

Chemical Analysis Report

SE-DIST-2022-04-14-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Lox Creek/Stuart Deploy Pickup**

Request ID: **RQ-2022-04-11-39**

Customer: **SE-DIST**

Project ID: **SMP**

Send Reports to:

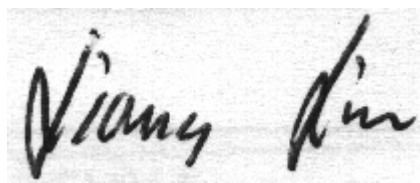
FL Dept. of Environmental Protection
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2199 South Rock Road
Fort Pierce, FL 34945
Attn: Jordan Skaggs

For additional information please contact

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 04-MAY-2022 14:03

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Tidal Creek to Lox

Collection Date/Time: 04/13/2022 09:35

Field ID: G2SE0027

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2319249	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P412384	
	SM 2320 B-2011	Total Alkalinity	140		mg CaCO3/L	P412808	
	SM 2540 D-2011	TSS	8	IA	mg/L	P412861	
	SM 4500-F- C-2011	Fluoride	0.95		mg F/L	P412811	
2319250	EPA 350.1 Rev. 2.0	Ammonia-N	0.031		mg N/L	P412546	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P412766	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P412687	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P412603	
	SM 5310 B-2011	Organic Carbon	6.4		mg C/L	P412477	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Manatee Pocket North

Collection Date/Time: 04/13/2022 11:40

Field ID: G2SE0063

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2319247	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P412384	
	SM 2320 B-2011	Total Alkalinity	125		mg CaCO3/L	P412808	
	SM 2540 D-2011	TSS	12		mg/L	P412861	
	SM 4500-F- C-2011	Fluoride	1.1		mg F/L	P412811	
2319248	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P412546	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33	I	mg N/L	P412766	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P412687	
	EPA 365.1 Rev. 2.0	Total-P	0.042		mg P/L	P412602	
	SM 5310 B-2011	Organic Carbon	4.3		mg C/L	P412477	
2319256	EPA 200.7 Rev. 4.4	Calcium	394		mg/L	P412394	
		Iron	120	U	ug/L	P412394	
		Magnesium	1.20E+03		mg/L	P412394	
		Strontium	7.05E+03		ug/L	P412394	
		Tin	150	U	ug/L	P412394	
		Titanium	6.3	I	ug/L	P412394	
		Vanadium	8.0	U	ug/L	P412394	
	EPA 200.8 Rev. 5.4	Zinc	20	U	ug/L	P412394	
		Aluminum	98		ug/L	P412394	
		Antimony	0.20	U	ug/L	P412394	
		Arsenic	2.54		ug/L	P412394	
		Beryllium	0.040	U	ug/L	P412394	
		Cadmium	0.080	U	ug/L	P412394	
		Chromium	1.6	U	ug/L	P412394	
		Cobalt	0.080	U	ug/L	P412394	
		Copper	5.3		ug/L	P412394	
		Lead	2.0	U	ug/L	P412394	
		Manganese	5.2		ug/L	P412394	
		Molybdenum	11.7		ug/L	P412394	
		Nickel	2.0	U	ug/L	P412394	
		Selenium	0.80	U	ug/L	P412394	
		Silver	0.040	U	ug/L	P412394	
		Thallium	1.0	U	ug/L	P412394	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium and strontium are unavailable because of high analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: The copper result was confirmed in the undigested sample on 04/19/2022.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P412384

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P412394

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P412394

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412546

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P412766

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P412687

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412602

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412603

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: SM 2320 B-2011
Batch ID: P412808

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 D-2011
Batch ID: P412861

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P412811

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P412477

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P412384

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	95.7		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P412394

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	107		P	85 - 115
Iron	110		P	85 - 115
Magnesium	104		P	85 - 115
Strontium	104		P	85 - 115
Tin	102		P	85 - 115
Titanium	106		P	85 - 115
Vanadium	99.1		P	85 - 115
Zinc	105		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P412394

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	103		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	102		P	85 - 115
Beryllium	94.0		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	98.4		P	85 - 115
Cobalt	103		P	85 - 115
Copper	98.6		P	85 - 115
Lead	103		P	85 - 115
Manganese	99.6		P	85 - 115
Molybdenum	101		P	85 - 115
Nickel	100		P	85 - 115
Selenium	99.0		P	85 - 115
Silver	105		P	85 - 115
Thallium	105		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P412546

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	93.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P412766

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P412687

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.0		P	90 - 110

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412602

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412603

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	100		P	90 - 110

Reference Method: SM 2320 B-2011
Batch ID: P412808

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	97.7		P	94 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P412811

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P412477

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P412394

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318261	Iron	104	105	P/P	70 - 130
2318261	Tin	77.6	89.5	P/P	70 - 130
2318261	Titanium	86.0	90.4	P/P	70 - 130
2318261	Vanadium	101	101	P/P	70 - 130
2318261	Zinc	100	101	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P412394

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318261	Aluminum	119	126	P/P	70 - 130
2318261	Antimony	101	101	P/P	70 - 130
2318261	Arsenic	115	117	P/P	70 - 130
2318261	Beryllium	108	105	P/P	70 - 130
2318261	Cadmium	94.9	94.6	P/P	70 - 130
2318261	Chromium	103	102	P/P	70 - 130
2318261	Cobalt	114	115	P/P	70 - 130
2318261	Copper	109	110	P/P	70 - 130
2318261	Lead	110	111	P/P	70 - 130
2318261	Manganese	98.5	98.6	P/P	70 - 130
2318261	Molybdenum	115	116	P/P	70 - 130
2318261	Nickel	119	120	P/P	70 - 130
2318261	Selenium	103	103	P/P	70 - 130
2318261	Silver	95.7	95.2	P/P	70 - 130
2318261	Thallium	111	112	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P412546

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319248	Ammonia-N	101	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P412766

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318920	Kjeldahl Nitrogen	94.2	96.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P412687

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319161	NO2NO3-N	92.9	92.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P412602

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319248	Total-P	93.3	94.4	P/P	90 - 110

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412603

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319250	Total-P	96.4	95.8	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P412811

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2319759	Fluoride	99.1	97.7	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P412477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2318660	Organic Carbon	87.1	88.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P412384

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319225	Turbidity	4.53	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P412394

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318261	Calcium	1.90	Spike	P	0 - 20
2318261	Iron	0.366	Spike	P	0 - 20
2318261	Magnesium	1.35	Spike	P	0 - 20
2318261	Strontium	1.36	Spike	P	0 - 20
2318261	Tin	14.2	Spike	P	0 - 20
2318261	Titanium	3.70	Spike	P	0 - 20
2318261	Vanadium	0.135	Spike	P	0 - 20
2318261	Zinc	0.786	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P412394

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318261	Aluminum	5.23	Spike	P	0 - 20
2318261	Antimony	0.132	Spike	P	0 - 20
2318261	Arsenic	1.40	Spike	P	0 - 20
2318261	Beryllium	2.97	Spike	P	0 - 20
2318261	Cadmium	0.257	Spike	P	0 - 20
2318261	Chromium	0.0921	Spike	P	0 - 20
2318261	Cobalt	0.851	Spike	P	0 - 20
2318261	Copper	1.06	Spike	P	0 - 20
2318261	Lead	0.719	Spike	P	0 - 20
2318261	Manganese	0.138	Spike	P	0 - 20
2318261	Molybdenum	1.08	Spike	P	0 - 20
2318261	Nickel	0.597	Spike	P	0 - 20
2318261	Selenium	0.317	Spike	P	0 - 20
2318261	Silver	0.538	Spike	P	0 - 20
2318261	Thallium	1.09	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P412546

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319248	Ammonia-N	2.44	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P412766

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318920	Kjeldahl Nitrogen	2.19	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P412687

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319161	NO2NO3-N	0.540	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319248	Total-P	1.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P412603

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319250	Total-P	0.575	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P412808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319759	Total Alkalinity	3.36	Sample	P	0 - 5.2

Reference Method: SM 4500-F- C-2011
Batch ID: P412811

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2319759	Fluoride	0.953	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P412477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2318660	Organic Carbon	1.12	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A111479

Included Lab Sample IDs: 2319247, 2319249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.0	P/P	95 - 105

Reference Method: SM 5310 B-2011

Run ID: A111518

Included Lab Sample IDs: 2319248, 2319250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.0	96.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A111539

Included Lab Sample IDs: 2319256

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	103	P/P	90 - 110
Antimony	98.5	99.3	P/P	90 - 110
Arsenic	102	103	P/P	90 - 110
Beryllium	96.9	98.9	P/P	90 - 110
Cadmium	97.2	96.9	P/P	90 - 110
Chromium	95.7	97.4	P/P	90 - 110
Copper	103	104	P/P	90 - 110
Lead	98.7	98.0	P/P	90 - 110
Manganese	96.4	98.0	P/P	90 - 110
Molybdenum	97.8	98.1	P/P	90 - 110
Nickel	104	105	P/P	90 - 110
Selenium	97.4	99.0	P/P	90 - 110
Silver	103	103	P/P	90 - 110
Thallium	97.5	96.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A111551

Included Lab Sample IDs: 2319248, 2319250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.3	98.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A111562

Included Lab Sample IDs: 2319256

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cobalt	101	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A111593

Included Lab Sample IDs: 2319248, 2319250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A111618

Included Lab Sample IDs: 2319256

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	105	105	P/P	90 - 110
Iron	102	100	P/P	90 - 110
Magnesium	102	101	P/P	90 - 110
Strontium	101	101	P/P	90 - 110
Tin	101	99.9	P/P	90 - 110
Titanium	102	102	P/P	90 - 110
Vanadium	102	102	P/P	90 - 110
Zinc	104	103	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A111656

Included Lab Sample IDs: 2319247, 2319249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.2	95.9	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A111656

Included Lab Sample IDs: 2319247, 2319249

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A111662

Included Lab Sample IDs: 2319248, 2319250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	102	P/P	90 - 110
Total-P	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A111695

Included Lab Sample IDs: 2319248, 2319250

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	107	103	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision SMP	MS
					LCS	
EPA 180.1 Rev. 2.0	Turbidity	95.7			4.53	
EPA 200.7 Rev. 4.4	Calcium	107				1.90
	Iron	110	104	105		0.366
	Magnesium	104				1.35
	Strontium	104				1.36
	Tin	102	77.6	89.5		14.2
	Titanium	106	86.0	90.4		3.70
	Vanadium	99.1	101	101		0.135
	Zinc	105	100	101		0.786
EPA 200.8 Rev. 5.4	Aluminum	103	119	126		5.23
	Antimony	101	101	101		0.132
	Arsenic	102	115	117		1.40
	Beryllium	94.0	108	105		2.97
	Cadmium	100	94.9	94.6		0.257
	Chromium	98.4	103	102		0.0921
	Cobalt	103	114	115		0.851
	Copper	98.6	109	110		1.06
	Lead	103	110	111		0.719
	Manganese	99.6	98.5	98.6		0.138
	Molybdenum	101	115	116		1.08
	Nickel	100	119	120		0.597
	Selenium	99.0	103	103		0.317
	Silver	105	95.7	95.2		0.538
	Thallium	105	111	112		1.09
EPA 350.1 Rev. 2.0	Ammonia-N	93.4	101	98.6		2.44
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.0	94.2	96.5		2.19
EPA 353.2 Rev. 2.0	NO2NO3-N	98.0	92.9	92.4		0.540
EPA 365.1 Rev. 2.0	Total-P	102	93.3	94.4		1.04
	Total-P	100	96.4	95.8		0.575
SM 2320 B-2011	Total Alkalinity	97.7			3.36	
SM 4500-F- C-2011	Fluoride	101	99.1	97.7		0.953
SM 5310 B-2011	Organic Carbon	97.6	87.1	88.4		1.12

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2319247, 2319249
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2319256
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2319256
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2319248, 2319250
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2319248, 2319250
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2319248, 2319250
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2319248, 2319250
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2319247, 2319249
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2319247, 2319249
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2319247, 2319249
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2319248, 2319250

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	04/14/2022			04/14/2022 14:12	Khloe J Berg	2319247
	04/14/2022			04/14/2022 14:13	Khloe J Berg	2319249
EPA 200.7 Rev. 4.4	04/14/2022	04/15/2022 09:45	Megan Whitefoot	04/22/2022 01:30	Josef B Mick	2319256
	04/14/2022	04/15/2022 09:45	Megan Whitefoot	04/22/2022 01:38	Josef B Mick	2319256
EPA 200.8 Rev. 5.4	04/14/2022	04/15/2022 09:45	Megan Whitefoot	04/18/2022 20:31	Alexander Thompson	2319256
	04/14/2022	04/15/2022 09:45	Megan Whitefoot	04/18/2022 22:36	Alexander Thompson	2319256
	04/14/2022	04/15/2022 09:45	Megan Whitefoot	04/19/2022 13:40	Alexander Thompson	2319256
EPA 350.1 Rev. 2.0	04/14/2022			04/19/2022 12:43	Ping Hua	2319248
	04/14/2022			04/19/2022 12:47	Ping Hua	2319250
EPA 351.2 Rev. 2.0	04/14/2022	04/25/2022 12:07	Alexandra J Mattheus	04/26/2022 12:56	Alexandra J Mattheus	2319248
	04/14/2022	04/25/2022 12:07	Alexandra J Mattheus	04/26/2022 13:20	Alexandra J Mattheus	2319250
EPA 353.2 Rev. 2.0	04/14/2022			04/21/2022 09:48	Beverly Y. Sanders	2319248
	04/14/2022			04/21/2022 09:49	Beverly Y. Sanders	2319250
EPA 365.1 Rev. 2.0	04/14/2022	04/21/2022 17:55	Simonne.V. Calhoun	04/22/2022 16:48	Sarah A Nixon	2319248
	04/14/2022	04/21/2022 17:55	Simonne.V. Calhoun	04/22/2022 17:03	Sarah A Nixon	2319250
SM 2320 B-2011	04/14/2022			04/22/2022 10:57	Sarah A Nixon	2319247
	04/14/2022			04/22/2022 11:11	Sarah A Nixon	2319249
SM 2540 D-2011	04/14/2022			04/18/2022 15:45	Yijie Li	2319247, 2319249
SM 4500-F- C-2011	04/14/2022			04/22/2022 13:54	Sarah A Nixon	2319247
	04/14/2022			04/22/2022 13:59	Sarah A Nixon	2319249
SM 5310 B-2011	04/14/2022			04/16/2022 04:49	Judith K. Clark	2319248
	04/14/2022			04/16/2022 05:06	Judith K. Clark	2319250