

Chemical Analysis Report

SW-DIST-2016-02-11-01

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

Event Description: **1456A, 1456B, 1456C**

Request ID: **RQ-2016-02-08-56**

Customer: **SW-DIST**

Project ID: **SMP**

Send Reports to:

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FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 29-FEB-2016 11:15



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: G4SW0094

Collection Date/Time: 02/10/2016 11:00

Field ID: G4SW0094

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1770590	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P298475	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P298712	
		Sulfate	2.2		mg SO4/L	P298714	
	SM 2120 B	Color (true)	500		PCU	P298471	
	SM 2320 B-97	Total Alkalinity	8.7		mg CaCO3/L	P298965	
	SM 2540 C-97	TDS	124		mg/L	P299076	
	SM 2540 D-97	TSS	4	I	mg/L	P298900	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P298799	
1770596	EPA 350.1 Rev. 2.0	Ammonia-N	0.050		mg N/L	P299119	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P298771	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P298841	
	EPA 365.1 Rev. 2.0	Total-P	0.59		mg P/L	P298784	
	SM 5310 B-00	Organic Carbon	42		mg C/L	P298681	
1770602	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.48		mg P/L	P298459	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: G4SW0093

Collection Date/Time: 02/10/2016 11:20

Field ID: G4SW0093

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1770591	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P298475	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P298713	
		Sulfate	2.2		mg SO4/L	P298715	
	SM 2120 B	Color (true)	510		PCU	P298472	
	SM 2320 B-97	Total Alkalinity	9.6		mg CaCO3/L	P298965	
	SM 2540 C-97	TDS	108		mg/L	P299076	
	SM 2540 D-97	TSS	2	I	mg/L	P298900	
	SM 4500 F-C-97	Fluoride	0.064	I	mg F/L	P298799	
1770597	EPA 350.1 Rev. 2.0	Ammonia-N	0.050		mg N/L	P299119	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P298771	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P298841	
	EPA 365.1 Rev. 2.0	Total-P	0.58		mg P/L	P298784	
	SM 5310 B-00	Organic Carbon	42		mg C/L	P298681	
1770603	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.48		mg P/L	P298459	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: G4SW0115

Collection Date/Time: 02/10/2016 13:35

Field ID: G4SW0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G4SW0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1770592	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P298475	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P298713	
		Sulfate	12		mg SO4/L	P298715	
	SM 2120 B	Color (true)	39		PCU	P298472	
	SM 2320 B-97	Total Alkalinity	28		mg CaCO3/L	P298965	
	SM 2540 C-97	TDS	104	A	mg/L	P299076	
	SM 2540 D-97	TSS	2	I	mg/L	P298900	
	SM 4500 F-C-97	Fluoride	0.065	I	mg F/L	P298799	
1770598	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P299119	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P298771	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.055		mg N/L	P298841	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P298784	
	SM 5310 B-00	Organic Carbon	9.4		mg C/L	P298681	
1770604	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298459	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: G4SW0116

Collection Date/Time: 02/10/2016 15:45

Field ID: G4SW0116

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1770593	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P298475	
	EPA 300.0 Rev. 2.1	Chloride	25	A	mg Cl/L	P298713	
		Sulfate	11	A	mg SO4/L	P298715	
	SM 2120 B	Color (true)	40		PCU	P298472	
	SM 2320 B-97	Total Alkalinity	29		mg CaCO3/L	P298965	
	SM 2540 C-97	TDS	99		mg/L	P299076	
	SM 2540 D-97	TSS	2	I	mg/L	P298900	
	SM 4500 F-C-97	Fluoride	0.066	I	mg F/L	P298799	
1770599	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P299119	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.76		mg N/L	P298771	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.051		mg N/L	P298841	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P298784	
	SM 5310 B-00	Organic Carbon	9.7		mg C/L	P298681	
1770605	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298459	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: G4SW0113

Collection Date/Time: 02/10/2016 14:30

Field ID: G4SW0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1770594	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P298475	

Field ID: G4SW0113

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1770594	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P298713	
		Sulfate	12		mg SO4/L	P298715	
	SM 2120 B	Color (true)	39		PCU	P298472	
	SM 2320 B-97	Total Alkalinity	22		mg CaCO3/L	P298809	
	SM 2540 C-97	TDS	106		mg/L	P299075	
	SM 2540 D-97	TSS	4	I	mg/L	P298899	
	SM 4500 F-C-97	Fluoride	0.069	I	mg F/L	P298799	
1770600	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P299119	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.85		mg N/L	P298771	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P298842	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P298784	
	SM 5310 B-00	Organic Carbon	9.9		mg C/L	P298681	
1770606	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298459	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: G4SW0114

Collection Date/Time: 02/10/2016 14:40

Field ID: G4SW0114

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1770595	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P298475	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P298713	
		Sulfate	12		mg SO4/L	P298715	
	SM 2120 B	Color (true)	40		PCU	P298472	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P298809	
	SM 2540 C-97	TDS	102		mg/L	P299075	
	SM 2540 D-97	TSS	2	I	mg/L	P298899	
1770601	SM 4500 F-C-97	Fluoride	0.069	I	mg F/L	P298799	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P299119	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P298771	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P298842	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P298784	
1770607	SM 5310 B-00	Organic Carbon	11		mg C/L	P298947	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298459	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

EPA 365.1 Rev. 2.0: Total-P: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P298475

Component	Result	Code	Units
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Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298475

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298712

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298713

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298714

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298715

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299119

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298771

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298841

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298842

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298784

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298459

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

Reference Method: SM 2120 B
Batch ID: P298471

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P298472

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P298809

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

Reference Method: SM 2320 B-97
Batch ID: P298965

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

Reference Method: SM 2540 C-97
Batch ID: P299075

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P299076

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P298899

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P298900

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P298799

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P298681

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

Reference Method: SM 5310 B-00
Batch ID: P298947

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: P298712

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298713

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298714

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298715

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299119

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299119

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298771

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.8		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298841

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: P298842

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298784

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298459

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

Reference Method: SM 2320 B-97
Batch ID: P298809

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 105

Reference Method: SM 2320 B-97
Batch ID: P298965

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P298799

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	94 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P298681

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.7		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P298947

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298712

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770565	Chloride	103		P	90 - 110
1770567	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298713

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770593	Chloride	103		P	90 - 110
1770594	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298714

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770565	Sulfate	96.4		P	90 - 110
1770567	Sulfate	95.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298715

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770593	Sulfate	98.4		P	90 - 110
1770594	Sulfate	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299119

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770600	Ammonia-N	94.4	95.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298841

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770575	NO2NO3-N	102	104	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298842

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770858	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298459

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770605	O-Phosphate-P	99.8	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P298799

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770515	Fluoride	98.2	99.5	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P298681

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770465	Organic Carbon	94.5	95.0	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P298947

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770601	Organic Carbon	92.6	93.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770524	Turbidity	5.99	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298712

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770565	Chloride	0.110	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298713

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770593	Chloride	0.124	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298714

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770565	Sulfate	0.254	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770593	Sulfate	0.0477	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P299119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770600	Ammonia-N	1.11	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298771

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770596	Kjeldahl Nitrogen	8.69	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770575	NO2NO3-N	1.45	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298842

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770858	NO2NO3-N	1.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298784

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770596	Total-P	1.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770605	O-Phosphate-P	1.59	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P298471

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770571	Color (true)	2.03	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P298472

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770690	Color (true)	0.971	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P298809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770515	Total Alkalinity	0.440	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P298965

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770847	Total Alkalinity	0.422	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P299075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770514	TDS	1.97	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P299076

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770592	TDS	1.92	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P298799

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770515	Fluoride	0.986	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P298681

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770465	Organic Carbon	0.361	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P298947

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770601	Organic Carbon	0.508	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: A67573
Included Lab Sample IDs: 1770602, 1770603, 1770604, 1770605, 1770606, 1770607

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.2	P/P	90 - 110
O-Phosphate-P	99.3	98.7	P/P	90 - 110
O-Phosphate-P	99.4	98.9	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A67575
Included Lab Sample IDs: 1770590, 1770591, 1770592, 1770593, 1770594, 1770595

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.2	P/P	90 - 115
Color (true)	99.2	99.3	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67576
Included Lab Sample IDs: 1770590, 1770591, 1770592, 1770593, 1770594, 1770595

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

Reference Method: SM 5310 B-00
Run ID: A67629
Included Lab Sample IDs: 1770596, 1770597, 1770598, 1770599, 1770600

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.2	94.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A67638
Included Lab Sample IDs: 1770590, 1770591, 1770592, 1770593, 1770594, 1770595

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	99.9	P/P	90 - 110
Chloride	99.5	101	P/P	90 - 110
Sulfate	94.2	98.6	P/P	90 - 110
Sulfate	98.6	96.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A67660

Included Lab Sample IDs: 1770590, 1770591, 1770592, 1770593, 1770594, 1770595

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

Reference Method: SM 2320 B-97

Run ID: A67665

Included Lab Sample IDs: 1770594, 1770595

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A67672

Included Lab Sample IDs: 1770596, 1770597, 1770598, 1770599, 1770600, 1770601

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67693

Included Lab Sample IDs: 1770596, 1770597

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67698

Included Lab Sample IDs: 1770596, 1770597, 1770598, 1770599, 1770600, 1770601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	97.9	P/P	90 - 110
Kjeldahl Nitrogen	101	96.9	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A67710

Included Lab Sample IDs: 1770601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.9	94.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A67716

Included Lab Sample IDs: 1770590, 1770591, 1770592, 1770593

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67724

Included Lab Sample IDs: 1770598, 1770599, 1770600, 1770601

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67724

Included Lab Sample IDs: 1770598, 1770599, 1770600, 1770601

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A67770

Included Lab Sample IDs: 1770596, 1770597, 1770598, 1770599, 1770600, 1770601

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	98.5	P/P	90 - 110
Ammonia-N	98.5	98.4	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				5.99	
EPA 300.0 Rev. 2.1	Chloride	103	103 102		0.110	
	Chloride	104	103 103		0.124	
	Sulfate	97.3	96.4 95.6		0.254	
	Sulfate	99.0	98.4 98.0		0.0477	
EPA 350.1 Rev. 2.0	Ammonia-N	95.0	94.4 95.6			1.11
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.8				8.69
EPA 353.2 Rev. 2.0	NO2NO3-N	105	102 104			1.45
	NO2NO3-N	105	104 105			1.44
EPA 365.1 Rev. 2.0	Total-P	98.2				1.16
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	99.8 101			1.59
SM 2120 B	Color (true)				2.03	
	Color (true)				0.971	
SM 2320 B-97	Total Alkalinity	104			0.440	
	Total Alkalinity	101			0.422	
SM 2540 C-97	TDS				1.97	
	TDS				1.92	
SM 4500 F-C-97	Fluoride	97.5	98.2 99.5			0.986
SM 5310 B-00	Organic Carbon	93.7	94.5 95.0			0.361
	Organic Carbon	95.2	92.6 93.3			0.508

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1770590, 1770591, 1770592, 1770593, 1770594, 1770595
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1770590, 1770591, 1770592, 1770593, 1770594, 1770595
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1770590, 1770591, 1770592, 1770593, 1770594, 1770595

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1770596, 1770597, 1770598, 1770599, 1770600, 1770601
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1770596, 1770597, 1770598, 1770599, 1770600, 1770601
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1770596, 1770597, 1770598, 1770599, 1770600, 1770601
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1770596, 1770597, 1770598, 1770599, 1770600, 1770601
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1770602, 1770603, 1770604, 1770605, 1770606, 1770607
SM 2120 B / E31780	True Color measured at 450 nm	1770590, 1770591, 1770592, 1770593, 1770594, 1770595
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1770590, 1770591, 1770592, 1770593, 1770594, 1770595
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1770590, 1770591, 1770592, 1770593, 1770594, 1770595
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1770590, 1770591, 1770592, 1770593, 1770594, 1770595
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1770590, 1770591, 1770592, 1770593, 1770594, 1770595
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1770596, 1770597, 1770598, 1770599, 1770600, 1770601

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	02/11/2016			02/11/2016 13:28	Sima Feizi	1770590, 1770591, 1770592, 1770593, 1770594, 1770595
EPA 300.0 Rev. 2.1	02/11/2016			02/16/2016	Ping Hua	1770590, 1770591, 1770592, 1770593, 1770594, 1770595
EPA 350.1 Rev. 2.0	02/11/2016			02/23/2016	Diana M. Turner	1770596, 1770597, 1770598, 1770599, 1770600, 1770601
EPA 351.2 Rev. 2.0	02/11/2016	02/18/2016	Christopher Armour	02/19/2016	Bryan A. Werth	1770596, 1770597, 1770598, 1770599, 1770600, 1770601
EPA 353.2 Rev. 2.0	02/11/2016			02/18/2016	Peter D. Kaus	1770596, 1770597, 1770598, 1770599, 1770600, 1770601
EPA 365.1 Rev. 2.0	02/11/2016	02/18/2016	Christopher Armour	02/19/2016	Lipi Saha	1770596, 1770597, 1770598, 1770599, 1770600, 1770601
EPA 365.1 Rev. 2.0 dissolved	02/11/2016			02/11/2016 12:50	Julia Storbeck	1770605
	02/11/2016			02/11/2016 13:39	Julia Storbeck	1770606
	02/11/2016			02/11/2016 13:40	Julia Storbeck	1770607
	02/11/2016			02/11/2016 13:46	Julia Storbeck	1770602
	02/11/2016			02/11/2016 13:47	Julia Storbeck	1770603
	02/11/2016			02/11/2016 13:52	Julia Storbeck	1770604
SM 2120 B	02/11/2016			02/11/2016 14:39	Rochelle Y Jackson	1770592
	02/11/2016			02/11/2016 14:40	Rochelle Y Jackson	1770593
	02/11/2016			02/11/2016 14:41	Rochelle Y Jackson	1770594, 1770595
	02/11/2016			02/11/2016 14:48	Rochelle Y Jackson	1770590, 1770591
SM 2320 B-97	02/11/2016			02/16/2016	Dale L. Simmons	1770594, 1770595
	02/11/2016			02/21/2016	Dale L. Simmons	1770590, 1770591, 1770592, 1770593
SM 2540 C-97	02/11/2016			02/15/2016	Sima Feizi	1770590, 1770591, 1770592, 1770593, 1770594, 1770595
SM 2540 D-97	02/11/2016			02/15/2016	Sima Feizi	1770590, 1770591, 1770592, 1770593, 1770594, 1770595
SM 4500 F-C-97	02/11/2016			02/15/2016	Dale L. Simmons	1770590, 1770591, 1770592, 1770593, 1770594, 1770595
SM 5310 B-00	02/11/2016			02/16/2016	Sofia Elnemr	1770596, 1770597, 1770598, 1770599, 1770600
	02/11/2016			02/19/2016	Diana M. Turner	1770601