

Chemical Analysis Report

NE-DIST-2016-04-07-01

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

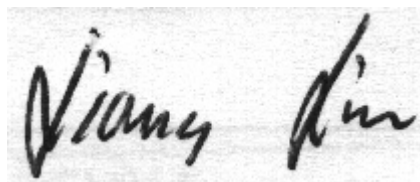
Event Description: **Nassau Middle**
Request ID: **RQ-2016-04-04-28**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256-7577
Attn: Jeremy Parrish

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 03-MAY-2016 16:14

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: 19010127 Unnamed @CR121

Collection Date/Time: 04/06/2016 09:45

Field ID: 19010127 Unnamed @CR121

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787624	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P301859	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P302028	
		Sulfate	0.97		mg SO4/L	P302026	
	SM 2120 B	Color (true)	380		PCU	P302068	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302191	
	SM 2540 C-97	TDS	54		mg/L	P302607	
	SM 2540 D-97	TSS	2	I	mg/L	P302327	
	SM 4500 F-C-97	Fluoride	0.041	I	mg F/L	P302194	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P302273	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.99		mg N/L	P302579	
1787629	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P302090	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P302354	
	SM 5310 B-00	Organic Carbon	33		mg C/L	P302340	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P301837	
	dissolved						

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 04/14//2016.

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

Sample Location: 19010127 Unnamed @121-DUP

Collection Date/Time: 04/06/2016 09:45

Field ID: 19010127 Unnamed @121-DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787625	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P301859	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P302028	
		Sulfate	0.99		mg SO4/L	P302026	
	SM 2120 B	Color (true)	380		PCU	P302069	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302191	
	SM 2540 C-97	TDS	52		mg/L	P302607	
	SM 2540 D-97	TSS	2	I	mg/L	P302327	
	SM 4500 F-C-97	Fluoride	0.040	I	mg F/L	P302194	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P302273	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P302579	
1787630	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P302090	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P302354	
	SM 5310 B-00	Organic Carbon	32		mg C/L	P302340	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P301837	
	dissolved						

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 04/14//2016.

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

Sample Location: G4NE0007 Unnamed @Crawford Rd

Collection Date/Time: 04/06/2016 10:20

Field ID: G4NE0007 Unnamed @Crawford Rd

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787626	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P301859	

Field ID: G4NE0007 Unnamed @Crawford Rd

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787626	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P302028	
		Sulfate	2.1		mg SO4/L	P302026	
	SM 2120 B	Color (true)	380		PCU	P302069	
	SM 2320 B-97	Total Alkalinity	0.95	I	mg CaCO3/L	P302192	
	SM 2540 C-97	TDS	65		mg/L	P302607	
	SM 2540 D-97	TSS	2	U	mg/L	P302327	
	SM 4500 F-C-97	Fluoride	0.047	I	mg F/L	P302195	
1787631	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P302273	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.90		mg N/L	P302579	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P302090	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P302355	
	SM 5310 B-00	Organic Carbon	35		mg C/L	P302340	
1787636	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301837	

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: 19010159 Unnamed Trib-Mills CR

Collection Date/Time: 04/06/2016 10:55

Field ID: 19010159 Unnamed Trib-Mills CR

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787627	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P301859	
	EPA 300.0 Rev. 2.1	Chloride	8.0		mg Cl/L	P302305	
		Sulfate	0.72		mg SO4/L	P302311	
	SM 2120 B	Color (true)	240		PCU	P302069	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302192	
	SM 2540 C-97	TDS	42		mg/L	P302608	
	SM 2540 D-97	TSS	2	U	mg/L	P302328	
1787632	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302195	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P302273	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.79		mg N/L	P302579	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P302090	
	EPA 365.1 Rev. 2.0	Total-P	0.01		mg P/L	P302355	
1787637	SM 5310 B-00	Organic Carbon	31		mg C/L	P302340	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301837	

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: Field Blank

Collection Date/Time: 04/06/2016 11:10

Field ID: Field Blank

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787628	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P301859	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P302305	
		Sulfate	0.20	U	mg SO4/L	P302311	
	SM 2120 B	Color (true)	2.5	U	PCU	P302069	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P302192	

Field ID: Field Blank

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1787628	SM 2540 C-97	TDS	15	U	mg/L	P302608	
	SM 2540 D-97	TSS	2	U	mg/L	P302328	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P302195	
1787633	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P302558	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P302579	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P302090	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P302355	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P302340	
1787638	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P301837	

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: P301859

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P302026

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P302028

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P302305

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P302311

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P302273

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302558

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302579

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302090

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302354

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302355

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301837

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

Reference Method: SM 2120 B
Batch ID: P302068

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P302069

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P302191

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P302192

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P302607

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P302608

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P302327

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P302328

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P302194

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P302195

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P302340

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: P302026

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302026

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302028

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	98.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302305

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302311

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302273

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302558

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302579

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302090

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302354

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P302355

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P301837

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	99.7		P	90 - 110

Reference Method: SM 2320 B-97

Batch ID: P302191

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

Reference Method: SM 2320 B-97

Batch ID: P302192

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

Reference Method: SM 4500 F-C-97

Batch ID: P302194

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

Reference Method: SM 4500 F-C-97

Batch ID: P302195

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

Reference Method: SM 5310 B-00

Batch ID: P302340

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.1		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P302026

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787480	Sulfate	93.8		P	90 - 110
1787486	Sulfate	96.4		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302028

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787480	Chloride	98.2		P	90 - 110
1787486	Chloride	96.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302305

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787664	Chloride	97.8		P	90 - 110
1787665	Chloride	98.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302311

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787664	Sulfate	95.6		P	90 - 110
1787665	Sulfate	95.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302273

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787631	Ammonia-N	102	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302558

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787718	Ammonia-N	102	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302579

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787630	Kjeldahl Nitrogen	99.6	94.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302090

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787629	NO2NO3-N	93.0	94.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302354

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787572	Total-P	103	95.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302355

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787631	Total-P	99.9	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301837

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787597	O-Phosphate-P	93.3	92.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P302194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787570	Fluoride	96.9	96.9	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P302195

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787722	Fluoride	95.5	95.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P302340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1787571	Organic Carbon	98.0	96.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P301859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787593	Turbidity	4.29	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787480	Sulfate	0.410	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302028

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787480	Chloride	0.694	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302305

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787664	Chloride	0.0904	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P302311

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787664	Sulfate	0.298	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302273

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787631	Ammonia-N	0.938	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P302558

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787718	Ammonia-N	0.495	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P302579

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787630	Kjeldahl Nitrogen	2.56	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P302090

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787629	NO2NO3-N	1.60	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302354

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787572	Total-P	7.38	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P302355

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787631	Total-P	2.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P301837

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787597	O-Phosphate-P	0.898	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P302068

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787569	Color (true)	1.22	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P302069

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787663	Color (true)	3.28	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P302191

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787570	Total Alkalinity	0.214	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P302192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787722	Total Alkalinity	0.0528	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P302607

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787530	TDS	0.889	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P302608

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787693	TDS	0.581	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P302194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787570	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P302195

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787722	Fluoride	0.0	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P302340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1787571	Organic Carbon	0.840	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: A68729
Included Lab Sample IDs: 1787634, 1787635, 1787636, 1787637, 1787638

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A68738
Included Lab Sample IDs: 1787624, 1787625, 1787626, 1787627, 1787628

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A68804
Included Lab Sample IDs: 1787624, 1787625, 1787626, 1787627, 1787628

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Chloride	101	100	P/P	90 - 110
Sulfate	100	99.0	P/P	90 - 110
Sulfate	96.4	99.1	P/P	90 - 110
Sulfate	99.0	99.7	P/P	90 - 110
Sulfate	99.1	96.0	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A68821
Included Lab Sample IDs: 1787624, 1787625, 1787626, 1787627, 1787628

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	105	106	P/P	85 - 115
Color (true)	106	104	P/P	85 - 115

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A68825
Included Lab Sample IDs: 1787629, 1787630, 1787631, 1787632, 1787633

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	96.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A68859

Included Lab Sample IDs: 1787624, 1787625, 1787626, 1787627, 1787628

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.6	P/P	90 - 110
Total Alkalinity	99.6	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A68859

Included Lab Sample IDs: 1787624, 1787625, 1787626, 1787627, 1787628

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68885

Included Lab Sample IDs: 1787629, 1787630, 1787631, 1787632

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

Reference Method: SM 5310 B-00

Run ID: A68901

Included Lab Sample IDs: 1787629, 1787630, 1787631, 1787632, 1787633

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.6	97.0	P/P	90 - 110
Organic Carbon	97.0	97.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68974

Included Lab Sample IDs: 1787633

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68978

Included Lab Sample IDs: 1787629, 1787630, 1787631, 1787632, 1787633

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.2	P/P	90 - 110
Total-P	98.2	98.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69049

Included Lab Sample IDs: 1787629, 1787630, 1787631, 1787632, 1787633

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.0	97.1	P/P	90 - 110
Kjeldahl Nitrogen	96.6	96.0	P/P	90 - 110
Kjeldahl Nitrogen	97.1	99.0	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					4.29	
EPA 300.0 Rev. 2.1	Chloride	98.7	98.2	96.9		0.694	
	Chloride	99.1	97.8	98.3		0.0904	
	Sulfate	97.2	93.8	96.4		0.410	
	Sulfate	97.8	95.6	95.9		0.298	
EPA 350.1 Rev. 2.0	Ammonia-N	103	102	101			0.938
	Ammonia-N	99.4	102	103			0.495
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	99.6	94.9			2.56
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	93.0	94.5			1.60
EPA 365.1 Rev. 2.0	Total-P	100	103	95.4			7.38
	Total-P	101	102	99.9			2.31
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.7	93.3	92.4			0.898
SM 2120 B	Color (true)					1.22	
	Color (true)					3.28	
SM 2320 B-97	Total Alkalinity	101				0.214	
	Total Alkalinity	101				0.0528	
SM 2540 C-97	TDS					0.889	
	TDS					0.581	
SM 4500 F-C-97	Fluoride	98.7	96.9	96.9			0.0
	Fluoride	98.7	95.5	95.5			0.0
SM 5310 B-00	Organic Carbon	98.1	98.0	96.6			0.840

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1787624, 1787625, 1787626, 1787627, 1787628
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1787624, 1787625, 1787626, 1787627, 1787628
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1787624, 1787625, 1787626, 1787627, 1787628
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1787629, 1787630, 1787631, 1787632, 1787633
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1787629, 1787630, 1787631, 1787632, 1787633
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1787629, 1787630, 1787631, 1787632, 1787633
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1787629, 1787630, 1787631, 1787632, 1787633
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1787634, 1787635, 1787636, 1787637, 1787638
SM 2120 B / E31780	True Color measured at 450 nm	1787624, 1787625, 1787626, 1787627, 1787628
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1787624, 1787625, 1787626, 1787627, 1787628
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1787624, 1787625, 1787626, 1787627, 1787628

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1787624, 1787625, 1787626, 1787627, 1787628
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1787624, 1787625, 1787626, 1787627, 1787628
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1787629, 1787630, 1787631, 1787632, 1787633

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	04/07/2016			04/07/2016 17:11	Sima Feizi	1787624, 1787625, 1787626, 1787627, 1787628
EPA 300.0 Rev. 2.1	04/07/2016			04/12/2016	Ping Hua	1787624, 1787625, 1787626, 1787627, 1787628
EPA 350.1 Rev. 2.0	04/07/2016			04/14/2016	Diana M. Turner	1787629, 1787630, 1787631, 1787632
	04/07/2016			04/19/2016	Diana M. Turner	1787633
EPA 351.2 Rev. 2.0	04/07/2016	04/20/2016	Sofia Elnemr	04/21/2016	Christopher Armour	1787629, 1787630, 1787631, 1787632, 1787633
EPA 353.2 Rev. 2.0	04/07/2016			04/12/2016	Peter D. Kaus	1787629, 1787630, 1787631, 1787632, 1787633
EPA 365.1 Rev. 2.0	04/07/2016	04/15/2016	Lipi Saha	04/18/2016	Lipi Saha	1787629, 1787630, 1787631, 1787632, 1787633
EPA 365.1 Rev. 2.0 dissolved	04/07/2016			04/07/2016 14:16	Ping Hua	1787634
	04/07/2016			04/07/2016 14:17	Ping Hua	1787635
	04/07/2016			04/07/2016 14:18	Ping Hua	1787636
	04/07/2016			04/07/2016 14:19	Ping Hua	1787637
	04/07/2016			04/07/2016 14:20	Ping Hua	1787638
SM 2120 B	04/07/2016			04/07/2016 15:18	Blanca Fach	1787624
	04/07/2016			04/07/2016 15:23	Blanca Fach	1787625
	04/07/2016			04/07/2016 15:24	Blanca Fach	1787626, 1787627
	04/07/2016			04/07/2016 15:25	Blanca Fach	1787628
SM 2320 B-97	04/07/2016			04/13/2016	Dale L. Simmons	1787624, 1787625, 1787626, 1787627, 1787628
SM 2540 C-97	04/07/2016			04/11/2016	Sima Feizi	1787624, 1787625, 1787626, 1787627, 1787628
SM 2540 D-97	04/07/2016			04/11/2016	Sima Feizi	1787624, 1787625, 1787626, 1787627, 1787628
SM 4500 F-C-97	04/07/2016			04/13/2016	Dale L. Simmons	1787624, 1787625, 1787626, 1787627, 1787628
SM 5310 B-00	04/07/2016			04/13/2016	Sofia Elnemr	1787629, 1787630, 1787631, 1787632, 1787633