Chemical Analysis Report

CEN-DIST-2018-08-30-01

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

Event Description: **SJR @ Lk Harney**
Request ID: **RQ-2018-08-27-14**
Customer: **CEN-DIST**
Project ID: **SMP**

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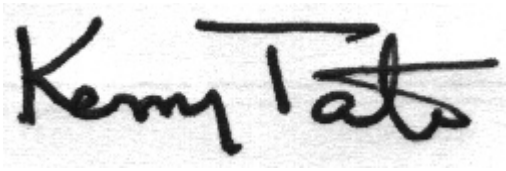
Date Certified: 14-SEP-2018 14:36



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: Lake Harney Outfall in Center of SJR **Collection Date/Time: 08/29/2018 10:45**

Field ID: G2CE0173 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2021039	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P351089	
	EPA 300.0 Rev. 2.1	Chloride	91		mg Cl/L	P351227	
		Sulfate	13		mg SO4/L	P351229	
	SM 2120 B	Color (true)	260		PCU	P350972	
	SM 2320 B-97	Total Alkalinity	48		mg CaCO3/L	P351369	
	SM 2540 C-97	TDS	263		mg/L	P351243	
	SM 2540 D-97	TSS	2	U	mg/L	P351093	
	SM 4500 F-C-97	Fluoride	0.092	I	mg F/L	P351373	
2021040	EPA 350.1 Rev. 2.0	Ammonia-N	0.070		mg N/L	P351087	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P351026	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P351130	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P351012	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P351132	
2021041	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.080		mg P/L	P350975	
2021044	EPA 200.7 Rev. 4.4	Calcium	23.4		mg/L	P350964	
		Iron	520		ug/L	P350964	
		Magnesium	6.72		mg/L	P350964	
		Potassium	2.6		mg/L	P350964	
		Sodium	49.9		mg/L	P350964	
		Zinc	5.0	U	ug/L	P350964	
	EPA 200.8 Rev. 5.4	Arsenic	0.72		ug/L	P350964	
		Cadmium	0.020	U	ug/L	P350964	
		Chromium	0.40	U	ug/L	P350964	
		Copper	0.32	I	ug/L	P350964	
		Lead	0.18	I	ug/L	P350964	
		Nickel	0.22	I	ug/L	P350964	
		Silver	0.010	U	ug/L	P350964	

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: P351089

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350964

Component	Result	Code	Units
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: P350964

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 300.0 Rev. 2.1
Batch ID: P351227

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351229

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351087

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351026

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351130

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351012

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350975

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

Reference Method: SM 2120 B
Batch ID: P350972

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P351369

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

Reference Method: SM 2540 C-97
Batch ID: P351243

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P351093

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P351373

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P351132

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: P350964

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	102		P	85 - 115
Magnesium	109		P	85 - 115
Potassium	110		P	85 - 115
Sodium	101		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350964

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	93.8		P	85 - 115
Cadmium	93.0		P	85 - 115
Chromium	88.5		P	85 - 115
Copper	87.3		P	85 - 115
Lead	91.5		P	85 - 115
Nickel	89.8		P	85 - 115
Silver	92.7		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351227

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351229

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351087

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351026

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: P351130

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351012

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: P350975

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

Reference Method: SM 2120 B
Batch ID: P350972

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

Reference Method: SM 2320 B-97
Batch ID: P351369

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

Reference Method: SM 4500 F-C-97
Batch ID: P351373

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P351132

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.5		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350964

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020573	Calcium	104		P	80 - 120
2020573	Iron	99.3		P	80 - 120
2020573	Magnesium	105		P	80 - 120
2020573	Potassium	106		P	80 - 120
2020573	Sodium	101		P	80 - 120
2020573	Zinc	103		P	80 - 120
2020654	Calcium	99.7		P	80 - 120
2020654	Iron	99.5	98.4	P/P	80 - 120
2020654	Magnesium	105	103	P/P	80 - 120
2020654	Potassium	110	107	P/P	80 - 120
2020654	Sodium	97.7		P	80 - 120
2020654	Zinc	104	101	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350964

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020573	Arsenic	99.8		P	80 - 120
2020573	Cadmium	98.4		P	80 - 120
2020573	Chromium	94.9		P	80 - 120
2020573	Copper	95.4		P	80 - 120
2020573	Lead	97.4		P	80 - 120
2020573	Nickel	95.4		P	80 - 120
2020573	Silver	95.4		P	80 - 120
2020654	Arsenic	101	102	P/P	80 - 120
2020654	Cadmium	101	103	P/P	80 - 120
2020654	Chromium	97.9	96.9	P/P	80 - 120
2020654	Copper	96.1	96.8	P/P	80 - 120
2020654	Lead	100	101	P/P	80 - 120
2020654	Nickel	97.1	97.5	P/P	80 - 120
2020654	Silver	95.9	96.7	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351227

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020917	Chloride	101		P	90 - 110
2021046	Chloride	96.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351229

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020917	Sulfate	98.1		P	90 - 110
2021046	Sulfate	91.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351087

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020962	Ammonia-N	101	101	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351026

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021049	Kjeldahl Nitrogen	94.1	98.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020931	NO2NO3-N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351012

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020974	Total-P	96.6	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350975

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021078	O-Phosphate-P	92.8	93.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P351373

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2021242	Fluoride	100	99.1	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P351132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2020931	Organic Carbon	94.6	95.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P351089

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020961	Turbidity	1.45	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P350964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020654	Calcium	1.54	Spike	P	0 - 20
2020654	Iron	1.09	Spike	P	0 - 20
2020654	Magnesium	1.22	Spike	P	0 - 20
2020654	Potassium	2.36	Spike	P	0 - 20
2020654	Sodium	1.98	Spike	P	0 - 20
2020654	Zinc	2.87	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P350964

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020654	Arsenic	0.432	Spike	P	0 - 20
2020654	Cadmium	2.18	Spike	P	0 - 20
2020654	Chromium	1.05	Spike	P	0 - 20
2020654	Copper	0.672	Spike	P	0 - 20
2020654	Lead	0.662	Spike	P	0 - 20
2020654	Nickel	0.452	Spike	P	0 - 20
2020654	Silver	0.801	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351227

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020917	Chloride	5.78	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P351229

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020917	Sulfate	9.26	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351087

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020962	Ammonia-N	0.315	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021049	Kjeldahl Nitrogen	2.24	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351130

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020931	NO2NO3-N	0.818	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351012

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020974	Total-P	1.47	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P350975

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021078	O-Phosphate-P	0.965	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P350972

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021046	Color (true)	5.90	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P351369

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021242	Total Alkalinity	0.607	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P351243

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020964	TDS	1.59	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P351373

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2021242	Fluoride	0.979	Spike	P	0 - 3.5

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P351132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2020931	Organic Carbon	0.724	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: SM 2120 B
Run ID: A86213
Included Lab Sample IDs: 2021039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.4	98.8	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86214
Included Lab Sample IDs: 2021041

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A86254
Included Lab Sample IDs: 2021040

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A86275
Included Lab Sample IDs: 2021040

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A86276
Included Lab Sample IDs: 2021040

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86280
Included Lab Sample IDs: 2021039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A86281
Included Lab Sample IDs: 2021044

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	96.4	94.8	P/P	90 - 110
Iron	90.8	91.2	P/P	90 - 110
Magnesium	94.7	94.3	P/P	90 - 110
Potassium	101	101	P/P	90 - 110
Sodium	98.7	96.9	P/P	90 - 110
Zinc	99.3	98.9	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A86298
Included Lab Sample IDs: 2021040

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

Reference Method: SM 5310 B-00
Run ID: A86299
Included Lab Sample IDs: 2021040

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.3	94.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A86307
Included Lab Sample IDs: 2021044

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	95.8	94.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A86312
Included Lab Sample IDs: 2021039

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	106	103	P/P	90 - 110
Sulfate	103	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A86337
Included Lab Sample IDs: 2021044

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	96.8	94.4	P/P	90 - 110
Cadmium	95.2	96.4	P/P	90 - 110
Chromium	98.8	98.6	P/P	90 - 110
Copper	95.7	93.2	P/P	90 - 110
Nickel	95.2	93.5	P/P	90 - 110
Silver	95.3	94.5	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A86387
Included Lab Sample IDs: 2021039

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

Reference Method: SM 4500 F-C-97
Run ID: A86387
Included Lab Sample IDs: 2021039

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

Quality Assurance Report
Calibration Verification

* 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						1.45	
EPA 200.7 Rev. 4.4	Calcium	102	104	99.7				1.54
	Iron	102	99.3	99.5	98.4			1.09
	Magnesium	109	105	105	103			1.22
	Potassium	110	106	110	107			2.36
	Sodium	101	101	97.7				1.98
	Zinc	103	103	104	101			2.87
EPA 200.8 Rev. 5.4	Arsenic	93.8	99.8	101	102			0.432
	Cadmium	93.0	98.4	101	103			2.18
	Chromium	88.5	94.9	97.9	96.9			1.05
	Copper	87.3	95.4	96.1	96.8			0.672
	Lead	91.5	97.4	100	101			0.662
	Nickel	89.8	95.4	97.1	97.5			0.452
	Silver	92.7	95.4	95.9	96.7			0.801
EPA 300.0 Rev. 2.1	Chloride	103	101	96.6			5.78	
	Sulfate	100	98.1	91.7			9.26	
EPA 350.1 Rev. 2.0	Ammonia-N	102	101	101				0.315
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	94.1	98.4				2.24
EPA 353.2 Rev. 2.0	NO2NO3-N	102	101					0.818
EPA 365.1 Rev. 2.0	Total-P	100	96.6	98.2				1.47
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	92.8	93.7				0.965
SM 2120 B	Color (true)	101					5.90	
SM 2320 B-97	Total Alkalinity	103					0.607	
SM 2540 C-97	TDS						1.59	
SM 4500 F-C-97	Fluoride	101	100	99.1				0.979
SM 5310 B-00	Organic Carbon	95.5	94.6	95.6				0.724

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2021039
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2021044
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2021044
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2021039
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2021039
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2021040
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2021040
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2021040
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2021040
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2021041
SM 2120 B / E31780	True Color measured at 450 nm	2021039
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2021039
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2021039
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2021039
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2021039

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2021040

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	08/30/2018			08/30/2018 16:04	Megan Treadwell	2021039
EPA 200.7 Rev. 4.4	08/30/2018	08/30/2018 14:20	Elliott D. Healy	08/31/2018 17:13	Martin Acosta	2021044
EPA 200.8 Rev. 5.4	08/30/2018	08/30/2018 14:20	Elliott D. Healy	09/05/2018 17:02	Allison Taylor	2021044
	08/30/2018	08/30/2018 14:20	Elliott D. Healy	09/06/2018 23:13	Allison Taylor	2021044
EPA 300.0 Rev. 2.1	08/30/2018			09/06/2018 17:39	Lipi Saha	2021039
EPA 350.1 Rev. 2.0	08/30/2018			09/04/2018 12:43	Ping Hua	2021040
EPA 351.2 Rev. 2.0	08/30/2018	08/31/2018 15:00	Adrian Shelby	09/04/2018 14:50	Joseph Suarez	2021040
EPA 353.2 Rev. 2.0	08/30/2018			09/05/2018 15:14	Lauren Bottorf	2021040
EPA 365.1 Rev. 2.0	08/30/2018	08/31/2018 12:15	Sima Feizi	09/04/2018 08:54	Beverly Y. Sanders	2021040
EPA 365.1 Rev. 2.0 dissolved	08/30/2018			08/30/2018 16:10	Julia Storbeck	2021041
SM 2120 B	08/30/2018			08/30/2018 15:17	DeAsia Armster	2021039
SM 2320 B-97	08/30/2018			09/07/2018 08:34	Dale L. Simmons	2021039
SM 2540 C-97	08/30/2018			08/31/2018 09:00	DeAsia Armster	2021039
SM 2540 D-97	08/30/2018			08/31/2018 09:00	DeAsia Armster	2021039
SM 4500 F-C-97	08/30/2018			09/07/2018 08:34	Dale L. Simmons	2021039
SM 5310 B-00	08/30/2018			09/04/2018 22:16	Megan Treadwell	2021040