

Chemical Analysis Report

TLH-ROC-2018-05-07-01

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

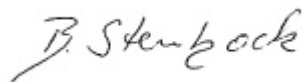
Event Description: **kit D-b (WBID 1274 Apalachicola Bay)**
Request ID: **RQ-2018-04-30-25**
Customer: **TLH-ROC**
Project ID: **SMP**

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Date Certified: 21-MAY-2018 17:50



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 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: Apalachicola Bay 1200m South of US98 Bridge Collection Date/Time: 05/07/2018 10:55

Field ID: G2TLHR0035

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1990548	EPA 180.1 Rev. 2.0	Turbidity	9.5	A	NTU	P344901	
	SM 2320 B-97	Total Alkalinity	41	A	mg CaCO3/L	P344919	
	SM 2540 D-97	TSS	8	I	mg/L	P345310	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P345179	
1990550	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P345111	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P345329	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.35		mg N/L	P345156	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P344897	
	SM 5310 B-00	Organic Carbon	4.0		mg C/L	P345344	
1990552	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P344909	
1990560	EPA 200.7 Rev. 4.4	Iron	750		ug/L	P344841	
		Zinc	15	U	ug/L	P344841	
	EPA 200.8 Rev. 5.4	Arsenic	0.53	I	ug/L	P344841	
		Cadmium	0.060	U	ug/L	P344841	
		Chromium	1.2	U	ug/L	P344841	
		Copper	0.68	I	ug/L	P344841	
		Lead	0.36	I	ug/L	P344841	
		Nickel	0.60	U	ug/L	P344841	
		Silver	0.030	U	ug/L	P344841	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Apalachicola Bay near St. George Island Collection Date/Time: 05/07/2018 11:55

Field ID: G2TLHR0036

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1990549	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P344901	
	SM 2320 B-97	Total Alkalinity	79		mg CaCO3/L	P345178	
	SM 2540 D-97	TSS	6	IA	mg/L	P345310	
	SM 4500 F-C-97	Fluoride	0.62		mg F/L	P344920	
1990551	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P345111	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P345329	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P345156	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P344897	
	SM 5310 B-00	Organic Carbon	3.9		mg C/L	P345344	
1990553	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P344909	
1990561	EPA 200.7 Rev. 4.4	Iron	210	I	ug/L	P344841	
		Zinc	15	U	ug/L	P344841	
	EPA 200.8 Rev. 5.4	Arsenic	1.09		ug/L	P344841	
		Cadmium	0.060	U	ug/L	P344841	
		Chromium	1.2	U	ug/L	P344841	
		Copper	0.60	U	ug/L	P344841	
		Lead	0.21	I	ug/L	P344841	
		Nickel	0.60	U	ug/L	P344841	

Field ID: G2TLHR0036

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1990561	EPA 200.8 Rev. 5.4	Silver	0.030	U	ug/L	P344841	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P344901

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P344841

Component	Result	Code	Units
Iron	30	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P344841

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P345111

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P345329

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P345156

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

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P344897

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344909

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2320 B-97
Batch ID: P344919

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

Reference Method: SM 2320 B-97
Batch ID: P345178

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

Reference Method: SM 2540 D-97
Batch ID: P345310

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P344920

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P345179

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P345344

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P344841

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	107		P	85 - 115
Zinc	103		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344841

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	96.5		P	85 - 115
Cadmium	94.5		P	85 - 115
Chromium	100		P	85 - 115
Copper	91.3		P	85 - 115
Lead	92.2		P	85 - 115
Nickel	92.3		P	85 - 115
Silver	97.7		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345111

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345329

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345156

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344897

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344909

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

Reference Method: SM 2320 B-97
Batch ID: P344919

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P345178

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P344920

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.4		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P345179

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.7		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345344

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.7		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P344841

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990561	Iron	102	105	P/P	70 - 130
1990561	Zinc	105	107	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344841

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990561	Arsenic	109	106	P/P	70 - 130
1990561	Cadmium	94.8	91.8	P/P	70 - 130
1990561	Chromium	95.6	92.9	P/P	70 - 130
1990561	Copper	92.4	91.5	P/P	70 - 130
1990561	Lead	105	102	P/P	70 - 130
1990561	Nickel	97.8	91.9	P/P	70 - 130
1990561	Silver	93.9	90.9	P/P	70 - 130

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989800	Ammonia-N	99.2	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990288	Kjeldahl Nitrogen	97.4	97.4	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345156

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990550	NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344897

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990550	Total-P	98.9	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344909

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990552	O-Phosphate-P	97.5	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P344920

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1989796	Fluoride	92.8	93.5	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P345179

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990462	Fluoride	96.6	96.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P345344

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1990550	Organic Carbon	98.7	99.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P344901

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990548	Turbidity	0.419	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P344841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990561	Iron	2.25	Spike	P	0 - 20
1990561	Zinc	1.62	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P344841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990561	Arsenic	3.02	Spike	P	0 - 20
1990561	Cadmium	3.25	Spike	P	0 - 20
1990561	Chromium	2.78	Spike	P	0 - 20
1990561	Copper	0.949	Spike	P	0 - 20
1990561	Lead	2.70	Spike	P	0 - 20
1990561	Nickel	6.17	Spike	P	0 - 20
1990561	Silver	3.22	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P345111

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989800	Ammonia-N	1.70	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990288	Kjeldahl Nitrogen	0.00540	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345156

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990550	NO2NO3-N	0.183	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P344897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990550	Total-P	1.14	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P344909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990552	O-Phosphate-P	1.34	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P344919

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990548	Total Alkalinity	1.12	Sample	P	0 - 1.6

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P345178

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989796	Total Alkalinity	0.243	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
Batch ID: P344920

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1989796	Fluoride	0.480	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P345179

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990462	Fluoride	0.473	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P345344

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1990550	Organic Carbon	0.321	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A83743
Included Lab Sample IDs: 1990548, 1990549

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A83744
Included Lab Sample IDs: 1990552, 1990553

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.0	99.1	P/P	90 - 110
O-Phosphate-P	99.3	98.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A83750
Included Lab Sample IDs: 1990548

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A83750

Included Lab Sample IDs: 1990549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	99.0	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A83775

Included Lab Sample IDs: 1990560, 1990561

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	102	P/P	90 - 110
Zinc	103	103	P/P	90 - 110
Zinc	103	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A83820

Included Lab Sample IDs: 1990550, 1990551

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A83833

Included Lab Sample IDs: 1990550, 1990551

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83834

Included Lab Sample IDs: 1990560, 1990561

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.1	97.9	P/P	90 - 110
Arsenic	97.9	97.6	P/P	90 - 110
Cadmium	94.4	96.4	P/P	90 - 110
Cadmium	95.4	94.4	P/P	90 - 110
Copper	96.2	96.4	P/P	90 - 110
Copper	96.4	96.1	P/P	90 - 110
Lead	95.0	95.3	P/P	90 - 110
Lead	95.3	97.0	P/P	90 - 110
Nickel	92.8	92.2	P/P	90 - 110
Nickel	94.0	92.8	P/P	90 - 110
Silver	96.7	97.9	P/P	90 - 110
Silver	97.9	97.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A83835

Included Lab Sample IDs: 1990560, 1990561

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	95.6	97.7	P/P	90 - 110
Chromium	97.7	91.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A83837
Included Lab Sample IDs: 1990549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.0	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A83837
Included Lab Sample IDs: 1990548

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A83863
Included Lab Sample IDs: 1990550, 1990551

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

Reference Method: SM 5310 B-00
Run ID: A83898
Included Lab Sample IDs: 1990550, 1990551

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	96.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A83975
Included Lab Sample IDs: 1990550, 1990551

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.6	100	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.419	
EPA 200.7 Rev. 4.4	Iron	107	102	105		2.25
	Zinc	103	105	107		1.62
EPA 200.8 Rev. 5.4	Arsenic	96.5	109	106		3.02
	Cadmium	94.5	94.8	91.8		3.25
	Chromium	100	95.6	92.9		2.78
	Copper	91.3	92.4	91.5		0.949
	Lead	92.2	105	102		2.70
	Nickel	92.3	97.8	91.9		6.17
	Silver	97.7	93.9	90.9		3.22
EPA 350.1 Rev. 2.0	Ammonia-N	99.7	99.2	101		1.70

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	97.4 97.4			0.0054
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	99.5			0.183
EPA 365.1 Rev. 2.0	Total-P	98.8	98.9 100			1.14
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	97.5 98.9			1.34
SM 2320 B-97	Total Alkalinity	103			1.12	
	Total Alkalinity	102			0.243	
SM 4500 F-C-97	Fluoride	94.4	92.8 93.5			0.480
	Fluoride	94.7	96.6 96.0			0.473
SM 5310 B-00	Organic Carbon	98.7	98.7 99.1			0.321

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1990548, 1990549
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1990560, 1990561
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1990560, 1990561
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1990550, 1990551
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1990550, 1990551
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1990550, 1990551
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1990550, 1990551
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1990552, 1990553
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1990548, 1990549
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1990548, 1990549
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1990548, 1990549
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1990550, 1990551

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	05/07/2018			05/08/2018 16:54	DeAsia Armster	1990548, 1990549
EPA 200.7 Rev. 4.4	05/07/2018	05/08/2018 11:30	Allison Taylor	05/09/2018 14:21	Betina Topolski	1990560
	05/07/2018	05/08/2018 11:30	Allison Taylor	05/09/2018 14:49	Betina Topolski	1990560
	05/07/2018	05/08/2018 11:30	Allison Taylor	05/09/2018 14:55	Betina Topolski	1990561
EPA 200.8 Rev. 5.4	05/07/2018	05/08/2018 11:30	Allison Taylor	05/10/2018 13:26	Robert K Palmer	1990561
	05/07/2018	05/08/2018 11:30	Allison Taylor	05/10/2018 15:02	Robert K Palmer	1990560
	05/07/2018	05/08/2018 11:30	Allison Taylor	05/11/2018 12:44	Robert K Palmer	1990561
	05/07/2018	05/08/2018 11:30	Allison Taylor	05/11/2018 13:37	Robert K Palmer	1990560
EPA 350.1 Rev. 2.0	05/07/2018			05/10/2018 12:04	Ping Hua	1990551
	05/07/2018			05/10/2018 12:07	Ping Hua	1990550
EPA 351.2 Rev. 2.0	05/07/2018	05/15/2018 11:30	Adrian Shelby	05/17/2018 09:53	Joseph Suarez	1990550
	05/07/2018	05/15/2018 11:30	Adrian Shelby	05/17/2018 09:54	Joseph Suarez	1990551
EPA 353.2 Rev. 2.0	05/07/2018			05/11/2018 14:20	Lauren Bottorf	1990550
	05/07/2018			05/11/2018 14:26	Lauren Bottorf	1990551
EPA 365.1 Rev. 2.0	05/07/2018	05/08/2018 12:00	Sima Feizi	05/14/2018 11:31	Beverly Y. Sanders	1990550
	05/07/2018	05/08/2018 12:00	Sima Feizi	05/14/2018 11:32	Beverly Y. Sanders	1990551
EPA 365.1 Rev. 2.0 dissolved	05/07/2018			05/08/2018 15:16	Megan Treadwell	1990552
	05/07/2018			05/08/2018 15:36	Megan Treadwell	1990553
SM 2320 B-97	05/07/2018			05/09/2018 01:23	Dale L. Simmons	1990548
	05/07/2018			05/12/2018 09:23	Dale L. Simmons	1990549
SM 2540 D-97	05/07/2018			05/09/2018 15:08	Yijie Li	1990548, 1990549
SM 4500 F-C-97	05/07/2018			05/08/2018 19:10	Dale L. Simmons	1990549
	05/07/2018			05/11/2018 23:50	Dale L. Simmons	1990548
SM 5310 B-00	05/07/2018			05/15/2018 04:50	Megan Treadwell	1990550
	05/07/2018			05/15/2018 05:28	Megan Treadwell	1990551