

Chemical Analysis Report

NW-DIST-2016-09-20-02

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

Event Description: **ENR C WBID 782 49A 789 722**

Request ID: **RQ-2016-09-26-18**

Customer: **NW-DIST**

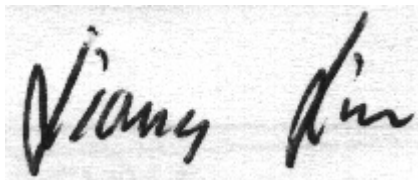
Project ID: **SMP**

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
Timothy W. Fitzpatrick
Liang-Tsair Lin, Ph.D.
Colin Wright, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Liang Lin, Environmental Administrator

Date Certified: 18-OCT-2016 16:40

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored background.

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: ROCKY BAYOU 1/2 MILES EAST OF BRIDGE **Collection Date/Time: 09/19/2016 11:00**

Field ID: G3NW0033

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1832804	EPA 180.1 Rev. 2.0	Turbidity	0.80		NTU	P311554	
	SM 2320 B-97	Total Alkalinity	26		mg CaCO3/L	P311737	
	SM 2540 D-97	TSS	3	I	mg/L	P311892	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P311968	
1832808	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P311752	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22	I	mg N/L	P311841	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P312124	
	EPA 365.1 Rev. 2.0	Total-P	0.01	I	mg P/L	P312142	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P311981	
1832812	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311527	

Ref. Method and Comment:

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

Sample Location: BASIN BAYOU AT INLET **Collection Date/Time: 09/19/2016 12:15**

Field ID: G3NW0101

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1832805	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P311554	
	SM 2320 B-97	Total Alkalinity	5.4		mg CaCO3/L	P311803	
	SM 2540 D-97	TSS	2	I	mg/L	P311892	
	SM 4500 F-C-97	Fluoride	0.054	I	mg F/L	P311805	
1832809	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P311751	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26	I	mg N/L	P311841	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P311897	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P312144	
	SM 5310 B-00	Organic Carbon	3.7		mg C/L	P311981	
1832813	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311526	

Ref. Method and Comment:

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

Sample Location: BASIN BAYOU NORTH END **Collection Date/Time: 09/19/2016 12:20**

Field ID: G3NW0102

Matrix: WATER

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1832806	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P311554	
	SM 2320 B-97	Total Alkalinity	7.0		mg CaCO3/L	P311803	
	SM 2540 D-97	TSS	2	I	mg/L	P311892	
	SM 4500 F-C-97	Fluoride	0.067	I	mg F/L	P311805	
1832810	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P311751	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.20		mg N/L	P311885	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	UY	mg N/L	P312623	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P312144	
	SM 5310 B-00	Organic Carbon	3.7		mg C/L	P311981	
1832814	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P311526	

Field ID: G3NW0102

Matrix: WATER

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

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

EPA 353.2 Rev. 2.0: Sample was left out at room temperature overnight, should be stored at 4 degC.

Sample Location: LA GRANGE BAYOU, MIDDLE

Collection Date/Time: 09/19/2016 13:30

Field ID: G3NW0036

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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1832807	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P311554	
	SM 2320 B-97	Total Alkalinity	61		mg CaCO3/L	P311737	
	SM 2540 D-97	TSS	4	I	mg/L	P311894	
	SM 4500 F-C-97	Fluoride	0.52		mg F/L	P311741	
1832811	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P311752	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P311841	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P312124	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P312142	
	SM 5310 B-00	Organic Carbon	4.6		mg C/L	P312090	
1832815	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P311527	
	dissolved						

Ref. Method and Comment:

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

Sample Location: CHOCTAWHATCHEE RIVER ABV
 SMOKEHOUSE LAKE

Collection Date/Time: 09/19/2016 14:35

Field ID: G3NW0073

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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1832801	EPA 180.1 Rev. 2.0	Turbidity	11	A	NTU	P311554	
	EPA 300.0 Rev. 2.1	Chloride	5.7	A	mg Cl/L	P311767	
		Sulfate	2.1	A	mg SO4/L	P311770	
	SM 2120 B	Color (true)	35		PCU	P311540	
	SM 2320 B-97	Total Alkalinity	55	A	mg CaCO3/L	P311803	
	SM 2540 C-97	TDS	84		mg/L	P311825	
	SM 2540 D-97	TSS	8	I	mg/L	P311891	
	SM 4500 F-C-97	Fluoride	0.050	I	mg F/L	P311805	
1832802	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P311751	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26		mg N/L	P311885	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.40	Y	mg N/L	P312332	
	EPA 365.1 Rev. 2.0	Total-P	0.036		mg P/L	P312144	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P311981	
1832803	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.014		mg P/L	P311526	
	dissolved						

Ref. Method and Comment:

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

EPA 353.2 Rev. 2.0: Sample was left out at room temperature overnight, should be stored at 4 degC.

Non-Conformance Report

Non-Conformance Report

NCR ID: 6057

<u>Event(s)</u>	<u>Job(s)</u>	<u>Sample(s)</u>	<u>Test(s)</u>
NW-DIST-2016-09-20-02	TLH-2016-09-20-59	1832802	
NW-DIST-2016-09-20-02	TLH-2016-09-20-59	1832810	

NCR Type: CUSTODY

NCR Category: General

Observation: Sample not stored in refrigerator the night of 09/29/2016.

Resolution: Sample returned to refrigerator in the morning on 9/30/2016. All analyses requiring refrigeration that were prepared or, if preparation is not required, analyzed on or after 09/30/2016 will be Y qualified for incorrect preservation.

Authorised by/Date: Colin Wright 10/18/2016

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: P311554

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P311767

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P311770

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P311751

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P311752

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P311841

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311885

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311897

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312124

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312332

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312623

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312142

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312144

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311526

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311527

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: P311540

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P311737

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2320 B-97
Batch ID: P311803

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P311825

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P311891

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P311892

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P311894

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P311741

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P311805

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: P311968

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P311981

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

Reference Method: SM 5310 B-00
Batch ID: P312090

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: P311767

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311770

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311751

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311752

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: P311841

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311885

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

Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311885

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	93.0		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311897

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312124

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: P312332

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312623

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: P312142

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312144

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	95.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311526

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311527

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P311737

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P311803

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P311741

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P311805

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.2		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P311968

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.0		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P311981

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

Reference Method: SM 5310 B-00
Batch ID: P312090

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311767

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832801	Chloride	98.7		P	90 - 110
1832827	Chloride	99.7		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311770

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832801	Sulfate	91.3		P	90 - 110
1832827	Sulfate	96.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311751

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832760	Ammonia-N	108	107	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311752

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832704	Ammonia-N	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311841

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832710	Kjeldahl Nitrogen	94.7	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311885

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832775	Kjeldahl Nitrogen	95.9	89.6	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311897

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832716	NO2NO3-N	91.6	92.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832311	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312332

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832736	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312623

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836921	NO2NO3-N	106		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312142

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832652	Total-P	95.0	95.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312144

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832789	Total-P	95.2	94.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311526

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832803	O-Phosphate-P	97.9	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311527

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832812	O-Phosphate-P	99.1	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P311741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832281	Fluoride	96.9	99.1	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P311805

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832801	Fluoride	98.6	98.0	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P311968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832596	Fluoride	99.1	101	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P311981

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832736	Organic Carbon	101	102	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P312090

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1832653	Organic Carbon	88.4	93.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P311554

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832801	Turbidity	0.905	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311767

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832801	Chloride	0.622	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311770

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832801	Sulfate	2.54	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311751

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832760	Ammonia-N	0.461	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311752

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832704	Ammonia-N	0.0578	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311841

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832710	Kjeldahl Nitrogen	10.6	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311885

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832775	Kjeldahl Nitrogen	4.51	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832716	NO2NO3-N	0.909	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832311	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312332

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832736	NO2NO3-N	0.943	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312623

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836921	NO2NO3-N	1.10	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312142

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832652	Total-P	0.718	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P312144

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832789	Total-P	0.320	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311526

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832803	O-Phosphate-P	0.0894	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P311527

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832812	O-Phosphate-P	0.904	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P311540

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832731	Color (true)	1.43	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P311737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832281	Total Alkalinity	0.725	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P311803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832801	Total Alkalinity	0.177	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P311825

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832597	TDS	3.69	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P311741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832281	Fluoride	1.45	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P311805

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832801	Fluoride	0.525	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P311968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832596	Fluoride	0.946	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P311981

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832736	Organic Carbon	0.645	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P312090

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1832653	Organic Carbon	4.99	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: A71736

Included Lab Sample IDs: 1832803, 1832812, 1832813, 1832814, 1832815

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.6	P/P	90 - 110
O-Phosphate-P	101	100	P/P	90 - 110
O-Phosphate-P	99.5	101	P/P	90 - 110
O-Phosphate-P	99.6	100	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A71739

Included Lab Sample IDs: 1832801

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.6	96.9	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A71745

Included Lab Sample IDs: 1832801, 1832804, 1832805, 1832806, 1832807

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71789

Included Lab Sample IDs: 1832801

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	95.9	98.9	P/P	90 - 110
Sulfate	98.1	98.9	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A71798

Included Lab Sample IDs: 1832804, 1832807

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A71798

Included Lab Sample IDs: 1832807

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71807

Included Lab Sample IDs: 1832802, 1832808, 1832809, 1832810, 1832811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.9	P/P	90 - 110
Ammonia-N	99.8	102	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A71811

Included Lab Sample IDs: 1832801, 1832805, 1832806

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	101	P/P	90 - 110
Total Alkalinity	104	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A71811

Included Lab Sample IDs: 1832801, 1832805, 1832806

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71854

Included Lab Sample IDs: 1832809

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	93.0	92.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A71875

Included Lab Sample IDs: 1832804

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

Reference Method: SM 5310 B-00

Run ID: A71877

Included Lab Sample IDs: 1832802, 1832808, 1832809, 1832810

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71889

Included Lab Sample IDs: 1832808, 1832809, 1832811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.9	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A71891
Included Lab Sample IDs: 1832802, 1832810

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A71894
Included Lab Sample IDs: 1832808, 1832811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110
NO2NO3-N	102	101	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A71905
Included Lab Sample IDs: 1832811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	102	97.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A71979
Included Lab Sample IDs: 1832802, 1832808, 1832809, 1832810, 1832811

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.5	P/P	90 - 110
Total-P	99.2	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A71983
Included Lab Sample IDs: 1832802

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72060
Included Lab Sample IDs: 1832810

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	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				0.905	
EPA 300.0 Rev. 2.1	Chloride	99.2	98.7 99.7		0.622	

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 300.0 Rev. 2.1	Sulfate	97.7	91.3	96.5	2.54	
EPA 350.1 Rev. 2.0	Ammonia-N	103	108	107		0.461
	Ammonia-N	104	104	104		0.0578
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	94.7	108		10.6
	Kjeldahl Nitrogen	93.0	95.9	89.6		4.51
EPA 353.2 Rev. 2.0	NO2NO3-N	97.5	91.6	92.6		0.909
	NO2NO3-N	101	104	104		0.0
	NO2NO3-N	105	106	106		0.943
	NO2NO3-N	106	106			1.10
EPA 365.1 Rev. 2.0	Total-P	94.6	95.0	95.6		0.718
	Total-P	95.7	95.2	94.9		0.320
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	97.9	98.0		0.0894
	O-Phosphate-P	99.5	99.1	100		0.904
SM 2120 B	Color (true)				1.43	
SM 2320 B-97	Total Alkalinity	103			0.725	
	Total Alkalinity	103			0.177	
SM 2540 C-97	TDS				3.69	
SM 4500 F-C-97	Fluoride	98.8	96.9	99.1		1.45
	Fluoride	99.2	98.6	98.0		0.525
	Fluoride	97.0	99.1	101		0.946
SM 5310 B-00	Organic Carbon	103	101	102		0.645
	Organic Carbon	99.0	88.4	93.6		4.99

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1832801, 1832804, 1832805, 1832806, 1832807
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1832801
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1832801
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1832802, 1832808, 1832809, 1832810, 1832811
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1832802, 1832808, 1832809, 1832810, 1832811
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1832802, 1832808, 1832809, 1832810, 1832811
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1832802, 1832808, 1832809, 1832810, 1832811
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1832803, 1832812, 1832813, 1832814, 1832815
SM 2120 B / E31780	True Color measured at 450 nm	1832801
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1832801, 1832804, 1832805, 1832806, 1832807
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1832801
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1832801, 1832804, 1832805, 1832806, 1832807
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1832801, 1832804, 1832805, 1832806, 1832807
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1832802, 1832808, 1832809, 1832810, 1832811

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	09/20/2016			09/20/2016 17:03	Blanca Fach	1832801, 1832804, 1832805, 1832806, 1832807
EPA 300.0 Rev. 2.1	09/20/2016			09/24/2016	Ping Hua	1832801
EPA 350.1 Rev. 2.0	09/20/2016			09/22/2016	Sofia Elnemr	1832802, 1832808, 1832809, 1832810, 1832811
EPA 351.2 Rev. 2.0	09/20/2016	09/26/2016	Adrian Shelby	09/27/2016	Christopher Armour	1832808, 1832809, 1832811
	09/20/2016	09/27/2016	Adrian Shelby	09/28/2016	Christopher Armour	1832802, 1832810
EPA 353.2 Rev. 2.0	09/20/2016			09/27/2016	Peter D. Kaus	1832809
	09/20/2016			09/28/2016	Beverly Y. Sanders	1832808, 1832811
	09/20/2016			10/03/2016	Beverly Y. Sanders	1832802
	09/20/2016			10/06/2016	Peter D. Kaus	1832810
EPA 365.1 Rev. 2.0	09/20/2016	09/29/2016	Vijayalakshmi Reddy	10/03/2016	Lipi Saha	1832802, 1832808, 1832809, 1832810, 1832811
EPA 365.1 Rev. 2.0 dissolved	09/20/2016			09/20/2016 15:08	Julia Storbeck	1832803
	09/20/2016			09/20/2016 15:16	Julia Storbeck	1832812
	09/20/2016			09/20/2016 15:34	Julia Storbeck	1832813
	09/20/2016			09/20/2016 15:35	Julia Storbeck	1832814
	09/20/2016			09/20/2016 15:40	Julia Storbeck	1832815
SM 2120 B	09/20/2016			09/20/2016 17:14	Julie Michelle Frank	1832801
SM 2320 B-97	09/20/2016			09/23/2016	Dale L. Simmons	1832804, 1832807
	09/20/2016			09/24/2016	Dale L. Simmons	1832801, 1832805, 1832806
SM 2540 C-97	09/20/2016			09/22/2016	Yijie Li	1832801
SM 2540 D-97	09/20/2016			09/22/2016	Yijie Li	1832801, 1832804, 1832805, 1832806, 1832807
SM 4500 F-C-97	09/20/2016			09/23/2016	Dale L. Simmons	1832807
	09/20/2016			09/24/2016	Dale L. Simmons	1832801, 1832805, 1832806
	09/20/2016			09/26/2016	Dale L. Simmons	1832804
SM 5310 B-00	09/20/2016			09/27/2016	Sofia Elnemr	1832802, 1832808, 1832809, 1832810
	09/20/2016			09/28/2016	Julie Michelle Frank	1832811