Chemical Analysis Report

NW-DIST-2016-08-19-01

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

Event Description: **WBID 872A 531 624 291 494 542 478A**
Request ID: **RQ-2016-08-15-42**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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160 W Government St
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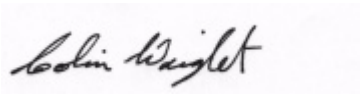
Certified by: Colin Wright, Environmental Administrator

Date Certified: 09-SEP-2016 15:00



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: Bridge Creek @ Bridge Creek Road **Collection Date/Time: 08/18/2016 11:00**

Field ID: G5NW0071 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1825069	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P310116	
	EPA 300.0 Rev. 2.1	Chloride	5.6		mg Cl/L	P310539	
		Sulfate	2.1		mg SO4/L	P310542	
	SM 2120 B	Color (true)	410		PCU	P310049	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P310236	
	SM 2540 C-97	TDS	54		mg/L	P310560	
	SM 2540 D-97	TSS	4	I	mg/L	P310532	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P310241	
1825075	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P310060	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P310124	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.023		mg N/L	P310476	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P310105	
	SM 5310 B-00	Organic Carbon	34		mg C/L	P310349	
1825081	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.005	I	mg P/L	P310033	

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: Eight Mile Creek near Bankhead Drive **Collection Date/Time: 08/18/2016 11:40**

Field ID: G5NW0056 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1825070	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P310116	
	EPA 300.0 Rev. 2.1	Chloride	6.4		mg Cl/L	P310539	
		Sulfate	2.3		mg SO4/L	P310542	
	SM 2120 B	Color (true)	77		PCU	P310049	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P310442	
	SM 2540 C-97	TDS	58		mg/L	P310560	
	SM 2540 D-97	TSS	2	I	mg/L	P310532	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P310241	
1825076	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P310060	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P310125	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P310476	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P310105	
	SM 5310 B-00	Organic Carbon	7.8		mg C/L	P310349	
1825082	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310033	

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: Ten Mile Creek at Hwy 297 (also BFA) **Collection Date/Time: 08/18/2016 12:10**

Field ID: G5NW0051 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1825071	EPA 180.1 Rev. 2.0	Turbidity	4.4		NTU	P310116	
	EPA 300.0 Rev. 2.1	Chloride	6.0		mg Cl/L	P310539	
		Sulfate	1.4		mg SO4/L	P310542	

Field ID: G5NW0051 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1825071	SM 2120 B	Color (true)	110		PCU	P310049	
	SM 2320 B-97	Total Alkalinity	24		mg CaCO3/L	P310442	
	SM 2540 C-97	TDS	52		mg/L	P310560	
	SM 2540 D-97	TSS	4	I	mg/L	P310532	
	SM 4500 F-C-97	Fluoride	0.037	I	mg F/L	P310241	
1825077	EPA 350.1 Rev. 2.0	Ammonia-N	0.042		mg N/L	P310060	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.56		mg N/L	P310125	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.073	J	mg N/L	P310477	MS
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P310105	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P310349	
1825083	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310033	

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: Refer to the narrative for an explanation of QC Codes.

Sample Location: Clear Creek @ Tecumseh Trail **Collection Date/Time: 08/18/2016 12:50**

Field ID: G4NW0358 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1825072	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P310116	
	EPA 300.0 Rev. 2.1	Chloride	8.1		mg Cl/L	P310539	
		Sulfate	3.9		mg SO4/L	P310542	
	SM 2120 B	Color (true)	45	A	PCU	P310050	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P310236	
	SM 2540 C-97	TDS	50		mg/L	P310560	
	SM 2540 D-97	TSS	2	I	mg/L	P310532	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P310241	
1825078	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P310060	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P310125	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.24		mg N/L	P310477	MS
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P310105	
	SM 5310 B-00	Organic Carbon	3.8		mg C/L	P310349	
1825084	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310033	

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: Muscogee Creek Below CR99 Below Champion Fill **Collection Date/Time: 08/18/2016 13:30**

Field ID: G5NW0019 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1825073	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P310116	
	EPA 300.0 Rev. 2.1	Chloride	4.4		mg Cl/L	P310539	
		Sulfate	1.1		mg SO4/L	P310542	
	SM 2120 B	Color (true)	90		PCU	P310050	
	SM 2320 B-97	Total Alkalinity	0.74	I	mg CaCO3/L	P310236	

Field ID: G5NW0019 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1825073	SM 2540 C-97	TDS	30		mg/L	P310560	
	SM 2540 D-97	TSS	2	I	mg/L	P310532	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P310241	
1825079	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P310060	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P310125	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P310477	MS
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P310105	
	SM 5310 B-00	Organic Carbon	8.4		mg C/L	P310349	
1825085	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310033	

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: Jacks Branch above Hwy 97 **Collection Date/Time: 08/18/2016 14:00**

Field ID: G5NW0037 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1825074	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P310116	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P310539	
		Sulfate	0.68		mg SO4/L	P310542	
	SM 2120 B	Color (true)	93		PCU	P310050	
	SM 2320 B-97	Total Alkalinity	3.0		mg CaCO3/L	P310236	
	SM 2540 C-97	TDS	27		mg/L	P310560	
	SM 2540 D-97	TSS	2	I	mg/L	P310532	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P310241	
1825080	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P310060	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P310125	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.072		mg N/L	P310477	MS
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P310105	
	SM 5310 B-00	Organic Carbon	8.2		mg C/L	P310349	
1825086	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310033	

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: P310116

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310539

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310542

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310060

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310124

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310125

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310476

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310477

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310105

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310033

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

Reference Method: SM 2120 B
Batch ID: P310049

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2120 B
Batch ID: P310050

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P310236

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

Reference Method: SM 2320 B-97
Batch ID: P310442

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

Reference Method: SM 2540 C-97
Batch ID: P310560

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P310532

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P310241

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P310349

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: P310539

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: P310542

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: P310542

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310060

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310124

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310125

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310476

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: P310477

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310105

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: P310033

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

Reference Method: SM 2320 B-97
Batch ID: P310236

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P310442

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

Reference Method: SM 4500 F-C-97
Batch ID: P310241

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.7		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P310349

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310539

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1824683	Chloride	100		P	90 - 110
1824684	Chloride	97.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310542

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1824683	Sulfate	101		P	90 - 110
1824684	Sulfate	98.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310060

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825075	Ammonia-N	105	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310124

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1824772	Kjeldahl Nitrogen	88.8	89.0	F/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310125

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825078	Kjeldahl Nitrogen	96.8	95.6	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310476

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1824933	NO2NO3-N	92.7	94.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825077	NO2NO3-N	91.4	89.4	P/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310105

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825065	Total-P	103	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310033

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825082	O-Phosphate-P	99.5	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P310241

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1824689	Fluoride	98.8	99.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P310349

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825059	Organic Carbon	99.8	98.2	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P310116

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1824985	Turbidity	1.44	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310539

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1824683	Chloride	0.0804	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310542

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1824683	Sulfate	1.64	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310060

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825075	Ammonia-N	0.515	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310124

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1824772	Kjeldahl Nitrogen	0.158	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310125

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825078	Kjeldahl Nitrogen	1.02	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310476

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1824933	NO2NO3-N	1.51	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825077	NO2NO3-N	1.57	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310105

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825065	Total-P	3.39	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310033

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825082	O-Phosphate-P	0.801	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P310049

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825058	Color (true)	4.54	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P310050

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825072	Color (true)	0.746	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P310236

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1824689	Total Alkalinity	0.233	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P310442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826501	Total Alkalinity	0.403	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P310560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825058	TDS	4.90	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P310241

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1824689	Fluoride	0.474	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P310349

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825059	Organic Carbon	0.842	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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71234
Included Lab Sample IDs: 1825081, 1825082, 1825083, 1825084, 1825085, 1825086

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	99.4	P/P	90 - 110
O-Phosphate-P	99.1	101	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A71237
Included Lab Sample IDs: 1825069, 1825070, 1825071, 1825072, 1825073, 1825074

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.2	98.5	P/P	90 - 115
Color (true)	98.5	97.2	P/P	90 - 115
Color (true)	98.6	98.2	P/P	90 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A71238
Included Lab Sample IDs: 1825075, 1825076, 1825077, 1825078, 1825079, 1825080

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A71253
Included Lab Sample IDs: 1825069, 1825070, 1825071, 1825072, 1825073, 1825074

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A71286
Included Lab Sample IDs: 1825075, 1825076, 1825077, 1825078, 1825079, 1825080

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	107	P/P	90 - 110
Kjeldahl Nitrogen	106	102	P/P	90 - 110
Kjeldahl Nitrogen	107	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A71290
Included Lab Sample IDs: 1825075, 1825076, 1825077, 1825078, 1825079, 1825080

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	96.8	99.8	P/P	90 - 110
Total-P	99.8	99.0	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A71291
Included Lab Sample IDs: 1825069, 1825072, 1825073, 1825074

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 4500 F-C-97
Run ID: A71291
Included Lab Sample IDs: 1825069, 1825070, 1825071, 1825072, 1825073, 1825074

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

Reference Method: SM 5310 B-00
Run ID: A71324
Included Lab Sample IDs: 1825075, 1825076, 1825077, 1825078, 1825079, 1825080

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A71337
Included Lab Sample IDs: 1825069, 1825070, 1825071, 1825072, 1825073, 1825074

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.7	102	P/P	90 - 110
Sulfate	97.2	101	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A71361
Included Lab Sample IDs: 1825070, 1825071

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A71378
Included Lab Sample IDs: 1825075, 1825076, 1825077, 1825078, 1825079, 1825080

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	99.5	P/P	90 - 110
NO2NO3-N	99.5	99.0	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					1.44	
EPA 300.0 Rev. 2.1	Chloride	99.7	100	97.8		0.0804	
	Sulfate	99.0	101	98.5		1.64	
EPA 350.1 Rev. 2.0	Ammonia-N	102	105	106			0.515
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.9	88.8	89.0			0.158
	Kjeldahl Nitrogen	104	96.8	95.6			1.02
EPA 353.2 Rev. 2.0	NO2NO3-N	101	92.7	94.7			1.51
	NO2NO3-N	102	91.4	89.4			1.57
EPA 365.1 Rev. 2.0	Total-P	99.8	103	99.4			3.39

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision		
					LCS	SMP	MS
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	99.5	100			0.801
SM 2120 B	Color (true)					4.54	
	Color (true)					0.746	
SM 2320 B-97	Total Alkalinity	103				0.233	
	Total Alkalinity	103				0.403	
SM 2540 C-97	TDS					4.90	
SM 4500 F-C-97	Fluoride	99.7	98.8	99.4			0.474
SM 5310 B-00	Organic Carbon	100	99.8	98.2			0.842

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1825069, 1825070, 1825071, 1825072, 1825073, 1825074
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1825069, 1825070, 1825071, 1825072, 1825073, 1825074
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1825069, 1825070, 1825071, 1825072, 1825073, 1825074
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1825075, 1825076, 1825077, 1825078, 1825079, 1825080
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1825075, 1825076, 1825077, 1825078, 1825079, 1825080
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1825075, 1825076, 1825077, 1825078, 1825079, 1825080
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1825075, 1825076, 1825077, 1825078, 1825079, 1825080
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1825081, 1825082, 1825083, 1825084, 1825085, 1825086
SM 2120 B / E31780	True Color measured at 450 nm	1825069, 1825070, 1825071, 1825072, 1825073, 1825074
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1825069, 1825070, 1825071, 1825072, 1825073, 1825074
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1825069, 1825070, 1825071, 1825072, 1825073, 1825074
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1825069, 1825070, 1825071, 1825072, 1825073, 1825074
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1825069, 1825070, 1825071, 1825072, 1825073, 1825074
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1825075, 1825076, 1825077, 1825078, 1825079, 1825080

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	08/19/2016			08/19/2016 16:16	Blanca Fach	1825069, 1825070, 1825071, 1825072, 1825073, 1825074
EPA 300.0 Rev. 2.1	08/19/2016			08/26/2016	Ping Hua	1825069, 1825070, 1825071, 1825072, 1825073, 1825074
EPA 350.1 Rev. 2.0	08/19/2016			08/21/2016	Julie Michelle Frank	1825075, 1825076, 1825077, 1825078, 1825079, 1825080
EPA 351.2 Rev. 2.0	08/19/2016	08/23/2016	Sofia Elnemr	08/24/2016	Christopher Armour	1825075, 1825076, 1825077, 1825078, 1825079, 1825080
EPA 353.2 Rev. 2.0	08/19/2016			08/29/2016	Beverly Y. Sanders	1825075, 1825076, 1825077, 1825078, 1825079, 1825080
EPA 365.1 Rev. 2.0	08/19/2016	08/22/2016	Vijayalakshmi Reddy	08/24/2016	Lipi Saha	1825075, 1825076, 1825077, 1825078, 1825079, 1825080
EPA 365.1 Rev. 2.0 dissolved	08/19/2016			08/19/2016 14:30	Julia Storbeck	1825082
	08/19/2016			08/19/2016 14:45	Julia Storbeck	1825081
	08/19/2016			08/19/2016 14:46	Julia Storbeck	1825083
	08/19/2016			08/19/2016 14:47	Julia Storbeck	1825084, 1825085
	08/19/2016			08/19/2016 14:48	Julia Storbeck	1825086
SM 2120 B	08/19/2016			08/19/2016 16:28	Rochelle Y Jackson	1825070, 1825071
	08/19/2016			08/19/2016 16:32	Rochelle Y Jackson	1825072
	08/19/2016			08/19/2016 16:33	Rochelle Y Jackson	1825073
	08/19/2016			08/19/2016 16:34	Rochelle Y Jackson	1825074
	08/19/2016			08/19/2016 16:41	Rochelle Y Jackson	1825069
SM 2320 B-97	08/19/2016			08/24/2016	Dale L. Simmons	1825069, 1825072, 1825073, 1825074
	08/19/2016			08/27/2016	Dale L. Simmons	1825070, 1825071
SM 2540 C-97	08/19/2016			08/24/2016	Yijie Li	1825069, 1825070, 1825071, 1825072, 1825073, 1825074
SM 2540 D-97	08/19/2016			08/24/2016	Yijie Li	1825069, 1825070, 1825071, 1825072, 1825073, 1825074
SM 4500 F-C-97	08/19/2016			08/24/2016	Dale L. Simmons	1825069, 1825070, 1825071, 1825072, 1825073, 1825074
SM 5310 B-00	08/19/2016			08/25/2016	Sofia Elnemr	1825075, 1825076, 1825077, 1825078, 1825079, 1825080