Chemical Analysis Report

CEN-DIST-2019-12-05-01

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

Event Description: **SJR ab Harney + HA**
Request ID: **RQ-2019-12-02-54**
Customer: **CEN-DIST**
Project ID: **SMP**

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Certified by: Colin Wright, Program Administrator

Date Certified: 03-JAN-2020 11:54

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: St. Johns River Above Lake Harney **Collection Date/Time: 12/04/2019 11:04**

Field ID: G2CE0118 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2141045	EPA 180.1 Rev. 2.0	Turbidity	4.3	A	NTU	P375571	
	EPA 300.0 Rev. 2.1	Chloride	300		mg Cl/L	P375656	
		Sulfate	58		mg SO4/L	P375659	
	SM 2120 B	Color (true)	200		PCU	P375370	
	SM 2320 B-97	Total Alkalinity	77		mg CaCO3/L	P375484	
	SM 2540 C-97	TDS	682		mg/L	P375804	
	SM 2540 D-97	TSS	4	I	mg/L	P375903	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P375487	
2141046	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P375780	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P375543	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P375461	
	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P375549	
	SM 5310 B-00	Organic Carbon	25		mg C/L	P375516	
2141047	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.024		mg P/L	P375285	
2141050	EPA 200.7 Rev. 4.4	Barium	30.0		ug/L	P375445	
		Calcium	54.5		mg/L	P375445	
		Iron	620		ug/L	P375445	
		Magnesium	19.6		mg/L	P375445	
		Potassium	5.7		mg/L	P375445	
		Sodium	153		mg/L	P375445	
		Zinc	5.0	U	ug/L	P375445	
	EPA 200.8 Rev. 5.4	Aluminum	87		ug/L	P375445	
		Antimony	0.084	I	ug/L	P375445	
		Arsenic	0.65		ug/L	P375445	
		Boron**	63.8		ug/L	P375445	
		Cadmium	0.020	U	ug/L	P375445	
		Chromium	0.40	U	ug/L	P376483	
		Copper	0.54	I	ug/L	P375445	
		Lead	0.39	I	ug/L	P375445	
		Nickel	0.50	U	ug/L	P376483	
		Selenium	0.20	U	ug/L	P375445	
		Silver	0.010	U	ug/L	P375445	
		Thallium	0.10	U	ug/L	P375445	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample; matrix spike recoveries for the second QC sample are unavailable because of high analyte concentration in the QC sample.
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: P375571

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P375445

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P375445

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P376483

Component	Result	Code	Units
Chromium	0.40	U	ug/L
Nickel	0.50	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375656

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375659

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375780

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375780

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375543

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375461

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375549

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375285

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

Reference Method: SM 2120 B
Batch ID: P375370

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P375484

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-97
Batch ID: P375804

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P375903

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P375487

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P375516

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: P375445

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	85 - 115
Calcium	102		P	85 - 115
Iron	101		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	96.4		P	85 - 115
Sodium	105		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P375445

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	98.2		P	85 - 115
Antimony	105		P	85 - 115
Arsenic	101		P	85 - 115
Boron	99.7		P	85 - 115
Cadmium	96.8		P	85 - 115
Copper	107		P	80 - 120
Lead	99.5		P	85 - 115
Selenium	93.8		P	85 - 115
Silver	102		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P376483

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chromium	97.7		P	85 - 115
Nickel	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375656

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375659

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375780

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375543

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375543

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	106		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375461

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375549

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375285

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	104		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P375370

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	102		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P375484

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P375487

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	94.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P375516

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P375445

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2141019	Barium	107	107	P/P	80 - 120
2141019	Calcium	111	110	P/P	80 - 120
2141019	Iron	107	108	P/P	80 - 120
2141019	Magnesium	107	109	P/P	80 - 120
2141019	Potassium	109	110	P/P	80 - 120
2141019	Sodium	107	108	P/P	80 - 120
2141019	Zinc	108	109	P/P	80 - 120
2141138	Barium	105		P	80 - 120
2141138	Calcium	107		P	80 - 120
2141138	Iron	106		P	80 - 120
2141138	Magnesium	106		P	80 - 120
2141138	Potassium	104		P	80 - 120
2141138	Sodium	106		P	80 - 120
2141138	Zinc	106		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P375445

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2131138	Antimony	103		P	80 - 120
2141019	Aluminum	97.7	96.2	P/P	80 - 120
2141019	Antimony	103	103	P/P	80 - 120
2141019	Arsenic	99.3	99.5	P/P	80 - 120
2141019	Boron	100	99.0	P/P	80 - 120
2141019	Cadmium	97.1	96.3	P/P	80 - 120
2141019	Copper	109	109	P/P	80 - 120
2141019	Lead	99.5	99.7	P/P	80 - 120
2141019	Selenium	92.2	91.5	P/P	80 - 120
2141019	Silver	102	102	P/P	80 - 120
2141019	Thallium	102	103	P/P	80 - 120
2141138	Aluminum	96.3		P	80 - 120
2141138	Arsenic	98.2		P	80 - 120
2141138	Boron	97.9		P	80 - 120
2141138	Cadmium	94.8		P	80 - 120
2141138	Copper	110		P	80 - 120
2141138	Lead	98.6		P	80 - 120
2141138	Selenium	89.4		P	80 - 120
2141138	Silver	101		P	80 - 120
2141138	Thallium	101		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P376483

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2141020	Chromium	97.9		P	80 - 120
2141020	Nickel	100		P	80 - 120
2141343	Chromium	99.4	101	P/P	80 - 120
2141343	Nickel	101	103	P/P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140965	Chloride	104		P	90 - 110
2141073	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375659

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140965	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375780

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140986	Ammonia-N	97.0	96.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375543

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140985	Kjeldahl Nitrogen	107	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140985	NO2NO3-N	99.2	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375549

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2141046	Total-P	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375285

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140911	O-Phosphate-P	98.5	98.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P375487

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140867	Fluoride	94.9	93.5	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P375516

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2140952	Organic Carbon	99.9	98.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P375571

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141045	Turbidity	10.5	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P375445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141019	Barium	0.111	Spike	P	0 - 20
2141019	Calcium	0.693	Spike	P	0 - 20
2141019	Iron	1.56	Spike	P	0 - 20
2141019	Magnesium	2.27	Spike	P	0 - 20
2141019	Potassium	0.767	Spike	P	0 - 20
2141019	Sodium	1.26	Spike	P	0 - 20
2141019	Zinc	0.860	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P375445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141019	Aluminum	1.49	Spike	P	0 - 20
2141019	Antimony	0.476	Spike	P	0 - 20
2141019	Arsenic	0.144	Spike	P	0 - 20
2141019	Boron	1.29	Spike	P	0 - 20
2141019	Cadmium	0.870	Spike	P	0 - 20
2141019	Copper	0.0101	Spike	P	0 - 20
2141019	Lead	0.142	Spike	P	0 - 20
2141019	Selenium	0.762	Spike	P	0 - 20
2141019	Silver	0.457	Spike	P	0 - 20
2141019	Thallium	0.850	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P376483

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141343	Chromium	2.06	Spike	P	0 - 20
2141343	Nickel	1.87	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P375656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140965	Chloride	0.481	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375780

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P375780

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140986	Ammonia-N	0.766	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P375543

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140985	Kjeldahl Nitrogen	1.52	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P375461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140985	NO2NO3-N	0.335	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P375549

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2141046	Total-P	0.240	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P375285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140911	O-Phosphate-P	0.351	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P375370

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140983	Color (true)	0.875	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P375484

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140867	Total Alkalinity	0.356	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P375804

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140984	TDS	8.22	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P375487

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140867	Fluoride	0.946	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P375516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2140952	Organic Carbon	0.875	Spike	P	0 - 20

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A96132
Included Lab Sample IDs: 2141047

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	98.8	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A96169
Included Lab Sample IDs: 2141045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	104	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A96201
Included Lab Sample IDs: 2141046

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A96205
Included Lab Sample IDs: 2141045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	101	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A96207
Included Lab Sample IDs: 2141045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A96207
Included Lab Sample IDs: 2141045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	98.6	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A96224
Included Lab Sample IDs: 2141046

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.0	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A96237
Included Lab Sample IDs: 2141050

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	97.4	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A96237
Included Lab Sample IDs: 2141050

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	106	P/P	90 - 110
Iron	102	104	P/P	90 - 110
Magnesium	101	103	P/P	90 - 110
Potassium	99.9	102	P/P	90 - 110
Sodium	103	104	P/P	90 - 110
Zinc	101	106	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A96245
Included Lab Sample IDs: 2141045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A96265
Included Lab Sample IDs: 2141046

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	107	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A96287
Included Lab Sample IDs: 2141046

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A96313
Included Lab Sample IDs: 2141046

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.9	99.3	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A96522
Included Lab Sample IDs: 2141050

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	94.9	94.8	P/P	90 - 110
Antimony	95.1	95.0	P/P	90 - 110
Arsenic	99.5	99.0	P/P	90 - 110
Boron	95.6	95.9	P/P	90 - 110
Cadmium	95.5	94.8	P/P	90 - 110
Lead	96.4	95.8	P/P	90 - 110
Selenium	96.5	95.1	P/P	90 - 110
Silver	101	101	P/P	90 - 110
Thallium	92.5	92.2	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A96557
Included Lab Sample IDs: 2141050

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A96637
Included Lab Sample IDs: 2141050

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	103	102	P/P	90 - 110
Nickel	106	107	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		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						10.5	
EPA 200.7 Rev. 4.4	Barium	101	107	107	105			0.111
	Calcium	102	111	110	107			0.693
	Iron	101	107	108	106			1.56
	Magnesium	101	107	109	106			2.27
	Potassium	96.4	109	110	104			0.767
	Sodium	105	107	108	106			1.26
	Zinc	103	108	109	106			0.860
EPA 200.8 Rev. 5.4	Aluminum	98.2	97.7	96.2	96.3			1.49
	Antimony	105	103	103	103			0.476
	Arsenic	101	99.3	99.5	98.2			0.144
	Boron	99.7	100	99.0	97.9			1.29
	Cadmium	96.8	97.1	96.3	94.8			0.870
	Chromium	97.7	99.4	101	97.9			2.06
	Copper	107	109	109	110			0.0101
	Lead	99.5	99.5	99.7	98.6			0.142
	Nickel	101	101	103	100			1.87
	Selenium	93.8	92.2	91.5	89.4			0.762
	Silver	102	102	102	101			0.457
	Thallium	102	102	103	101			0.850
EPA 300.0 Rev. 2.1	Chloride	104	104	103			0.481	
	Sulfate	101	101					
EPA 350.1 Rev. 2.0	Ammonia-N	98.7	97.0	96.1				0.766
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	107	105				1.52
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.2	99.7				0.335
EPA 365.1 Rev. 2.0	Total-P	101	102	102				0.240
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	98.5	98.0				0.351
SM 2120 B	Color (true)	102					0.875	
SM 2320 B-97	Total Alkalinity	103					0.356	
SM 2540 C-97	TDS						8.22	
SM 4500 F-C-97	Fluoride	94.2	94.9	93.5				0.946
SM 5310 B-00	Organic Carbon	99.4	99.9	98.6				0.875

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2141045
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2141050
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2141050
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2141045
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2141045
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2141046
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2141046
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2141046
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2141046

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2141047
SM 2120 B / E31780	True Color measured at 450 nm	2141045
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2141045
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2141045
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2141045
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2141045
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2141046

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	12/05/2019			12/05/2019 16:38	Yen Ta	2141045
EPA 200.7 Rev. 4.4	12/05/2019	12/09/2019 16:35	Elliott D. Healy	12/10/2019 14:22	Betina Topolski	2141050
EPA 200.8 Rev. 5.4	12/05/2019	12/09/2019 16:35	Elliott D. Healy	12/21/2019 08:05	Alexander Thompson	2141050
	12/05/2019	12/09/2019 16:35	Elliott D. Healy	12/23/2019 19:27	Alexander Thompson	2141050
	12/05/2019	12/27/2019 15:50	Elliott D. Healy	12/31/2019 00:41	Alexander Thompson	2141050
EPA 300.0 Rev. 2.1	12/05/2019			12/12/2019 00:23	Lipi Saha	2141045
EPA 350.1 Rev. 2.0	12/05/2019			12/12/2019 13:01	Ping Hua	2141046
EPA 351.2 Rev. 2.0	12/05/2019	12/10/2019 12:53	Sima Feizi	12/11/2019 17:05	Jhamieka S. Greenwood	2141046
EPA 353.2 Rev. 2.0	12/05/2019			12/09/2019 10:18	Beverly Y. Sanders	2141046
EPA 365.1 Rev. 2.0	12/05/2019	12/10/2019 14:00	Yen Ta	12/12/2019 12:46	Benjamin T. Nordmann	2141046
EPA 365.1 Rev. 2.0 dissolved	12/05/2019			12/05/2019 14:40	Samantha Davila	2141047
SM 2120 B	12/05/2019			12/05/2019 18:12	Madeline Funaro	2141045
SM 2320 B-97	12/05/2019			12/07/2019 09:10	Dale L. Simmons	2141045
SM 2540 C-97	12/05/2019			12/09/2019 15:22	Yijie Li	2141045
SM 2540 D-97	12/05/2019			12/09/2019 15:22	Yijie Li	2141045
SM 4500 F-C-97	12/05/2019			12/07/2019 09:10	Dale L. Simmons	2141045
SM 5310 B-00	12/05/2019			12/10/2019 00:20	Madeline Funaro	2141046