

Chemical Analysis Report

NW-DIST-2016-04-14-01

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

Event Description: **WBID 28 27 275 336**

Request ID: **RQ-2016-04-11-53**

Customer: **NW-DIST**

Project ID: **SMP**

Send Reports to:
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 04-MAY-2016 11:23



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 Upstream of HWY 90

Collection Date/Time: 04/13/2016 11:00

Field ID: G4NW0336

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789260	EPA 180.1 Rev. 2.0	Turbidity	5.3		NTU	P302318	
	EPA 300.0 Rev. 2.1	Chloride	3.7		mg Cl/L	P302548	
		Sulfate	0.91		mg SO4/L	P302551	
	SM 2120 B	Color (true)	39	A	PCU	P302290	
	SM 2320 B-97	Total Alkalinity	6.6		mg CaCO3/L	P302634	
	SM 2540 C-97	TDS	28		mg/L	P303135	
	SM 2540 D-97	TSS	6	I	mg/L	P302912	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302637	
1789268	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P303036	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.36		mg N/L	P303028	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.48		mg N/L	P302707	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P302790	
	SM 5310 B-00	Organic Carbon	3.1		mg C/L	P302855	
1789276	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302276	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Wilkinson Creek Upstream of Wilkinson Bluff Road

Collection Date/Time: 04/13/2016 11:20

Field ID: G4NW0357

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789261	EPA 180.1 Rev. 2.0	Turbidity	1.7	A	NTU	P302319	
	EPA 300.0 Rev. 2.1	Chloride	3.1		mg Cl/L	P302548	
		Sulfate	1.1		mg SO4/L	P302551	
	SM 2120 B	Color (true)	34		PCU	P302290	
	SM 2320 B-97	Total Alkalinity	1.2	I	mg CaCO3/L	P302634	
	SM 2540 C-97	TDS	15	U	mg/L	P303135	
	SM 2540 D-97	TSS	2	I	mg/L	P302912	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302637	
1789269	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P303036	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.17	I	mg N/L	P303028	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P302707	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P302791	
	SM 5310 B-00	Organic Carbon	2.2		mg C/L	P302855	
1789277	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302276	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Wilkinson Creek Upstream of Wilkinson Bluff Road

Collection Date/Time: 04/13/2016 11:25

Field ID: G4NW0357DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Field ID: G4NW0357DUPLICATE

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789262	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P302319	
	EPA 300.0 Rev. 2.1	Chloride	3.2		mg Cl/L	P302548	
		Sulfate	1.1		mg SO4/L	P302551	
		Color (true)	34		PCU	P302290	
	SM 2320 B-97	Total Alkalinity	1.2	I	mg CaCO3/L	P302634	
	SM 2540 C-97	TDS	19	I	mg/L	P303136	
	SM 2540 D-97	TSS	2	I	mg/L	P302913	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302637	
1789270	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P303036	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.12	I	mg N/L	P303028	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P302707	
	EPA 365.1 Rev. 2.0	Total-P	0.007		mg P/L	P302791	
	SM 5310 B-00	Organic Carbon	2.1		mg C/L	P302855	
1789278	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P302276	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Baggett Creek Upstream of Keyser Mill Road **Collection Date/Time: 04/13/2016 12:00**

Field ID: G4NW0335

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789263	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P302319	
	EPA 300.0 Rev. 2.1	Chloride	4.3		mg Cl/L	P302548	
		Sulfate	0.65		mg SO4/L	P302551	
		Color (true)	22		PCU	P302290	
	SM 2320 B-97	Total Alkalinity	2.8		mg CaCO3/L	P302634	
	SM 2540 C-97	TDS	31		mg/L	P303136	
	SM 2540 D-97	TSS	2	U	mg/L	P302913	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302637	
1789271	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P303036	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.15	I	mg N/L	P303029	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.79		mg N/L	P302707	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P302791	
	SM 5310 B-00	Organic Carbon	1.9		mg C/L	P302855	
1789279	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P302276	

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: Yellow River Abv Hwy 2 **Collection Date/Time: 04/13/2016 12:30**

Field ID: G4NW0261

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789264	EPA 180.1 Rev. 2.0	Turbidity	12		NTU	P302319	
	EPA 300.0 Rev. 2.1	Chloride	3.3		mg Cl/L	P302548	
		Sulfate	1.1		mg SO4/L	P302551	

Field ID: G4NW0261

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789264	SM 2120 B	Color (true)	59		PCU	P302293	
	SM 2320 B-97	Total Alkalinity	18		mg CaCO3/L	P302634	
	SM 2540 C-97	TDS	40		mg/L	P303136	
	SM 2540 D-97	TSS	15		mg/L	P302913	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302637	
1789272	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P303036	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35		mg N/L	P303029	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.20		mg N/L	P302707	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P302791	
	SM 5310 B-00	Organic Carbon	4.6		mg C/L	P302855	
1789280	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P302276	

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: Big Horse Creek Upstream of Old River Road **Collection Date/Time: 04/13/2016 13:00**

Field ID: G4NW0298

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789265	EPA 180.1 Rev. 2.0	Turbidity	7.2		NTU	P302319	
	EPA 300.0 Rev. 2.1	Chloride	3.3		mg Cl/L	P302548	
		Sulfate	0.99		mg SO4/L	P302551	
	SM 2120 B	Color (true)	48		PCU	P302290	
	SM 2320 B-97	Total Alkalinity	2.1	I	mg CaCO3/L	P302635	
	SM 2540 C-97	TDS	25		mg/L	P303136	
	SM 2540 D-97	TSS	9	I	mg/L	P302913	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302638	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P303036	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P303029	
1789273	EPA 353.2 Rev. 2.0	NO2NO3-N	0.058		mg N/L	P302707	
	EPA 365.1 Rev. 2.0	Total-P	0.029		mg P/L	P302791	
	SM 5310 B-00	Organic Carbon	3.7		mg C/L	P302855	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P302276	

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: Big Horse Creek S.R.2 OKA.CO. **Collection Date/Time: 04/13/2016 13:20**

Field ID: G4NW0299

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789266	EPA 180.1 Rev. 2.0	Turbidity	7.0		NTU	P302319	
	EPA 300.0 Rev. 2.1	Chloride	3.4		mg Cl/L	P302548	
		Sulfate	0.94		mg SO4/L	P302551	
	SM 2120 B	Color (true)	47		PCU	P302290	
	SM 2320 B-97	Total Alkalinity	1.9	I	mg CaCO3/L	P302635	
	SM 2540 C-97	TDS	26		mg/L	P303136	
	SM 2540 D-97	TSS	7	I	mg/L	P302913	

Field ID: G4NW0299

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789266	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302638	
1789274	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P303036	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21		mg N/L	P303029	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.15		mg N/L	P302707	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P302791	
	SM 5310 B-00	Organic Carbon	3.2		mg C/L	P302855	
1789282	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P302276	

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: Big Horse Creek Upstream of Horse Creek Road

Collection Date/Time: 04/13/2016 14:00

Field ID: G4NW0301

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1789267	EPA 180.1 Rev. 2.0	Turbidity	5.9		NTU	P302319	
	EPA 300.0 Rev. 2.1	Chloride	3.3		mg Cl/L	P302548	
		Sulfate	0.92		mg SO4/L	P302551	
	SM 2120 B	Color (true)	51		PCU	P302290	
	SM 2320 B-97	Total Alkalinity	1.8	I	mg CaCO3/L	P302635	
	SM 2540 C-97	TDS	24	I	mg/L	P303136	
	SM 2540 D-97	TSS	5	I	mg/L	P302913	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302638	
1789275	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P303036	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P303029	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.026		mg N/L	P302707	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P302791	
	SM 5310 B-00	Organic Carbon	3.8		mg C/L	P302855	
1789283	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.01	I	mg P/L	P302277	

Ref. Method and Comment:

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P302318

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P302319

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: P302548

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302551

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303036

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303028

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303029

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302707

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302790

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302791

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302276

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302277

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

Reference Method: SM 2120 B
Batch ID: P302290

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P302293

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P302634

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

Reference Method: SM 2320 B-97
Batch ID: P302635

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

Reference Method: SM 2540 C-97
Batch ID: P303135

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P303136

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P302912

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P302913

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P302637

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P302638

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P302855

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: P302548

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302551

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303036

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: P303028

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303029

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302707

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: P302707

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: P302790

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	108		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302791

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: P302276

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302277

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

Reference Method: SM 2320 B-97
Batch ID: P302634

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

Reference Method: SM 2320 B-97
Batch ID: P302635

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

Reference Method: SM 4500 F-C-97
Batch ID: P302637

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.6		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P302638

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P302855

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P302548

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789288	Chloride	100		P	90 - 110
1789292	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P302551

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789288	Sulfate	99.4		P	90 - 110
1789292	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P303036

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789270	Ammonia-N	101	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P303029

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789271	Kjeldahl Nitrogen	98.7	98.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P302707

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789269	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P302790

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789168	Total-P	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P302791

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789269	Total-P	102	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302276

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789280	O-Phosphate-P	99.4	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302277

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789305	O-Phosphate-P	98.9	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P302637

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789022	Fluoride	99.1	97.9	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P302638

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789284	Fluoride	96.2	96.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P302855

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1789221	Organic Carbon	104		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P302318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789151	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P302319

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789261	Turbidity	1.75	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302548

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789292	Chloride	0.326	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302551

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789292	Sulfate	0.0661	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303036

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789270	Ammonia-N	1.39	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789222	Kjeldahl Nitrogen	0.483	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P303029

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789271	Kjeldahl Nitrogen	0.142	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789269	NO2NO3-N	1.13	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789168	Total-P	0.594	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789269	Total-P	0.796	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302276

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789280	O-Phosphate-P	1.22	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P302277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789305	O-Phosphate-P	1.31	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P302290

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789260	Color (true)	5.94	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P302293

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789152	Color (true)	4.73	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P302634

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789022	Total Alkalinity	0.787	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P302635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789284	Total Alkalinity	0.477	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P303135

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789220	TDS	0.922	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P303136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789284	TDS	4.49	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P302637

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789022	Fluoride	0.947	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P302638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789284	Fluoride	0.539	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P302855

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1789221	Organic Carbon	0.299	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: A68887
Included Lab Sample IDs: 1789276, 1789277, 1789278, 1789279, 1789280, 1789281, 1789282, 1789283

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	101	101	P/P	90 - 110
O-Phosphate-P	99.8	100	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A68890
Included Lab Sample IDs: 1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	100	P/P	90 - 115
Color (true)	98.1	101	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A68896
Included Lab Sample IDs: 1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A68939
Included Lab Sample IDs: 1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Chloride	99.8	102	P/P	90 - 110
Sulfate	99.5	99.6	P/P	90 - 110
Sulfate	99.6	99.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A68993

Included Lab Sample IDs: 1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.7	P/P	90 - 110
Total Alkalinity	99.7	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A68993

Included Lab Sample IDs: 1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.5	P/P	90 - 110
Fluoride	99.5	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69015

Included Lab Sample IDs: 1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	98.0	P/P	90 - 110
NO2NO3-N	98.5	98.5	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69060

Included Lab Sample IDs: 1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.8	94.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69085

Included Lab Sample IDs: 1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69122

Included Lab Sample IDs: 1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69201

Included Lab Sample IDs: 1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	94.9	P/P	90 - 110
Kjeldahl Nitrogen	102	97.4	P/P	90 - 110
Kjeldahl Nitrogen	95.0	102	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						0.0	
	Turbidity						1.75	
EPA 300.0 Rev. 2.1	Chloride	102		101	100		0.326	
	Sulfate	101		101	99.4		0.0661	
EPA 350.1 Rev. 2.0	Ammonia-N	102		101	99.7			1.39
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105						0.483
	Kjeldahl Nitrogen	101		98.7	98.9			0.142
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102		100	102			1.13
EPA 365.1 Rev. 2.0	Total-P	108		102	103			0.594
	Total-P	104		102	102			0.796
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104		99.4	101			1.22
	O-Phosphate-P	101		98.9	100			1.31
SM 2120 B	Color (true)						5.94	
	Color (true)						4.73	
SM 2320 B-97	Total Alkalinity	102					0.787	
	Total Alkalinity	102					0.477	
SM 2540 C-97	TDS						0.922	
	TDS						4.49	
SM 4500 F-C-97	Fluoride	95.6		99.1	97.9			0.947
	Fluoride	96.5		96.2	96.9			0.539
SM 5310 B-00	Organic Carbon	97.8		104				0.299

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1789276, 1789277, 1789278, 1789279, 1789280, 1789281, 1789282, 1789283
SM 2120 B / E31780	True Color measured at 450 nm	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275

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	04/14/2016			04/14/2016 16:39	Blanca Fach	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267
EPA 300.0 Rev. 2.1	04/14/2016			04/20/2016	Julia Storbeck	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267
EPA 350.1 Rev. 2.0	04/14/2016			04/26/2016	Diana M. Turner	1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275
EPA 351.2 Rev. 2.0	04/14/2016	04/27/2016	Sofia Elnemr	04/29/2016	Christopher Armour	1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275
EPA 353.2 Rev. 2.0	04/14/2016			04/21/2016	Peter D. Kaus	1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275
EPA 365.1 Rev. 2.0	04/14/2016	04/22/2016	Lipi Saha	04/25/2016	Lipi Saha	1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275
EPA 365.1 Rev. 2.0 dissolved	04/14/2016			04/14/2016 14:11	Julia Storbeck	1789280
	04/14/2016			04/14/2016 14:35	Julia Storbeck	1789277
	04/14/2016			04/14/2016 14:36	Julia Storbeck	1789278
	04/14/2016			04/14/2016 15:01	Julia Storbeck	1789276
	04/14/2016			04/14/2016 15:02	Julia Storbeck	1789279, 1789281
	04/14/2016			04/14/2016 15:03	Julia Storbeck	1789282
	04/14/2016			04/14/2016 15:04	Julia Storbeck	1789283
	04/14/2016			04/14/2016 16:03	Chrisoulla Rakowski	1789260
	04/14/2016			04/14/2016 16:04	Chrisoulla Rakowski	1789261
	04/14/2016			04/14/2016 16:05	Chrisoulla Rakowski	1789262, 1789263
SM 2120 B	04/14/2016			04/14/2016 16:07	Chrisoulla Rakowski	1789265
	04/14/2016			04/14/2016 16:08	Chrisoulla Rakowski	1789266, 1789267
	04/14/2016			04/14/2016 16:35	Chrisoulla Rakowski	1789264
	04/14/2016			04/20/2016	Dale L. Simmons	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267
	04/14/2016			04/18/2016	Sima Feizi	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267
SM 2320 B-97	04/14/2016			04/18/2016	Sima Feizi	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267
SM 2540 C-97	04/14/2016			04/20/2016	Dale L. Simmons	1789260, 1789261, 1789262, 1789263, 1789264, 1789265, 1789266, 1789267
SM 2540 D-97	04/14/2016			04/21/2016	Sofia Elnemr	1789268, 1789269, 1789270, 1789271, 1789272, 1789273, 1789274, 1789275
SM 4500 F-C-97	04/14/2016					
SM 5310 B-00	04/14/2016					