

Chemical Analysis Report

WQAP-2016-08-22-02

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

Event Description: **Tanyard Branch, Little River and Chicken Branch**
Request ID: **RQ-2016-08-22-24**
Customer: **WQAP**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
MS #3560
Tallahassee, FL 32399-2400
Attn: Katrina Sanders

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Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 12-SEP-2016 14:11

A handwritten signature in black ink, appearing to read "Timothy Fitzpatrick", with a stylized flourish at the end.

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: Chicken Branch @ Old Plank Rd.

Collection Date/Time: 08/22/2016 08:00

Field ID: G1WA0031_08222016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1825505	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P310157	
	EPA 300.0 Rev. 2.1	Chloride	5.6		mg Cl/L	P310540	
	SM 2120 B	Color (true)	34		PCU	P310167	
	SM 2320 B-97	Total Alkalinity	124		mg CaCO3/L	P310287	
	SM 2540 C-97	TDS	170	A	mg/L	P310625	
	SM 2540 D-97	TSS	3	I	mg/L	P310574	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P310297	
1825509	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P310169	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P310181	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.21		mg N/L	P310477	MS
	EPA 365.1 Rev. 2.0	Total-P	0.048		mg P/L	P310212	
	SM 5310 B-00	Organic Carbon	3.5		mg C/L	P310349	
1825513	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P310151	

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: Killearn Chain of Lakes Outlet @ Velda Dairy Rd.

Collection Date/Time: 08/22/2016 09:30

Field ID: G1WA0015_08222016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1825506	EPA 180.1 Rev. 2.0	Turbidity	4.3	A	NTU	P310157	
	EPA 300.0 Rev. 2.1	Chloride	4.9		mg Cl/L	P310540	
	SM 2120 B	Color (true)	53	A	PCU	P310167	
	SM 2320 B-97	Total Alkalinity	22		mg CaCO3/L	P310287	
	SM 2540 C-97	TDS	31		mg/L	P310625	
	SM 2540 D-97	TSS	5	I	mg/L	P310574	
	SM 4500 F-C-97	Fluoride	0.061	I	mg F/L	P310297	
1825510	EPA 350.1 Rev. 2.0	Ammonia-N	0.044		mg N/L	P310169	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P310181	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.019		mg N/L	P310477	MS
	EPA 365.1 Rev. 2.0	Total-P	0.084		mg P/L	P310212	
	SM 5310 B-00	Organic Carbon	4.9		mg C/L	P310349	
1825514	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.030		mg P/L	P310151	

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: Tanyard Branch 100 Meters Upstream of Ralph Strong Rd.

Collection Date/Time: 08/22/2016 10:35

Field ID: G1WA0005_08222016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1825507	EPA 180.1 Rev. 2.0	Turbidity	13		NTU	P310157	
	EPA 300.0 Rev. 2.1	Chloride	16	A	mg Cl/L	P310540	
	SM 2120 B	Color (true)	80		PCU	P310167	

Field ID: G1WA0005_08222016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1825507	SM 2320 B-97	Total Alkalinity	45		mg CaCO3/L	P310287	
	SM 2540 C-97	TDS	96		mg/L	P310625	
	SM 2540 D-97	TSS	8	I	mg/L	P310574	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P310297	
1825511	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P310169	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.46		mg N/L	P310181	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P310478	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P310212	
	SM 5310 B-00	Organic Carbon	5.0		mg C/L	P310349	
1825515	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.072		mg P/L	P310151	

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: Little River 100 Meters Upstream of SR 12

Collection Date/Time: 08/22/2016 13:05

Field ID: G1WA0020_08222016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1825508	EPA 180.1 Rev. 2.0	Turbidity	38		NTU	P310157	
	EPA 300.0 Rev. 2.1	Chloride	5.9		mg Cl/L	P310540	
	SM 2120 B	Color (true)	99	A	PCU	P310165	
	SM 2320 B-97	Total Alkalinity	21		mg CaCO3/L	P310287	
	SM 2540 C-97	TDS	82		mg/L	P310625	
	SM 2540 D-97	TSS	20		mg/L	P310574	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P310297	
1825512	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P310169	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P310181	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.2		mg N/L	P310478	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P310212	
	SM 5310 B-00	Organic Carbon	7.0		mg C/L	P310349	
1825516	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.047		mg P/L	P310151	

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: P310157

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P310540

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310169

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310181

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	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 353.2 Rev. 2.0
Batch ID: P310478

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310212

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310151

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

Reference Method: SM 2120 B
Batch ID: P310165

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P310167

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P310287

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P310625

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P310574

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P310297

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: P310540

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310169

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310181

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.9		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 353.2 Rev. 2.0
Batch ID: P310478

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310478

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: P310212

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310151

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.1		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P310287

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

Reference Method: SM 4500 F-C-97
Batch ID: P310297

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		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: P310540

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825507	Chloride	96.3		P	90 - 110
1825508	Chloride	98.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310169

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825509	Ammonia-N	99.8	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P310181

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825510	Kjeldahl Nitrogen	100	96.7	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 353.2 Rev. 2.0
 Batch ID: P310478

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825511	NO2NO3-N	90.0	90.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P310212

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825234	Total-P	104	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P310151

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825514	O-Phosphate-P	98.1	98.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
 Batch ID: P310297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1825232	Fluoride	99.1	99.7	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: P310157

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825506	Turbidity	2.33	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310540

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825507	Chloride	0.145	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310169

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825509	Ammonia-N	0.974	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310181

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825510	Kjeldahl Nitrogen	2.50	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 353.2 Rev. 2.0
Batch ID: P310478

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825511	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310212

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825234	Total-P	3.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310151

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825514	O-Phosphate-P	0.233	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P310165

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825508	Color (true)	5.29	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P310167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825506	Color (true)	1.87	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P310287

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825232	Total Alkalinity	0.269	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P310625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825505	TDS	2.35	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P310297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1825232	Fluoride	0.467	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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71271
Included Lab Sample IDs: 1825513, 1825514, 1825515, 1825516

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A71272
Included Lab Sample IDs: 1825505, 1825506, 1825507, 1825508

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A71272

Included Lab Sample IDs: 1825505, 1825506, 1825507, 1825508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A71273

Included Lab Sample IDs: 1825508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.8	101	P/P	90 - 115

Reference Method: SM 2120 B

Run ID: A71274

Included Lab Sample IDs: 1825505, 1825506, 1825507

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.4	99.5	P/P	90 - 115

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71275

Included Lab Sample IDs: 1825509, 1825510, 1825511, 1825512

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	101	P/P	90 - 110
Ammonia-N	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71308

Included Lab Sample IDs: 1825510, 1825511, 1825512

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

Reference Method: SM 2320 B-97

Run ID: A71312

Included Lab Sample IDs: 1825505, 1825506, 1825507, 1825508

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

Reference Method: SM 4500 F-C-97

Run ID: A71312

Included Lab Sample IDs: 1825505, 1825506, 1825507, 1825508

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71321

Included Lab Sample IDs: 1825509

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	95.5	96.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00

Run ID: A71324

Included Lab Sample IDs: 1825509, 1825510, 1825511, 1825512

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71337

Included Lab Sample IDs: 1825505, 1825506, 1825507, 1825508

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71347

Included Lab Sample IDs: 1825509, 1825510, 1825511, 1825512

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.0	96.6	P/P	90 - 110
Kjeldahl Nitrogen	99.8	98.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71378

Included Lab Sample IDs: 1825509, 1825510, 1825511, 1825512

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	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	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				2.33	
EPA 300.0 Rev. 2.1	Chloride	96.4	96.3 98.0		0.145	
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	99.8 101			0.974
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.9	100 96.7			2.50
EPA 353.2 Rev. 2.0	NO2NO3-N	102	91.4 89.4			1.57
	NO2NO3-N	106	90.0 90.0			0.0
EPA 365.1 Rev. 2.0	Total-P	104	104 100			3.16
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.1	98.1 98.4			0.233
SM 2120 B	Color (true)				5.29	
	Color (true)				1.87	
SM 2320 B-97	Total Alkalinity	104			0.269	
SM 2540 C-97	TDS				2.35	
SM 4500 F-C-97	Fluoride	97.5	99.1 99.7			0.467
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	1825505, 1825506, 1825507, 1825508
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1825505, 1825506, 1825507, 1825508
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1825509, 1825510, 1825511, 1825512
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1825509, 1825510, 1825511, 1825512
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1825509, 1825510, 1825511, 1825512
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1825509, 1825510, 1825511, 1825512
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1825513, 1825514, 1825515, 1825516
SM 2120 B / E31780	True Color measured at 450 nm	1825505, 1825506, 1825507, 1825508
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1825505, 1825506, 1825507, 1825508
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1825505, 1825506, 1825507, 1825508
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1825505, 1825506, 1825507, 1825508
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1825505, 1825506, 1825507, 1825508
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1825509, 1825510, 1825511, 1825512

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	08/22/2016			08/23/2016 14:34	Sima Feizi	1825505, 1825506, 1825507, 1825508
EPA 300.0 Rev. 2.1	08/22/2016			08/27/2016	Ping Hua	1825505, 1825506, 1825507, 1825508
EPA 350.1 Rev. 2.0	08/22/2016			08/23/2016	Julie Michelle Frank	1825509, 1825510, 1825511, 1825512
EPA 351.2 Rev. 2.0	08/22/2016	08/24/2016	Adrian Shelby	08/25/2016	Christopher Armour	1825509, 1825510, 1825511, 1825512
EPA 353.2 Rev. 2.0	08/22/2016			08/29/2016	Beverly Y. Sanders	1825509, 1825510, 1825511, 1825512
EPA 365.1 Rev. 2.0	08/22/2016	08/24/2016	Vijayalakshmi Reddy	08/24/2016	Lipi Saha	1825510, 1825511, 1825512
	08/22/2016	08/24/2016	Vijayalakshmi Reddy	08/25/2016	Lipi Saha	1825509
EPA 365.1 Rev. 2.0 dissolved	08/22/2016			08/23/2016 14:21	Julia Storbeck	1825514
	08/22/2016			08/23/2016 14:53	Julia Storbeck	1825513
	08/22/2016			08/23/2016 15:03	Julia Storbeck	1825515
	08/22/2016			08/23/2016 15:04	Julia Storbeck	1825516
SM 2120 B	08/22/2016			08/23/2016 15:16	Rochelle Y Jackson	1825505
	08/22/2016			08/23/2016 15:18	Rochelle Y Jackson	1825506
	08/22/2016			08/23/2016 15:19	Rochelle Y Jackson	1825507
	08/22/2016			08/23/2016 16:42	Rochelle Y Jackson	1825508
SM 2320 B-97	08/22/2016			08/24/2016	Dale L. Simmons	1825505, 1825506, 1825507, 1825508
SM 2540 C-97	08/22/2016			08/26/2016	Yijie Li	1825505, 1825506, 1825507, 1825508
SM 2540 D-97	08/22/2016			08/26/2016	Yijie Li	1825505, 1825506, 1825507, 1825508
SM 4500 F-C-97	08/22/2016			08/24/2016	Dale L. Simmons	1825505, 1825506, 1825507, 1825508
SM 5310 B-00	08/22/2016			08/25/2016	Sofia Elnemr	1825509, 1825510, 1825511, 1825512