Chemical Analysis Report

NE-DIST-2019-05-15-01

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

Event Description: **2213 LSJR M&N**
Request ID: **RQ-2019-05-13-19**
Customer: **NE-DIST**
Project ID: **SMP**

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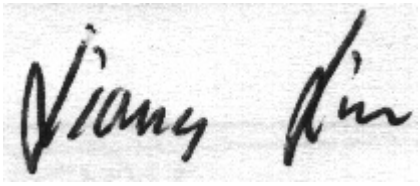
Date Certified: 31-MAY-2019 16:41



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 @ WELAKA BOAT RAMP DOCK **Collection Date/Time: 05/14/2019 10:00**

Field ID: 20030766 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2086294	EPA 180.1 Rev. 2.0	Turbidity	10		NTU	P364015	
	EPA 300.0 Rev. 2.1	Chloride	340		mg Cl/L	P364113	
		Sulfate	90		mg SO4/L	P364115	
	SM 2120 B	Color (true)	59		PCU	P364019	
	SM 2320 B-97	Total Alkalinity	78		mg CaCO3/L	P364309	
	SM 2540 C-97	TDS	716		mg/L	P364393	
	SM 2540 D-97	TSS	16		mg/L	P364399	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P364313	
2086296	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P364285	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P364467	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364218	
	EPA 365.1 Rev. 2.0	Total-P	0.079		mg P/L	P364386	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P364413	
2086298	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364006	
2086304	EPA 200.7 Rev. 4.4	Barium	19.2		ug/L	P364222	
		Calcium	58.9		mg/L	P364222	
		Iron	110	I	ug/L	P364222	
		Magnesium	24.9		mg/L	P364222	
		Potassium	6.0		mg/L	P364222	
		Sodium	183		mg/L	P364222	
		Zinc	5.0	U	ug/L	P364222	
	EPA 200.8 Rev. 5.4	Aluminum	80		ug/L	P364222	
		Antimony	0.081	I	ug/L	P364222	
		Arsenic	0.92		ug/L	P364222	
		Boron**	73.7		ug/L	P364222	
		Cadmium	0.020	U	ug/L	P364222	
		Chromium	0.40	U	ug/L	P364222	
		Copper	0.43	I	ug/L	P364222	
		Lead	0.21	I	ug/L	P364222	
		Nickel	0.50	U	ug/L	P364222	
		Selenium	0.26	I	ug/L	P364222	
		Silver	0.010	U	ug/L	P364222	
		Thallium	0.10	U	ug/L	P364222	

Sample Location: ST.JOHNS R @ CM6 PUTNAME CO **Collection Date/Time: 05/14/2019 11:45**

Field ID: 20030222 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2086295	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P364015	
	EPA 300.0 Rev. 2.1	Chloride	180		mg Cl/L	P364113	
		Sulfate	60		mg SO4/L	P364115	
	SM 2120 B	Color (true)	57		PCU	P364019	
	SM 2320 B-97	Total Alkalinity	107		mg CaCO3/L	P364309	
	SM 2540 C-97	TDS	490	A	mg/L	P364393	
	SM 2540 D-97	TSS	11	A	mg/L	P364399	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P364313	
2086297	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P364285	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P364467	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P364218	
	EPA 365.1 Rev. 2.0	Total-P	0.057		mg P/L	P364386	
	SM 5310 B-00	Organic Carbon	9.8		mg C/L	P364413	
2086299	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P364006	
2086305	EPA 200.7 Rev. 4.4	Barium	14.0		ug/L	P364222	
		Calcium	56.8		mg/L	P364222	
		Iron	53	I	ug/L	P364222	
		Magnesium	16.7		mg/L	P364222	
		Potassium	3.5		mg/L	P364222	
		Sodium	96.6		mg/L	P364222	
		Zinc	5.0	U	ug/L	P364222	
	EPA 200.8 Rev. 5.4	Aluminum	38		ug/L	P364222	
		Antimony	0.051	I	ug/L	P364222	
		Arsenic	0.90		ug/L	P364222	
		Boron**	48.7		ug/L	P364222	
		Cadmium	0.020	U	ug/L	P364222	
		Chromium	0.40	U	ug/L	P364222	
		Copper	0.40	U	ug/L	P364222	
		Lead	0.20	U	ug/L	P364222	
		Nickel	0.50	U	ug/L	P364222	
		Selenium	0.20	U	ug/L	P364222	
		Silver	0.010	U	ug/L	P364222	
		Thallium	0.10	U	ug/L	P364222	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364015

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P364222

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: P364222

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
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	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 300.0 Rev. 2.1
Batch ID: P364113

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364115

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364285

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364467

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364218

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364386

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364006

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

Reference Method: SM 2120 B
Batch ID: P364019

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P364309

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

Reference Method: SM 2540 C-97
Batch ID: P364393

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P364399

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P364313

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P364413

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: P364222

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	100		P	85 - 115
Calcium	106		P	85 - 115
Iron	103		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	102		P	85 - 115
Sodium	105		P	85 - 115
Zinc	98.9		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P364222

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	101		P	85 - 115
Antimony	99.3		P	85 - 115
Arsenic	101		P	85 - 115
Boron	105		P	85 - 115
Cadmium	103		P	85 - 115
Chromium	97.7		P	85 - 115
Copper	98.7		P	85 - 115
Lead	95.6		P	85 - 115
Nickel	98.6		P	85 - 115
Selenium	101		P	85 - 115
Silver	102		P	85 - 115
Thallium	99.9		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364113

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364115

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364285

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	103		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364467

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.8		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364218

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364386

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364006

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

Reference Method: SM 2120 B
Batch ID: P364019

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P364309

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P364313

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P364413

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P364222

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086663	Barium	101	101	P/P	80 - 120
2086663	Calcium	106	105	P/P	80 - 120
2086663	Iron	104	103	P/P	80 - 120
2086663	Magnesium	111	109	P/P	80 - 120
2086663	Potassium	107	107	P/P	80 - 120
2086663	Sodium	104	103	P/P	80 - 120
2086663	Zinc	99.8	100	P/P	80 - 120
2086727	Barium	98.0		P	80 - 120
2086727	Calcium	101		P	80 - 120
2086727	Iron	103		P	80 - 120
2086727	Magnesium	106		P	80 - 120
2086727	Potassium	101		P	80 - 120
2086727	Sodium	103		P	80 - 120
2086727	Zinc	100		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P364222

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086663	Aluminum	102	102	P/P	80 - 120
2086663	Antimony	100	101	P/P	80 - 120
2086663	Arsenic	105	105	P/P	80 - 120
2086663	Boron	109	109	P/P	80 - 120
2086663	Cadmium	105	105	P/P	80 - 120
2086663	Chromium	101	101	P/P	80 - 120
2086663	Copper	103	102	P/P	80 - 120
2086663	Lead	97.2	96.6	P/P	80 - 120
2086663	Nickel	103	103	P/P	80 - 120
2086663	Selenium	108	108	P/P	80 - 120
2086663	Silver	104	103	P/P	80 - 120
2086663	Thallium	94.5	95.1	P/P	80 - 120
2086727	Aluminum	103		P	80 - 120
2086727	Antimony	99.3		P	80 - 120
2086727	Arsenic	103		P	80 - 120
2086727	Boron	103		P	80 - 120
2086727	Cadmium	100		P	80 - 120
2086727	Chromium	97.2		P	80 - 120
2086727	Copper	97.7		P	80 - 120
2086727	Lead	98.6		P	80 - 120
2086727	Nickel	98.1		P	80 - 120
2086727	Selenium	103		P	80 - 120
2086727	Silver	101		P	80 - 120
2086727	Thallium	103		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364113

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086153	Chloride	101		P	90 - 110
2086219	Chloride	99.0		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364115

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086153	Sulfate	99.9		P	90 - 110
2086219	Sulfate	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364285

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086297	Ammonia-N	103	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364467

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086224	Kjeldahl Nitrogen	101	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364218

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086223	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364386

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086216	Total-P	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364006

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086310	O-Phosphate-P	94.6	93.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P364313

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086221	Fluoride	95.6	96.7	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P364413

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2086216	Organic Carbon	97.9	96.7	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P364015

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086270	Turbidity	2.23	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P364222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086663	Barium	0.0454	Spike	P	0 - 20
2086663	Calcium	1.08	Spike	P	0 - 20
2086663	Iron	1.36	Spike	P	0 - 20
2086663	Magnesium	1.29	Spike	P	0 - 20
2086663	Potassium	0.208	Spike	P	0 - 20
2086663	Sodium	0.924	Spike	P	0 - 20
2086663	Zinc	0.327	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P364222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086663	Aluminum	0.229	Spike	P	0 - 20
2086663	Antimony	0.917	Spike	P	0 - 20
2086663	Arsenic	0.0710	Spike	P	0 - 20
2086663	Boron	0.230	Spike	P	0 - 20
2086663	Cadmium	0.0917	Spike	P	0 - 20
2086663	Chromium	0.129	Spike	P	0 - 20
2086663	Copper	0.618	Spike	P	0 - 20
2086663	Lead	0.518	Spike	P	0 - 20
2086663	Nickel	0.140	Spike	P	0 - 20
2086663	Selenium	0.117	Spike	P	0 - 20
2086663	Silver	1.23	Spike	P	0 - 20
2086663	Thallium	0.563	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364113

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086219	Chloride	0.210	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P364115

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086219	Sulfate	0.114	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P364285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086297	Ammonia-N	1.66	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P364467

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086224	Kjeldahl Nitrogen	0.625	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P364218

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086223	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P364386

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086216	Total-P	1.29	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P364006

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086310	O-Phosphate-P	1.56	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P364019

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086213	Color (true)	1.24	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P364309

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086221	Total Alkalinity	1.02	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P364393

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086295	TDS	3.06	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 2540 D-97
Batch ID: P364399

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086295	TSS	7.41	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P364313

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086221	Fluoride	0.968	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P364413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2086216	Organic Carbon	0.727	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 300.0 Rev. 2.1
Run ID: A91404
Included Lab Sample IDs: 2086294, 2086295

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A91453
Included Lab Sample IDs: 2086298, 2086299

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.5	98.2	P/P	90 - 110
O-Phosphate-P	98.2	97.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A91457
Included Lab Sample IDs: 2086294, 2086295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.5	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A91460
Included Lab Sample IDs: 2086294, 2086295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A91529
Included Lab Sample IDs: 2086296, 2086297

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A91558
Included Lab Sample IDs: 2086296, 2086297

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	105	105	P/P	90 - 110
Ammonia-N	106	105	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A91564
Included Lab Sample IDs: 2086294, 2086295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	105	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A91564
Included Lab Sample IDs: 2086294, 2086295

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.1	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A91577
Included Lab Sample IDs: 2086304, 2086305

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	100	P/P	95 - 105
Calcium	103	101	P/P	95 - 105
Iron	102	101	P/P	95 - 105
Magnesium	103	101	P/P	95 - 105
Potassium	102	100	P/P	95 - 105
Sodium	102	102	P/P	95 - 105
Zinc	102	101	P/P	95 - 105

Reference Method: SM 5310 B-00
Run ID: A91605
Included Lab Sample IDs: 2086296, 2086297

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.1	99.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A91613
Included Lab Sample IDs: 2086304, 2086305

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	105	103	P/P	90 - 110
Antimony	97.3	96.3	P/P	90 - 110
Arsenic	102	101	P/P	90 - 110
Boron	110	108	P/P	90 - 110
Cadmium	101	101	P/P	90 - 110
Chromium	99.0	102	P/P	90 - 110
Copper	102	102	P/P	90 - 110
Lead	98.6	98.2	P/P	90 - 110
Nickel	101	101	P/P	90 - 110
Selenium	103	103	P/P	90 - 110
Silver	103	103	P/P	90 - 110
Thallium	97.0	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A91619
Included Lab Sample IDs: 2086296, 2086297

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A91693
Included Lab Sample IDs: 2086296, 2086297

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.9	95.4	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						2.23	
EPA 200.7 Rev. 4.4	Barium	100	101	101	98.0			0.0454
	Calcium	106	106	105	101			1.08
	Iron	103	104	103	103			1.36
	Magnesium	110	111	109	106			1.29
	Potassium	102	107	107	101			0.208
	Sodium	105	104	103	103			0.924
	Zinc	98.9	99.8	100	100			0.327
EPA 200.8 Rev. 5.4	Aluminum	101	102	102	103			0.229
	Antimony	99.3	100	101	99.3			0.917
	Arsenic	101	105	105	103			0.0710
	Boron	105	109	109	103			0.230
	Cadmium	103	105	105	100			0.0917
	Chromium	97.7	101	101	97.2			0.129
	Copper	98.7	103	102	97.7			0.618
	Lead	95.6	97.2	96.6	98.6			0.518
	Nickel	98.6	103	103	98.1			0.140
	Selenium	101	108	108	103			0.117
	Silver	102	104	103	101			1.23
	Thallium	99.9	94.5	95.1	103			0.563
EPA 300.0 Rev. 2.1	Chloride	98.7	99.0	101			0.210	
	Sulfate	97.9	100	99.9			0.114	
EPA 350.1 Rev. 2.0	Ammonia-N	103	103	105				1.66
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.8	101	100				0.625
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102				0.489
EPA 365.1 Rev. 2.0	Total-P	100	102	101				1.29
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.0	94.6	93.0				1.56
SM 2120 B	Color (true)	101					1.24	
SM 2320 B-97	Total Alkalinity	101					1.02	
SM 2540 C-97	TDS						3.06	
SM 2540 D-97	TSS						7.41	
SM 4500 F-C-97	Fluoride	97.2	95.6	96.7				0.968
SM 5310 B-00	Organic Carbon	98.2	97.9	96.7				0.727

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2086294, 2086295
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2086304, 2086305
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2086304, 2086305
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2086294, 2086295
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2086294, 2086295
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2086296, 2086297
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2086296, 2086297
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2086296, 2086297
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2086296, 2086297

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	2086298, 2086299
SM 2120 B / E31780	True Color measured at 450 nm	2086294, 2086295
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2086294, 2086295
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2086294, 2086295
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2086294, 2086295
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2086294, 2086295
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2086296, 2086297

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	05/15/2019			05/15/2019 15:04	Sima Feizi	2086294, 2086295
EPA 200.7 Rev. 4.4	05/15/2019	05/20/2019 14:30	Elliott D. Healy	05/21/2019 13:07	Betina Topolski	2086304
	05/15/2019	05/20/2019 14:30	Elliott D. Healy	05/21/2019 13:15	Betina Topolski	2086305
EPA 200.8 Rev. 5.4	05/15/2019	05/20/2019 14:30	Elliott D. Healy	05/22/2019 21:52	Robert K Palmer	2086304
	05/15/2019	05/20/2019 14:30	Elliott D. Healy	05/22/2019 22:02	Robert K Palmer	2086305
EPA 300.0 Rev. 2.1	05/15/2019			05/17/2019 01:54	Lipi Saha	2086294
	05/15/2019			05/17/2019 02:06	Lipi Saha	2086295
EPA 350.1 Rev. 2.0	05/15/2019			05/17/2019 13:21	Ping Hua	2086297
	05/15/2019			05/17/2019 13:37	Ping Hua	2086296
EPA 351.2 Rev. 2.0	05/15/2019	05/23/2019 13:15	Adrian Shelby	05/28/2019 14:22	Joseph Suarez	2086296
	05/15/2019	05/23/2019 13:15	Adrian Shelby	05/28/2019 14:23	Joseph Suarez	2086297
EPA 353.2 Rev. 2.0	05/15/2019			05/20/2019 12:10	Beverly Y. Sanders	2086296
	05/15/2019			05/20/2019 12:11	Beverly Y. Sanders	2086297
EPA 365.1 Rev. 2.0	05/15/2019	05/22/2019 02:01	Lipi Saha	05/22/2019 19:41	Rosalyn Ballman	2086296
	05/15/2019	05/22/2019 02:01	Lipi Saha	05/22/2019 19:43	Rosalyn Ballman	2086297
EPA 365.1 Rev. 2.0 dissolved	05/15/2019			05/15/2019 16:19	Jhamieka S. Greenwood	2086298
	05/15/2019			05/15/2019 16:24	Jhamieka S. Greenwood	2086299
SM 2120 B	05/15/2019			05/15/2019 16:50	Madeline Funaro	2086294
	05/15/2019			05/15/2019 16:51	Madeline Funaro	2086295
SM 2320 B-97	05/15/2019			05/21/2019 04:38	Dale L. Simmons	2086295
	05/15/2019			05/21/2019 04:51	Dale L. Simmons	2086294
SM 2540 C-97	05/15/2019			05/16/2019 15:31	Yijie Li	2086294, 2086295
SM 2540 D-97	05/15/2019			05/16/2019 15:31	Yijie Li	2086294, 2086295
SM 4500 F-C-97	05/15/2019			05/21/2019 04:38	Dale L. Simmons	2086295
	05/15/2019			05/21/2019 04:51	Dale L. Simmons	2086294
SM 5310 B-00	05/15/2019			05/22/2019 08:54	Julia Storbeck	2086296
	05/15/2019			05/22/2019 09:07	Julia Storbeck	2086297