

Chemical Analysis Report

WQAP-2017-04-21-03

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

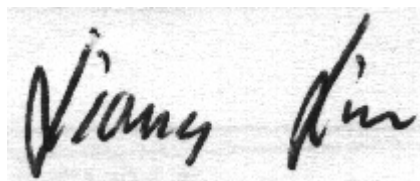
Event Description: **RUN 3**
Request ID: **RQ-2017-04-17-30**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
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Attn: Judy Ashton

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 16-MAY-2017 11:02

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: HANCOCK LAKE

Collection Date/Time: 04/20/2017 10:20

Field ID: G5SW0046

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1891233	EPA 180.1 Rev. 2.0	Turbidity	5.2		NTU	P323841	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P324309	
		Sulfate	1.3		mg SO4/L	P324311	
	SM 2120 B	Color (true)	42	A	PCU	P323844	
	SM 2320 B-97	Total Alkalinity	26		mg CaCO3/L	P324445	
	SM 2540 C-97	TDS	75		mg/L	P324359	
	SM 2540 D-97	TSS	8	I	mg/L	P324365	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P324683	MS
1891238	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P323825	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P323986	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324124	
	EPA 365.1 Rev. 2.0	Total-P	0.066		mg P/L	P323895	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P323857	
1891243	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P323847	

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: LAKE THOMAS

Collection Date/Time: 04/20/2017 11:43

Field ID: G5SW0111

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1891234	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P323841	
	EPA 300.0 Rev. 2.1	Chloride	24	A	mg Cl/L	P324309	
		Sulfate	9.5	A	mg SO4/L	P324311	
	SM 2120 B	Color (true)	25		PCU	P323844	
	SM 2320 B-97	Total Alkalinity	0.65	UA	mg CaCO3/L	P324446	
	SM 2540 C-97	TDS	77		mg/L	P324359	
	SM 2540 D-97	TSS	2	I	mg/L	P324365	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P324679	
1891239	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P323825	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P323986	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324124	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P323895	
	SM 5310 B-00	Organic Carbon	8.3		mg C/L	P323857	
1891244	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P323847	

Ref. Method and Comment:

SM 2320 B-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: BEAR CRK @ BEACON

Collection Date/Time: 04/20/2017 12:50

Field ID: G5SW0102

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1891235	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P323841	
	EPA 300.0 Rev. 2.1	Chloride	150		mg Cl/L	P324309	

Field ID: G5SW0102

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1891235	EPA 300.0 Rev. 2.1	Sulfate	36		mg SO4/L	P324311	
	SM 2120 B	Color (true)	19		PCU	P323844	
	SM 2320 B-97	Total Alkalinity	165		mg CaCO3/L	P324446	
	SM 2540 C-97	TDS	505		mg/L	P324359	
	SM 2540 D-97	TSS	7	I	mg/L	P324365	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P324679	
1891240	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P323825	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.83		mg N/L	P323987	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324124	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P323896	
	SM 5310 B-00	Organic Carbon	6.4		mg C/L	P323857	
1891245	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.025		mg P/L	P323847	

Ref. Method and Comment:

SM 2320 B-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

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

Sample Location: BEAR CRK @ BEACON-DUPLICATE

Collection Date/Time: 04/20/2017 12:52

Field ID: DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1891236	EPA 180.1 Rev. 2.0	Turbidity	3.9	A	NTU	P323842	
	EPA 300.0 Rev. 2.1	Chloride	150		mg Cl/L	P324309	
		Sulfate	35		mg SO4/L	P324311	
		Color (true)	19		PCU	P323844	
	SM 2320 B-97	Total Alkalinity	164		mg CaCO3/L	P324445	
	SM 2540 C-97	TDS	484	A	mg/L	P324359	
	SM 2540 D-97	TSS	7	IA	mg/L	P324365	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P324683	MS
1891241	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P323825	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.86		mg N/L	P323987	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324124	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P323896	
	SM 5310 B-00	Organic Carbon	6.5		mg C/L	P323857	
1891246	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.024		mg P/L	P323847	

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: BLANK

Collection Date/Time: 04/20/2017 12:58

Field ID: BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1891237	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P323842	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P324309	
		Sulfate	0.20	U	mg SO4/L	P324311	
		Color (true)	2.5	U	PCU	P323844	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P324445	

Field ID: BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1891237	SM 2540 C-97	TDS	15	U	mg/L	P324359	MS
	SM 2540 D-97	TSS	2	U	mg/L	P324365	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P324683	
1891242	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P323825	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P323987	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P324125	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P323896	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P323857	
1891247	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P323847	

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: P323841

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P323842

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324309

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324311

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323825

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323986

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323987

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324124

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324125

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323895

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323896

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323847

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

Reference Method: SM 2120 B
Batch ID: P323844

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P324445

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

Reference Method: SM 2320 B-97
Batch ID: P324446

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P324359

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P324365

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P324679

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P324683

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P323857

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: P324309

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324311

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323825

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: P323986

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323986

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323987

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324124

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324125

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: P323895

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323896

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	109		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323847

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

Reference Method: SM 2320 B-97
Batch ID: P324445

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.2		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P324446

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P324679

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.1		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P324683

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P323857

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	103		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324309

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1891234	Chloride	101		P	90 - 110
1891365	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1891234	Sulfate	99.0		P	90 - 110
1891365	Sulfate	94.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323825

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1891238	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1891238	Kjeldahl Nitrogen	97.7	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1891863	Kjeldahl Nitrogen	92.6	94.7	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1891239	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324125

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1891366	NO2NO3-N	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323895

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890835	Total-P	100	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323896

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1891240	Total-P	101	110	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1891243	O-Phosphate-P	99.4	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P324679

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1891234	Fluoride	98.4	99.0	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P324683

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890829	Fluoride	105	106	P/F	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P323857

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1891146	Organic Carbon	105	106	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P323841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891145	Turbidity	1.23	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P323842

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891236	Turbidity	2.58	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324309

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891234	Chloride	0.0793	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891234	Sulfate	0.582	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323825

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891238	Ammonia-N	1.25	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891238	Kjeldahl Nitrogen	1.05	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891863	Kjeldahl Nitrogen	2.02	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891239	NO2NO3-N	0.482	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P324125

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891366	NO2NO3-N	1.91	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323895

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890835	Total-P	3.38	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323896

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891240	Total-P	6.76	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891243	O-Phosphate-P	0.702	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P323844

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891233	Color (true)	1.63	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P324445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890829	Total Alkalinity	0.0167	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P324359

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891236	TDS	5.17	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P324679

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891234	Fluoride	0.487	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P324683

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890829	Fluoride	1.50	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P323857

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1891146	Organic Carbon	0.458	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 350.1 Rev. 2.0
Run ID: A75931
Included Lab Sample IDs: 1891238, 1891239, 1891240, 1891241, 1891242

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A75940
Included Lab Sample IDs: 1891233, 1891234, 1891235, 1891236, 1891237

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.5	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A75941
Included Lab Sample IDs: 1891233, 1891234, 1891235, 1891236, 1891237

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A75942
Included Lab Sample IDs: 1891243, 1891244, 1891245, 1891246, 1891247

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.3	97.7	P/P	90 - 110
O-Phosphate-P	98.4	99.0	P/P	90 - 110
O-Phosphate-P	99.0	98.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A75946

Included Lab Sample IDs: 1891238, 1891239, 1891240, 1891241, 1891242

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75977

Included Lab Sample IDs: 1891238, 1891240, 1891241

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	105	106	P/P	90 - 110
Total-P	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A75984

Included Lab Sample IDs: 1891239, 1891242

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A75999

Included Lab Sample IDs: 1891233, 1891234, 1891235, 1891236, 1891237

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Chloride	103	102	P/P	90 - 110
Sulfate	94.0	97.5	P/P	90 - 110
Sulfate	97.4	94.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A76029

Included Lab Sample IDs: 1891238, 1891239, 1891240, 1891241, 1891242

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76034

Included Lab Sample IDs: 1891238, 1891239, 1891240, 1891241, 1891242

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	98.0	P/P	90 - 110
Kjeldahl Nitrogen	99.9	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A76137

Included Lab Sample IDs: 1891233, 1891234, 1891235, 1891236, 1891237

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A76201

Included Lab Sample IDs: 1891233, 1891234, 1891235, 1891236, 1891237

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	100	P/P	90 - 110
Fluoride	100		P	90 - 110
Fluoride	101	100	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				1.23	
	Turbidity				2.58	
EPA 300.0 Rev. 2.1	Chloride	102	101 102		0.0793	
	Sulfate	98.9	99.0 94.1		0.582	
EPA 350.1 Rev. 2.0	Ammonia-N	101	102 103			1.25
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.4	97.7 99.8			1.05
	Kjeldahl Nitrogen	97.6	92.6 94.7			2.02
EPA 353.2 Rev. 2.0	NO2NO3-N	105	104 104			0.482
	NO2NO3-N	104	106 104			1.91
EPA 365.1 Rev. 2.0	Total-P	106	100 104			3.38
	Total-P	109	101 110			6.76
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	99.4 100			0.702
SM 2120 B	Color (true)				1.63	
SM 2320 B-97	Total Alkalinity	98.2			0.0167	
	Total Alkalinity	101				
SM 2540 C-97	TDS				5.17	
SM 4500 F-C-97	Fluoride	98.1	98.4 99.0			0.487
	Fluoride	99.5	105 106			1.50
SM 5310 B-00	Organic Carbon	103	105 106			0.458

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1891233, 1891234, 1891235, 1891236, 1891237
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1891233, 1891234, 1891235, 1891236, 1891237
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1891233, 1891234, 1891235, 1891236, 1891237
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1891238, 1891239, 1891240, 1891241, 1891242
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1891238, 1891239, 1891240, 1891241, 1891242
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1891238, 1891239, 1891240, 1891241, 1891242
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1891238, 1891239, 1891240, 1891241, 1891242

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved / E31780 SM 2120 B / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L True Color measured at 450 nm	1891243, 1891244, 1891245, 1891246, 1891247 1891233, 1891234, 1891235, 1891236, 1891237
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1891233, 1891234, 1891235, 1891236, 1891237
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1891233, 1891234, 1891235, 1891236, 1891237
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1891233, 1891234, 1891235, 1891236, 1891237
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1891233, 1891234, 1891235, 1891236, 1891237
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1891238, 1891239, 1891240, 1891241, 1891242

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	04/21/2017			04/21/2017 16:07	Sima Feizi	1891233, 1891234, 1891235, 1891236, 1891237
EPA 300.0 Rev. 2.1	04/21/2017			04/29/2017	Ping Hua	1891233, 1891234, 1891235, 1891236, 1891237
EPA 350.1 Rev. 2.0	04/21/2017			04/21/2017	Julie Michelle Frank	1891238, 1891239, 1891240, 1891241, 1891242
EPA 351.2 Rev. 2.0	04/21/2017	04/26/2017	Adrian Shelby	04/27/2017	Joseph Suarez	1891238, 1891239, 1891240, 1891241, 1891242
EPA 353.2 Rev. 2.0	04/21/2017			04/27/2017	Beverly Y. Sanders	1891238, 1891239, 1891240, 1891241, 1891242
EPA 365.1 Rev. 2.0	04/21/2017	04/24/2017	Vijayalakshmi Reddy	04/25/2017	Christopher Armour	1891238, 1891240, 1891241
	04/21/2017	04/24/2017	Vijayalakshmi Reddy	04/25/2017	Lipi Saha	1891239, 1891242
EPA 365.1 Rev. 2.0 dissolved	04/21/2017			04/21/2017 15:47	Anthony C. Onicha	1891243
	04/21/2017			04/21/2017 15:59	Anthony C. Onicha	1891244
	04/21/2017			04/21/2017 16:00	Anthony C. Onicha	1891245
	04/21/2017			04/21/2017 16:01	Anthony C. Onicha	1891246
	04/21/2017			04/21/2017 16:14	Anthony C. Onicha	1891247
SM 2120 B	04/21/2017			04/21/2017 16:32	Julia Storbeck	1891233
	04/21/2017			04/21/2017 16:34	Julia Storbeck	1891234
	04/21/2017			04/21/2017 16:35	Julia Storbeck	1891235, 1891236
	04/21/2017			04/21/2017 16:36	Julia Storbeck	1891237
SM 2320 B-97	04/21/2017			05/02/2017	Dale L. Simmons	1891233, 1891236, 1891237
	04/21/2017			05/03/2017	Dale L. Simmons	1891234, 1891235
SM 2540 C-97	04/21/2017			04/26/2017	Yijie Li	1891233, 1891234, 1891235, 1891236, 1891237
SM 2540 D-97	04/21/2017			04/26/2017	Yijie Li	1891233, 1891234, 1891235, 1891236, 1891237
SM 4500 F-C-97	04/21/2017			05/02/2017	Dale L. Simmons	1891234, 1891235
	04/21/2017			05/03/2017	Dale L. Simmons	1891233, 1891236, 1891237
SM 5310 B-00	04/21/2017			04/21/2017	Julie Michelle Frank	1891238, 1891239, 1891240, 1891241, 1891242