Chemical Analysis Report

NW-DIST-2016-05-27-01

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

Event Description: **WBID 10D 10E**
Request ID: **RQ-2016-05-30-11**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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160 W Government St
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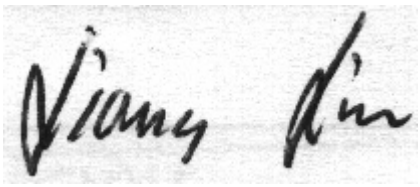
Certified by: Liang Lin, Environmental Administrator

Date Certified: 20-JUN-2016 16:34



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: Escambia R Mouth WMS Ditch **Collection Date/Time: 05/26/2016 10:45**

Field ID: G4NW0006 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802542	EPA 180.1 Rev. 2.0	Turbidity	17	A	NTU	P305299	
	EPA 300.0 Rev. 2.1	Chloride	4.9		mg Cl/L	P305567	
		Sulfate	5.3		mg SO4/L	P305570	
	SM 2120 B	Color (true)	40	A	PCU	P305215	
	SM 2320 B-97	Total Alkalinity	25		mg CaCO3/L	P305510	
	SM 2540 C-97	TDS	64		mg/L	P305707	
	SM 2540 D-97	TSS	16		mg/L	P305635	
	SM 4500 F-C-97	Fluoride	0.043	I	mg F/L	P305512	
1802546	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P305661	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.18	I	mg N/L	P305506	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.26		mg N/L	P305439	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P305786	
	SM 5310 B-00	Organic Carbon	5.0		mg C/L	P305855	
1802550	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P305201	

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: Escambia River HWY 184 BR **Collection Date/Time: 05/26/2016 11:00**

Field ID: G4NW0005 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802543	EPA 180.1 Rev. 2.0	Turbidity	17		NTU	P305299	
	EPA 300.0 Rev. 2.1	Chloride	4.9		mg Cl/L	P305567	
		Sulfate	5.3		mg SO4/L	P305570	
	SM 2120 B	Color (true)	41		PCU	P305215	
	SM 2320 B-97	Total Alkalinity	26		mg CaCO3/L	P305748	
	SM 2540 C-97	TDS	60		mg/L	P305707	
	SM 2540 D-97	TSS	14		mg/L	P305635	
	SM 4500 F-C-97	Fluoride	0.043	I	mg F/L	P305751	
1802547	EPA 350.1 Rev. 2.0	Ammonia-N	0.024		mg N/L	P305661	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23		mg N/L	P305507	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.27		mg N/L	P305439	
	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P305786	
	SM 5310 B-00	Organic Carbon	5.0		mg C/L	P305855	
1802551	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P305201	

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: Escambia R at Beaver Dam L **Collection Date/Time: 05/26/2016 11:20**

Field ID: G4NW0007 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802544	EPA 180.1 Rev. 2.0	Turbidity	17		NTU	P305299	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P305567	
		Sulfate	5.4		mg SO4/L	P305570	

Field ID: G4NW0007 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802544	SM 2120 B	Color (true)	36		PCU	P305215	
	SM 2320 B-97	Total Alkalinity	26		mg CaCO3/L	P305748	
	SM 2540 C-97	TDS	73		mg/L	P305707	
	SM 2540 D-97	TSS	16		mg/L	P305635	
	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P305751	
1802548	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P305661	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.24		mg N/L	P305507	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.27		mg N/L	P305439	
	EPA 365.1 Rev. 2.0	Total-P	0.053		mg P/L	P305787	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P305855	
1802552	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P305201	

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: Upper Escambia River @ Power Lines TMDL WBID 10E-5 **Collection Date/Time: 05/26/2016 12:25**

Field ID: G4NW0185 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1802545	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P305299	
	EPA 300.0 Rev. 2.1	Chloride	8.8		mg Cl/L	P305567	
		Sulfate	6.1		mg SO4/L	P305570	
	SM 2120 B	Color (true)	85		PCU	P305215	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P305749	
	SM 2540 C-97	TDS	74		mg/L	P305707	
	SM 2540 D-97	TSS	7	I	mg/L	P305635	
	SM 4500 F-C-97	Fluoride	0.042	I	mg F/L	P305752	
1802549	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P305662	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20		mg N/L	P305507	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P305439	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P305787	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P305855	
1802553	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.011		mg P/L	P305201	

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: P305299

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: P305567

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305570

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305661

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305662

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305506

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305507

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305439

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305786

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305787

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: P305201

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

Reference Method: SM 2120 B
Batch ID: P305215

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P305510

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

Reference Method: SM 2320 B-97
Batch ID: P305748

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

Reference Method: SM 2320 B-97
Batch ID: P305749

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

Reference Method: SM 2540 C-97
Batch ID: P305707

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P305635

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P305512

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P305751

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P305752

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P305855

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: P305567

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305570

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305661

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305662

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305506

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305507

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305439

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305439

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305786

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	97.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305787

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305201

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

Reference Method: SM 2320 B-97
Batch ID: P305510

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

Reference Method: SM 2320 B-97
Batch ID: P305748

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

Reference Method: SM 2320 B-97
Batch ID: P305749

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P305512

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P305751

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.2		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P305752

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P305855

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305567

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802333	Chloride	100		P	90 - 110
1802562	Chloride	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305570

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802333	Sulfate	98.1		P	90 - 110
1802562	Sulfate	97.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305661

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802367	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305662

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802581	Ammonia-N	99.1	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305506

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802546	Kjeldahl Nitrogen	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305507

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802547	Kjeldahl Nitrogen	100	106	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305439

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802547	NO2NO3-N	96.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802534	Total-P	98.8	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802548	Total-P	99.4	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305201

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802552	O-Phosphate-P	98.9	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P305512

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802519	Fluoride	94.7	95.3	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P305751

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1803363	Fluoride	96.4	97.1	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P305752

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802567	Fluoride	97.4	97.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P305855

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1802549	Organic Carbon	99.4	100	P/P	85 - 115

Quality Assurance Report
Precision

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P305299

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802542	Turbidity	0.593	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305567

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802333	Chloride	0.700	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P305570

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802333	Sulfate	2.99	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305661

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802367	Ammonia-N	0.894	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P305662

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802581	Ammonia-N	0.140	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305506

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802546	Kjeldahl Nitrogen	0.280	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P305507

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802547	Kjeldahl Nitrogen	4.52	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P305439

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802547	NO2NO3-N	0.866	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305786

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802534	Total-P	1.76	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P305787

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802548	Total-P	1.08	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P305201

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802552	O-Phosphate-P	1.24	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P305215

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802542	Color (true)	0.0847	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P305510

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802519	Total Alkalinity	0.261	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P305748

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803363	Total Alkalinity	0.443	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P305749

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802567	Total Alkalinity	0.672	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P305707

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802567	TDS	6.09	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P305512

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802519	Fluoride	0.536	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P305751

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1803363	Fluoride	0.495	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P305752

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802567	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P305855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1802549	Organic Carbon	0.747	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: A69738
Included Lab Sample IDs: 1802550, 1802551, 1802552, 1802553

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

Reference Method: SM 2120 B
Run ID: A69740
Included Lab Sample IDs: 1802542, 1802543, 1802544, 1802545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.9	97.4	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A69767
Included Lab Sample IDs: 1802542, 1802543, 1802544, 1802545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits

Quality Assurance Report
Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A69767
Included Lab Sample IDs: 1802542, 1802543, 1802544, 1802545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A69804
Included Lab Sample IDs: 1802546, 1802547, 1802548, 1802549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	97.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A69814
Included Lab Sample IDs: 1802542, 1802543, 1802544, 1802545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	97.4	99.9	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A69825
Included Lab Sample IDs: 1802542

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

Reference Method: SM 4500 F-C-97
Run ID: A69825
Included Lab Sample IDs: 1802542

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A69862
Included Lab Sample IDs: 1802546, 1802547, 1802548, 1802549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	98.8	P/P	90 - 110
Ammonia-N	98.8	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A69882
Included Lab Sample IDs: 1802546, 1802547, 1802548, 1802549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	97.7	P/P	90 - 110
Kjeldahl Nitrogen	102	101	P/P	90 - 110
Kjeldahl Nitrogen	104	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A69906
Included Lab Sample IDs: 1802543, 1802544, 1802545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	99.0	P/P	90 - 110
Total Alkalinity	99.0	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A69906
Included Lab Sample IDs: 1802543, 1802544, 1802545

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	99.5	P/P	90 - 110
Fluoride	99.5	98.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A69933
Included Lab Sample IDs: 1802546, 1802547, 1802548, 1802549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.0	99.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A69962
Included Lab Sample IDs: 1802546, 1802547, 1802548

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A69970
Included Lab Sample IDs: 1802549

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	97.5	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		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					0.593	
EPA 300.0 Rev. 2.1	Chloride	99.7	100	98.3		0.700	
	Sulfate	98.0	98.1	97.8		2.99	
EPA 350.1 Rev. 2.0	Ammonia-N	98.8	101	102			0.894
	Ammonia-N	98.1	99.1	99.2			0.140
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	104	104			0.280
	Kjeldahl Nitrogen	98.1	100	106			4.52
EPA 353.2 Rev. 2.0	NO2NO3-N	100	96.2				0.866
EPA 365.1 Rev. 2.0	Total-P	97.8	98.8	101			1.76

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 365.1 Rev. 2.0	Total-P	99.8	99.4	101			1.08
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	98.9	100			1.24
SM 2120 B	Color (true)					0.0847	
SM 2320 B-97	Total Alkalinity	101				0.261	
	Total Alkalinity	103				0.443	
	Total Alkalinity	102				0.672	
SM 2540 C-97	TDS					6.09	
SM 4500 F-C-97	Fluoride	98.2	94.7	95.3			0.536
	Fluoride	97.2	96.4	97.1			0.495
	Fluoride	96.7	97.4	97.4			0.0
SM 5310 B-00	Organic Carbon	101	99.4	100			0.747

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1802542, 1802543, 1802544, 1802545
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1802542, 1802543, 1802544, 1802545
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1802542, 1802543, 1802544, 1802545
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1802546, 1802547, 1802548, 1802549
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1802546, 1802547, 1802548, 1802549
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1802546, 1802547, 1802548, 1802549
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1802546, 1802547, 1802548, 1802549
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1802550, 1802551, 1802552, 1802553
SM 2120 B / E31780	True Color measured at 450 nm	1802542, 1802543, 1802544, 1802545
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1802542, 1802543, 1802544, 1802545
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1802542, 1802543, 1802544, 1802545
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1802542, 1802543, 1802544, 1802545
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1802542, 1802543, 1802544, 1802545
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1802546, 1802547, 1802548, 1802549

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	05/27/2016			05/27/2016 16:00	Blanca Fach	1802542, 1802543, 1802544, 1802545
EPA 300.0 Rev. 2.1	05/27/2016			06/03/2016	Elisa J Lutz	1802542, 1802543, 1802544, 1802545
EPA 350.1 Rev. 2.0	05/27/2016			06/06/2016	Diana M. Turner	1802546, 1802547, 1802548, 1802549
EPA 351.2 Rev. 2.0	05/27/2016	06/03/2016	Sofia Elnemr	06/07/2016	Christopher Armour	1802546, 1802547, 1802548, 1802549
EPA 353.2 Rev. 2.0	05/27/2016			06/02/2016	Peter D. Kaus	1802546, 1802547, 1802548, 1802549
EPA 365.1 Rev. 2.0	05/27/2016	06/08/2016	Vijayalakshmi Reddy	06/09/2016	Peter D. Kaus	1802546, 1802547, 1802548
	05/27/2016	06/08/2016	Vijayalakshmi Reddy	06/10/2016	Virginia P. Brown	1802549
EPA 365.1 Rev. 2.0 dissolved	05/27/2016			05/27/2016 14:26	Julia Storbeck	1802552
	05/27/2016			05/27/2016 14:44	Julia Storbeck	1802550
	05/27/2016			05/27/2016 14:45	Julia Storbeck	1802551
	05/27/2016			05/27/2016 14:51	Julia Storbeck	1802553
SM 2120 B	05/27/2016			05/27/2016 17:08	Chrisoulla Rakowski	1802542, 1802543
	05/27/2016			05/27/2016 17:09	Chrisoulla Rakowski	1802544
	05/27/2016			05/27/2016 17:10	Chrisoulla Rakowski	1802545
SM 2320 B-97	05/27/2016			06/03/2016	Dale L. Simmons	1802542
	05/27/2016			06/06/2016	Dale L. Simmons	1802543, 1802544, 1802545
SM 2540 C-97	05/27/2016			06/01/2016	Yijie Li	1802542, 1802543, 1802544, 1802545
SM 2540 D-97	05/27/2016			06/01/2016	Yijie Li	1802542, 1802543, 1802544, 1802545
SM 4500 F-C-97	05/27/2016			06/03/2016	Dale L. Simmons	1802542
	05/27/2016			06/06/2016	Dale L. Simmons	1802543, 1802544, 1802545
SM 5310 B-00	05/27/2016			06/08/2016	Diana M. Turner	1802546, 1802547, 1802548, 1802549