Chemical Analysis Report

SE-DIST-2018-10-05-03

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

Event Description: **SMP- St. Johns**
Request ID: **RQ-2018-10-01-80**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 30-OCT-2018 15:33

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 group are included in this report: 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: BLUE CYPRESS **Collection Date/Time: 10/04/2018 12:45**

Field ID: BLUE CYPRESS Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2031905	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P352917	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P353436	
		Sulfate	2.4		mg SO4/L	P353441	
	SM 2120 B	Color (true)	280		PCU	P352867	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P353317	
	SM 2540 C-97	TDS	132		mg/L	P353222	
	SM 2540 D-97	TSS	3	I	mg/L	P353135	
	SM 4500 F-C-97	Fluoride	0.075	I	mg F/L	P353320	
2031906	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P353481	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P353608	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.031		mg N/L	P353148	
	EPA 365.1 Rev. 2.0	Total-P	0.28		mg P/L	P353111	
	SM 5310 B-00	Organic Carbon	24		mg C/L	P353395	
2031907	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.26		mg P/L	P352872	

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: PADGETT BRANCH @ 441 **Collection Date/Time: 10/04/2018 13:30**

Field ID: G3SE0026 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2031899	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P352916	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P353436	
		Sulfate	1.4		mg SO4/L	P353441	
	SM 2120 B	Color (true)	300		PCU	P352867	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P353317	
	SM 2540 C-97	TDS	107		mg/L	P353221	
	SM 2540 D-97	TSS	6	I	mg/L	P353134	
	SM 4500 F-C-97	Fluoride	0.081	I	mg F/L	P353320	
2031900	EPA 350.1 Rev. 2.0	Ammonia-N	0.15		mg N/L	P353481	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P353191	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P353147	
	EPA 365.1 Rev. 2.0	Total-P	0.24		mg P/L	P353106	
	SM 5310 B-00	Organic Carbon	24		mg C/L	P353395	
2031901	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.17		mg P/L	P352872	

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: SWEETWATER BRANCH @441 **Collection Date/Time: 10/04/2018 13:50**

Field ID: G3SE0025 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2031902	EPA 180.1 Rev. 2.0	Turbidity	15	A	NTU	P352916	
	EPA 300.0 Rev. 2.1	Chloride	29		mg Cl/L	P353436	
		Sulfate	9.5		mg SO4/L	P353441	
	SM 2120 B	Color (true)	110		PCU	P352867	
	SM 2320 B-97	Total Alkalinity	30		mg CaCO3/L	P353317	
	SM 2540 C-97	TDS	151		mg/L	P353221	
	SM 2540 D-97	TSS	34		mg/L	P353134	
	SM 4500 F-C-97	Fluoride	0.077	I	mg F/L	P353320	
2031903	EPA 350.1 Rev. 2.0	Ammonia-N	0.052		mg N/L	P353481	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.94		mg N/L	P353608	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P353147	
	EPA 365.1 Rev. 2.0	Total-P	0.29		mg P/L	P353111	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P353395	
2031904	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.16		mg P/L	P352872	

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: P352916

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352917

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353436

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353441

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353481

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353191

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353608

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353147

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353148

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353106

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353111

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352872

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

Reference Method: SM 2120 B
Batch ID: P352867

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P353317

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

Reference Method: SM 2540 C-97
Batch ID: P353221

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P353222

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P353134

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P353135

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P353320

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P353395

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353436

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353441

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353481

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353191

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353608

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353147

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353148

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: P353106

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353111

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352872

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

Reference Method: SM 2120 B
Batch ID: P352867

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

Reference Method: SM 2320 B-97
Batch ID: P353317

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

Reference Method: SM 4500 F-C-97
Batch ID: P353320

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.4		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353395

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353436

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031782	Chloride	102		P	90 - 110
2031899	Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353441

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031782	Sulfate	101		P	90 - 110
2031899	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353481

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031928	Ammonia-N	92.4	99.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353191

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031810	Kjeldahl Nitrogen	100	98.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353608

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031937	Kjeldahl Nitrogen	103	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353147

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031788	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353148

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031927	NO2NO3-N	100		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353106

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031937	Total-P	103	98.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353111

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032383	Total-P	103	100	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352872

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031939	O-Phosphate-P	98.0	98.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P353320

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2032610	Fluoride	98.9	98.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P353395

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2031810	Organic Carbon	95.3	89.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031902	Turbidity	16.2	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031933	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031782	Chloride	1.73	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P353441

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031782	Sulfate	1.37	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P353481

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031928	Ammonia-N	6.13	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353191

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031810	Kjeldahl Nitrogen	0.751	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P353608

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031937	Kjeldahl Nitrogen	1.46	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353147

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031788	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P353148

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031927	NO2NO3-N	0.477	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353106

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031937	Total-P	3.77	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P353111

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032383	Total-P	3.01	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031939	O-Phosphate-P	0.719	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P352867

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031825	Color (true)	2.48	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P353317

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032610	Total Alkalinity	0.438	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P353221

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031717	TDS	1.46	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P353222

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031924	TDS	2.02	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P353320

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2032610	Fluoride	0.509	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P353395

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2031810	Organic Carbon	3.32	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: A86954
Included Lab Sample IDs: 2031899, 2031902, 2031905

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115
Color (true)	103	102	P/P	90 - 115
Color (true)	103	103	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A86955
Included Lab Sample IDs: 2031901, 2031904, 2031907

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.8	98.4	P/P	90 - 110
O-Phosphate-P	99.2	99.4	P/P	90 - 110
O-Phosphate-P	99.4	99.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A86965
Included Lab Sample IDs: 2031899, 2031902, 2031905

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A87067
Included Lab Sample IDs: 2031900, 2031903, 2031906

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A87087
Included Lab Sample IDs: 2031900, 2031903, 2031906

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A87105
Included Lab Sample IDs: 2031899, 2031902, 2031905

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Chloride	101	102	P/P	90 - 110
Sulfate	100	100	P/P	90 - 110
Sulfate	100	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A87130
Included Lab Sample IDs: 2031899, 2031902, 2031905

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A87130
Included Lab Sample IDs: 2031899, 2031902, 2031905

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

Reference Method: SM 4500 F-C-97
Run ID: A87130
Included Lab Sample IDs: 2031899, 2031902, 2031905

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

Reference Method: SM 5310 B-00
Run ID: A87167
Included Lab Sample IDs: 2031900, 2031903, 2031906

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.0	95.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A87175
Included Lab Sample IDs: 2031900

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A87205
Included Lab Sample IDs: 2031900, 2031903, 2031906

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A87281
Included Lab Sample IDs: 2031903, 2031906

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	104	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					16.2	
	Turbidity					0.0	
EPA 300.0 Rev. 2.1	Chloride	103	102	99.4		1.73	
	Sulfate	104	101	101		1.37	
EPA 350.1 Rev. 2.0	Ammonia-N	98.1	92.4	99.6			6.13
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	100	98.7			0.751
	Kjeldahl Nitrogen	100	103	101			1.46
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	102			0.0
	NO2NO3-N	100	100				0.477
EPA 365.1 Rev. 2.0	Total-P	99.9	103	98.6			3.77
	Total-P	102	103	100			3.01
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	98.0	98.8			0.719
SM 2120 B	Color (true)	102				2.48	
SM 2320 B-97	Total Alkalinity	102				0.438	
SM 2540 C-97	TDS					1.46	
	TDS					2.02	
SM 4500 F-C-97	Fluoride	98.4	98.9	98.2			0.509
SM 5310 B-00	Organic Carbon	93.0	95.3	89.8			3.32

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2031899, 2031902, 2031905
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2031899, 2031902, 2031905
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2031899, 2031902, 2031905
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2031900, 2031903, 2031906
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2031900, 2031903, 2031906
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2031900, 2031903, 2031906
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2031900, 2031903, 2031906
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2031901, 2031904, 2031907
SM 2120 B / E31780	True Color measured at 450 nm	2031899, 2031902, 2031905
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2031899, 2031902, 2031905
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2031899, 2031902, 2031905
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2031899, 2031902, 2031905
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2031899, 2031902, 2031905
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2031900, 2031903, 2031906

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	10/05/2018			10/05/2018 17:34	Megan Treadwell	2031899, 2031902, 2031905
EPA 300.0 Rev. 2.1	10/05/2018			10/20/2018 08:54	Lipi Saha	2031899
	10/05/2018			10/20/2018 12:07	Lipi Saha	2031902
	10/05/2018			10/20/2018 12:19	Lipi Saha	2031905
EPA 350.1 Rev. 2.0	10/05/2018			10/22/2018 13:36	Ping Hua	2031903
	10/05/2018			10/22/2018 13:37	Ping Hua	2031906
	10/05/2018			10/22/2018 13:46	Ping Hua	2031900
EPA 351.2 Rev. 2.0	10/05/2018	10/17/2018 11:30	Adrian Shelby	10/18/2018 14:44	Joseph Suarez	2031900
	10/05/2018	10/24/2018 11:00	Adrian Shelby	10/25/2018 09:29	Joseph Suarez	2031903
	10/05/2018	10/24/2018 11:00	Adrian Shelby	10/25/2018 09:30	Joseph Suarez	2031906
EPA 353.2 Rev. 2.0	10/05/2018			10/16/2018 13:11	Lauren Bottorf	2031900
	10/05/2018			10/16/2018 13:13	Lauren Bottorf	2031903
	10/05/2018			10/16/2018 13:26	Lauren Bottorf	2031906
EPA 365.1 Rev. 2.0	10/05/2018	10/16/2018 13:46	Sima Feizi	10/17/2018 11:06	Beverly Y. Sanders	2031900
	10/05/2018	10/16/2018 13:46	Sima Feizi	10/17/2018 11:17	Beverly Y. Sanders	2031903
	10/05/2018	10/16/2018 13:46	Sima Feizi	10/17/2018 11:18	Beverly Y. Sanders	2031906
EPA 365.1 Rev. 2.0 dissolved	10/05/2018			10/05/2018 17:28	Julia Storbeck	2031907
	10/05/2018			10/05/2018 17:36	Julia Storbeck	2031904
	10/05/2018			10/05/2018 18:03	Julia Storbeck	2031901
SM 2120 B	10/05/2018			10/05/2018 16:56	Chelsea Hernandez	2031902
	10/05/2018			10/05/2018 17:10	Chelsea Hernandez	2031899
	10/05/2018			10/05/2018 17:13	Chelsea Hernandez	2031905
SM 2320 B-97	10/05/2018			10/17/2018 22:22	Dale L. Simmons	2031899
	10/05/2018			10/17/2018 22:32	Dale L. Simmons	2031902
	10/05/2018			10/17/2018 22:42	Dale L. Simmons	2031905
SM 2540 C-97	10/05/2018			10/09/2018 15:15	Yijie Li	2031899, 2031902, 2031905
SM 2540 D-97	10/05/2018			10/09/2018 15:15	Yijie Li	2031899, 2031902, 2031905
SM 4500 F-C-97	10/05/2018			10/17/2018 22:22	Dale L. Simmons	2031899
	10/05/2018			10/17/2018 22:32	Dale L. Simmons	2031902
	10/05/2018			10/17/2018 22:42	Dale L. Simmons	2031905
SM 5310 B-00	10/05/2018			10/19/2018 08:26	Megan Treadwell	2031900
	10/05/2018			10/19/2018 08:38	Megan Treadwell	2031903
	10/05/2018			10/19/2018 08:53	Megan Treadwell	2031906