

Chemical Analysis Report

NW-DIST-2018-02-01-03

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

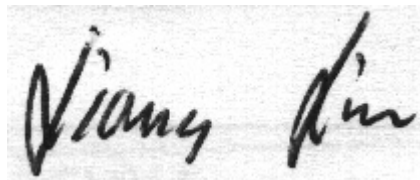
Event Description: **CRESTVIEW**
Request ID: **RQ-2018-01-29-21**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
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Attn: Michael King

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 28-FEB-2018 17:30

A handwritten signature in black ink, appearing to read "Liang Lin", 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 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: GREEN BRANCH UPSTREAM OF BUCK TYNER RD. **Collection Date/Time: 01/31/2018 11:00**

Field ID: G4NW0207

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963746	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P339173	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P339697	
		Sulfate	0.87		mg SO4/L	P339702	
	SM 2120 B	Color (true)	25		PCU	P339195	
	SM 2320 B-97	Total Alkalinity	2.9		mg CaCO3/L	P339515	
	SM 2540 C-97	TDS	24	I	mg/L	P339637	
	SM 2540 D-97	TSS	2	U	mg/L	P339535	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340385	
1963752	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P339677	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.11	I	mg N/L	P339225	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P339333	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P339340	
	SM 5310 B-00	Organic Carbon	2.1		mg C/L	P339521	
1963758	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P339201	

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: OAK CREEK BELOW TOMMY STEEL RD.

Collection Date/Time: 01/31/2018 11:45

Field ID: G4NW0395

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963747	EPA 180.1 Rev. 2.0	Turbidity	4.5		NTU	P339173	
	EPA 300.0 Rev. 2.1	Chloride	4.2		mg Cl/L	P339697	
		Sulfate	2.1		mg SO4/L	P339702	
	SM 2120 B	Color (true)	54		PCU	P339195	
	SM 2320 B-97	Total Alkalinity	2.2	I	mg CaCO3/L	P339515	
	SM 2540 C-97	TDS	30		mg/L	P339637	
	SM 2540 D-97	TSS	2	U	mg/L	P339535	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340385	
1963753	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P339677	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P339225	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P339333	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P339340	
	SM 5310 B-00	Organic Carbon	2.9		mg C/L	P339521	
1963759	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P339201	

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: HURRICANE CREEK BELOW HURRICANE LAKE

Collection Date/Time: 01/31/2018 12:30

Field ID: G4NW0160

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963748	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P339173	

Field ID: G4NW0160

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963748	EPA 300.0 Rev. 2.1	Chloride	2.5		mg Cl/L	P339228	
		Sulfate	0.43	I	mg SO4/L	P339231	
	SM 2120 B	Color (true)	15		PCU	P339195	
	SM 2320 B-97	Total Alkalinity	3.0		mg CaCO3/L	P339515	
	SM 2540 C-97	TDS	18	I	mg/L	P339637	
	SM 2540 D-97	TSS	2	I	mg/L	P339535	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340385	
1963754	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P339677	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P339225	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P339333	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P339340	
	SM 5310 B-00	Organic Carbon	3.3		mg C/L	P339521	
1963760	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P339201	

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: WILKINSON CREEK UPSTREAM OF WILKINSON BLUFF ROAD

Collection Date/Time: 01/31/2018 13:15

Field ID: G4NW0357

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963749	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P339173	
	EPA 300.0 Rev. 2.1	Chloride	3.3		mg Cl/L	P339697	
		Sulfate	1.2		mg SO4/L	P339702	
	SM 2120 B	Color (true)	14		PCU	P339195	
	SM 2320 B-97	Total Alkalinity	1.2	I	mg CaCO3/L	P339515	
	SM 2540 C-97	TDS	17	I	mg/L	P339637	
	SM 2540 D-97	TSS	2	U	mg/L	P339535	
1963755	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340385	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P339677	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P339225	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P339333	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P339340	
1963761	SM 5310 B-00	Organic Carbon	0.93	I	mg C/L	P339521	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P339201	

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: BAGGETT CREEK UPSTREAM OF HWY 90

Collection Date/Time: 01/31/2018 13:40

Field ID: G4NW0336

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963750	EPA 180.1 Rev. 2.0	Turbidity	2.3	A	NTU	P339174	
	EPA 300.0 Rev. 2.1	Chloride	4.0		mg Cl/L	P339697	
		Sulfate	0.99		mg SO4/L	P339702	
	SM 2120 B	Color (true)	16		PCU	P339195	

Field ID: G4NW0336

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963750	SM 2320 B-97	Total Alkalinity	7.3		mg CaCO3/L	P339515	
	SM 2540 C-97	TDS	26		mg/L	P339637	
	SM 2540 D-97	TSS	2	I	mg/L	P339535	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340385	
1963756	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P339677	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.10	I	mg N/L	P339225	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.66		mg N/L	P339333	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P339340	
	SM 5310 B-00	Organic Carbon	1.5		mg C/L	P339521	
1963762	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P339201	

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: TRAMMEL CREEK EAST OF HWY 4

Collection Date/Time: 01/31/2018 14:00

Field ID: G4NW0052

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1963751	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P339174	
	EPA 300.0 Rev. 2.1	Chloride	4.8		mg Cl/L	P339697	
		Sulfate	5.4		mg SO4/L	P339702	
	SM 2120 B	Color (true)	31	A	PCU	P339196	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P339515	
	SM 2540 C-97	TDS	40	A	mg/L	P339637	
	SM 2540 D-97	TSS	2	UA	mg/L	P339535	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340385	
1963757	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P339372	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P339225	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.21		mg N/L	P339333	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P339340	
	SM 5310 B-00	Organic Carbon	2.8		mg C/L	P339521	
1963763	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P339201	

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: P339173

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P339174

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339228

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339231

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339697

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339702

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339372

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339677

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339225

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339333

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339340

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: P339201

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

Reference Method: SM 2120 B
 Batch ID: P339195

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
 Batch ID: P339196

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
 Batch ID: P339515

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

Reference Method: SM 2540 C-97
 Batch ID: P339637

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P339535

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P340385

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P339521

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: P339228

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339228

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339231

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339697

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	95.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339702

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339372

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339677

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339225

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: P339333

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: P339340

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339201

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.7		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P339515

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.0		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P340385

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P339521

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339228

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963420	Chloride	101		P	90 - 110
1963748	Chloride	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339231

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963420	Sulfate	98.0		P	90 - 110
1963748	Sulfate	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339697

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963717	Chloride	96.2		P	90 - 110
1963747	Chloride	95.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339702

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963717	Sulfate	94.8		P	90 - 110
1963747	Sulfate	94.8		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339372

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963757	Ammonia-N	100	96.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339677

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963756	Ammonia-N	99.2	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963724	Kjeldahl Nitrogen	95.6	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339333

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963752	NO2NO3-N	104	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963757	Total-P	98.2	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339201

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963758	O-Phosphate-P	97.5	97.3	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P340385

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963695	Fluoride	95.8	95.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P339521

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1963629	Organic Carbon	94.2	95.6	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P339173

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963696	Turbidity	0.847	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P339174

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963750	Turbidity	0.873	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339228

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963420	Chloride	1.06	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339231

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963420	Sulfate	0.476	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339697

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963717	Chloride	0.995	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P339702

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963717	Sulfate	1.57	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339372

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963757	Ammonia-N	2.90	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339677

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963756	Ammonia-N	2.97	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963724	Kjeldahl Nitrogen	2.39	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P339333

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963752	NO2NO3-N	0.952	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P339340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963757	Total-P	3.88	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339201

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963758	O-Phosphate-P	0.194	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P339195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963717	Color (true)	2.70	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P339196

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963751	Color (true)	5.14	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P339515

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963824	Total Alkalinity	0.431	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P339637

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963751	TDS	7.59	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P340385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963695	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P339521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1963629	Organic Carbon	0.970	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: 81775
Included Lab Sample IDs: 1963748

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	104	P/P	90 - 110
Sulfate	103	103	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A81797
Included Lab Sample IDs: 1963746, 1963747, 1963748, 1963749, 1963750, 1963751

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: SM 2120 B
Run ID: A81803
Included Lab Sample IDs: 1963746, 1963747, 1963748, 1963749, 1963750, 1963751

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	104	106	P/P	85 - 115
Color (true)	104	104	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A81805
Included Lab Sample IDs: 1963758, 1963759, 1963760, 1963761, 1963762, 1963763

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	99.9	99.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A81855

Included Lab Sample IDs: 1963752, 1963753, 1963754, 1963755, 1963756, 1963757

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A81857

Included Lab Sample IDs: 1963752, 1963753, 1963754, 1963755, 1963756, 1963757

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.7	93.6	P/P	90 - 110
Kjeldahl Nitrogen	97.7	96.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A81869

Included Lab Sample IDs: 1963752, 1963753, 1963754, 1963755, 1963756, 1963757

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A81871

Included Lab Sample IDs: 1963757

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A81913

Included Lab Sample IDs: 1963746, 1963747, 1963748, 1963749, 1963750, 1963751

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.5	94.9	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A81915

Included Lab Sample IDs: 1963752, 1963753, 1963754, 1963755, 1963756, 1963757

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.3	94.1	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A81964

Included Lab Sample IDs: 1963752, 1963753, 1963754, 1963755, 1963756

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	103	P/P	90 - 110
Ammonia-N	102	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A81969

Included Lab Sample IDs: 1963746, 1963747, 1963749, 1963750, 1963751

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	99.4	P/P	90 - 110
Chloride	98.8	99.3	P/P	90 - 110
Sulfate	99.6	97.9	P/P	90 - 110
Sulfate	99.9	98.7	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82220

Included Lab Sample IDs: 1963746, 1963747, 1963748, 1963749, 1963750, 1963751

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.2	97.1	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 180.1 Rev. 2.0	Turbidity				0.847	
	Turbidity				0.873	
EPA 300.0 Rev. 2.1	Chloride	97.9	101 97.2		1.06	
	Chloride	95.7	96.2 95.8		0.995	
	Sulfate	96.7	98.0 96.8		0.476	
	Sulfate	94.1	94.8 94.8		1.57	
EPA 350.1 Rev. 2.0	Ammonia-N	99.1	100 96.3			2.90
	Ammonia-N	104	99.2 103			2.97
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	95.6 98.2			2.39
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104 106			0.952
EPA 365.1 Rev. 2.0	Total-P	100	98.2 102			3.88
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.7	97.5 97.3			0.194
SM 2120 B	Color (true)				2.70	
	Color (true)				5.14	
SM 2320 B-97	Total Alkalinity	96.0			0.431	
SM 2540 C-97	TDS				7.59	
SM 4500 F-C-97	Fluoride	97.1	95.8 95.2			0.473
SM 5310 B-00	Organic Carbon	94.0	94.2 95.6			0.970

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1963746, 1963747, 1963748, 1963749, 1963750, 1963751
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1963746, 1963747, 1963748, 1963749, 1963750, 1963751
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1963746, 1963747, 1963748, 1963749, 1963750, 1963751

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1963752, 1963753, 1963754, 1963755, 1963756, 1963757
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1963752, 1963753, 1963754, 1963755, 1963756, 1963757
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1963752, 1963753, 1963754, 1963755, 1963756, 1963757
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1963752, 1963753, 1963754, 1963755, 1963756, 1963757
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1963758, 1963759, 1963760, 1963761, 1963762, 1963763
SM 2120 B / E31780	True Color measured at 450 nm	1963746, 1963747, 1963748, 1963749, 1963750, 1963751
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1963746, 1963747, 1963748, 1963749, 1963750, 1963751
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1963746, 1963747, 1963748, 1963749, 1963750, 1963751
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1963746, 1963747, 1963748, 1963749, 1963750, 1963751
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1963746, 1963747, 1963748, 1963749, 1963750, 1963751
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1963752, 1963753, 1963754, 1963755, 1963756, 1963757

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	02/01/2018			02/01/2018 16:00	DeAsia Armster	1963746, 1963747, 1963748, 1963749, 1963750, 1963751
EPA 300.0 Rev. 2.1	02/01/2018			02/02/2018	Julia Storbeck	1963748
	02/01/2018			02/09/2018	Julia Storbeck	1963746, 1963747, 1963749, 1963750, 1963751
EPA 350.1 Rev. 2.0	02/01/2018			02/05/2018	Ping Hua	1963757
	02/01/2018			02/09/2018	Julia Storbeck	1963752, 1963753, 1963754, 1963755, 1963756
EPA 351.2 Rev. 2.0	02/01/2018	02/02/2018	Adrian Shelby	02/05/2018	Joseph Suarez	1963752, 1963753, 1963754, 1963755, 1963756, 1963757
EPA 353.2 Rev. 2.0	02/01/2018			02/05/2018	Lauren Bottorf	1963752, 1963753, 1963754, 1963755, 1963756, 1963757
EPA 365.1 Rev. 2.0	02/01/2018	02/05/2018	Sima Feizi	02/06/2018	Beverly Y. Sanders	1963752, 1963753, 1963754, 1963755, 1963756, 1963757
EPA 365.1 Rev. 2.0 dissolved	02/01/2018			02/01/2018 15:17	Megan Treadwell	1963758
	02/01/2018			02/01/2018 15:55	Megan Treadwell	1963759
	02/01/2018			02/01/2018 15:56	Megan Treadwell	1963760
	02/01/2018			02/01/2018 15:57	Megan Treadwell	1963761
	02/01/2018			02/01/2018 15:58	Megan Treadwell	1963762
	02/01/2018			02/01/2018 15:59	Megan Treadwell	1963763
SM 2120 B	02/01/2018			02/01/2018 16:16	Tanya Welborn	1963746, 1963747
	02/01/2018			02/01/2018 16:17	Tanya Welborn	1963748
	02/01/2018			02/01/2018 16:18	Tanya Welborn	1963749
	02/01/2018			02/01/2018 16:19	Tanya Welborn	1963750
	02/01/2018			02/01/2018 16:22	Tanya Welborn	1963751
SM 2320 B-97	02/01/2018			02/08/2018	Lauren Bottorf	1963746, 1963747, 1963748, 1963749, 1963750, 1963751
SM 2540 C-97	02/01/2018			02/02/2018	DeAsia Armster	1963746, 1963747, 1963748, 1963749, 1963750, 1963751
SM 2540 D-97	02/01/2018			02/02/2018	DeAsia Armster	1963746, 1963747, 1963748, 1963749, 1963750, 1963751
SM 4500 F-C-97	02/01/2018			02/22/2018	Dale L. Simmons	1963746, 1963747, 1963748, 1963749, 1963750, 1963751
SM 5310 B-00	02/01/2018			02/07/2018	Megan Treadwell	1963752, 1963753, 1963754, 1963755, 1963756, 1963757