

Chemical Analysis Report

SW-DIST-2016-02-04-01

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

Event Description: **1432A, 1464W, 1473W, 1474W, 1464V**

Request ID: **RQ-2016-02-01-78**

Customer: **SW-DIST**

Project ID: **SMP**

Send Reports to:

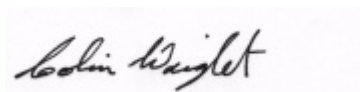
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Temple Terrace, FL 33637-0926
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For additional information please contact

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Certified by: Colin Wright, Environmental Administrator

Date Certified: 22-FEB-2016 13:32



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: G1SW0019

Collection Date/Time: 02/03/2016 14:15

Field ID: G1SW0019

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1769065	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P298091	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P298294	
		Sulfate	4.1		mg SO4/L	P298297	
	SM 2120 B	Color (true)	70		PCU	P298074	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P298483	
	SM 2540 C-97	TDS	86		mg/L	P298689	
	SM 2540 D-97	TSS	2	I	mg/L	P298506	
	SM 4500 F-C-97	Fluoride	0.051	I	mg F/L	P298366	
1769071	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P298700	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.95		mg N/L	P298272	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P298454	
	EPA 365.1 Rev. 2.0	Total-P	0.023		mg P/L	P298301	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P298360	
1769077	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298077	

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: 24040057

Collection Date/Time: 02/03/2016 12:35

Field ID: G1SW0017

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1769066	EPA 180.1 Rev. 2.0	Turbidity	1.1	A	NTU	P298092	
	EPA 300.0 Rev. 2.1	Chloride	27		mg Cl/L	P298294	
		Sulfate	6.8		mg SO4/L	P298297	
	SM 2120 B	Color (true)	40		PCU	P298074	
	SM 2320 B-97	Total Alkalinity	9.4		mg CaCO3/L	P298483	
	SM 2540 C-97	TDS	85		mg/L	P298689	
	SM 2540 D-97	TSS	2	U	mg/L	P298506	
	SM 4500 F-C-97	Fluoride	0.069	I	mg F/L	P298366	
1769072	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P298700	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P298272	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P298454	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P298303	
	SM 5310 B-00	Organic Carbon	8.4		mg C/L	P298360	
1769078	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298077	

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.

Sample Location: G1SW0021

Collection Date/Time: 02/03/2016 13:15

Field ID: G1SW0021

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1769067	EPA 180.1 Rev. 2.0	Turbidity	3.5		NTU	P298092	

Field ID: G1SW0021

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1769067	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P298294	
		Sulfate	3.4		mg SO4/L	P298297	
	SM 2120 B	Color (true)	110		PCU	P298074	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P298483	
	SM 2540 C-97	TDS	82		mg/L	P298689	
	SM 2540 D-97	TSS	3	I	mg/L	P298506	
	SM 4500 F-C-97	Fluoride	0.060	I	mg F/L	P298366	
1769073	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P298700	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P298272	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P298454	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P298303	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P298360	
1769079	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298077	

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.

Sample Location: G5SW0031

Collection Date/Time: 02/03/2016 10:15

Field ID: G5SW0031

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1769068	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P298092	
	EPA 300.0 Rev. 2.1	Chloride	25		mg Cl/L	P298294	
		Sulfate	1.1		mg SO4/L	P298297	
	SM 2120 B	Color (true)	150		PCU	P298074	
	SM 2320 B-97	Total Alkalinity	62		mg CaCO3/L	P298483	
	SM 2540 C-97	TDS	146		mg/L	P298689	
	SM 2540 D-97	TSS	2	I	mg/L	P298506	
1769074	SM 4500 F-C-97	Fluoride	0.088	I	mg F/L	P298366	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P298700	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.91		mg N/L	P298382	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P298454	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P298303	
1769080	SM 5310 B-00	Organic Carbon	21		mg C/L	P298360	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.01	I	mg P/L	P298078	

Ref. Method and Comment:

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

Sample Location: G1SW0010

Collection Date/Time: 02/03/2016 15:00

Field ID: G1SW0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1769069	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P298092	
	EPA 300.0 Rev. 2.1	Chloride	33		mg Cl/L	P298294	
		Sulfate	7.3		mg SO4/L	P298297	
	SM 2120 B	Color (true)	110		PCU	P298074	

Field ID: G1SW0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1769069	SM 2320 B-97	Total Alkalinity	26		mg CaCO3/L	P298483	
	SM 2540 C-97	TDS	116		mg/L	P298689	
	SM 2540 D-97	TSS	2	U	mg/L	P298506	
	SM 4500 F-C-97	Fluoride	0.099	I	mg F/L	P298366	
1769075	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P298700	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P298382	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P298454	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P298303	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P298360	
1769081	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298078	

Ref. Method and Comment:

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

Sample Location: 99LAKES06

Collection Date/Time: 02/03/2016 11:30

Field ID: G1SW0018

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1769070	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P298092	
	EPA 300.0 Rev. 2.1	Chloride	31		mg Cl/L	P298294	
		Sulfate	6.5		mg SO4/L	P298297	
	SM 2120 B	Color (true)	28		PCU	P298074	
1769076	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P298483	
	SM 2540 C-97	TDS	83		mg/L	P298689	
	SM 2540 D-97	TSS	4	I	mg/L	P298506	
	SM 4500 F-C-97	Fluoride	0.072	I	mg F/L	P298366	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.005		mg N/L	P298700	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.69		mg N/L	P298382	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P298455	
1769082	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P298303	
	SM 5310 B-00	Organic Carbon	8.3		mg C/L	P298360	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298078	

Ref. Method and Comment:

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P298091

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P298092

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report

Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298294

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298297

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298700

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298272

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298382

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298454

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298455

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298301

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298303

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298077

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298078

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

Reference Method: SM 2120 B
Batch ID: P298074

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P298483

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

Reference Method: SM 2540 C-97
Batch ID: P298689

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P298506

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P298366

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P298360

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: P298294

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: P298294

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	107		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298297

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298700

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298272

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298454

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298455

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298301

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298303

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298077

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298078

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

Reference Method: SM 2320 B-97
Batch ID: P298483

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P298366

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P298360

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298294

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768968	Chloride	106		P	90 - 110
1769067	Chloride	107		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768968	Sulfate	102		P	90 - 110
1769067	Sulfate	103		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298700

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769074	Ammonia-N	96.9	98.4	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298382

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769074	Kjeldahl Nitrogen	101	93.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298454

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769007	NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298455

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769076	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769072	Total-P	109	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298077

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769077	O-Phosphate-P	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298078

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769080	O-Phosphate-P	99.6	99.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P298366

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1769006	Fluoride	97.3	98.0	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P298360

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768954	Organic Carbon	101		P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768950	Turbidity	1.72	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769066	Turbidity	1.82	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298294

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768968	Chloride	0.116	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768968	Sulfate	0.353	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769074	Ammonia-N	1.17	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298272

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769060	Kjeldahl Nitrogen	4.98	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769074	Kjeldahl Nitrogen	3.86	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769007	NO2NO3-N	0.995	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298455

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769076	NO2NO3-N	1.49	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298301

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768954	Total-P	1.15	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769072	Total-P	5.24	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298077

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769077	O-Phosphate-P	0.196	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298078

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769080	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P298074

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769101	Color (true)	0.343	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P298483

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769006	Total Alkalinity	0.768	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P298689

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769006	TDS	1.89	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P298366

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1769006	Fluoride	0.467	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P298360

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768954	Organic Carbon	1.05	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: SM 2120 B
Run ID: A67454
Included Lab Sample IDs: 1769065, 1769066, 1769067, 1769068, 1769069, 1769070

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.0	98.0	P/P	90 - 115
Color (true)	99.8	98.4	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A67455
Included Lab Sample IDs: 1769077, 1769078, 1769079, 1769080, 1769081, 1769082

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	99.1	P/P	90 - 110
O-Phosphate-P	98.6	98.1	P/P	90 - 110
O-Phosphate-P	98.9	97.6	P/P	90 - 110
O-Phosphate-P	99.7	98.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67458
Included Lab Sample IDs: 1769065, 1769066, 1769067, 1769068, 1769069, 1769070

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A67468
Included Lab Sample IDs: 1769065, 1769066, 1769067, 1769068, 1769069, 1769070

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	103	102	P/P	90 - 110
Chloride	103	103	P/P	90 - 110
Sulfate	98.6	99.1	P/P	90 - 110
Sulfate	99.1	94.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A67539

Included Lab Sample IDs: 1769071, 1769072, 1769073, 1769074, 1769075, 1769076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.0	96.6	P/P	90 - 110
Organic Carbon	95.4	94.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A67543

Included Lab Sample IDs: 1769065, 1769066, 1769067, 1769068, 1769069, 1769070

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67550

Included Lab Sample IDs: 1769071, 1769072, 1769073

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.7	97.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67552

Included Lab Sample IDs: 1769071, 1769072, 1769073, 1769074, 1769075, 1769076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	99.2	P/P	90 - 110
Total-P	99.2	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A67571

Included Lab Sample IDs: 1769071, 1769072, 1769073, 1769074, 1769075, 1769076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110
NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A67579

Included Lab Sample IDs: 1769065, 1769066, 1769067, 1769068, 1769069, 1769070

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.5	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67602

Included Lab Sample IDs: 1769074, 1769075, 1769076

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A67634

Included Lab Sample IDs: 1769071, 1769072, 1769073, 1769074, 1769075, 1769076

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.4	100	P/P	90 - 110
Ammonia-N	100	99.5	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				1.72	
	Turbidity				1.82	
EPA 300.0 Rev. 2.1	Chloride	107	106 107		0.116	
	Sulfate	103	102 103		0.353	
EPA 350.1 Rev. 2.0	Ammonia-N	98.5	96.9 98.4			1.17
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.0				4.98
	Kjeldahl Nitrogen	94.6	101 93.9			3.86
EPA 353.2 Rev. 2.0	NO2NO3-N	101	100 101			0.995
	NO2NO3-N	102	100 102			1.49
EPA 365.1 Rev. 2.0	Total-P	101				1.15
	Total-P	109	109 103			5.24
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	102 102			0.196
	O-Phosphate-P	103	99.6 99.6			0.0
SM 2120 B	Color (true)				0.343	
SM 2320 B-97	Total Alkalinity	103			0.768	
SM 2540 C-97	TDS				1.89	
SM 4500 F-C-97	Fluoride	98.2	97.3 98.0			0.467
SM 5310 B-00	Organic Carbon	97.3	101			1.05

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1769065, 1769066, 1769067, 1769068, 1769069, 1769070
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1769065, 1769066, 1769067, 1769068, 1769069, 1769070
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1769065, 1769066, 1769067, 1769068, 1769069, 1769070
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1769071, 1769072, 1769073, 1769074, 1769075, 1769076
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1769071, 1769072, 1769073, 1769074, 1769075, 1769076
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1769071, 1769072, 1769073, 1769074, 1769075, 1769076
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1769071, 1769072, 1769073, 1769074, 1769075, 1769076
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1769077, 1769078, 1769079, 1769080, 1769081, 1769082

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2120 B / E31780	True Color measured at 450 nm	1769065, 1769066, 1769067, 1769068, 1769069, 1769070
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1769065, 1769066, 1769067, 1769068, 1769069, 1769070
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1769065, 1769066, 1769067, 1769068, 1769069, 1769070
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1769065, 1769066, 1769067, 1769068, 1769069, 1769070
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1769065, 1769066, 1769067, 1769068, 1769069, 1769070
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1769071, 1769072, 1769073, 1769074, 1769075, 1769076

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	02/04/2016			02/04/2016 16:09	Sima Feizi	1769065, 1769066, 1769067, 1769068, 1769069, 1769070
EPA 300.0 Rev. 2.1	02/04/2016			02/06/2016	Ping Hua	1769067
	02/04/2016			02/07/2016	Ping Hua	1769065, 1769066, 1769068, 1769069, 1769070
EPA 350.1 Rev. 2.0	02/04/2016			02/16/2016	Diana M. Turner	1769071, 1769072, 1769073, 1769074, 1769075, 1769076
EPA 351.2 Rev. 2.0	02/04/2016	02/09/2016	Christopher Armour	02/10/2016	Bryan A. Werth	1769071, 1769072, 1769073
	02/04/2016	02/10/2016	Christopher Armour	02/12/2016	Rochelle Y Jackson	1769074, 1769075, 1769076
EPA 353.2 Rev. 2.0	02/04/2016			02/11/2016	Peter D. Kaus	1769071, 1769072, 1769073, 1769074, 1769075, 1769076
EPA 365.1 Rev. 2.0	02/04/2016	02/09/2016	Christopher Armour	02/10/2016	Lipi Saha	1769071, 1769072, 1769073, 1769074, 1769075, 1769076
EPA 365.1 Rev. 2.0 dissolved	02/04/2016			02/04/2016 13:36	Bryan A. Werth	1769077
	02/04/2016			02/04/2016 13:41	Bryan A. Werth	1769080
	02/04/2016			02/04/2016 14:07	Bryan A. Werth	1769079
	02/04/2016			02/04/2016 14:08	Bryan A. Werth	1769081
	02/04/2016			02/04/2016 14:13	Bryan A. Werth	1769082
	02/04/2016			02/04/2016 14:42	Bryan A. Werth	1769078
SM 2120 B	02/04/2016			02/04/2016 14:23	Rochelle Y Jackson	1769065
	02/04/2016			02/04/2016 14:24	Rochelle Y Jackson	1769066
	02/04/2016			02/04/2016 14:25	Rochelle Y Jackson	1769067
	02/04/2016			02/04/2016 14:26	Rochelle Y Jackson	1769069
	02/04/2016			02/04/2016 14:27	Rochelle Y Jackson	1769070
	02/04/2016			02/04/2016 15:07	Rochelle Y Jackson	1769068
SM 2320 B-97	02/04/2016			02/11/2016	Dale L. Simmons	1769065, 1769066, 1769067, 1769068, 1769069, 1769070
SM 2540 C-97	02/04/2016			02/08/2016	Sima Feizi	1769065, 1769066, 1769067, 1769068, 1769069, 1769070
SM 2540 D-97	02/04/2016			02/08/2016	Sima Feizi	1769065, 1769066, 1769067, 1769068, 1769069, 1769070
SM 4500 F-C-97	02/04/2016			02/09/2016	Dale L. Simmons	1769065, 1769066, 1769067, 1769068, 1769069, 1769070
SM 5310 B-00	02/04/2016			02/09/2016	Sofia Elnemr	1769071, 1769072, 1769073, 1769074, 1769075, 1769076