

Chemical Analysis Report

SW-DIST-2019-03-19-01

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

Event Description: **SMP - Hernado/Citrus Run**
Request ID: **RQ-2019-03-18-05**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 10-APR-2019 10:49

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored 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 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: IRVIN LAKE CENTER

Collection Date/Time: 03/18/2019 14:25

Field ID: G4SW0025

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071122	EPA 180.1 Rev. 2.0	Turbidity	13	A	NTU	P360703	
	EPA 300.0 Rev. 2.1	Chloride	9.9	A	mg Cl/L	P361110	
		Sulfate	2.5	A	mg SO4/L	P361112	
	SM 2120 B	Color (true)	59		PCU	P360746	
	SM 2320 B-97	Total Alkalinity	39		mg CaCO3/L	P361242	
	SM 2540 C-97	TDS	75		mg/L	P361037	
	SM 2540 D-97	TSS	18	I	mg/L	P361029	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P361246	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P361176	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P360911	
2071126	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P360961	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P361117	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P361059	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P360706	
	dissolved						

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. The PQL was elevated due to sample matrix interference.

Sample Location: CATO LAKE SOUTH

Collection Date/Time: 03/18/2019 12:30

Field ID: G4SW0102

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071123	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P360703	
	EPA 300.0 Rev. 2.1	Chloride	18		mg Cl/L	P361110	
		Sulfate	0.20	U	mg SO4/L	P361112	
	SM 2120 B	Color (true)	26	A	PCU	P360746	
	SM 2320 B-97	Total Alkalinity	169	A	mg CaCO3/L	P361242	
	SM 2540 C-97	TDS	202		mg/L	P361037	
	SM 2540 D-97	TSS	3	I	mg/L	P361029	
	SM 4500 F-C-97	Fluoride	0.089	I	mg F/L	P361246	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P361176	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P360911	
2071127	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P360961	
	EPA 365.1 Rev. 2.0	Total-P	0.021		mg P/L	P361117	
	SM 5310 B-00	Organic Carbon	9.7		mg C/L	P361059	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P360706	
	dissolved						

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: MCKETHAN LAKE @ CENTER

Collection Date/Time: 03/18/2019 13:15

Field ID: G4SW0021

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071124	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P360703	
	EPA 300.0 Rev. 2.1	Chloride	1.8		mg Cl/L	P361110	
		Sulfate	0.20	U	mg SO4/L	P361112	
	SM 2120 B	Color (true)	37		PCU	P360746	
	SM 2320 B-97	Total Alkalinity	9.2		mg CaCO3/L	P361243	
	SM 2540 C-97	TDS	21	I	mg/L	P361037	
	SM 2540 D-97	TSS	2	U	mg/L	P361029	
	SM 4500 F-C-97	Fluoride	0.041	I	mg F/L	P361247	
2071128	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P361178	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P360911	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.72		mg N/L	P360961	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P361117	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P361059	
2071132	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360706	

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: BLUE SPRINGS RUN

Collection Date/Time: 03/18/2019 11:15

Field ID: G4SW0100

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071125	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P360703	
	EPA 300.0 Rev. 2.1	Chloride	7.0		mg Cl/L	P361110	
		Sulfate	14		mg SO4/L	P361112	
	SM 2120 B	Color (true)	2.5	U	PCU	P360746	
	SM 2320 B-97	Total Alkalinity	165		mg CaCO3/L	P361243	
	SM 2540 C-97	TDS	200	A	mg/L	P361037	
	SM 2540 D-97	TSS	2	IA	mg/L	P361029	
	SM 4500 F-C-97	Fluoride	0.053	I	mg F/L	P361247	
2071129	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P361178	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P360912	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P360961	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P361118	
	SM 5310 B-00	Organic Carbon	7.6		mg C/L	P361059	
2071133	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P360707	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 04/08/2019.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The result was confirmed on 04/04/2019.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360703

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361110

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361112

Component	Result	Code	Units
Sulfate	0.20	U	mg SO ₄ /L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361176

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361178

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360911

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360912

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360961

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361117

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
Batch ID: P361118

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360706

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360707

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

Reference Method: SM 2120 B
Batch ID: P360746

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P361242

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

Reference Method: SM 2320 B-97
Batch ID: P361243

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

Reference Method: SM 2540 C-97
Batch ID: P361037

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P361029

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P361246

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P361247

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P361059

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: P361110

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361112

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361176

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361178

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360911

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360912

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360961

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361117

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361118

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360706

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360707

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.6		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P360746

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	104		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P361242

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P361243

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	105		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P361246

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

Reference Method: SM 4500 F-C-97
Batch ID: P361247

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

Reference Method: SM 5310 B-00
Batch ID: P361059

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361110

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071122	Chloride	96.2		P	90 - 110
2071200	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361112

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071122	Sulfate	97.0		P	90 - 110
2071200	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361176

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071028	Ammonia-N	103	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361178

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071129	Ammonia-N	105	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360911

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071029	Kjeldahl Nitrogen	98.8	95.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360912

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071129	Kjeldahl Nitrogen	92.2	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360961

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071114	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361117

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071035	Total-P	95.9	97.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361118

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071176	Total-P	99.3	97.6	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360706

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071036	O-Phosphate-P	90.6	91.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360707

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071133	O-Phosphate-P	95.6	96.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P361246

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071123	Fluoride	100	99.2	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P361247

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071227	Fluoride	97.3	97.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P361059

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071128	Organic Carbon	101	100	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071122	Turbidity	3.86	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361110

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071122	Chloride	0.00704	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361112

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071122	Sulfate	1.14	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361176

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071028	Ammonia-N	0.986	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361178

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071129	Ammonia-N	0.206	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360911

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071029	Kjeldahl Nitrogen	2.08	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P360912

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071129	Kjeldahl Nitrogen	8.12	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360961

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071114	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361117

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071035	Total-P	1.39	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361118

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071176	Total-P	1.68	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071036	O-Phosphate-P	1.42	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071133	O-Phosphate-P	0.873	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P360746

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071123	Color (true)	5.09	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P361242

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071123	Total Alkalinity	0.972	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P361243

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071227	Total Alkalinity	0.471	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P361037

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071125	TDS	4.49	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P361246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071123	Fluoride	0.993	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P361247

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071227	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P361059

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071128	Organic Carbon	0.846	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: A90071

Included Lab Sample IDs: 2071122, 2071123, 2071124, 2071125

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A90100

Included Lab Sample IDs: 2071122, 2071123, 2071124, 2071125

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A90101

Included Lab Sample IDs: 2071130, 2071131, 2071132, 2071133

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.2	P/P	90 - 110
O-Phosphate-P	99.8	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A90215

Included Lab Sample IDs: 2071126, 2071127, 2071128, 2071129

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A90235

Included Lab Sample IDs: 2071126, 2071127, 2071128, 2071129

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	93.8	P/P	90 - 110
Kjeldahl Nitrogen	93.8	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A90238

Included Lab Sample IDs: 2071126, 2071127, 2071128, 2071129

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.2	93.8	P/P	90 - 110
Organic Carbon	95.7	94.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A90288

Included Lab Sample IDs: 2071126, 2071127, 2071128, 2071129

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90290

Included Lab Sample IDs: 2071126

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90303

Included Lab Sample IDs: 2071127, 2071128, 2071129

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

Reference Method: SM 2320 B-97

Run ID: A90311

Included Lab Sample IDs: 2071122, 2071123, 2071124, 2071125

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	104	P/P	90 - 110
Total Alkalinity	102	102	P/P	90 - 110
Total Alkalinity	104	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A90311

Included Lab Sample IDs: 2071122, 2071123, 2071124, 2071125

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	105	P/P	90 - 110
Fluoride	102	103	P/P	90 - 110
Fluoride	105	102	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	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					3.86	
EPA 300.0 Rev. 2.1	Chloride	101	96.2	102		0.0070	
	Sulfate	101	97.0	103		1.14	
EPA 350.1 Rev. 2.0	Ammonia-N	101	103	104			0.986
	Ammonia-N	101	105	105			0.206
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105	98.8	95.7			2.08
	Kjeldahl Nitrogen	98.1	92.2	104			8.12
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	100	100			0.0
EPA 365.1 Rev. 2.0	Total-P	96.2	95.9	97.3			1.39
	Total-P	101	99.3	97.6			1.68
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	90.6	91.9			1.42
	O-Phosphate-P	99.6	95.6	96.7			0.873
SM 2120 B	Color (true)	104				5.09	
SM 2320 B-97	Total Alkalinity	104				0.972	
	Total Alkalinity	105				0.471	
SM 2540 C-97	TDS					4.49	
SM 4500 F-C-97	Fluoride	101	100	99.2			0.993
	Fluoride	101	97.3	97.3			0.0
SM 5310 B-00	Organic Carbon	97.6	101	100			0.846

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2071122, 2071123, 2071124, 2071125
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2071122, 2071123, 2071124, 2071125
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2071122, 2071123, 2071124, 2071125
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2071126, 2071127, 2071128, 2071129
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2071126, 2071127, 2071128, 2071129
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2071126, 2071127, 2071128, 2071129
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2071126, 2071127, 2071128, 2071129
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2071130, 2071131, 2071132, 2071133
SM 2120 B / E31780	True Color measured at 450 nm	2071122, 2071123, 2071124, 2071125
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2071122, 2071123, 2071124, 2071125
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2071122, 2071123, 2071124, 2071125
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2071122, 2071123, 2071124, 2071125
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2071122, 2071123, 2071124, 2071125
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2071126, 2071127, 2071128, 2071129

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	03/19/2019			03/19/2019 15:54	Adrian Shelby	2071122, 2071123, 2071124, 2071125
EPA 300.0 Rev. 2.1	03/19/2019			03/23/2019 23:23	Lipi Saha	2071122
	03/19/2019			03/24/2019 00:23	Lipi Saha	2071123
	03/19/2019			03/24/2019 00:36	Lipi Saha	2071124
	03/19/2019			03/24/2019 00:48	Lipi Saha	2071125
EPA 350.1 Rev. 2.0	03/19/2019			03/27/2019 10:43	Ping Hua	2071126
	03/19/2019			03/27/2019 10:44	Ping Hua	2071127
	03/19/2019			03/27/2019 11:22	Ping Hua	2071129
	03/19/2019			03/27/2019 11:26	Ping Hua	2071128
EPA 351.2 Rev. 2.0	03/19/2019	03/22/2019 12:00	Adrian Shelby	03/26/2019 12:13	Joseph Suarez	2071126
	03/19/2019	03/22/2019 12:00	Adrian Shelby	03/26/2019 12:14	Joseph Suarez	2071127
	03/19/2019	03/22/2019 12:00	Adrian Shelby	03/26/2019 12:16	Joseph Suarez	2071128
	03/19/2019	03/22/2019 12:00	Adrian Shelby	03/26/2019 12:24	Joseph Suarez	2071129
EPA 353.2 Rev. 2.0	03/19/2019			03/22/2019 10:34	Beverly Y. Sanders	2071126
	03/19/2019			03/22/2019 10:35	Beverly Y. Sanders	2071127
	03/19/2019			03/22/2019 10:36	Beverly Y. Sanders	2071128
	03/19/2019			03/22/2019 10:37	Beverly Y. Sanders	2071129
EPA 365.1 Rev. 2.0	03/19/2019	03/27/2019 12:00	Adrian Shelby	03/28/2019 10:19	Rosalyn Ballman	2071126
	03/19/2019	03/27/2019 12:00	Adrian Shelby	03/28/2019 14:33	Rosalyn Ballman	2071127
	03/19/2019	03/27/2019 12:00	Adrian Shelby	03/28/2019 14:34	Rosalyn Ballman	2071128
	03/19/2019	03/27/2019 12:00	Adrian Shelby	03/28/2019 14:43	Rosalyn Ballman	2071129
EPA 365.1 Rev. 2.0 dissolved	03/19/2019			03/19/2019 15:21	Julia Storbeck	2071133
	03/19/2019			03/19/2019 15:50	Julia Storbeck	2071130
	03/19/2019			03/19/2019 15:51	Julia Storbeck	2071131
	03/19/2019			03/19/2019 15:52	Julia Storbeck	2071132
SM 2120 B	03/19/2019			03/19/2019 15:54	Mariam Hanna	2071122
	03/19/2019			03/19/2019 15:55	Mariam Hanna	2071123
	03/19/2019			03/19/2019 15:56	Mariam Hanna	2071124
	03/19/2019			03/19/2019 15:57	Mariam Hanna	2071125
SM 2320 B-97	03/19/2019			03/28/2019 07:27	Dale L. Simmons	2071123
	03/19/2019			03/28/2019 11:15	Dale L. Simmons	2071122
	03/19/2019			03/28/2019 13:38	Dale L. Simmons	2071124
	03/19/2019			03/28/2019 13:51	Dale L. Simmons	2071125
SM 2540 C-97	03/19/2019			03/20/2019 15:26	Yijie Li	2071122, 2071123, 2071124, 2071125
SM 2540 D-97	03/19/2019			03/20/2019 15:26	Yijie Li	2071122, 2071123, 2071124, 2071125
SM 4500 F-C-97	03/19/2019			03/28/2019 07:16	Dale L. Simmons	2071123
	03/19/2019			03/28/2019 11:15	Dale L. Simmons	2071122
	03/19/2019			03/28/2019 13:38	Dale L. Simmons	2071124
	03/19/2019			03/28/2019 13:51	Dale L. Simmons	2071125
SM 5310 B-00	03/19/2019			03/25/2019 06:46	Julia Storbeck	2071128

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	03/19/2019			03/25/2019 09:16	Julia Storbeck	2071126
	03/19/2019			03/25/2019 09:29	Julia Storbeck	2071127
	03/19/2019			03/25/2019 09:42	Julia Storbeck	2071129