Chemical Analysis Report

NW-DIST-2018-01-25-02

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

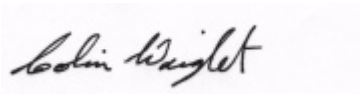
Event Description: **PACE RUN**
Request ID: **RQ-2018-01-22-52**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 21-FEB-2018 09:51



NON-CONFORMANCE REPORT INCLUDED

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: DIRECT RUNOFF-GRAVEYARD BRANCH @ TRADEWINDS DR. **Collection Date/Time: 01/24/2018 10:45**

Field ID: G4NW0176 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1962064	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P338808	
	EPA 300.0 Rev. 2.1	Chloride	7.1		mg Cl/L	P338912	
		Sulfate	6.3	Y	mg SO4/L	P338914	
	SM 2120 B	Color (true)	13		PCU	P338809	
	SM 2320 B-97	Total Alkalinity	30	Y	mg CaCO3/L	P339016	
	SM 2540 C-97	TDS	56	Y	mg/L	P339125	
	SM 2540 D-97	TSS	2	IY	mg/L	P339064	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P339021	
1962065	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P339285	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P338830	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.49		mg N/L	P338965	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P338956	
	SM 5310 B-00	Organic Carbon	1.4		mg C/L	P339209	
1962066	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P338842	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 2320 B-97: Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 2540 C-97: Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: DRIDGLERS CREEK ABOVE PARKVIEW STREET **Collection Date/Time: 01/24/2018 11:15**

Field ID: G4NW0168 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1962061	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P338808	
	EPA 300.0 Rev. 2.1	Chloride	6.9		mg Cl/L	P338912	
		Sulfate	0.66	Y	mg SO4/L	P338914	
	SM 2120 B	Color (true)	110		PCU	P338809	
	SM 2320 B-97	Total Alkalinity	1.8	IY	mg CaCO3/L	P339016	
	SM 2540 C-97	TDS	33	Y	mg/L	P339125	
	SM 2540 D-97	TSS	2	UY	mg/L	P339064	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P339021	
1962062	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P339285	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P338830	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P338965	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P338956	
	SM 5310 B-00	Organic Carbon	7.0		mg C/L	P339209	
1962063	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P338842	

Field ID: G4NW0168 Matrix: W-SURF-FRH

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

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 2320 B-97: Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 2540 C-97: Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: SEVENMILE CREEK UPSTREAM OF ALDERBROOK BLVD. **Collection Date/Time: 01/24/2018 12:20**

Field ID: G4NW0345 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1962058	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P338808	
	EPA 300.0 Rev. 2.1	Chloride	6.0		mg Cl/L	P338912	
		Sulfate	0.84	Y	mg SO4/L	P338914	
	SM 2120 B	Color (true)	6.0	I	PCU	P338809	
	SM 2320 B-97	Total Alkalinity	0.65	UY	mg CaCO3/L	P339016	
	SM 2540 C-97	TDS	30	Y	mg/L	P339124	
	SM 2540 D-97	TSS	2	UY	mg/L	P339063	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P339021	
1962059	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P339285	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P338830	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.9		mg N/L	P338965	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P338956	
	SM 5310 B-00	Organic Carbon	0.79	I	mg C/L	P339209	
1962060	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P338842	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 2320 B-97: Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 2540 C-97: Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample. Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Non-Conformance Report

NCR ID: 6886

Event(s)	Job(s)	Sample(s)	Test(s)
NW-DIST-2018-01-25-02	TLH-2018-01-25-40	1962058	
NW-DIST-2018-01-25-02	TLH-2018-01-25-40	1962061	
NW-DIST-2018-01-25-02	TLH-2018-01-25-40	1962064	

NCR Type: CUSTODY **NCR Category: General**

Observation: Samples stored at room temperature overnight on 1/25/2018 because of an oversight. Samples require refrigeration for proper preservation.

Resolution: Samples were returned to refrigerator in the afternoon on 1/26/2018. All analysis done after 1/25/2018 will be Y qualified.

Authorized by/Date: Bettina S. Steinbock 2/9/2018

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P338808

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338912

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338914

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339285

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338830

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338965

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338956

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338842

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2120 B
Batch ID: P338809

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P339016

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

Reference Method: SM 2540 C-97
Batch ID: P339124

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P339125

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P339063

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P339064

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P339021

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P339209

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: P338912

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338912

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338914

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339285

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338830

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338965

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338956

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338842

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

Reference Method: SM 2320 B-97
Batch ID: P339016

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

Reference Method: SM 4500 F-C-97
Batch ID: P339021

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P339209

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.2		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338912

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1961961	Chloride	97.7		P	90 - 110
1961993	Chloride	98.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338914

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1961961	Sulfate	97.1		P	90 - 110
1961993	Sulfate	97.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339285

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1962062	Ammonia-N	96.7	96.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338830

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1962065	Kjeldahl Nitrogen	99.2	93.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338965

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1961995	NO2NO3-N	108	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338956

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1962065	Total-P	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338842

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1962060	O-Phosphate-P	97.4	97.9	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P339209

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1961962	Organic Carbon	103		P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P338808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1962040	Turbidity	5.05	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338912

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961961	Chloride	0.0654	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P338914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961961	Sulfate	0.0906	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P339285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1962062	Ammonia-N	0.613	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P338830

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1962065	Kjeldahl Nitrogen	5.28	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P338965

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961995	NO2NO3-N	0.909	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P338956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1962065	Total-P	0.775	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P338842

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1962060	O-Phosphate-P	0.512	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P338809

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1962022	Color (true)	8.08	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P339016

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1962336	Total Alkalinity	0.887	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P339124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1962034	TDS	0.839	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P339125

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1962153	TDS	0.853	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P339021

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1962336	Fluoride	1.41	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P339209

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1961962	Organic Carbon	0.304	Spike	P	0 - 20

Quality Assurance Report
Precision

* 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 300.0 Rev. 2.1
Run ID: A81616
Included Lab Sample IDs: 1962058, 1962061, 1962064

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Chloride	103	101	P/P	90 - 110
Sulfate	101	99.9	P/P	90 - 110
Sulfate	102	101	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A81652
Included Lab Sample IDs: 1962058, 1962061, 1962064

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A81653
Included Lab Sample IDs: 1962058, 1962061, 1962064

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.0	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A81660
Included Lab Sample IDs: 1962060, 1962063, 1962066

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.7	99.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A81701
Included Lab Sample IDs: 1962059, 1962062, 1962065

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	103	P/P	90 - 110
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A81714
Included Lab Sample IDs: 1962059, 1962062, 1962065

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	105	P/P	90 - 110
Kjeldahl Nitrogen	105	106	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 2320 B-97
Run ID: A81736
Included Lab Sample IDs: 1962058, 1962061, 1962064

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.2	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A81736
Included Lab Sample IDs: 1962058, 1962061, 1962064

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A81742
Included Lab Sample IDs: 1962059, 1962062, 1962065

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

Reference Method: SM 5310 B-00
Run ID: A81810
Included Lab Sample IDs: 1962059, 1962062, 1962065

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.4	94.6	P/P	90 - 110
Organic Carbon	97.2	94.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A81838
Included Lab Sample IDs: 1962059, 1962062, 1962065

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	101	P/P	90 - 110
Ammonia-N	100	99.2	P/P	90 - 110
Ammonia-N	100	100	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					5.05	
EPA 300.0 Rev. 2.1	Chloride	97.5	97.7	98.4		0.0654	
	Sulfate	96.4	97.1	97.5		0.0906	
EPA 350.1 Rev. 2.0	Ammonia-N	100	96.7	96.0			0.613
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	99.2	93.4			5.28
EPA 353.2 Rev. 2.0	NO2NO3-N	106	108	107			0.909
EPA 365.1 Rev. 2.0	Total-P	104	104	105			0.775
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.3	97.4	97.9			0.512

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	Precision		
				LCS	SMP	MS
SM 2120 B	Color (true)				8.08	
SM 2320 B-97	Total Alkalinity	101			0.887	
SM 2540 C-97	TDS				0.839	
	TDS				0.853	
SM 4500 F-C-97	Fluoride	100				1.41
SM 5310 B-00	Organic Carbon	93.2	103			0.304

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1962058, 1962061, 1962064
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1962058, 1962061, 1962064
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1962058, 1962061, 1962064
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1962059, 1962062, 1962065
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1962059, 1962062, 1962065
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1962059, 1962062, 1962065
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1962059, 1962062, 1962065
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1962060, 1962063, 1962066
SM 2120 B / E31780	True Color measured at 450 nm	1962058, 1962061, 1962064
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1962058, 1962061, 1962064
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1962058, 1962061, 1962064
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1962058, 1962061, 1962064
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1962058, 1962061, 1962064
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1962059, 1962062, 1962065

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	01/25/2018			01/25/2018 16:15	DeAsia Armster	1962058, 1962061, 1962064
EPA 300.0 Rev. 2.1	01/25/2018			01/26/2018	Julia Storbeck	1962058, 1962061, 1962064
EPA 350.1 Rev. 2.0	01/25/2018			02/02/2018	Ping Hua	1962059, 1962062, 1962065
EPA 351.2 Rev. 2.0	01/25/2018	01/26/2018	Adrian Shelby	01/29/2018	Joseph Suarez	1962059, 1962062, 1962065
EPA 353.2 Rev. 2.0	01/25/2018			01/29/2018	Beverly Y. Sanders	1962059, 1962062, 1962065
EPA 365.1 Rev. 2.0	01/25/2018	01/29/2018	Sima Feizi	01/30/2018	Beverly Y. Sanders	1962059, 1962062, 1962065
EPA 365.1 Rev. 2.0 dissolved	01/25/2018			01/25/2018 15:48	Megan Treadwell	1962060
	01/25/2018			01/25/2018 15:50	Megan Treadwell	1962063
	01/25/2018			01/25/2018 15:51	Megan Treadwell	1962066
SM 2120 B	01/25/2018			01/25/2018 15:31	Tanya Welborn	1962058
	01/25/2018			01/25/2018 15:32	Tanya Welborn	1962061
	01/25/2018			01/25/2018 15:33	Tanya Welborn	1962064
SM 2320 B-97	01/25/2018			01/30/2018	Lauren Bottorf	1962058, 1962061, 1962064
SM 2540 C-97	01/25/2018			01/26/2018	DeAsia Armster	1962058, 1962061, 1962064
SM 2540 D-97	01/25/2018			01/26/2018	DeAsia Armster	1962058, 1962061, 1962064
SM 4500 F-C-97	01/25/2018			01/30/2018	Lauren Bottorf	1962058, 1962061, 1962064
SM 5310 B-00	01/25/2018			02/01/2018	Megan Treadwell	1962059, 1962062, 1962065