

Chemical Analysis Report

SO-DIST-2018-03-06-01

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

Event Description: **Caloosa Creeks**
Request ID: **RQ-2018-03-05-74**
Customer: **SO-DIST**
Project ID: **BMAP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901-3381
Attn: Gary Snorek

For additional information please contact
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Certified by: Colin Wright, Program Administrator

Date Certified: 27-MAR-2018 15:29

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular background.

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: Hancock Creek

Collection Date/Time: 03/05/2018 12:00

Field ID: G3SD0130

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1971678	SM 2120 B	Color (true)	63		PCU	P341024	
	SM 2320 B-97	Total Alkalinity	145		mg CaCO3/L	P341337	
	SM 2540 D-97	TSS	4	IA	mg/L	P341379	
	SM 4500 F-C-97	Fluoride	0.47		mg F/L	P341828	
1971681	SM 5310 B-00 dissolved	Organic Carbon	13		mg C/L	P341195	
1971684	EPA 350.1 Rev. 2.0	Ammonia-N	0.030		mg N/L	P341401	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P341059	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341104	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P341082	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P341195	
1971687	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.15		mg P/L	P341056	

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: Telegraph Creek

Collection Date/Time: 03/05/2018 13:00

Field ID: G3SD0129

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1971679	SM 2120 B	Color (true)	47		PCU	P341024	
	SM 2320 B-97	Total Alkalinity	287		mg CaCO3/L	P341453	
	SM 2540 D-97	TSS	3	I	mg/L	P341378	
	SM 4500 F-C-97	Fluoride	0.18		mg F/L	P341458	
1971682	SM 5310 B-00 dissolved	Organic Carbon	14		mg C/L	P341193	
1971685	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P341405	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P341293	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341199	
	EPA 365.1 Rev. 2.0	Total-P	0.054		mg P/L	P341102	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P341193	
1971688	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.017		mg P/L	P341050	

Sample Location: Orange River

Collection Date/Time: 03/05/2018 13:45

Field ID: G3SD0128

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1971680	SM 2120 B	Color (true)	38		PCU	P341024	
	SM 2320 B-97	Total Alkalinity	198		mg CaCO3/L	P341453	
	SM 2540 D-97	TSS	10	I	mg/L	P341378	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P341458	
1971683	SM 5310 B-00 dissolved	Organic Carbon	11		mg C/L	P341193	
1971686	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P341405	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P341293	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341199	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P341102	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P341193	

Field ID: G3SD0128

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1971689	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P341050	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341401

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341405

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341059

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341293

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341104

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341199

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341082

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341102

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341050

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341056

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

Reference Method: SM 2120 B
Batch ID: P341024

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P341337

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

Reference Method: SM 2320 B-97
Batch ID: P341453

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

Reference Method: SM 2540 D-97
Batch ID: P341378

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P341379

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P341458

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P341828

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: P341193

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

Reference Method: SM 5310 B-00
Batch ID: P341195

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

Reference Method: SM 5310 B-00 dissolved
Batch ID: P341193

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

Reference Method: SM 5310 B-00 dissolved
Batch ID: P341195

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341401

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341405

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: P341059

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: P341293

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341104

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341104

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	103		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341199

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341082

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341102

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341050

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341056

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

Reference Method: SM 2320 B-97
Batch ID: P341337

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.3		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P341453

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.4		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P341458

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.0		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P341828

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P341193

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.8		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P341195

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P341193

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.8		P	85 - 115

Reference Method: SM 5310 B-00 dissolved
Batch ID: P341195

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971684	Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341405

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971685	Ammonia-N	100	98.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970749	Kjeldahl Nitrogen	97.7	96.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341293

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341293

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971795	Kjeldahl Nitrogen	108	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341104

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1970749	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341199

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971659	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341082

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971765	Total-P	97.4	95.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341102

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971793	Total-P	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341050

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971586	O-Phosphate-P	96.9	95.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341056

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972333	O-Phosphate-P	96.1	98.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P341458

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971581	Fluoride	92.6	93.7	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P341828

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972478	Fluoride	92.1	94.5	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P341193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971599	Organic Carbon	94.4	95.7	P/P	85 - 115

Reference Method: SM 5310 B-00
 Batch ID: P341195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971681	Organic Carbon	94.2	95.9	P/P	85 - 115

Reference Method: SM 5310 B-00 dissolved
 Batch ID: P341193

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971599	Organic Carbon	94.4	95.7	P/P	85 - 115

Reference Method: SM 5310 B-00 dissolved
 Batch ID: P341195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971681	Organic Carbon	94.2	95.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P341401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971684	Ammonia-N	0.499	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P341405

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971685	Ammonia-N	1.33	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P341059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970749	Kjeldahl Nitrogen	0.618	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P341293

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971795	Kjeldahl Nitrogen	4.14	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341104

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1970749	NO2NO3-N	1.36	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341199

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971659	NO2NO3-N	0.380	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341082

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971765	Total-P	1.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341102

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971793	Total-P	1.18	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341050

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971586	O-Phosphate-P	0.887	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341056

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972333	O-Phosphate-P	2.16	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P341024

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971744	Color (true)	5.33	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P341337

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972478	Total Alkalinity	0.490	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P341453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971581	Total Alkalinity	0.296	Sample	P	0 - 4.8

Reference Method: SM 2540 D-97
Batch ID: P341378

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971597	TSS	7.41	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P341458

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971581	Fluoride	0.987	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P341828

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972478	Fluoride	1.43	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P341193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971599	Organic Carbon	1.17	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P341195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971681	Organic Carbon	1.30	Spike	P	0 - 20

Reference Method: SM 5310 B-00 dissolved
Batch ID: P341193

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971599	Organic Carbon	1.17	Spike	P	0 - 20

Reference Method: SM 5310 B-00 dissolved
Batch ID: P341195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971681	Organic Carbon	1.30	Spike	P	0 - 20

Quality Assurance Report Precision

* 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: A82462

Included Lab Sample IDs: 1971678, 1971679, 1971680

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A82474

Included Lab Sample IDs: 1971687, 1971688, 1971689

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82478

Included Lab Sample IDs: 1971684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82494

Included Lab Sample IDs: 1971684, 1971685, 1971686

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82501

Included Lab Sample IDs: 1971684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	109	106	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A82505

Included Lab Sample IDs: 1971684, 1971685, 1971686

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.3	95.8	P/P	90 - 110
Organic Carbon	97.0	98.0	P/P	90 - 110

Reference Method: SM 5310 B-00 dissolved

Run ID: A82505

Included Lab Sample IDs: 1971681, 1971682, 1971683

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00 dissolved

Run ID: A82505

Included Lab Sample IDs: 1971681, 1971682, 1971683

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.3	95.8	P/P	90 - 110
Organic Carbon	97.0	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82506

Included Lab Sample IDs: 1971685, 1971686

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

Reference Method: SM 2320 B-97

Run ID: A82543

Included Lab Sample IDs: 1971678

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.7	97.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82549

Included Lab Sample IDs: 1971685, 1971686

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.2	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82557

Included Lab Sample IDs: 1971684

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82558

Included Lab Sample IDs: 1971685, 1971686

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	103	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A82571

Included Lab Sample IDs: 1971679, 1971680

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.5	99.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82571

Included Lab Sample IDs: 1971679, 1971680

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A82726

Included Lab Sample IDs: 1971678

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	96.7	99.1	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 350.1 Rev. 2.0	Ammonia-N	98.1	103	103		0.499
	Ammonia-N	102	100	98.7		1.33
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	97.7	96.9		0.618
	Kjeldahl Nitrogen	96.4	108	103		4.14
EPA 353.2 Rev. 2.0	NO2NO3-N	103	102	104		1.36
	NO2NO3-N	104	102	102		0.380
EPA 365.1 Rev. 2.0	Total-P	101	97.4	95.6		1.50
	Total-P	102	103	102		1.18
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.5	96.9	95.7		0.887
	O-Phosphate-P	101	96.1	98.2		2.16
SM 2120 B	Color (true)				5.33	
SM 2320 B-97	Total Alkalinity	99.3			0.490	
	Total Alkalinity	99.4			0.296	
SM 2540 D-97	TSS				7.41	
SM 4500 F-C-97	Fluoride	95.0	92.6	93.7		0.987
	Fluoride	93.6	92.1	94.5		1.43
SM 5310 B-00	Organic Carbon	95.8	94.4	95.7		1.17
	Organic Carbon	96.0	94.2	95.9		1.30
SM 5310 B-00 dissolved	Organic Carbon	95.8	94.4	95.7		1.17
	Organic Carbon	96.0	94.2	95.9		1.30

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1971684, 1971685, 1971686
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1971684, 1971685, 1971686
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1971684, 1971685, 1971686
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1971684, 1971685, 1971686
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1971687, 1971688, 1971689
SM 2120 B / E31780	True Color measured at 450 nm	1971678, 1971679, 1971680
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1971678, 1971679, 1971680
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1971678, 1971679, 1971680
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1971678, 1971679, 1971680
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1971684, 1971685, 1971686

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 5310 B-00 dissolved / E31780	Dissolved Nonpurgeable Organic Carbon in filtered, aqueous matrices	1971681, 1971682, 1971683

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 350.1 Rev. 2.0	03/06/2018			03/09/2018	Ping Hua	1971684, 1971685, 1971686
EPA 351.2 Rev. 2.0	03/06/2018	03/07/2018	Adrian Shelby	03/08/2018	Joseph Suarez	1971684
	03/06/2018	03/09/2018	Adrian Shelby	03/12/2018	Joseph Suarez	1971685, 1971686
EPA 353.2 Rev. 2.0	03/06/2018			03/07/2018	Lauren Bottorf	1971684
	03/06/2018			03/08/2018	Lauren Bottorf	1971685, 1971686
EPA 365.1 Rev. 2.0	03/06/2018	03/07/2018	Sima Feizi	03/08/2018	Beverly Y. Sanders	1971684, 1971685, 1971686
EPA 365.1 Rev. 2.0 dissolved	03/06/2018			03/06/2018 16:54	Megan Treadwell	1971687
	03/06/2018			03/06/2018 16:55	Megan Treadwell	1971688
	03/06/2018			03/06/2018 16:56	Megan Treadwell	1971689
SM 2120 B	03/06/2018			03/06/2018 15:49	Tanya Welborn	1971678
	03/06/2018			03/06/2018 15:50	Tanya Welborn	1971679, 1971680
SM 2320 B-97	03/06/2018			03/10/2018	Lauren Bottorf	1971678
	03/06/2018			03/13/2018	Dale L. Simmons	1971679, 1971680
SM 2540 D-97	03/06/2018			03/07/2018	Yijie Li	1971678, 1971679, 1971680
SM 4500 F-C-97	03/06/2018			03/13/2018	Dale L. Simmons	1971679, 1971680
	03/06/2018			03/20/2018	Lauren Bottorf	1971678
SM 5310 B-00	03/06/2018			03/07/2018	Megan Treadwell	1971685, 1971686
	03/06/2018			03/08/2018	Megan Treadwell	1971684
SM 5310 B-00 dissolved	03/06/2018			03/07/2018	Megan Treadwell	1971682, 1971683
	03/06/2018			03/08/2018	Megan Treadwell	1971681