Cadmium	ug/L	20	3.00	U	3.00	U			P
Calcium	ug/L	20	27500		27300		1		P
Chromium	ug/L	20	1.42	J	1.55	J	9		P
Cobalt	ug/L	20	14.5	J	14.4	J	1		P
Copper	ug/L	20	10.0	U	10.0	U			P
Iron	ug/L	20	3290		3440		4		P
Lead	ug/L	20	6.00	U	6.00	U			P
Magnesium	ug/L	20	16400		16100		2		P
Manganese	ug/L	20	143		142		1		P
Nickel	ug/L	20	7.44	J	7.25	J	3		P
Potassium	ug/L	20	2280		2400		5		P
Selenium	ug/L	20	10.0	U	10.0	U			P
Silver	ug/L	20	5.00	U	5.00	U			P
Sodium	ug/L	20	140000		145000		4		P
Thallium	ug/L	20	20.0	U	20.0	U			P
Vanadium	ug/L	20	3.55	J	3.26	J	9		P
Zinc	ug/L	20	18.1	J	18.1	J	0		P

“A control limit of $\pm 20\%$ RPD for each matrix applies for sample values greater than 10 times Detection Limit”

Metals

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DUPLICATE SAMPLE SUMMARY

Client: APTIM **Level:** LOW **SDG No.:** Q1543
Contract: SHAW18 **Lab Code:** CHEM **Case No.:** Q1543 **SAS No.:** Q1543
Matrix: Water **Sample ID:** Q1543-02MS **Client ID:** ISB878MW05MSD
Percent Solids for Sample: NA **Duplicate ID** Q1543-02MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit	Sample Result	C	Duplicate Result	C	RPD	Qual	M
Aluminum	ug/L	20	1200		1200		0		P
Antimony	ug/L	20	408		407		0		P
Arsenic	ug/L	20	397		395		1		P
Barium	ug/L	20	249		245		2		P
Beryllium	ug/L	20	91.3		89.1		2		P
Cadmium	ug/L	20	93.7		93.2		1		P
Calcium	ug/L	20	27700		27200		2		P
Chromium	ug/L	20	198		196		1		P
Cobalt	ug/L	20	106		105		1		P
Copper	ug/L	20	143		142		1		P
Iron	ug/L	20	2170		2140		1		P
Lead	ug/L	20	455		453		0		P
Magnesium	ug/L	20	17000		16700		2		P
Manganese	ug/L	20	215		211		2		P
Nickel	ug/L	20	240		239		0		P
Potassium	ug/L	20	7570		7430		2		P
Selenium	ug/L	20	938		935		0		P
Silver	ug/L	20	36.0		35.4		2		P
Sodium	ug/L	20	141000		139000		1		P
Thallium	ug/L	20	925		902		3		P
Vanadium	ug/L	20	141		139		1		P
Zinc	ug/L	20	117		115		2		P

“A control limit of $\pm 20\%$ RPD for each matrix applies for sample values greater than 10 times Detection Limit”

Metals

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LABORATORY CONTROL SAMPLE SUMMARY

Client: APTIM SDG No.: Q1543
 Contract: SHAW18 Lab Code: CHEM Case No.: Q1543 SAS No.: Q1543

Analyte	Units	True Value	Result	C	% Recovery	Acceptance Limits	M
PB167119BS							
Aluminum	ug/L	1000	940		94	80 - 120	P
Antimony	ug/L	400	403		101	80 - 120	P
Arsenic	ug/L	400	392		98	80 - 120	P
Barium	ug/L	100	89.3		89	80 - 120	P
Beryllium	ug/L	100	95.6		96	80 - 120	P
Cadmium	ug/L	100	94.4		94	80 - 120	P
Calcium	ug/L	500	479	J	96	80 - 120	P
Chromium	ug/L	200	200		100	80 - 120	P
Cobalt	ug/L	100	94.8		95	80 - 120	P
Copper	ug/L	150	153		102	80 - 120	P
Iron	ug/L	1500	1440		96	80 - 120	P
Lead	ug/L	500	473		95	80 - 120	P
Magnesium	ug/L	1000	929	J	93	80 - 120	P
Manganese	ug/L	100	93.4		93	80 - 120	P
Nickel	ug/L	250	238		95	80 - 120	P
Potassium	ug/L	5000	4570		91	80 - 120	P
Selenium	ug/L	1000	974		97	80 - 120	P
Silver	ug/L	37.5	37.3		100	80 - 120	P
Sodium	ug/L	1500	1430		95	80 - 120	P
Thallium	ug/L	1000	997		100	80 - 120	P
Vanadium	ug/L	150	141		94	80 - 120	P
Zinc	ug/L	100	101		101	80 - 120	P

Metals
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ICP SERIAL DILUTIONS

SAMPLE NO.

ISB878MW05L

Lab Name: Chemtech Consulting Group

Contract: SHAW18

Lab Code: CHEM Lb No.: lb135063 Lab Sample ID : Q1543-02L SDG No.: Q1543

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

Concentration Units: ug/L

Analyte	Initial Sample Result (I)		Serial Dilution Result (S)		% Difference	Q	M
Aluminum	841		2010		139		P
Antimony	25.0	U	125	U			P
Arsenic	10.0	U	50.0	U			P
Barium	165		166	J	0		P
Beryllium	0.40	J	15.0	U	100.0		P
Cadmium	3.00	U	15.0	U			P
Calcium	27500		28700		4		P
Chromium	1.42	J	3.30	J	132		P
Cobalt	14.5	J	14.7	J	2		P
Copper	10.0	U	50.0	U			P
Iron	3290		3970		21		P
Lead	6.00	U	30.0	U			P
Magnesium	16400		17000		3		P
Manganese	143		155		9		P
Nickel	7.44	J	7.64	J	3		P
Potassium	2280		5000	U	100.0		P
Selenium	10.0	U	50.0	U			P
Silver	5.00	U	25.0	U			P
Sodium	140000		141000		0		P
Thallium	20.0	U	100	U			P
Vanadium	3.55	J	100	U	100.0		P
Zinc	18.1	J	16.5	J	9		P



METAL PREPARATION & INSTRUMENT DATA

Metals

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ICP INTERELEMENT CORRECTION FACTORS

Client: APTIM

SDG No.: Q1543

Contract: SHAW18

Lab Code: CHEM

Case No.: Q1543

SAS No.: Q1543

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Al	Ca	Fe	Mg	Ag
Aluminum	396.100	0.0000000	-0.0002060	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	0.0000000	0.0000000	-0.0000440	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000930	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	-0.0075970	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0007850	0.0000000	0.0000000
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	-0.0000920	0.0000000	0.0000380	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	-0.0001440	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	-0.0001490	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0001050	0.0000000	0.0000000

Metals

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ICP INTERELEMEN CORRECTION FACTORS

Client: APTIM

SDG No.: Q1543

Contract: SHAW18

Lab Code: CHEM

Case No.: Q1543

SAS No.: Q1543

Instrument ID: _____

Date: _____

Interement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interement Correction Factors For:				
		As	Ba	Be	Cd	Co
Aluminum	396.100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0002870
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0000000	0.0000000	0.0000000	0.0009530
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	-0.0039600
Lead	220.353	0.0000000	0.0003170	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	-0.0003570
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0054900
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Metals

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ICP INTERELEMENT CORRECTION FACTORS

Client: APTIM

SDG No.: Q1543

Contract: SHAW18

Lab Code: CHEM

Case No.: Q1543

SAS No.: Q1543

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Cr	Cu	K	Mn	Mo
Aluminum	396.100	0.0000000	0.0000000	0.0000590	0.0000000	0.0396900
Antimony	206.833	0.0122000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	-0.0029000	0.0000000	0.0000000	0.0000000	0.0004900
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	-0.0000710	-0.0003400
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000070	0.0002200	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	-0.0007860
Copper	224.700	0.0000000	0.0000000	0.0000000	0.0006510	0.0020500
Iron	240.488	0.0000000	0.0000000	0.0000730	0.0000000	-0.0015250
Lead	220.353	0.0000000	0.0000000	0.0000000	0.0001400	-0.0008600
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0007460	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	-0.0000120
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0017400	-0.0100400
Vanadium	292.402	-0.0025100	0.0000000	0.0000000	0.0000000	-0.0072000
Zinc	213.800	0.0000000	0.0009010	0.0000000	0.0000000	0.0000000

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ICP INTERELEMENT CORRECTION FACTORS

Client: APTIM

SDG No.: Q1543

Contract: SHAW18

Lab Code: CHEM

Case No.: Q1543

SAS No.: Q1543

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Na	Ni	Pb	Sb	Se
Aluminum	396.100	0.0000000	0.0000000	0.0012800	0.0000000	0.0000000
Antimony	206.833	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cobalt	228.616	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	-0.0047000	0.0036100	0.0000000	0.0000000
Iron	240.488	0.0000000	-0.0017000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	0.0006580	0.0000000	0.0000000	0.0001290
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0003330	0.0000000	0.0000000
Silver	328.068	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.402	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0067600	0.0000000	0.0000000	0.0000000

Metals

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ICP INTERELEMENT CORRECTION FACTORS

Client: APTIM

SDG No.: Q1543

Contract: SHAW18

Lab Code: CHEM

Case No.: Q1543

SAS No.: Q1543

Instrument ID: _____

Date: _____

Interelement Correction Factors (apparent ppb analyte/ppm interferent)

Analyte	Wave- Length (nm)	ICP Interelement Correction Factors For:				
		Sn	Ti	Tl	V	Zn
Aluminum	396.100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.833	-0.0035600	-0.0007970	0.0000000	-0.0018900	0.0000000
Arsenic	193.759	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Barium	493.409	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	234.861	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.502	0.0000000	0.0000630	0.0001280	0.0000000	0.0000000
Calcium	373.690	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.716	0.0000000	0.0000000	0.0000000	0.0001110	0.0000000
Cobalt	228.616	0.0000000	0.0018800	0.0000000	0.0000000	0.0000000
Copper	224.700	0.0000000	0.0003840	0.0000000	0.0000000	0.0000000
Iron	240.488	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.353	0.0000000	-0.0003610	0.0000000	0.0000000	0.0000000
Magnesium	279.079	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.610	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.604	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.490	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.090	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.068	0.0000000	-0.0007420	0.0000000	0.0000000	0.0000000
Sodium	589.592	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.856	0.0000000	-0.0039700	0.0000000	-0.0115600	0.0000000
Vanadium	292.402	0.0000000	0.0005320	0.0000000	0.0000000	0.0000000
Zinc	213.800	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000



METAL PREPARATION & ANALYICAL SUMMARY

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SAMPLE PREPARATION SUMMARY

Client: <u>APTIM</u>	SDG No.: <u>Q1543</u>	
Contract: <u>SHAW18</u>	Lab Code: <u>CHEM</u>	Method: _____
	Case No.: <u>Q1543</u>	SAS No.: <u>Q1543</u>

Sample ID	Client ID	Sample Type	Matrix	Prep Date	Initial Sample Size(mL)	Final Sample Volume (mL)	Percent Solids
Batch Number: PB167119							
PB167119BL	PB167119BL	MB	WATER	03/13/2025	50.0	25.0	
PB167119BS	PB167119BS	LCS	WATER	03/13/2025	50.0	25.0	
Q1543-01	ISB878MW02	SAM	WATER	03/13/2025	50.0	25.0	
Q1543-02	ISB878MW05	SAM	WATER	03/13/2025	50.0	25.0	
Q1543-02DUP	ISB878MW05DUP	DUP	WATER	03/13/2025	50.0	25.0	
Q1543-02MS	ISB878MW05MS	MS	WATER	03/13/2025	50.0	25.0	
Q1543-02MSD	ISB878MW05MSD	MSD	WATER	03/13/2025	50.0	25.0	

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ANALYSIS RUN LOG

Client: APTIM **Contract:** SHAW18

Lab code: CHEM **Case no.:** Q1543 **Sas no.:** Q1543 **Sdg no.:** Q1543

Instrument id number: **Method:** **Run number:** LB135063

Start date: 03/17/2025 **End date:** 03/17/2025

Lab sample id.	Client Sample Id	d/f	Time	Parameter list
S0	S0	1	1405	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S1	S1	1	1409	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S2	S2	1	1414	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S3	S3	1	1418	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S4	S4	1	1422	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
S5	S5	1	1427	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICV01	ICV01	1	1431	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
LLICV01	LLICV01	1	1438	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICB01	ICB01	1	1443	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CRI01	CRI01	1	1447	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICSA01	ICSA01	1	1451	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
ICSAB01	ICSAB01	1	1502	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV01	CCV01	1	1515	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB01	CCB01	1	1527	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
PB167119BL	PB167119BL	1	1539	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
PB167119BS	PB167119BS	1	1544	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q1543-01	ISB878MW02	1	1548	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q1543-02	ISB878MW05	1	1552	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q1543-02DUP	ISB878MW05DUP	1	1556	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q1543-02L	ISB878MW05L	5	1601	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q1543-02MS	ISB878MW05MS	1	1605	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q1543-02MSD	ISB878MW05MSD	1	1609	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV02	CCV02	1	1613	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB02	CCB02	1	1617	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
Q1543-02A	ISB878MW05A	1	1626	Al,Fe,Mn
CCV03	CCV03	1	1705	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB03	CCB03	1	1709	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV04	CCV04	1	1751	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB04	CCB04	1	1755	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCV05	CCV05	1	1818	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn
CCB05	CCB05	1	1822	Ag,Al,As,Ba,Be,Ca,Cd,Co,Cr,Cu,Fe,K,Mg,Mn,Na,Ni,Pb,Sb,Se,Tl,V,Zn



SHIPPING DOCUMENTS

Laboratory Certification

Certified By	License No.
CAS EPA CLP Contract	68HERH20D0011
Connecticut	PH-0830
DOD ELAP (ANAB)	L2219
Maine	2024021
Maryland	296
New Hampshire	255424 Rev 1
New Jersey	20012
New York	11376
Pennsylvania	68-00548
Soil Permit	525-24-234-08441
Texas	T104704488