Chemical Analysis Report

NW-DIST-2017-04-19-02

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

Event Description: **DEAD RIVER RUN WBID429 30C**
Request ID: **RQ-2017-04-17-25**
Customer: **NW-DIST**
Project ID: **SMP**

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

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 16-MAY-2017 11:33

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: Dead River above Yellow R **Collection Date/Time: 04/18/2017 12:05**

Field ID: G4NW0408 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1890168	EPA 180.1 Rev. 2.0	Turbidity	4.8		NTU	P323703	
	EPA 300.0 Rev. 2.1	Chloride	3.8		mg Cl/L	P324026	
		Sulfate	0.60		mg SO4/L	P324023	
	SM 2120 B	Color (true)	51		PCU	P323669	
	SM 2320 B-97	Total Alkalinity	6.7		mg CaCO3/L	P324164	
	SM 2540 C-97	TDS	33		mg/L	P324030	
	SM 2540 D-97	TSS	3	I	mg/L	P324269	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325241	
1890172	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P323682	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P323956	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P323909	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P323741	
	SM 5310 B-00	Organic Carbon	4.1		mg C/L	P323789	
1890176	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P323665	

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: Dead River above Yellow R **Collection Date/Time: 04/18/2017 12:10**

Field ID: G4NW0408DUPLICATE Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1890169	EPA 180.1 Rev. 2.0	Turbidity	4.8		NTU	P323703	
	EPA 300.0 Rev. 2.1	Chloride	3.8		mg Cl/L	P324026	
		Sulfate	0.60		mg SO4/L	P324023	
	SM 2120 B	Color (true)	50		PCU	P323669	
	SM 2320 B-97	Total Alkalinity	6.6		mg CaCO3/L	P324164	
	SM 2540 C-97	TDS	32		mg/L	P324030	
	SM 2540 D-97	TSS	4	I	mg/L	P324269	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325241	
1890173	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P323682	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31		mg N/L	P323956	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P323909	
	EPA 365.1 Rev. 2.0	Total-P	0.017		mg P/L	P323742	
	SM 5310 B-00	Organic Carbon	4.0		mg C/L	P323789	
1890177	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P323665	

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: FIELD BLANK **Collection Date/Time: 04/18/2017 12:15**

Field ID: FIELD BLANK Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1890170	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P323703	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P324026	
		Sulfate	0.20	U	mg SO4/L	P324023	

Field ID: FIELD BLANK Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1890170	SM 2120 B	Color (true)	2.5	U	PCU	P323669	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P324164	
	SM 2540 C-97	TDS	15	U	mg/L	P324028	
	SM 2540 D-97	TSS	2	U	mg/L	P324267	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325241	
1890174	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P323682	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P323956	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P323909	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P323742	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P323789	
1890178	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P323665	

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: Yellow River above Metts Ck **Collection Date/Time: 04/18/2017 13:50**

Field ID: G4NW0370 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1890171	EPA 180.1 Rev. 2.0	Turbidity	7.3		NTU	P323703	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P324026	
		Sulfate	1.1		mg SO4/L	P324023	
	SM 2120 B	Color (true)	41	A	PCU	P323669	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P324164	
	SM 2540 C-97	TDS	35		mg/L	P324030	
	SM 2540 D-97	TSS	11		mg/L	P324269	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325241	
1890175	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P323682	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.23		mg N/L	P323956	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P323909	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P323742	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P323789	
1890179	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P323665	

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: P323703

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324023

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324023

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324026

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323682

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323956

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323909

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323741

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323742

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323665

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

Reference Method: SM 2120 B
Batch ID: P323669

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report
Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P324164

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

Reference Method: SM 2540 C-97
Batch ID: P324028

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P324030

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P324267

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P324269

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P325241

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P323789

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: P324023

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324026

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: P324026

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323682

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: P323956

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	98.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323909

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323741

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	93.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323742

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323665

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

Reference Method: SM 2320 B-97
Batch ID: P324164

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

Reference Method: SM 4500 F-C-97
Batch ID: P325241

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P323789

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.6		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324023

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1889995	Sulfate	98.3		P	90 - 110
1890093	Sulfate	98.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324026

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1889995	Chloride	99.2		P	90 - 110
1890093	Chloride	99.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323682

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1889996	Ammonia-N	101	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323956

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890096	Kjeldahl Nitrogen	95.4	97.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323909

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890097	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323741

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890088	Total-P	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323742

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890175	Total-P	100	95.0	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323665

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890176	O-Phosphate-P	99.5	99.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P325241

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1890087	Fluoride	101	104	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P323789

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1889973	Organic Carbon	99.2	99.6	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P323703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890134	Turbidity	18.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324023

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890093	Sulfate	0.0502	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P324026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890093	Chloride	0.245	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P323682

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1889996	Ammonia-N	1.67	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P323956

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890096	Kjeldahl Nitrogen	2.04	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323909

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890097	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890088	Total-P	0.517	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P323742

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890175	Total-P	5.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P323665

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890176	O-Phosphate-P	0.401	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P323669

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890171	Color (true)	0.468	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P324164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890087	Total Alkalinity	0.565	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P324028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1889863	TDS	4.36	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P324030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890208	TDS	3.83	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P325241

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1890087	Fluoride	2.62	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P323789

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1889973	Organic Carbon	0.245	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: A75883
Included Lab Sample IDs: 1890176, 1890177, 1890178, 1890179

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.1	97.6	P/P	90 - 110
O-Phosphate-P	98.9	97.8	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A75886
Included Lab Sample IDs: 1890168, 1890169, 1890170, 1890171

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A75889
Included Lab Sample IDs: 1890172, 1890173, 1890174, 1890175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	104	P/P	90 - 110
Ammonia-N	103	104	P/P	90 - 110
Ammonia-N	104	105	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A75900
Included Lab Sample IDs: 1890168, 1890169, 1890170, 1890171

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

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A75924
Included Lab Sample IDs: 1890172, 1890173, 1890174, 1890175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A75932
Included Lab Sample IDs: 1890172, 1890173, 1890174, 1890175

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A75962
Included Lab Sample IDs: 1890172, 1890173, 1890174, 1890175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	97.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A75996
Included Lab Sample IDs: 1890172, 1890173, 1890174, 1890175

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	99.8	P/P	90 - 110
Kjeldahl Nitrogen	99.8	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A75999
Included Lab Sample IDs: 1890168, 1890169, 1890170, 1890171

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	101	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Sulfate	93.7	98.9	P/P	90 - 110
Sulfate	98.9	95.9	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A76045
Included Lab Sample IDs: 1890168, 1890169, 1890170, 1890171

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: A76396
Included Lab Sample IDs: 1890168, 1890169, 1890170, 1890171

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

* 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					18.0	
EPA 300.0 Rev. 2.1	Chloride	101	99.5	99.2		0.245	
	Sulfate	98.9	98.8	98.3		0.0502	
EPA 350.1 Rev. 2.0	Ammonia-N	102	101	103			1.67
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.6	95.4	97.8			2.04
EPA 353.2 Rev. 2.0	NO2NO3-N	101	101	101			0.0
EPA 365.1 Rev. 2.0	Total-P	93.8	103	103			0.517
	Total-P	98.4	100	95.0			5.44
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	99.5	99.9			0.401
SM 2120 B	Color (true)					0.468	
SM 2320 B-97	Total Alkalinity	104				0.565	
SM 2540 C-97	TDS					4.36	
	TDS					3.83	
SM 4500 F-C-97	Fluoride	101	101	104			2.62
SM 5310 B-00	Organic Carbon	99.6	99.2	99.6			0.245

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1890168, 1890169, 1890170, 1890171
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1890168, 1890169, 1890170, 1890171
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1890168, 1890169, 1890170, 1890171
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1890172, 1890173, 1890174, 1890175
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1890172, 1890173, 1890174, 1890175
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1890172, 1890173, 1890174, 1890175
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1890172, 1890173, 1890174, 1890175
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1890176, 1890177, 1890178, 1890179
SM 2120 B / E31780	True Color measured at 450 nm	1890168, 1890169, 1890170, 1890171
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1890168, 1890169, 1890170, 1890171
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1890168, 1890169, 1890170, 1890171
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1890168, 1890169, 1890170, 1890171
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1890168, 1890169, 1890170, 1890171
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1890172, 1890173, 1890174, 1890175

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	04/19/2017			04/19/2017 16:06	Sima Feizi	1890168, 1890169, 1890170, 1890171
EPA 300.0 Rev. 2.1	04/19/2017			04/26/2017	Ping Hua	1890168, 1890169, 1890170, 1890171
EPA 350.1 Rev. 2.0	04/19/2017			04/19/2017	Julie Michelle Frank	1890172, 1890173, 1890174, 1890175
EPA 351.2 Rev. 2.0	04/19/2017	04/25/2017	Adrian Shelby	04/26/2017	Joseph Suarez	1890172, 1890173, 1890174, 1890175
EPA 353.2 Rev. 2.0	04/19/2017			04/24/2017	Beverly Y. Sanders	1890172, 1890173, 1890174, 1890175
EPA 365.1 Rev. 2.0	04/19/2017	04/20/2017	Adrian Shelby	04/21/2017	Lipi Saha	1890172, 1890173, 1890174, 1890175
EPA 365.1 Rev. 2.0 dissolved	04/19/2017			04/19/2017 14:14	Anthony C. Onicha	1890176
	04/19/2017			04/19/2017 14:46	Anthony C. Onicha	1890177
	04/19/2017			04/19/2017 14:47	Anthony C. Onicha	1890178
	04/19/2017			04/19/2017 14:48	Anthony C. Onicha	1890179
SM 2120 B	04/19/2017			04/19/2017 15:57	Julia Storbeck	1890171
	04/19/2017			04/19/2017 16:02	Julia Storbeck	1890168
	04/19/2017			04/19/2017 16:03	Julia Storbeck	1890169
	04/19/2017			04/19/2017 16:04	Julia Storbeck	1890170
SM 2320 B-97	04/19/2017			04/27/2017	Dale L. Simmons	1890168, 1890169, 1890170, 1890171
SM 2540 C-97	04/19/2017			04/21/2017	Yijie Li	1890168, 1890169, 1890170, 1890171
SM 2540 D-97	04/19/2017			04/21/2017	Yijie Li	1890168, 1890169, 1890170, 1890171
SM 4500 F-C-97	04/19/2017			05/13/2017	Dale L. Simmons	1890168, 1890169, 1890170, 1890171
SM 5310 B-00	04/19/2017			04/20/2017	Julie Michelle Frank	1890172, 1890173, 1890174, 1890175