Chemical Analysis Report

NW-DIST-2016-02-02-01

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

Event Description: **WBID 271,275, 28,336**
Request ID: **RQ-2016-02-01-53**
Customer: **NW-DIST**
Project ID: **SMP**

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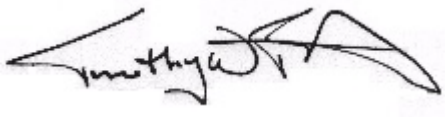
Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 22-FEB-2016 13:58



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: Baggett Creek abv Hwy 90 **Collection Date/Time: 02/01/2016 11:10**

Field ID: G4NW0336 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1768129	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P297978	
	EPA 300.0 Rev. 2.1	Chloride	3.8		mg Cl/L	P298181	
		Sulfate	1.2		mg SO4/L	P298178	
	SM 2120 B	Color (true)	32	A	PCU	P297973	
	SM 2320 B-97	Total Alkalinity	5.0		mg CaCO3/L	P298263	
	SM 2540 C-97	TDS	26		mg/L	P298621	
	SM 2540 D-97	TSS	3	I	mg/L	P298550	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P298258	
1768136	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P298499	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.15	I	mg N/L	P298210	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.58		mg N/L	P298336	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P298219	
	SM 5310 B-00	Organic Carbon	2.6		mg C/L	P298244	
1768143	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P297950	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

Sample Location: Wilkinson Creek abv Wilkinson Bluff Rd. **Collection Date/Time: 02/01/2016 11:55**

Field ID: G4NW0357 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1768130	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P297978	
	EPA 300.0 Rev. 2.1	Chloride	3.3		mg Cl/L	P298181	
		Sulfate	1.2		mg SO4/L	P298178	
	SM 2120 B	Color (true)	25		PCU	P297973	
	SM 2320 B-97	Total Alkalinity	0.82	I	mg CaCO3/L	P298263	
	SM 2540 C-97	TDS	17	I	mg/L	P298622	
	SM 2540 D-97	TSS	2	U	mg/L	P298551	RPD
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P298258	
1768137	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P298499	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.094	I	mg N/L	P298210	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P298336	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P298219	
	SM 5310 B-00	Organic Carbon	1.8		mg C/L	P298244	
1768144	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P297950	

Sample Location: Field Blank **Collection Date/Time: 02/01/2016 12:00**

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

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1768131	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P297978	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P298181	
		Sulfate	0.20	U	mg SO4/L	P298178	
	SM 2120 B	Color (true)	2.5	U	PCU	P297973	

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

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1768131	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P298263	
	SM 2540 C-97	TDS	15	U	mg/L	P298618	
	SM 2540 D-97	TSS	2	U	mg/L	P298547	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P298258	
1768138	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P298499	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P298210	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P298336	
	EPA 365.1 Rev. 2.0	Total-P	0.002	I	mg P/L	P298219	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P298244	
1768145	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P297951	

Ref. Method and Comment:
SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 02/16/2016.

Sample Location: Ates Creek abv Bryant Bridge Rd. **Collection Date/Time: 02/01/2016 12:40**

Field ID: G4NW0332 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1768132	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P297978	
	EPA 300.0 Rev. 2.1	Chloride	3.6		mg Cl/L	P298181	
		Sulfate	0.87		mg SO4/L	P298178	
	SM 2120 B	Color (true)	15		PCU	P297973	
	SM 2320 B-97	Total Alkalinity	6.0		mg CaCO3/L	P298263	
	SM 2540 C-97	TDS	16	I	mg/L	P298622	
	SM 2540 D-97	TSS	2	I	mg/L	P298551	RPD
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P298258	
1768139	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P298499	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P298210	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.028		mg N/L	P298336	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P298219	
	SM 5310 B-00	Organic Carbon	1.3		mg C/L	P298244	
1768146	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P297951	

Sample Location: Big Horse Creek abv Horse Creek Rd. **Collection Date/Time: 02/01/2016 13:30**

Field ID: G4NW0301 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1768133	EPA 180.1 Rev. 2.0	Turbidity	4.3	A	NTU	P297979	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P298181	
		Sulfate	1.2		mg SO4/L	P298178	
	SM 2120 B	Color (true)	37		PCU	P297973	
	SM 2320 B-97	Total Alkalinity	1.9	I	mg CaCO3/L	P298264	
	SM 2540 C-97	TDS	24	I	mg/L	P298622	
	SM 2540 D-97	TSS	2	U	mg/L	P298551	RPD
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P298259	
1768140	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P298500	

Field ID: G4NW0301 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1768140	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.26		mg N/L	P298210	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.039		mg N/L	P298336	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P298219	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P298244	
1768147	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P297951	

Sample Location: Big Horse Creek abv Hwy 2 **Collection Date/Time: 02/01/2016 14:00**

Field ID: G4NW0299 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1768134	EPA 180.1 Rev. 2.0	Turbidity	3.9		NTU	P297979	
	EPA 300.0 Rev. 2.1	Chloride	4.2		mg Cl/L	P298181	
		Sulfate	1.2		mg SO4/L	P298178	
	SM 2120 B	Color (true)	28		PCU	P297973	
	SM 2320 B-97	Total Alkalinity	1.6	I	mg CaCO3/L	P298264	
	SM 2540 C-97	TDS	20	I	mg/L	P298622	
	SM 2540 D-97	TSS	5	I	mg/L	P298551	RPD
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P298259	
1768141	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P298500	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P298211	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.28		mg N/L	P298336	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P298219	
	SM 5310 B-00	Organic Carbon	2.3		mg C/L	P298244	
1768148	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P297951	

Sample Location: Big Horse Creek abv Old River Rd. **Collection Date/Time: 02/01/2016 14:30**

Field ID: G4NW0298 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1768135	EPA 180.1 Rev. 2.0	Turbidity	5.1		NTU	P297979	
	EPA 300.0 Rev. 2.1	Chloride	3.6		mg Cl/L	P298181	
		Sulfate	1.3		mg SO4/L	P298178	
	SM 2120 B	Color (true)	34		PCU	P297973	
	SM 2320 B-97	Total Alkalinity	1.8	I	mg CaCO3/L	P298264	
	SM 2540 C-97	TDS	20	I	mg/L	P298622	
	SM 2540 D-97	TSS	11		mg/L	P298551	RPD
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P298259	
1768142	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P298500	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28		mg N/L	P298211	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.086		mg N/L	P298339	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P298219	
	SM 5310 B-00	Organic Carbon	2.9		mg C/L	P298244	
1768149	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.01	I	mg P/L	P297951	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P297978

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P297979

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298178

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298181

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298499

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298500

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298210

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298211

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298336

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298339

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298219

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297950

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297951

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

Reference Method: SM 2120 B
Batch ID: P297973

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P298263

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

Reference Method: SM 2320 B-97
Batch ID: P298264

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

Reference Method: SM 2540 C-97
Batch ID: P298618

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P298621

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P298622

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P298547

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P298550

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P298551

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P298258

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P298259

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P298244

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: P298178

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298181

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: P298181

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298499

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298500

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: P298210

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298211

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298336

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: P298339

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: P298219

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297950

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297951

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

Reference Method: SM 2320 B-97
Batch ID: P298263

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 105

Reference Method: SM 2320 B-97
Batch ID: P298264

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P298258

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	94 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P298259

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.3		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P298244

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298178

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1767990	Sulfate	102		P	90 - 110
1768038	Sulfate	104		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298181

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1767990	Chloride	104		P	90 - 110
1768038	Chloride	106		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298499

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768137	Ammonia-N	101	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298500

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768190	Ammonia-N	105	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298210

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768139	Kjeldahl Nitrogen	98.5	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768141	Kjeldahl Nitrogen	105	97.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298336

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768127	NO2NO3-N	101	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298339

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768142	NO2NO3-N	99.0	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298219

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768136	Total-P	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297950

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768007	O-Phosphate-P	104	105	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297951

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768146	O-Phosphate-P	104	105	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P298258

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1767986	Fluoride	97.1	98.3	P/P	94 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P298259

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768446	Fluoride	98.6	98.6	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P298244

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1768136	Organic Carbon	91.5	91.3	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P297978

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768036	Turbidity	5.06	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P297979

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768133	Turbidity	2.56	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298178

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1767990	Sulfate	0.657	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298181

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1767990	Chloride	0.825	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298499

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768137	Ammonia-N	0.207	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768190	Ammonia-N	0.0446	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298210

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768139	Kjeldahl Nitrogen	2.70	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768141	Kjeldahl Nitrogen	7.13	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298336

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768127	NO2NO3-N	1.24	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298339

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768142	NO2NO3-N	1.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298219

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768136	Total-P	1.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297950

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768007	O-Phosphate-P	1.63	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P297951

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768146	O-Phosphate-P	0.670	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2120 B
Batch ID: P297973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768129	Color (true)	3.35	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P298263

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1767986	Total Alkalinity	2.46	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P298264

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768446	Total Alkalinity	0.242	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P298618

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1767867	TDS	6.49	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P298621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768038	TDS	6.62	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P298622

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768257	TDS	3.96	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P298551

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768257	TSS	23.7	Sample	F	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P298258

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1767986	Fluoride	1.03	Spike	P	0 - 3.7

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P298259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768446	Fluoride	0.0	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P298244

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1768136	Organic Carbon	0.192	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: A67411
Included Lab Sample IDs: 1768143, 1768144, 1768145, 1768146, 1768147, 1768148, 1768149

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.1	97.1	P/P	90 - 110
O-Phosphate-P	97.1	97.3	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A67415
Included Lab Sample IDs: 1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	104	102	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A67417
Included Lab Sample IDs: 1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105
Turbidity	100	100	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A67468
Included Lab Sample IDs: 1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	105	P/P	90 - 110
Chloride	104	102	P/P	90 - 110
Sulfate	100	96.3	P/P	90 - 110
Sulfate	96.3	101	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A67508
Included Lab Sample IDs: 1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.2	94.9	P/P	90 - 110
Organic Carbon	95.0	94.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A67514
Included Lab Sample IDs: 1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	98.0	P/P	90 - 110
Fluoride	99.0	98.6	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A67515
Included Lab Sample IDs: 1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A67528
Included Lab Sample IDs: 1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A67532
Included Lab Sample IDs: 1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A67536
Included Lab Sample IDs: 1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	103	P/P	90 - 110
Kjeldahl Nitrogen	103	104	P/P	90 - 110
Kjeldahl Nitrogen	104	106	P/P	90 - 110
Kjeldahl Nitrogen	106	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A67582
Included Lab Sample IDs: 1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	104	P/P	90 - 110
Ammonia-N	104	103	P/P	90 - 110
Ammonia-N	104	104	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					5.06	
	Turbidity					2.56	
EPA 300.0 Rev. 2.1	Chloride	105	104	106		0.825	
	Sulfate	100	102	104		0.657	
EPA 350.1 Rev. 2.0	Ammonia-N	101	101	101			0.207
	Ammonia-N	102	105	104			0.0446
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.2	98.5	101			2.70
	Kjeldahl Nitrogen	106	105	97.4			7.13
EPA 353.2 Rev. 2.0	NO2NO3-N	101	101	103			1.24
	NO2NO3-N	102	99.0	101			1.40
EPA 365.1 Rev. 2.0	Total-P	103	100	102			1.40
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	104	105			1.63
	O-Phosphate-P	102	104	105			0.670
SM 2120 B	Color (true)					3.35	
SM 2320 B-97	Total Alkalinity	101				2.46	
	Total Alkalinity	102				0.242	
SM 2540 C-97	TDS					6.49	
	TDS					6.62	
	TDS					3.96	
SM 2540 D-97	TSS					23.7	
SM 4500 F-C-97	Fluoride	97.3	97.1	98.3			1.03
	Fluoride	97.3	98.6	98.6			0.0
SM 5310 B-00	Organic Carbon	93.6	91.5	91.3			0.192

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1768143, 1768144, 1768145, 1768146, 1768147, 1768148, 1768149
SM 2120 B / E31780	True Color measured at 450 nm	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142

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	02/02/2016			02/02/2016 18:21	Blanca Fach	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135
EPA 300.0 Rev. 2.1	02/02/2016			02/06/2016	Ping Hua	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135
EPA 350.1 Rev. 2.0	02/02/2016			02/11/2016	Diana M. Turner	1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142
EPA 351.2 Rev. 2.0	02/02/2016	02/08/2016	Sofia Elnemr	02/09/2016	Bryan A. Werth	1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142
EPA 353.2 Rev. 2.0	02/02/2016			02/09/2016	Peter D. Kaus	1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142
EPA 365.1 Rev. 2.0	02/02/2016	02/08/2016	Christopher Armour	02/09/2016	Lipi Saha	1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142
EPA 365.1 Rev. 2.0 dissolved	02/02/2016			02/02/2016 15:40	Bryan A. Werth	1768143
	02/02/2016			02/02/2016 15:41	Bryan A. Werth	1768144
	02/02/2016			02/02/2016 15:43	Bryan A. Werth	1768146
	02/02/2016			02/02/2016 15:46	Bryan A. Werth	1768145
	02/02/2016			02/02/2016 15:47	Bryan A. Werth	1768147
	02/02/2016			02/02/2016 15:48	Bryan A. Werth	1768148
	02/02/2016			02/02/2016 15:53	Bryan A. Werth	1768149
SM 2120 B	02/02/2016			02/03/2016 08:00	Rochelle Y Jackson	1768129
	02/02/2016			02/03/2016 08:01	Rochelle Y Jackson	1768130, 1768131
	02/02/2016			02/03/2016 08:03	Rochelle Y Jackson	1768132
	02/02/2016			02/03/2016 08:04	Rochelle Y Jackson	1768133, 1768134
	02/02/2016			02/03/2016 08:05	Rochelle Y Jackson	1768135
SM 2320 B-97	02/02/2016			02/09/2016	Dale L. Simmons	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135
SM 2540 C-97	02/02/2016			02/05/2016	Yijie Li	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135
SM 2540 D-97	02/02/2016			02/05/2016	Yijie Li	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135
SM 4500 F-C-97	02/02/2016			02/08/2016	Dale L. Simmons	1768129, 1768130, 1768131, 1768132, 1768133, 1768134, 1768135
SM 5310 B-00	02/02/2016			02/05/2016	Sofia Elnemr	1768136, 1768137, 1768138, 1768139, 1768140, 1768141, 1768142