Chemical Analysis Report

NW-DIST-2018-07-17-02

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

Event Description: **BIOASSESSMENT**
Request ID: **RQ-2018-07-23-22**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 01-AUG-2018 11:01

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: CHOCTAWHATCHEE RIVER ABOVE SMOKEHOSE LAKE

Collection Date/Time: 07/16/2018 12:15

Field ID: G3NW0073

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008049	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P348730	
	EPA 300.0 Rev. 2.1	Chloride	4.7		mg Cl/L	P349062	
		Sulfate	1.8		mg SO4/L	P349065	
	SM 2120 B	Color (true)	66		PCU	P348609	
	SM 2320 B-97	Total Alkalinity	46		mg CaCO3/L	P348736	
	SM 2540 C-97	TDS	76		mg/L	P349269	
	SM 2540 D-97	TSS	10		mg/L	P349275	
	SM 4500 F-C-97	Fluoride	0.045	I	mg F/L	P348739	
2008051	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P348997	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P348840	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.27		mg N/L	P348759	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P348924	
	SM 5310 B-00	Organic Carbon	4.7		mg C/L	P348823	
2008053	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P348600	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: SISTER RIVER MOUTH **Collection Date/Time: 07/16/2018 13:15**

Field ID: G3NW0154 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008050	EPA 180.1 Rev. 2.0	Turbidity	7.2		NTU	P348730	
	EPA 300.0 Rev. 2.1	Chloride	6.1		mg Cl/L	P349062	
		Sulfate	1.5		mg SO4/L	P349065	
	SM 2120 B	Color (true)	96	A	PCU	P348609	
	SM 2320 B-97	Total Alkalinity	31		mg CaCO3/L	P348736	
	SM 2540 C-97	TDS	73		mg/L	P349269	
	SM 2540 D-97	TSS	3	I	mg/L	P349275	
	SM 4500 F-C-97	Fluoride	0.039	I	mg F/L	P348739	
2008052	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P348997	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P348840	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P348759	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P348924	
	SM 5310 B-00	Organic Carbon	7.8		mg C/L	P348823	
2008054	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.012		mg P/L	P348600	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 5310 B-00: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BASIN BAYOU AT INLET **Collection Date/Time: 07/16/2018 14:40**

Field ID: G3NW0101 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2008055	EPA 180.1 Rev. 2.0	Turbidity	1.8	A	NTU	P348731	
	SM 2320 B-97	Total Alkalinity	7.3		mg CaCO3/L	P348736	
	SM 2540 D-97	TSS	4	I	mg/L	P349279	
	SM 4500 F-C-97	Fluoride	0.063	I	mg F/L	P348739	
2008056	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P348997	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.25		mg N/L	P348840	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P348759	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P348884	
	SM 5310 B-00	Organic Carbon	4.7		mg C/L	P348929	
2008057	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P348600	

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348730

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348731

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349062

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349065

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348997

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348840

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348759

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348884

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348924

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: P348600

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

Reference Method: SM 2120 B
Batch ID: P348609

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P348736

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

Reference Method: SM 2540 C-97
Batch ID: P349269

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349275

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P349279

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P348739

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P348823

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

Reference Method: SM 5310 B-00
Batch ID: P348929

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: P349062

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349065

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348997

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348840

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348759

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348884

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: P348924

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348600

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

Reference Method: SM 2120 B
Batch ID: P348609

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	99.7		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P348736

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P348739

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P348823

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P348929

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: P349062

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2006061	Chloride	108		P	90 - 110
2007924	Chloride	98.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349065

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2006061	Sulfate	106		P	90 - 110
2007924	Sulfate	97.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348997

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008095	Ammonia-N	101	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348840

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008169	Kjeldahl Nitrogen	95.8	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348759

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007832	NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348884

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008248	Total-P	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348924

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2008300	Total-P	98.3	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348600

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007893	O-Phosphate-P	95.2	93.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P348739

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007885	Fluoride	97.5	96.9	P/P	91 - 105

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P348929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2007890	Organic Carbon	92.6	91.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007876	Turbidity	4.86	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P348731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008055	Turbidity	2.22	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349062

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007924	Chloride	2.45	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P349065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007924	Sulfate	2.30	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P348997

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008095	Ammonia-N	1.60	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P348840

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008169	Kjeldahl Nitrogen	1.29	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P348759

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007832	NO2NO3-N	1.54	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348884

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008248	Total-P	1.07	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P348924

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008300	Total-P	2.17	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P348600

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007893	O-Phosphate-P	1.48	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P348609

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008050	Color (true)	0.0964	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P348736

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007885	Total Alkalinity	0.368	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P349269

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2008094	TDS	3.31	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P348739

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007885	Fluoride	0.516	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P348823

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007729	Organic Carbon	0.278	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P348929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2007890	Organic Carbon	0.839	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 365.1 Rev. 2.0 dissolved
Run ID: A85281
Included Lab Sample IDs: 2008053, 2008054, 2008057

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.3	100	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A85283
Included Lab Sample IDs: 2008049, 2008050

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	103	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A85325
Included Lab Sample IDs: 2008049, 2008050, 2008055

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	98.0	P/P	95 - 105
Turbidity	98.0	98.0	P/P	95 - 105

Reference Method: SM 2320 B-97
Run ID: A85328
Included Lab Sample IDs: 2008049, 2008050, 2008055

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.8	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A85328
Included Lab Sample IDs: 2008049, 2008050, 2008055

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A85343
Included Lab Sample IDs: 2008051, 2008052, 2008056

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

Reference Method: SM 5310 B-00
Run ID: A85362
Included Lab Sample IDs: 2008051, 2008052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	96.2	P/P	90 - 110
Organic Carbon	96.2	99.2	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A85392
Included Lab Sample IDs: 2008056

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A85392
Included Lab Sample IDs: 2008056

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	96.4	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A85405
Included Lab Sample IDs: 2008051, 2008052, 2008056

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	92.6	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85408
Included Lab Sample IDs: 2008056

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A85415
Included Lab Sample IDs: 2008051, 2008052, 2008056

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A85417
Included Lab Sample IDs: 2008049, 2008050

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	96.9	101	P/P	90 - 110
Sulfate	97.3	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A85425
Included Lab Sample IDs: 2008051, 2008052

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	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					4.86	
	Turbidity					2.22	
EPA 300.0 Rev. 2.1	Chloride	99.0	98.7	108		2.45	
	Sulfate	99.4	97.7	106		2.30	
EPA 350.1 Rev. 2.0	Ammonia-N	104	101	103			1.60
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	95.8	97.5			1.29
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	102	104			1.54
EPA 365.1 Rev. 2.0	Total-P	101	101	100			1.07
	Total-P	97.1	98.3	96.0			2.17
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.1	95.2	93.8			1.48
SM 2120 B	Color (true)	99.7				0.0964	
SM 2320 B-97	Total Alkalinity	102				0.368	
SM 2540 C-97	TDS					3.31	
SM 4500 F-C-97	Fluoride	97.6	97.5	96.9			0.516
SM 5310 B-00	Organic Carbon	97.4					0.278
	Organic Carbon	93.2	92.6	91.3			0.839

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2008049, 2008050, 2008055
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2008049, 2008050
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2008049, 2008050
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2008051, 2008052, 2008056
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2008051, 2008052, 2008056
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2008051, 2008052, 2008056
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2008051, 2008052, 2008056
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2008053, 2008054, 2008057
SM 2120 B / E31780	True Color measured at 450 nm	2008049, 2008050
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2008049, 2008050, 2008055
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2008049, 2008050
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2008049, 2008050, 2008055
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2008049, 2008050, 2008055
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2008051, 2008052, 2008056

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	07/17/2018			07/17/2018 16:55	Blanca Fach	2008049, 2008050, 2008055
EPA 300.0 Rev. 2.1	07/17/2018			07/23/2018 14:34	Lipi Saha	2008049
	07/17/2018			07/23/2018 14:46	Lipi Saha	2008050
EPA 350.1 Rev. 2.0	07/17/2018			07/23/2018 12:18	Ping Hua	2008051
	07/17/2018			07/23/2018 12:20	Ping Hua	2008052
	07/17/2018			07/23/2018 12:21	Ping Hua	2008056
EPA 351.2 Rev. 2.0	07/17/2018	07/20/2018 11:00	Adrian Shelby	07/23/2018 10:35	Joseph Suarez	2008051
	07/17/2018	07/20/2018 11:00	Adrian Shelby	07/23/2018 10:36	Joseph Suarez	2008052
	07/17/2018	07/20/2018 11:00	Adrian Shelby	07/23/2018 10:38	Joseph Suarez	2008056
EPA 353.2 Rev. 2.0	07/17/2018			07/19/2018 11:14	Lauren Bottorf	2008051
	07/17/2018			07/19/2018 11:15	Lauren Bottorf	2008052
	07/17/2018			07/19/2018 11:17	Lauren Bottorf	2008056
EPA 365.1 Rev. 2.0	07/17/2018	07/20/2018 13:40	Sima Feizi	07/23/2018 13:57	Beverly Y. Sanders	2008056
	07/17/2018	07/23/2018 12:25	Sima Feizi	07/24/2018 10:51	Beverly Y. Sanders	2008051
	07/17/2018	07/23/2018 12:25	Sima Feizi	07/24/2018 10:52	Beverly Y. Sanders	2008052
EPA 365.1 Rev. 2.0 dissolved	07/17/2018			07/17/2018 16:01	Julia Storbeck	2008053
	07/17/2018			07/17/2018 16:02	Julia Storbeck	2008054
	07/17/2018			07/17/2018 16:03	Julia Storbeck	2008057
SM 2120 B	07/17/2018			07/17/2018 16:36	Tanya Welborn	2008049
	07/17/2018			07/17/2018 16:37	Tanya Welborn	2008050
SM 2320 B-97	07/17/2018			07/19/2018 03:53	Dale L. Simmons	2008049
	07/17/2018			07/19/2018 04:04	Dale L. Simmons	2008050
	07/17/2018			07/19/2018 04:25	Dale L. Simmons	2008055
SM 2540 C-97	07/17/2018			07/20/2018 14:31	Yijie Li	2008049, 2008050
SM 2540 D-97	07/17/2018			07/20/2018 14:31	Yijie Li	2008049, 2008050, 2008055
SM 4500 F-C-97	07/17/2018			07/19/2018 03:53	Dale L. Simmons	2008049
	07/17/2018			07/19/2018 04:04	Dale L. Simmons	2008050
	07/17/2018			07/19/2018 04:25	Dale L. Simmons	2008055
SM 5310 B-00	07/17/2018			07/19/2018 07:52	Megan Treadwell	2008051
	07/17/2018			07/19/2018 08:37	Megan Treadwell	2008052
	07/17/2018			07/19/2018 23:53	Megan Treadwell	2008056