

Chemical Analysis Report

SO-DIST-2016-03-10-01

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

Event Description: **SMP: Manuel, Oak, Chapel, Winker**

Request ID: **RQ-2016-03-07-66**

Customer: **SO-DIST**

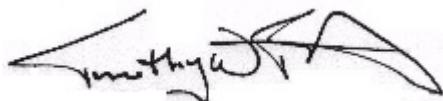
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

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Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 30-MAR-2016 10:27

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

Case Narrative

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

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

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

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

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

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

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

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

Precision is reported as relative percent difference unless otherwise noted.

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

QC Codes used in this report may include:

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

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

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

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

Sample Location: MANUEL BRANCH UPSTREAM OF WEIR

Collection Date/Time: 03/09/2016 08:40

Field ID: G3SD03092016-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778851	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P300665	
	EPA 300.0 Rev. 2.1	Chloride	86		mg Cl/L	P300295	
		Sulfate	27		mg SO4/L	P300297	
	SM 2120 B	Color (true)	61	A	PCU	P300175	
	SM 2320 B-97	Total Alkalinity	199		mg CaCO3/L	P300460	
	SM 2540 C-97	TDS	412		mg/L	P300637	
	SM 2540 D-97	TSS	3	I	mg/L	P300406	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P300462	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P300847	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P300726	
1778856	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P300384	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P300615	
	SM 5310 B-00	Organic Carbon	9.7		mg C/L	P300359	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.094		mg P/L	P300171	
	dissolved						

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: CHAPEL CREEK SOUTH OF SR 78

Collection Date/Time: 03/09/2016 09:45

Field ID: G3SD03092016-2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778852	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P300665	
	EPA 300.0 Rev. 2.1	Chloride	58		mg Cl/L	P300295	
		Sulfate	3.6		mg SO4/L	P300485	
	SM 2120 B	Color (true)	110		PCU	P300175	
	SM 2320 B-97	Total Alkalinity	168		mg CaCO3/L	P300587	
	SM 2540 C-97	TDS	310		mg/L	P300637	
	SM 2540 D-97	TSS	3	I	mg/L	P300406	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P300590	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.091		mg N/L	P300847	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P300726	
1778857	EPA 353.2 Rev. 2.0	NO2NO3-N	0.13		mg N/L	P300384	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P300615	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P300359	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.072		mg P/L	P300171	
	dissolved						

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: WINKLER CANAL @ PRINCETON ST.

Collection Date/Time: 03/09/2016 09:10

Field ID: G3SD03092016-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778853	EPA 180.1 Rev. 2.0	Turbidity	1.2		NTU	P300665	

Field ID: G3SD03092016-3

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778853	EPA 300.0 Rev. 2.1	Chloride	93		mg Cl/L	P300295	
		Sulfate	48		mg SO4/L	P300297	
	SM 2120 B	Color (true)	20		PCU	P300175	
	SM 2320 B-97	Total Alkalinity	240		mg CaCO3/L	P300587	
	SM 2540 C-97	TDS	482	A	mg/L	P300638	
	SM 2540 D-97	TSS	2	U	mg/L	P300407	
	SM 4500 F-C-97	Fluoride	0.36		mg F/L	P300590	
1778858	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P300847	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P300726	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P300384	
	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P300615	
	SM 5310 B-00	Organic Carbon	5.1		mg C/L	P300359	
1778863	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.024		mg P/L	P300172	

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: OAK CREEK @ KENTUCY ST.

Collection Date/Time: 03/09/2016 10:55

Field ID: G1SD03092016-2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778854	EPA 180.1 Rev. 2.0	Turbidity	3.0	A	NTU	P300666	
	EPA 300.0 Rev. 2.1	Chloride	58		mg Cl/L	P300295	
		Sulfate	27		mg SO4/L	P300297	
	SM 2120 B	Color (true)	28		PCU	P300175	
	SM 2320 B-97	Total Alkalinity	296		mg CaCO3/L	P300587	
	SM 2540 C-97	TDS	440		mg/L	P300638	
	SM 2540 D-97	TSS	4	I	mg/L	P300407	
1778859	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P300590	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.040		mg N/L	P300847	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P300726	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P300385	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P300615	
1778864	SM 5310 B-00	Organic Carbon	8.7		mg C/L	P300359	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.021		mg P/L	P300172	

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: OAK CREEK @ OAK CREEK PRESERVE

Collection Date/Time: 03/09/2016 10:35

Field ID: G1SD03092016-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778855	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P300666	
	EPA 300.0 Rev. 2.1	Chloride	39		mg Cl/L	P300295	
		Sulfate	19		mg SO4/L	P300297	

Field ID: G1SD03092016-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1778855	SM 2120 B	Color (true)	23		PCU	P300176	
	SM 2320 B-97	Total Alkalinity	314		mg CaCO3/L	P300587	
	SM 2540 C-97	TDS	437		mg/L	P300638	
	SM 2540 D-97	TSS	2	U	mg/L	P300407	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P300590	
1778860	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P300847	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.52		mg N/L	P300727	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.23		mg N/L	P300385	
	EPA 365.1 Rev. 2.0	Total-P	0.035		mg P/L	P300694	
	SM 5310 B-00	Organic Carbon	8.3		mg C/L	P300359	
1778865	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.016		mg P/L	P300172	

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: P300665

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P300666

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P300295

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P300297

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P300485

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P300847

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300726

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300727

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300384

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300385

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300615

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300694

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300171

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300172

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

Reference Method: SM 2120 B
Batch ID: P300175

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P300176

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P300460

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

Reference Method: SM 2320 B-97
Batch ID: P300587

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

Reference Method: SM 2540 C-97
Batch ID: P300637

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P300638

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P300406

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P300407

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P300462

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P300590

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P300359

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: P300295

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300297

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300485

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300847

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.6		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300726

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300727

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300384

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: P300385

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: P300385

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300615

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300694

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300171

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300172

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

Reference Method: SM 2320 B-97
Batch ID: P300460

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

Reference Method: SM 2320 B-97
Batch ID: P300587

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

Reference Method: SM 4500 F-C-97
Batch ID: P300462

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.3		P	94 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P300590

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.4		P	94 - 108

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P300359

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300295

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778832	Chloride	104		P	90 - 110
1778834	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300297

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778832	Sulfate	101		P	90 - 110
1778834	Sulfate	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300485

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778845	Sulfate	102		P	90 - 110
1779206	Sulfate	99.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778856	Ammonia-N	99.2	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300727

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778860	Kjeldahl Nitrogen	94.3	96.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300384

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778858	NO2NO3-N	101	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300385

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778859	NO2NO3-N	99.5	97.5	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300615

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778836	Total-P	99.4	109	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300694

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778860	Total-P	98.2	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300171

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778825	O-Phosphate-P	95.5	97.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300172

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778863	O-Phosphate-P	95.8	96.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P300462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1779207	Fluoride	101	101	P/P	94 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P300590

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1779161	Fluoride	100	101	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P300359

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1778637	Organic Carbon	96.9	97.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P300665

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778830	Turbidity	1.36	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P300666

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778854	Turbidity	2.31	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300295

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778832	Chloride	4.36	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300297

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778832	Sulfate	4.50	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P300485

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778845	Sulfate	2.67	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P300847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778856	Ammonia-N	1.31	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300726

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778836	Kjeldahl Nitrogen	2.65	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P300727

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778860	Kjeldahl Nitrogen	1.30	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778858	NO2NO3-N	2.93	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P300385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778859	NO2NO3-N	1.31	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300615

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778836	Total-P	6.87	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P300694

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778860	Total-P	0.401	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300171

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778825	O-Phosphate-P	1.59	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P300172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778863	O-Phosphate-P	0.914	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P300175

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778851	Color (true)	0.389	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P300176

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778874	Color (true)	0.213	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P300460

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779207	Total Alkalinity	0.297	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P300587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779161	Total Alkalinity	0.262	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P300637

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778823	TDS	4.61	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P300638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778853	TDS	0.622	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P300462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779207	Fluoride	0.0	Spike	P	0 - 3.7

Reference Method: SM 4500 F-C-97
Batch ID: P300590

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1779161	Fluoride	0.470	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P300359

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1778637	Organic Carbon	0.728	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 300.0 Rev. 2.1
Run ID: A68089
Included Lab Sample IDs: 1778851, 1778852, 1778853, 1778854, 1778855

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.1	100	P/P	90 - 110
Chloride	99.6	99.1	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A68089

Included Lab Sample IDs: 1778851, 1778853, 1778854, 1778855

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A68147

Included Lab Sample IDs: 1778861, 1778862, 1778863, 1778864, 1778865

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.2	97.5	P/P	90 - 110
O-Phosphate-P	98.5	98.2	P/P	90 - 110
O-Phosphate-P	98.9	98.7	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A68148

Included Lab Sample IDs: 1778851, 1778852, 1778853, 1778854, 1778855

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.6	97.1	P/P	90 - 115
Color (true)	97.1	97.5	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A68152

Included Lab Sample IDs: 1778851, 1778852, 1778853, 1778854, 1778855

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

Reference Method: SM 5310 B-00

Run ID: A68221

Included Lab Sample IDs: 1778856, 1778857, 1778858, 1778859, 1778860

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A68232

Included Lab Sample IDs: 1778856, 1778857, 1778858, 1778859, 1778860

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	102	P/P	90 - 110
NO2NO3-N	102	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A68255

Included Lab Sample IDs: 1778851

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

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A68255

Included Lab Sample IDs: 1778851

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A68261

Included Lab Sample IDs: 1778852

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sulfate	99.1	96.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A68295

Included Lab Sample IDs: 1778852, 1778853, 1778854, 1778855

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

Reference Method: SM 4500 F-C-97

Run ID: A68295

Included Lab Sample IDs: 1778852, 1778853, 1778854, 1778855

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68343

Included Lab Sample IDs: 1778856, 1778857, 1778858, 1778859

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A68381

Included Lab Sample IDs: 1778856, 1778857, 1778858, 1778859, 1778860

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.7	95.1	P/P	90 - 110
Kjeldahl Nitrogen	99.8	95.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A68389

Included Lab Sample IDs: 1778856, 1778857, 1778858, 1778859, 1778860

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68404

Included Lab Sample IDs: 1778860

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A68404

Included Lab Sample IDs: 1778860

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.5	97.5	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				1.36	
	Turbidity				2.31	
EPA 300.0 Rev. 2.1	Chloride	104	104	103	4.36	
	Sulfate	102	101	99.9	4.50	
	Sulfate	101	102	99.5	2.67	
EPA 350.1 Rev. 2.0	Ammonia-N	97.6	99.2	101		1.31
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.1				2.65
	Kjeldahl Nitrogen	99.1	94.3	96.1		1.30
EPA 353.2 Rev. 2.0	NO2NO3-N	101	101	104		2.93
	NO2NO3-N	101	99.5	97.5		1.31
EPA 365.1 Rev. 2.0	Total-P	94.9	99.4	109		6.87
	Total-P	100	98.2	97.8		0.401
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.9	95.5	97.1		1.59
	O-Phosphate-P	103	95.8	96.9		0.914
SM 2120 B	Color (true)				0.389	
	Color (true)				0.213	
SM 2320 B-97	Total Alkalinity	102			0.297	
	Total Alkalinity	102			0.262	
SM 2540 C-97	TDS				4.61	
	TDS				0.622	
SM 4500 F-C-97	Fluoride	98.3	101	101		0.0
	Fluoride	99.4	100	101		0.470
SM 5310 B-00	Organic Carbon	99.4	96.9	97.8		0.728

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1778851, 1778852, 1778853, 1778854, 1778855
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1778851, 1778852, 1778853, 1778854, 1778855
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1778851, 1778852, 1778853, 1778854, 1778855
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1778856, 1778857, 1778858, 1778859, 1778860
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1778856, 1778857, 1778858, 1778859, 1778860
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1778856, 1778857, 1778858, 1778859, 1778860

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1778856, 1778857, 1778858, 1778859, 1778860
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1778861, 1778862, 1778863, 1778864, 1778865
SM 2120 B / E31780	True Color measured at 450 nm	1778851, 1778852, 1778853, 1778854, 1778855
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1778851, 1778852, 1778853, 1778854, 1778855
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1778851, 1778852, 1778853, 1778854, 1778855
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1778851, 1778852, 1778853, 1778854, 1778855
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1778851, 1778852, 1778853, 1778854, 1778855
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1778856, 1778857, 1778858, 1778859, 1778860

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	03/10/2016			03/10/2016 13:49	Sima Feizi	1778851, 1778852, 1778853, 1778854, 1778855
EPA 300.0 Rev. 2.1	03/10/2016			03/11/2016	Julia Storbeck	1778851
	03/10/2016			03/12/2016	Julia Storbeck	1778853, 1778854, 1778855
	03/10/2016			03/16/2016	Ping Hua	1778852
EPA 350.1 Rev. 2.0	03/10/2016			03/22/2016	Diana M. Turner	1778856, 1778857, 1778858, 1778859, 1778860
EPA 351.2 Rev. 2.0	03/10/2016	03/21/2016	Sofia Elnemr	03/22/2016	Christopher Armour	1778856, 1778857, 1778858, 1778859, 1778860
EPA 353.2 Rev. 2.0	03/10/2016			03/15/2016	Peter D. Kaus	1778856, 1778857, 1778858, 1778859, 1778860
EPA 365.1 Rev. 2.0	03/10/2016	03/18/2016	Christopher Armour	03/21/2016	Lipi Saha	1778856, 1778857, 1778858, 1778859
	03/10/2016	03/21/2016	Christopher Armour	03/23/2016	Lipi Saha	1778860
EPA 365.1 Rev. 2.0 dissolved	03/10/2016			03/10/2016 13:53	Ping Hua	1778863
	03/10/2016			03/10/2016 14:19	Ping Hua	1778861
	03/10/2016			03/10/2016 14:20	Ping Hua	1778862
	03/10/2016			03/10/2016 14:21	Ping Hua	1778864
	03/10/2016			03/10/2016 14:26	Ping Hua	1778865
SM 2120 B	03/10/2016			03/10/2016 14:23	Rochelle Y Jackson	1778851
	03/10/2016			03/10/2016 14:24	Rochelle Y Jackson	1778852
	03/10/2016			03/10/2016 14:25	Rochelle Y Jackson	1778853
	03/10/2016			03/10/2016 14:26	Rochelle Y Jackson	1778854
	03/10/2016			03/10/2016 14:29	Rochelle Y Jackson	1778855
SM 2320 B-97	03/10/2016			03/16/2016	Dale L. Simmons	1778851, 1778852, 1778853, 1778854, 1778855
SM 2540 C-97	03/10/2016			03/14/2016	Christopher Armour	1778851, 1778852, 1778853, 1778854, 1778855
SM 2540 D-97	03/10/2016			03/14/2016	Christopher Armour	1778851, 1778852, 1778853, 1778854, 1778855
SM 4500 F-C-97	03/10/2016			03/16/2016	Dale L. Simmons	1778851, 1778852, 1778853, 1778854, 1778855
SM 5310 B-00	03/10/2016			03/15/2016	Sofia Elnemr	1778856, 1778857, 1778858, 1778859, 1778860