

Chemical Analysis Report

WQAP-2017-01-05-01

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

Event Description: **UEC North**
Request ID: **RQ-2017-01-02-50**
Customer: **WQAP**
Project ID: **SMP**

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 27-JAN-2017 14:59



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: Ponte Vedra Lk @ Sawgrass Dr

Collection Date/Time: 01/04/2017 11:00

Field ID: G5NE0188 01042017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1861436	EPA 180.1 Rev. 2.0	Turbidity	1.8	A	NTU	P317814	
	EPA 300.0 Rev. 2.1	Chloride	120		mg Cl/L	P318404	
		Sulfate	82		mg SO4/L	P318403	
	SM 2120 B	Color (true)	63		PCU	P317809	
	SM 2320 B-97	Total Alkalinity	139		mg CaCO3/L	P317914	
	SM 2540 C-97	TDS	536		mg/L	P318413	
	SM 2540 D-97	TSS	7	I	mg/L	P318205	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P317917	
1861441	EPA 350.1 Rev. 2.0	Ammonia-N	0.43		mg N/L	P317986	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P317827	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.035		mg N/L	P318092	
	EPA 365.1 Rev. 2.0	Total-P	0.33		mg P/L	P317885	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P317926	
1861446	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.19		mg P/L	P317806	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: FIELD BLANK 01042017

Collection Date/Time: 01/04/2017 08:45

Field ID: FIELD BLANK 01042017

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1861437	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P317814	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P318399	
		Sulfate	0.20	U	mg SO4/L	P318401	
	SM 2120 B	Color (true)	2.5	U	PCU	P317809	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P317914	
	SM 2540 C-97	TDS	15	U	mg/L	P318413	
	SM 2540 D-97	TSS	2	U	mg/L	P318205	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317917	
1861442	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P317986	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P317827	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P318092	
	EPA 365.1 Rev. 2.0	Total-P	0.002	I	mg P/L	P317885	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P317926	
1861447	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P317806	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 01/17/2017.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The result was confirmed on 01/06/2017.

Sample Location: Lake Vedra @ Solana Rd

Collection Date/Time: 01/04/2017 11:20

Field ID: G5NE0186 01042017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G5NE0186 01042017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1861438	EPA 180.1 Rev. 2.0	Turbidity	7.7		NTU	P317814	
	EPA 300.0 Rev. 2.1	Chloride	130		mg Cl/L	P318399	
		Sulfate	99		mg SO4/L	P318401	
	SM 2120 B	Color (true)	51	A	PCU	P317809	
	SM 2320 B-97	Total Alkalinity	136		mg CaCO3/L	P317914	
	SM 2540 C-97	TDS	565		mg/L	P318413	
	SM 2540 D-97	TSS	12		mg/L	P318205	
	SM 4500 F-C-97	Fluoride	0.25		mg F/L	P317917	
1861443	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P317986	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P317827	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P318092	
	EPA 365.1 Rev. 2.0	Total-P	0.20		mg P/L	P317885	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P317926	
1861448	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.054		mg P/L	P317806	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Deep Creek 1.25 m N of Pine Island Rd

Collection Date/Time: 01/04/2017 08:30

Field ID: G5NE0017 01042017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1861439	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P317814	
	EPA 300.0 Rev. 2.1	Chloride	32		mg Cl/L	P318399	
		Sulfate	8.2		mg SO4/L	P318401	
	SM 2120 B	Color (true)	620		PCU	P317809	
	SM 2320 B-97	Total Alkalinity	54		mg CaCO3/L	P317914	
	SM 2540 C-97	TDS	200		mg/L	P318413	
	SM 2540 D-97	TSS	2	I	mg/L	P318205	
	SM 4500 F-C-97	Fluoride	0.056	I	mg F/L	P317917	
1861444	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P317986	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P317827	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P318092	
	EPA 365.1 Rev. 2.0	Total-P	0.077		mg P/L	P317885	
	SM 5310 B-00	Organic Carbon	48		mg C/L	P317926	
1861449	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P317806	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Oyster Crk @ S.Dixie Hwy

Collection Date/Time: 01/04/2017 09:25

Field ID: G5NE0075 01042017

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1861451	EPA 180.1 Rev. 2.0	Turbidity	18		NTU	P317814	
	SM 2320 B-97	Total Alkalinity	173		mg CaCO3/L	P317916	

Field ID: G5NE0075 01042017

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1861451	SM 2540 D-97	TSS	30		mg/L	P318207	
	SM 4500 F-C-97	Fluoride	0.74		mg F/L	P317919	
1861452	EPA 350.1 Rev. 2.0	Ammonia-N	0.11		mg N/L	P317869	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P317829	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.034		mg N/L	P317873	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P317952	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P317926	
1861453	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.036		mg P/L	P317796	

Ref. Method and Comment:

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

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Wildwood Crk @ Wildwood Rd

Collection Date/Time: 01/04/2017 09:55

Field ID: G5NE0194 01042017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1861440	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P317814	
	EPA 300.0 Rev. 2.1	Chloride	48		mg Cl/L	P318404	
		Sulfate	9.8		mg SO4/L	P318403	
	SM 2120 B	Color (true)	140		PCU	P317809	
	SM 2320 B-97	Total Alkalinity	82		mg CaCO3/L	P317914	
	SM 2540 C-97	TDS	238		mg/L	P318413	
	SM 2540 D-97	TSS	2	U	mg/L	P318205	
	SM 4500 F-C-97	Fluoride	0.089	I	mg F/L	P317917	
1861445	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P317986	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.48		mg N/L	P317920	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.011		mg N/L	P318092	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P317885	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P317926	
1861450	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.10		mg P/L	P317797	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P317814

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P318399

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318401

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318403

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318404

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317869

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317986

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317827

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317829

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317920

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317873

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318092

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317885

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317952

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317796

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317797

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317806

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

Reference Method: SM 2120 B
Batch ID: P317809

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P317914

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

Reference Method: SM 2320 B-97
Batch ID: P317916

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: P318413

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318205

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318207

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P317917

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P317919

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P317926

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: P318399

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318401

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318403

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: P318403

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318404

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317869

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317986

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: P317827

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317829

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317920

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317873

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	105		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318092

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	100		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317885

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317952

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	90.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317796

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: P317797

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: P317806

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

Reference Method: SM 2320 B-97
Batch ID: P317914

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P317916

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P317917

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.0		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P317919

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P317926

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318399

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864397	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318401

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864397	Sulfate	98.4		P	90 - 110
1864400	Sulfate	96.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861484	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861484	Chloride	104		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317986

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861443	Ammonia-N	96.0	97.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317827

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861394	Kjeldahl Nitrogen	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317829

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861682	Kjeldahl Nitrogen	103	105	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317920

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861547	Kjeldahl Nitrogen	104	112	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317873

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861422	NO2NO3-N	107	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861441	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317885

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861469	Total-P	96.4	97.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317952

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861421	Total-P	95.1	96.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317796

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861424	O-Phosphate-P	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317797

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861470	O-Phosphate-P	101	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317806

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861384	O-Phosphate-P	97.8	96.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P317919

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861063	Fluoride	96.6	96.6	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P317926

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861359	Organic Carbon	91.4	91.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P317814

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861436	Turbidity	7.69	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318399

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864400	Chloride	0.0388	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318401

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864400	Sulfate	0.622	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861484	Sulfate	0.549	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318404

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861484	Chloride	0.0576	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860597	Ammonia-N	0.515	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317986

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861443	Ammonia-N	1.08	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317827

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861394	Kjeldahl Nitrogen	0.452	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317829

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861682	Kjeldahl Nitrogen	1.72	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317920

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861547	Kjeldahl Nitrogen	4.14	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317873

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861422	NO2NO3-N	0.779	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861441	NO2NO3-N	0.840	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317885

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861469	Total-P	0.764	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861421	Total-P	1.63	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317796

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861424	O-Phosphate-P	1.09	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861470	O-Phosphate-P	1.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317806

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861384	O-Phosphate-P	1.22	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P317809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861438	Color (true)	2.22	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P317914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861485	Total Alkalinity	0.0985	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P317916

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861415	Total Alkalinity	0.171	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P318413

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861358	TDS	0.390	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P317917

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861485	Fluoride	0.995	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P317919

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861063	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P317926

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861359	Organic Carbon	0.222	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 365.1 Rev. 2.0 dissolved
Run ID: A73756
Included Lab Sample IDs: 1861450, 1861453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.8	97.4	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A73759
Included Lab Sample IDs: 1861436, 1861437, 1861438, 1861439, 1861440

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	85 - 115
Color (true)	98.7	101	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A73760
Included Lab Sample IDs: 1861446, 1861447, 1861448, 1861449

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.2	97.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A73761
Included Lab Sample IDs: 1861436, 1861437, 1861438, 1861439, 1861440, 1861451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	99.5	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A73778
Included Lab Sample IDs: 1861452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.9	99.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73779

Included Lab Sample IDs: 1861452

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

Reference Method: SM 2320 B-97

Run ID: A73806

Included Lab Sample IDs: 1861436, 1861437, 1861438, 1861439, 1861440, 1861451

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

Reference Method: SM 4500 F-C-97

Run ID: A73806

Included Lab Sample IDs: 1861436, 1861437, 1861438, 1861439, 1861440, 1861451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	100	P/P	90 - 110
Fluoride	99.5	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A73807

Included Lab Sample IDs: 1861441, 1861442, 1861443, 1861444, 1861445, 1861452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.1	95.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73823

Included Lab Sample IDs: 1861441, 1861442, 1861443, 1861444, 1861452

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73827

Included Lab Sample IDs: 1861441, 1861442, 1861443, 1861444, 1861445

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.9	100	P/P	90 - 110
Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73829

Included Lab Sample IDs: 1861441, 1861443, 1861444, 1861445

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73843

Included Lab Sample IDs: 1861452

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73851

Included Lab Sample IDs: 1861441, 1861442, 1861443, 1861444, 1861445

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73852

Included Lab Sample IDs: 1861445

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73866

Included Lab Sample IDs: 1861442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	95.8	96.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73993

Included Lab Sample IDs: 1861436, 1861437, 1861438, 1861439, 1861440

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	101	100	P/P	90 - 110
Chloride	102	101	P/P	90 - 110
Sulfate	92.7	97.6	P/P	90 - 110
Sulfate	93.5	98.4	P/P	90 - 110
Sulfate	98.4	92.7	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				7.69	
EPA 300.0 Rev. 2.1	Chloride	102	101		0.0388	
	Chloride	103	104		0.0576	
	Sulfate	99.0	96.1	98.4	0.622	
	Sulfate	99.3	101		0.549	
EPA 350.1 Rev. 2.0	Ammonia-N	103				0.515

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 350.1 Rev. 2.0	Ammonia-N	101	96.0	97.2		1.08
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.1	104	104		0.452
	Kjeldahl Nitrogen	108	103	105		1.72
	Kjeldahl Nitrogen	103	104	112		4.14
EPA 353.2 Rev. 2.0	NO2NO3-N	105	107	106		0.779
	NO2NO3-N	100	102	101		0.840
EPA 365.1 Rev. 2.0	Total-P	99.2	96.4	97.3		0.764
	Total-P	90.9	95.1	96.8		1.63
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	100	102		1.09
	O-Phosphate-P	102	101	98.7		1.50
	O-Phosphate-P	100	97.8	96.4		1.22
SM 2120 B	Color (true)				2.22	
SM 2320 B-97	Total Alkalinity	103			0.0985	
	Total Alkalinity	104			0.171	
SM 2540 C-97	TDS				0.390	
SM 4500 F-C-97	Fluoride	96.0				0.995
	Fluoride	96.5	96.6	96.6		0.0
SM 5310 B-00	Organic Carbon	97.8	91.4	91.8		0.222

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1861436, 1861437, 1861438, 1861439, 1861440, 1861451
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1861436, 1861437, 1861438, 1861439, 1861440
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1861436, 1861437, 1861438, 1861439, 1861440
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1861441, 1861442, 1861443, 1861444, 1861445, 1861452
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1861441, 1861442, 1861443, 1861444, 1861445, 1861452
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1861441, 1861442, 1861443, 1861444, 1861445, 1861452
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1861441, 1861442, 1861443, 1861444, 1861445, 1861452
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1861446, 1861447, 1861448, 1861449, 1861450, 1861453
SM 2120 B / E31780	True Color measured at 450 nm	1861436, 1861437, 1861438, 1861439, 1861440
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1861436, 1861437, 1861438, 1861439, 1861440, 1861451
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1861436, 1861437, 1861438, 1861439, 1861440
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1861436, 1861437, 1861438, 1861439, 1861440, 1861451
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1861436, 1861437, 1861438, 1861439, 1861440, 1861451
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1861441, 1861442, 1861443, 1861444, 1861445, 1861452

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	01/05/2017			01/05/2017 16:07	Sima Feizi	1861436, 1861437, 1861438, 1861439, 1861440, 1861451
EPA 300.0 Rev. 2.1	01/05/2017			01/18/2017	Ping Hua	1861437, 1861438, 1861439
	01/05/2017			01/19/2017	Ping Hua	1861436, 1861440
EPA 350.1 Rev. 2.0	01/05/2017			01/05/2017	Sofia Elnemr	1861452
	01/05/2017			01/09/2017	Sofia Elnemr	1861441, 1861442, 1861443, 1861444, 1861445
EPA 351.2 Rev. 2.0	01/05/2017	01/06/2017	Adrian Shelby	01/09/2017	Joseph Suarez	1861441, 1861442, 1861443, 1861444, 1861452
	01/05/2017	01/09/2017	Adrian Shelby	01/10/2017	Joseph Suarez	1861445
EPA 353.2 Rev. 2.0	01/05/2017			01/06/2017	Beverly Y. Sanders	1861452
	01/05/2017			01/10/2017	Beverly Y. Sanders	1861441, 1861442, 1861443, 1861444, 1861445
EPA 365.1 Rev. 2.0	01/05/2017	01/06/2017	Vijayalakshmi Reddy	01/09/2017	Beverly Y. Sanders	1861441, 1861443, 1861444, 1861445
	01/05/2017	01/06/2017	Vijayalakshmi Reddy	01/11/2017	Lipi Saha	1861442
	01/05/2017	01/09/2017	Vijayalakshmi Reddy	01/10/2017	Beverly Y. Sanders	1861452
EPA 365.1 Rev. 2.0 dissolved	01/05/2017			01/05/2017 13:44	Lipi Saha	1861453
	01/05/2017			01/05/2017 13:49	Lipi Saha	1861450
	01/05/2017			01/05/2017 15:14	Lipi Saha	1861446
	01/05/2017			01/05/2017 15:15	Lipi Saha	1861447
	01/05/2017			01/05/2017 15:16	Lipi Saha	1861448
	01/05/2017			01/05/2017 15:17	Lipi Saha	1861449
SM 2120 B	01/05/2017			01/05/2017 15:29	Jared I. Manley	1861438
	01/05/2017			01/05/2017 15:32	Jared I. Manley	1861436, 1861437
	01/05/2017			01/05/2017 15:34	Jared I. Manley	1861440
	01/05/2017			01/05/2017 15:53	Jared I. Manley	1861439
SM 2320 B-97	01/05/2017			01/06/2017	Dale L. Simmons	1861436, 1861437, 1861438, 1861439, 1861440
	01/05/2017			01/07/2017	Dale L. Simmons	1861451
SM 2540 C-97	01/05/2017			01/09/2017	Sima Feizi	1861436, 1861437, 1861438, 1861439, 1861440
SM 2540 D-97	01/05/2017			01/09/2017	Sima Feizi	1861436, 1861437, 1861438, 1861439, 1861440, 1861451
SM 4500 F-C-97	01/05/2017			01/06/2017	Dale L. Simmons	1861436, 1861437, 1861438, 1861439, 1861440
	01/05/2017			01/07/2017	Dale L. Simmons	1861451
SM 5310 B-00	01/05/2017			01/06/2017	Julie Michelle Frank	1861441, 1861442, 1861443, 1861444, 1861445, 1861452