

Chemical Analysis Report

SE-DIST-2016-04-29-01

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

Event Description: **SMP-Yellow**
Request ID: **RQ-2016-04-25-23**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Matthew Sewell

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Certified by: Timothy Fitzpatrick, Program Administrator

Date Certified: 25-MAY-2016 16:32

A handwritten signature in black ink, appearing to read 'Timothy W. 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: Ocean Canal 3 mi W of US 98

Collection Date/Time: 04/28/2016 11:00

Field ID: G5SE0010

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794258	EPA 180.1 Rev. 2.0	Turbidity	26	A	NTU	P303248	
	EPA 300.0 Rev. 2.1	Chloride	45		mg Cl/L	P303902	
		Sulfate	24		mg SO4/L	P303905	
	SM 2120 B	Color (true)	51	A	PCU	P303259	
	SM 2320 B-97	Total Alkalinity	95		mg CaCO3/L	P303984	
	SM 2540 C-97	TDS	252		mg/L	P303933	
	SM 2540 D-97	TSS	8	I	mg/L	P303893	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P303988	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P303867	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.95		mg N/L	P304321	MS
1794264	EPA 353.2 Rev. 2.0	NO2NO3-N	0.41		mg N/L	P304008	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P304149	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P303954	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.088		mg P/L	P303293	
	dissolved						

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Ocean Canal @ CR 880 East

Collection Date/Time: 04/28/2016 11:15

Field ID: G5SE0007

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794259	EPA 180.1 Rev. 2.0	Turbidity	19		NTU	P303248	
	EPA 300.0 Rev. 2.1	Chloride	50		mg Cl/L	P303902	
		Sulfate	26		mg SO4/L	P303905	
	SM 2120 B	Color (true)	66		PCU	P303259	
	SM 2320 B-97	Total Alkalinity	117		mg CaCO3/L	P303985	
	SM 2540 C-97	TDS	284	A	mg/L	P303933	
	SM 2540 D-97	TSS	15	A	mg/L	P303893	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P303990	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.037		mg N/L	P303867	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P304322	
1794265	EPA 353.2 Rev. 2.0	NO2NO3-N	0.41		mg N/L	P304008	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P304149	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P303954	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.052		mg P/L	P303293	
	dissolved						

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Hillsboro Canal @ SR 715

Collection Date/Time: 04/28/2016 11:50

Field ID: G5SE0025

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794260	EPA 180.1 Rev. 2.0	Turbidity	20		NTU	P303248	
	EPA 300.0 Rev. 2.1	Chloride	46		mg Cl/L	P303902	
		Sulfate	23		mg SO4/L	P303905	

Field ID: G5SE0025

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794260	SM 2120 B	Color (true)	58		PCU	P303259	
	SM 2320 B-97	Total Alkalinity	108		mg CaCO3/L	P303985	
	SM 2540 C-97	TDS	245		mg/L	P303934	
	SM 2540 D-97	TSS	13		mg/L	P303894	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P303990	
1794266	EPA 350.1 Rev. 2.0	Ammonia-N	0.051		mg N/L	P303867	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P304322	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.30		mg N/L	P304008	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P304149	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P303954	
1794272	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.088		mg P/L	P303293	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Duplicate Hillsboro Canal

Collection Date/Time: 04/28/2016 12:00

Field ID: G5SE0025 duplicate

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794261	EPA 180.1 Rev. 2.0	Turbidity	20		NTU	P303248	
	EPA 300.0 Rev. 2.1	Chloride	46		mg Cl/L	P303902	
		Sulfate	23		mg SO4/L	P303905	
	SM 2120 B	Color (true)	56		PCU	P303259	
	SM 2320 B-97	Total Alkalinity	108		mg CaCO3/L	P303985	
	SM 2540 C-97	TDS	262		mg/L	P303934	
	SM 2540 D-97	TSS	12		mg/L	P303894	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P303990	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.052		mg N/L	P303867	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P304322	
1794267	EPA 353.2 Rev. 2.0	NO2NO3-N	0.30		mg N/L	P304008	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P304149	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P303954	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.088		mg P/L	P303293	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: North New River Canal @ SR 80

Collection Date/Time: 04/28/2016 12:35

Field ID: G5SE0024

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794262	EPA 180.1 Rev. 2.0	Turbidity	21		NTU	P303248	
	EPA 300.0 Rev. 2.1	Chloride	47		mg Cl/L	P303902	
		Sulfate	23		mg SO4/L	P303905	
	SM 2120 B	Color (true)	57		PCU	P303259	
	SM 2320 B-97	Total Alkalinity	112		mg CaCO3/L	P303985	
	SM 2540 C-97	TDS	272		mg/L	P303934	
	SM 2540 D-97	TSS	14		mg/L	P303894	

Field ID: G5SE0024

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794262	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P303990	
1794268	EPA 350.1 Rev. 2.0	Ammonia-N	0.051		mg N/L	P303867	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P304322	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.24		mg N/L	P304008	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P304149	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P303954	
1794274	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.080		mg P/L	P303293	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: L 25 Canal @ Cork Screw Rd

Collection Date/Time: 04/28/2016 13:00

Field ID: 28010980

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794263	EPA 180.1 Rev. 2.0	Turbidity	22		NTU	P303248	
	EPA 300.0 Rev. 2.1	Chloride	47		mg Cl/L	P303902	
		Sulfate	24		mg SO4/L	P303905	
	SM 2120 B	Color (true)	46		PCU	P303259	
	SM 2320 B-97	Total Alkalinity	107		mg CaCO3/L	P303985	
	SM 2540 C-97	TDS	256	A	mg/L	P303934	
	SM 2540 D-97	TSS	18	A	mg/L	P303894	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P303990	
1794269	EPA 350.1 Rev. 2.0	Ammonia-N	0.029		mg N/L	P303867	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P304322	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.066		mg N/L	P304042	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P304149	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P303954	
1794275	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.034		mg P/L	P303293	

Ref. Method and Comment:

EPA 350.1 Rev. 2.0: Matrix spike recovery data is unavailable due to high analyte concentration in the QC sample.

Sample Location: Hillsboro Canal @ SR 715 - Blank

Collection Date/Time: 04/28/2016 12:05

Field ID: G5SE0025-Blank

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794276	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P303248	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P303902	
		Sulfate	0.20	U	mg SO4/L	P303905	
	SM 2120 B	Color (true)	2.5	U	PCU	P303257	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P303985	
	SM 2540 C-97	TDS	15	U	mg/L	P303933	
	SM 2540 D-97	TSS	2	U	mg/L	P303893	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P303990	
1794277	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P304320	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P304322	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P304446	

Field ID: G5SE0025-Blank

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1794277	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P304233	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P304743	
1794278	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P303293	

Ref. Method and Comment:
 EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 05/19/2016.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P303248

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P303902

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P303905

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P303867

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P304320

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P304321

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P304322

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P304008

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304008

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304042

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304446

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304149

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304233

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303293

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

Reference Method: SM 2120 B
Batch ID: P303257

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P303259

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P303984

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: P303985

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

Reference Method: SM 2540 C-97
Batch ID: P303933

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P303934

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P303893

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P303894

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P303988

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P303990

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P303954

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Reference Method: SM 5310 B-00
Batch ID: P304743

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: P303902

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303905

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303867

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304320

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304321

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304322

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: P304008

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304042

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304446

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304149

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304233

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: P303293

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

Reference Method: SM 2320 B-97
Batch ID: P303984

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

Reference Method: SM 2320 B-97
Batch ID: P303985

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

Reference Method: SM 4500 F-C-97
Batch ID: P303988

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P303990

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P303954

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

Reference Method: SM 5310 B-00
Batch ID: P304743

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303902

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794086	Chloride	99.8		P	90 - 110
1794120	Chloride	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303905

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794086	Sulfate	97.0		P	90 - 110
1794120	Sulfate	96.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304320

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1797503	Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304321

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794032	Kjeldahl Nitrogen	110	104	F/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304322

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794265	Kjeldahl Nitrogen	110	98.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304008

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1792946	NO2NO3-N	91.4	90.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304042

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794269	NO2NO3-N	98.1	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304446

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1796941	NO2NO3-N	98.5	99.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304149

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794264	Total-P	101	98.2	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304233

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793547	Total-P	97.4	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303293

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794092	O-Phosphate-P	99.2	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P303988

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794911	Fluoride	98.2	98.2	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P303990

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794420	Fluoride	95.7	96.2	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P303954

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1794125	Organic Carbon	98.0	98.6	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P304743

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1793864	Organic Carbon	95.9	97.9	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P303248

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794258	Turbidity	0.766	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794120	Chloride	0.820	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P303905

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794120	Sulfate	2.81	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P303867

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794091	Ammonia-N	1.48	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P304320

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1797503	Ammonia-N	0.936	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304321

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794032	Kjeldahl Nitrogen	3.49	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P304322

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794265	Kjeldahl Nitrogen	5.51	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304008

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1792946	NO2NO3-N	0.520	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304042

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794269	NO2NO3-N	1.52	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P304446

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1796941	NO2NO3-N	0.310	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794264	Total-P	1.77	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P304233

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793547	Total-P	3.71	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P303293

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794092	O-Phosphate-P	1.00	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P303257

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794292	Color (true)	0.0936	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P303259

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794258	Color (true)	0.206	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P303984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794911	Total Alkalinity	0.278	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P303985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794420	Total Alkalinity	0.0601	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P303933

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794259	TDS	3.17	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P303934

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794263	TDS	3.12	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P303893

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794259	TSS	5.26	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P303894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794263	TSS	6.74	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P303988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794911	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P303990

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794420	Fluoride	0.490	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P303954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1794125	Organic Carbon	0.509	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P304743

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1793864	Organic Carbon	1.87	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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A69183

Included Lab Sample IDs: 1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276

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

Reference Method: SM 2120 B

Run ID: A69185

Included Lab Sample IDs: 1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	101	P/P	85 - 115
Color (true)	102	102	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A69192

Included Lab Sample IDs: 1794270, 1794271, 1794272, 1794273, 1794274, 1794275, 1794278

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A69217

Included Lab Sample IDs: 1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	100	P/P	90 - 110
Chloride	100	100	P/P	90 - 110
Sulfate	99.0	99.9	P/P	90 - 110
Sulfate	99.5	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69351

Included Lab Sample IDs: 1794264, 1794265, 1794266, 1794267, 1794268, 1794269

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	98.3	P/P	90 - 110
Ammonia-N	98.7	98.2	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69382

Included Lab Sample IDs: 1794264, 1794265, 1794266, 1794267, 1794268, 1794269

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

Reference Method: SM 2320 B-97

Run ID: A69399

Included Lab Sample IDs: 1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.1	P/P	90 - 110
Total Alkalinity	98.3	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A69399

Included Lab Sample IDs: 1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	99.5	P/P	90 - 110
Fluoride	99.5	99.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69407

Included Lab Sample IDs: 1794264, 1794265, 1794266, 1794267, 1794268

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69415

Included Lab Sample IDs: 1794269

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69452

Included Lab Sample IDs: 1794264, 1794265, 1794266, 1794267, 1794268, 1794269

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	99.9	P/P	90 - 110
Total-P	99.9	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A69475

Included Lab Sample IDs: 1794277

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A69506

Included Lab Sample IDs: 1794277

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A69519

Included Lab Sample IDs: 1794277

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69526

Included Lab Sample IDs: 1794264, 1794265, 1794266, 1794267, 1794268, 1794269, 1794277

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A69526

Included Lab Sample IDs: 1794264, 1794265, 1794266, 1794267, 1794268, 1794269, 1794277

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.4	93.8	P/P	90 - 110
Kjeldahl Nitrogen	95.9	93.5	P/P	90 - 110
Kjeldahl Nitrogen	96.6	95.4	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A69609

Included Lab Sample IDs: 1794277

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	98.4	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				0.766	
EPA 300.0 Rev. 2.1	Chloride	99.3	99.6 99.8		0.820	
	Sulfate	95.5	96.5 97.0		2.81	
EPA 350.1 Rev. 2.0	Ammonia-N	100				1.48
	Ammonia-N	100	100 101			0.936
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	110 104			3.49
	Kjeldahl Nitrogen	102	110 98.7			5.51
EPA 353.2 Rev. 2.0	NO2NO3-N	100	91.4 90.8			0.520
	NO2NO3-N	100	98.1 100			1.52
	NO2NO3-N	101	98.5 99.0			0.310
EPA 365.1 Rev. 2.0	Total-P	98.2	101 98.2			1.77
	Total-P	104	97.4 101			3.71
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	99.2 100			1.00
SM 2120 B	Color (true)				0.0936	
	Color (true)				0.206	
SM 2320 B-97	Total Alkalinity	101			0.278	
	Total Alkalinity	101			0.0601	
SM 2540 C-97	TDS				3.17	
	TDS				3.12	
SM 2540 D-97	TSS				5.26	
	TSS				6.74	
SM 4500 F-C-97	Fluoride	97.5	98.2 98.2			0.0
	Fluoride	97.9	95.7 96.2			0.490
SM 5310 B-00	Organic Carbon	99.6	98.0 98.6			0.509
	Organic Carbon	96.6	95.9 97.9			1.87

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
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Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1794264, 1794265, 1794266, 1794267, 1794268, 1794269, 1794277
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1794264, 1794265, 1794266, 1794267, 1794268, 1794269, 1794277
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1794264, 1794265, 1794266, 1794267, 1794268, 1794269, 1794277
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1794264, 1794265, 1794266, 1794267, 1794268, 1794269, 1794277
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1794270, 1794271, 1794272, 1794273, 1794274, 1794275, 1794278
SM 2120 B / E31780	True Color measured at 450 nm	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1794264, 1794265, 1794266, 1794267, 1794268, 1794269, 1794277

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	04/29/2016			04/29/2016 15:40	Sima Feizi	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
EPA 300.0 Rev. 2.1	04/29/2016			05/05/2016	Elisa J Lutz	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
EPA 350.1 Rev. 2.0	04/29/2016			05/09/2016	Diana M. Turner	1794264, 1794265, 1794266, 1794267, 1794268, 1794269
	04/29/2016			05/13/2016	Diana M. Turner	1794277
EPA 351.2 Rev. 2.0	04/29/2016	05/13/2016	Christopher Armour	05/16/2016	Christopher Armour	1794264, 1794265, 1794266, 1794267, 1794268, 1794269, 1794277
EPA 353.2 Rev. 2.0	04/29/2016			05/10/2016	Peter D. Kaus	1794264, 1794265, 1794266, 1794267, 1794268
	04/29/2016			05/11/2016	Peter D. Kaus	1794269
	04/29/2016			05/17/2016	Peter D. Kaus	1794277
EPA 365.1 Rev. 2.0	04/29/2016	05/12/2016	Lipi Saha	05/12/2016	Lipi Saha	1794264, 1794265, 1794266, 1794267, 1794268, 1794269
	04/29/2016	05/13/2016	Lipi Saha	05/16/2016	Lipi Saha	1794277
EPA 365.1 Rev. 2.0 dissolved	04/29/2016			04/29/2016 15:16	Julia Storbeck	1794272, 1794273
	04/29/2016			04/29/2016 15:52	Julia Storbeck	1794278
	04/29/2016			04/29/2016 16:07	Julia Storbeck	1794270, 1794271
	04/29/2016			04/29/2016 16:08	Julia Storbeck	1794274
	04/29/2016			04/29/2016 16:09	Julia Storbeck	1794275
SM 2120 B	04/29/2016			04/29/2016 15:55	Blanca Fach	1794276
	04/29/2016			04/29/2016 16:07	Blanca Fach	1794258
	04/29/2016			04/29/2016 16:08	Blanca Fach	1794259, 1794260
	04/29/2016			04/29/2016 16:09	Blanca Fach	1794261
	04/29/2016			04/29/2016 16:10	Blanca Fach	1794262
	04/29/2016			04/29/2016 16:11	Blanca Fach	1794263
SM 2320 B-97	04/29/2016			05/10/2016	Dale L. Simmons	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
SM 2540 C-97	04/29/2016			05/04/2016	Yijie Li	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
SM 2540 D-97	04/29/2016			05/04/2016	Yijie Li	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
SM 4500 F-C-97	04/29/2016			05/10/2016	Dale L. Simmons	1794258, 1794259, 1794260, 1794261, 1794262, 1794263, 1794276
SM 5310 B-00	04/29/2016			05/10/2016	Diana M. Turner	1794264, 1794265, 1794266, 1794267, 1794268, 1794269
	04/29/2016			05/20/2016	Ping Hua	1794277