

Chemical Analysis Report

NW-DIST-2016-09-08-01

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

Event Description: **WBID135 111 462C**

Request ID: **RQ-2016-09-05-72**

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: Colin Wright, Environmental Administrator

Date Certified: 29-SEP-2016 15:52

A handwritten signature in black ink, appearing to read "Colin Wright", is written on a light-colored rectangular background.

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: MOORE CR ABOVE MINERAL SPRINGS RD. SR **Collection Date/Time: 09/07/2016 11:45**
CO

Field ID: G4NW0355

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1829467	EPA 180.1 Rev. 2.0	Turbidity	4.4	A	NTU	P310871	
	EPA 300.0 Rev. 2.1	Chloride	6.3		mg Cl/L	P311400	
		Sulfate	0.62		mg SO4/L	P311406	
	SM 2120 B	Color (true)	16		PCU	P310844	
	SM 2320 B-97	Total Alkalinity	3.7		mg CaCO3/L	P311189	
	SM 2540 C-97	TDS	33		mg/L	P311635	
	SM 2540 D-97	TSS	12		mg/L	P311571	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P311194	
1829471	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P311079	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P311263	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.2		mg N/L	P311278	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P311223	
	SM 5310 B-00	Organic Carbon	1.8		mg C/L	P311105	
1829475	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310835	

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: MOORE CR SR 197

Collection Date/Time: 09/07/2016 12:15

Field ID: G4NW0318

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1829468	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P310871	
	EPA 300.0 Rev. 2.1	Chloride	6.9		mg Cl/L	P311400	
		Sulfate	0.32	I	mg SO4/L	P311406	
	SM 2120 B	Color (true)	12		PCU	P310844	
	SM 2320 B-97	Total Alkalinity	6.1		mg CaCO3/L	P311189	
	SM 2540 C-97	TDS	42		mg/L	P311635	
	SM 2540 D-97	TSS	6	I	mg/L	P311571	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P311194	
1829472	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P311079	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.13	I	mg N/L	P311263	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.3		mg N/L	P311278	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P311223	
	SM 5310 B-00	Organic Carbon	1.6		mg C/L	P311105	
1829476	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310835	

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: BOGGY CREEK AT SR 97A

Collection Date/Time: 09/07/2016 13:20

Field ID: G5NW0009

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1829469	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P310871	
	EPA 300.0 Rev. 2.1	Chloride	5.5		mg Cl/L	P311400	

Field ID: G5NW0009

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1829469	EPA 300.0 Rev. 2.1	Sulfate	0.67		mg SO4/L	P311406	
	SM 2120 B	Color (true)	30		PCU	P310844	
	SM 2320 B-97	Total Alkalinity	2.2	I	mg CaCO3/L	P311257	
	SM 2540 C-97	TDS	30		mg/L	P311635	
	SM 2540 D-97	TSS	2	I	mg/L	P311571	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P311260	
1829473	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P311079	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P311263	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.83		mg N/L	P311278	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P311224	
	SM 5310 B-00	Organic Carbon	3.3		mg C/L	P311105	
1829477	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P310835	

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: PERDIDIO RIVER AT RUBY'S LANDING HWY 90 Collection Date/Time: 09/07/2016 14:15

Field ID: G5NW0033

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1829470	EPA 180.1 Rev. 2.0	Turbidity	5.4		NTU	P310871	
	EPA 300.0 Rev. 2.1	Chloride	6.8		mg Cl/L	P311400	
		Sulfate	1.6		mg SO4/L	P311406	
		Color (true)	66	A	PCU	P310844	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P311257	
	SM 2540 C-97	TDS	36		mg/L	P311635	
	SM 2540 D-97	TSS	6	I	mg/L	P311571	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P311260	
1829474	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P311079	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P311263	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P311279	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P311224	
	SM 5310 B-00	Organic Carbon	7.9		mg C/L	P311105	
1829478	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P310835	

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: P310871

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311400

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311406

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311079

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311263

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311278

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311279

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311223

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311224

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310835

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: P310844

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P311189

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

Reference Method: SM 2320 B-97
Batch ID: P311257

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

Reference Method: SM 2540 C-97
Batch ID: P311635

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P311571

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P311194

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P311260

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P311105

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: P311400

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: P311400

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311406

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311079

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311263

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311278

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311279

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311223

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: P311224

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310835

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P311189

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P311257

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P311194

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P311260

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.7		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P311105

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	104		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311400

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829457	Chloride	97.9		P	90 - 110
1829585	Chloride	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311406

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829457	Sulfate	98.7		P	90 - 110
1829585	Sulfate	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311079

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829471	Ammonia-N	104	104	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P311263

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829517	Kjeldahl Nitrogen	96.9	84.2	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P311278

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829427	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P311279

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829474	NO2NO3-N	99.0	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P311223

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829419	Total-P	102	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P311224

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829473	Total-P	95.3	95.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P310835

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829475	O-Phosphate-P	99.9	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Batch ID: P311194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829410	Fluoride	96.4	97.0	P/P	91 - 105

Reference Method: SM 4500 F-C-97
 Batch ID: P311260

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1830470	Fluoride	100	100	P/P	91 - 105

Reference Method: SM 5310 B-00
 Batch ID: P311105

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829427	Organic Carbon	105	104	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P310871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829467	Turbidity	2.75	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311400

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829457	Chloride	0.357	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P311406

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829457	Sulfate	0.285	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P311079

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829471	Ammonia-N	0.624	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P311263

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829517	Kjeldahl Nitrogen	9.69	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311278

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829427	NO2NO3-N	0.265	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P311279

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829474	NO2NO3-N	1.09	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P311223

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829419	Total-P	2.98	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P311224

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829473	Total-P	0.633	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P310835

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829475	O-Phosphate-P	1.19	Spike	P	0 - 20

Reference Method: SM 2120 B

Batch ID: P310844

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829470	Color (true)	2.15	Sample	P	0 - 20

Reference Method: SM 2320 B-97

Batch ID: P311189

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829410	Total Alkalinity	1.96	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97

Batch ID: P311257

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1830470	Total Alkalinity	0.137	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97

Batch ID: P311635

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829522	TDS	1.13	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97

Batch ID: P311194

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829410	Fluoride	0.470	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97

Batch ID: P311260

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1830470	Fluoride	0.0	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P311105

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829427	Organic Carbon	0.661	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71491
Included Lab Sample IDs: 1829475, 1829476, 1829477, 1829478

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.9	99.0	P/P	90 - 110
O-Phosphate-P	98.9	98.3	P/P	90 - 110
O-Phosphate-P	99.7	100	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A71492
Included Lab Sample IDs: 1829467, 1829468, 1829469, 1829470

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.4	96.1	P/P	85 - 115
Color (true)	96.1	97.4	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A71499
Included Lab Sample IDs: 1829467, 1829468, 1829469, 1829470

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.0	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A71576
Included Lab Sample IDs: 1829467, 1829468, 1829469, 1829470

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

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A71596
Included Lab Sample IDs: 1829471, 1829472, 1829473, 1829474

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A71605

Included Lab Sample IDs: 1829471, 1829472, 1829473, 1829474

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	106	105	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A71639

Included Lab Sample IDs: 1829467, 1829468

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

Reference Method: SM 4500 F-C-97

Run ID: A71639

Included Lab Sample IDs: 1829467, 1829468

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71651

Included Lab Sample IDs: 1829474

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A71657

Included Lab Sample IDs: 1829469, 1829470

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

Reference Method: SM 4500 F-C-97

Run ID: A71657

Included Lab Sample IDs: 1829469, 1829470

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	102	P/P	90 - 110
Fluoride	101	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71674

Included Lab Sample IDs: 1829471, 1829472, 1829473

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71679

Included Lab Sample IDs: 1829473, 1829474

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A71679
Included Lab Sample IDs: 1829473, 1829474

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A71709
Included Lab Sample IDs: 1829471, 1829472

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A71711
Included Lab Sample IDs: 1829471, 1829472, 1829473, 1829474

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	97.7	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				2.75	
EPA 300.0 Rev. 2.1	Chloride	101	97.9 99.2		0.357	
	Sulfate	99.6	98.7 99.2		0.285	
EPA 350.1 Rev. 2.0	Ammonia-N	105	104 104			0.624
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.8	96.9 84.2			9.69
EPA 353.2 Rev. 2.0	NO2NO3-N	104	106 106			0.265
	NO2NO3-N	105	99.0 101			1.09
EPA 365.1 Rev. 2.0	Total-P	94.6	102 97.1			2.98
	Total-P	99.3	95.3 95.9			0.633
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	99.9 101			1.19
SM 2120 B	Color (true)				2.15	
SM 2320 B-97	Total Alkalinity	104			1.96	
	Total Alkalinity	104			0.137	
SM 2540 C-97	TDS				1.13	
SM 4500 F-C-97	Fluoride	99.8	96.4 97.0			0.470
	Fluoride	98.7	100 100			0.0
SM 5310 B-00	Organic Carbon	104	105 104			0.661

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1829467, 1829468, 1829469, 1829470
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1829467, 1829468, 1829469, 1829470

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1829467, 1829468, 1829469, 1829470
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1829471, 1829472, 1829473, 1829474
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1829471, 1829472, 1829473, 1829474
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1829471, 1829472, 1829473, 1829474
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1829471, 1829472, 1829473, 1829474
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1829475, 1829476, 1829477, 1829478
SM 2120 B / E31780	True Color measured at 450 nm	1829467, 1829468, 1829469, 1829470
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1829467, 1829468, 1829469, 1829470
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1829467, 1829468, 1829469, 1829470
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1829467, 1829468, 1829469, 1829470
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1829467, 1829468, 1829469, 1829470
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1829471, 1829472, 1829473, 1829474

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	09/08/2016			09/08/2016 17:32	Sima Feizi	1829467, 1829468, 1829469, 1829470
EPA 300.0 Rev. 2.1	09/08/2016			09/16/2016	Ping Hua	1829467, 1829468, 1829469, 1829470
EPA 350.1 Rev. 2.0	09/08/2016			09/08/2016	Joseph Suarez	1829471, 1829472, 1829473, 1829474
EPA 351.2 Rev. 2.0	09/08/2016	09/16/2016	Adrian Shelby	09/19/2016	Virginia P. Brown	1829471, 1829472, 1829473, 1829474
EPA 353.2 Rev. 2.0	09/08/2016			09/15/2016	Peter D. Kaus	1829471, 1829472, 1829473, 1829474
EPA 365.1 Rev. 2.0	09/08/2016	09/15/2016	Vijayalakshmi Reddy	09/16/2016	Lipi Saha	1829471, 1829472, 1829473, 1829474
EPA 365.1 Rev. 2.0 dissolved	09/08/2016			09/08/2016 14:57	Julia Storbeck	1829475
	09/08/2016			09/08/2016 15:36	Julia Storbeck	1829477
	09/08/2016			09/08/2016 15:37	Julia Storbeck	1829478
	09/08/2016			09/08/2016 15:58	Julia Storbeck	1829476
	09/08/2016			09/08/2016 18:46	Julie Michelle Frank	1829467
SM 2120 B	09/08/2016			09/08/2016 18:47	Julie Michelle Frank	1829468
	09/08/2016			09/08/2016 18:48	Julie Michelle Frank	1829469
	09/08/2016			09/08/2016 18:51	Julie Michelle Frank	1829470
SM 2320 B-97	09/08/2016			09/14/2016	Dale L. Simmons	1829467, 1829468
	09/08/2016			09/15/2016	Dale L. Simmons	1829469, 1829470
SM 2540 C-97	09/08/2016			09/12/2016	Sima Feizi	1829467, 1829468, 1829469, 1829470
SM 2540 D-97	09/08/2016			09/12/2016	Sima Feizi	1829467, 1829468, 1829469, 1829470
SM 4500 F-C-97	09/08/2016			09/14/2016	Dale L. Simmons	1829467, 1829468
	09/08/2016			09/15/2016	Dale L. Simmons	1829469, 1829470
SM 5310 B-00	09/08/2016			09/14/2016	Sofia Elnemr	1829471, 1829472, 1829473, 1829474