

Chemical Analysis Report

SO-DIST-2016-12-14-01

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

Event Description: **SMP: Alligator 2074**
Request ID: **RQ-2016-11-28-14**
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: Liang Lin, Environmental Administrator

Date Certified: 09-JAN-2017 11:19

A handwritten signature in black ink, appearing to read "Liang Lin", 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 groups are included in this report: Metals and 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: Alligator Cr South Branch @SR768

Collection Date/Time: 12/13/2016 10:45

Field ID: G2SD25010009

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857679	EPA 180.1 Rev. 2.0	Turbidity	5.9		NTU	P316808	
	EPA 300.0 Rev. 2.1	Chloride	150		mg Cl/L	P317356	
		Sulfate	32		mg SO4/L	P317360	
	SM 2120 B	Color (true)	16		PCU	P316803	
	SM 2320 B-97	Total Alkalinity	176		mg CaCO3/L	P317138	
	SM 2540 C-97	TDS	482		mg/L	P317407	
	SM 2540 D-97	TSS	6	I	mg/L	P317285	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P317329	
1857682	EPA 350.1 Rev. 2.0	Ammonia-N	0.18		mg N/L	P317312	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P316913	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P317067	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P317086	
	SM 5310 B-00	Organic Carbon	8.2		mg C/L	P316965	
1857685	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.020		mg P/L	P316791	
1857691	EPA 200.7 Rev. 4.4	Calcium	78.0		mg/L	P317002	
		Iron	1.65E+03		ug/L	P317002	
		Magnesium	15.3		mg/L	P317002	
		Potassium	2.4		mg/L	P317002	
		Sodium	73.5		mg/L	P317002	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P317002	
		Arsenic	2.07		ug/L	P317002	
		Cadmium	0.020	U	ug/L	P317002	
		Chromium	0.17	I	ug/L	P317002	
		Copper	0.25	I	ug/L	P317002	
		Lead	0.050	U	ug/L	P317002	
		Nickel	0.26		ug/L	P317002	
		Silver	0.0050	U	ug/L	P317002	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: The chromium result was confirmed in the undigested sample on 12/22/2016.

Sample Location: Alligator Cr South Branch @SR768 DUP

Collection Date/Time: 12/13/2016 10:50

Field ID: G2SD2074DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857680	EPA 180.1 Rev. 2.0	Turbidity	6.1		NTU	P316808	
	EPA 300.0 Rev. 2.1	Chloride	160		mg Cl/L	P317356	
		Sulfate	31		mg SO4/L	P317360	
	SM 2120 B	Color (true)	17		PCU	P316803	
	SM 2320 B-97	Total Alkalinity	176		mg CaCO3/L	P317138	
	SM 2540 C-97	TDS	466		mg/L	P317407	
	SM 2540 D-97	TSS	5	I	mg/L	P317285	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P317329	
1857683	EPA 350.1 Rev. 2.0	Ammonia-N	0.18		mg N/L	P317312	

Field ID: G2SD2074DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857683	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P316913	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.17		mg N/L	P317067	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P317086	
	SM 5310 B-00	Organic Carbon	8.1		mg C/L	P316965	
1857686	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.020		mg P/L	P316791	
1857692	EPA 200.7 Rev. 4.4	Calcium	76.5		mg/L	P317002	
		Iron	1.68E+03		ug/L	P317002	
		Magnesium	15.1		mg/L	P317002	
		Potassium	2.4		mg/L	P317002	
		Sodium	72.0		mg/L	P317002	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P317002	
		Arsenic	2.13		ug/L	P317002	
		Cadmium	0.020	U	ug/L	P317002	
		Chromium	0.26		ug/L	P317002	
		Copper	0.10	I	ug/L	P317002	
		Lead	0.074	I	ug/L	P317002	
		Nickel	0.25		ug/L	P317002	
		Silver	0.0050	U	ug/L	P317002	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 200.8 Rev. 5.4: The chromium result was confirmed on 12/30/2016.

Sample Location: Field Blank

Collection Date/Time: 12/13/2016 11:00

Field ID: G2SDBLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857681	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P316808	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P317356	
		Sulfate	0.20	U	mg SO4/L	P317360	
		Color (true)	2.5	U	PCU	P316803	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P317138	
	SM 2540 C-97	TDS	15	U	mg/L	P317405	
	SM 2540 D-97	TSS	2	U	mg/L	P317283	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317329	
1857684	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P317312	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P316995	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P317067	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P317427	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P316965	
1857687	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316791	
1857693	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P317002	
		Iron	30	U	ug/L	P317002	
		Magnesium	0.040	U	mg/L	P317002	
		Potassium	0.30	U	mg/L	P317002	
		Sodium	0.50	U	mg/L	P317002	

Field ID: G2SDBLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857693	EPA 200.7 Rev. 4.4	Zinc	5.0	U	ug/L	P317002	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P317002	
		Cadmium	0.020	U	ug/L	P317002	
		Chromium	0.050	U	ug/L	P317002	
		Copper	0.10	U	ug/L	P317002	
		Lead	0.050	U	ug/L	P317002	
		Nickel	0.050	U	ug/L	P317002	
		Silver	0.0050	U	ug/L	P317002	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P316808

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P317002

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P317002

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P317356

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P317360

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317312

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316913

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316995

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317067

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317086

Component	Result	Code	Units
Total-P	0.005	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317427

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316791

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

Reference Method: SM 2120 B
Batch ID: P316803

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P317138

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P317405

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P317407

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P317283

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P317285

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P317329

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P316965

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P317002

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	108		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	110		P	85 - 115
Sodium	103		P	85 - 115
Zinc	99.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P317002

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P317002

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cadmium	100		P	85 - 115
Chromium	99.9		P	85 - 115
Copper	99.9		P	85 - 115
Lead	100		P	85 - 115
Nickel	101		P	85 - 115
Silver	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317356

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317360

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317312

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316913

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316995

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317067

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	101		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317086

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: P317427

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P316791

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

Reference Method: SM 2320 B-97
 Batch ID: P317138

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.6		P	95 - 108

Reference Method: SM 4500 F-C-97
 Batch ID: P317329

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	92 - 103

Reference Method: SM 5310 B-00
 Batch ID: P316965

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P317002

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857001	Calcium	102		P	80 - 120
1857001	Iron	105		P	80 - 120
1857001	Magnesium	109		P	80 - 120
1857001	Potassium	105		P	80 - 120
1857001	Sodium	102		P	80 - 120
1857001	Zinc	99.8		P	80 - 120
1857539	Calcium	103		P	80 - 120
1857539	Iron	108	105	P/P	80 - 120
1857539	Magnesium	104		P	80 - 120
1857539	Potassium	103	104	P/P	80 - 120
1857539	Sodium	103		P	80 - 120
1857539	Zinc	101	98.5	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P317002

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857001	Arsenic	103		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P317002

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857001	Cadmium	102		P	80 - 120
1857001	Chromium	100		P	80 - 120
1857001	Copper	102		P	80 - 120
1857001	Lead	101		P	80 - 120
1857001	Nickel	101		P	80 - 120
1857001	Silver	101		P	80 - 120
1857539	Arsenic	104	102	P/P	80 - 120
1857539	Cadmium	104	105	P/P	80 - 120
1857539	Chromium	105	103	P/P	80 - 120
1857539	Copper	101	98.3	P/P	80 - 120
1857539	Lead	104	103	P/P	80 - 120
1857539	Nickel	102	105	P/P	80 - 120
1857539	Silver	103	103	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317356

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857880	Chloride	100		P	90 - 110
1858180	Chloride	96.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317360

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857880	Sulfate	95.9		P	90 - 110
1858180	Sulfate	91.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317312

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857712	Ammonia-N	102	97.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316913

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857683	Kjeldahl Nitrogen	102	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316995

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857711	Kjeldahl Nitrogen	101	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317067

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857682	NO2NO3-N	93.5	94.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317086

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857644	Total-P	98.2	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857645	Total-P	96.8	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316791

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857651	O-Phosphate-P	98.8	99.4	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P317329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857834	Fluoride	103	103	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P316965

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857478	Organic Carbon	95.1	99.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316808

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857790	Turbidity	1.71	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P317002

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857539	Calcium	2.89	Spike	P	0 - 20
1857539	Iron	2.36	Spike	P	0 - 20
1857539	Magnesium	2.56	Spike	P	0 - 20
1857539	Potassium	1.40	Spike	P	0 - 20
1857539	Sodium	2.27	Spike	P	0 - 20
1857539	Zinc	3.02	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P317002

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857539	Arsenic	1.57	Spike	P	0 - 20
1857539	Cadmium	0.649	Spike	P	0 - 20
1857539	Chromium	1.51	Spike	P	0 - 20
1857539	Copper	2.21	Spike	P	0 - 20
1857539	Lead	1.53	Spike	P	0 - 20
1857539	Nickel	2.73	Spike	P	0 - 20
1857539	Silver	0.0671	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317356

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857880	Chloride	0.151	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317360

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857880	Sulfate	0.927	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317312

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857712	Ammonia-N	1.98	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316913

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857683	Kjeldahl Nitrogen	2.67	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857711	Kjeldahl Nitrogen	1.90	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317067

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857682	NO2NO3-N	0.303	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317086

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857644	Total-P	3.15	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857645	Total-P	0.817	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316791

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857651	O-Phosphate-P	0.491	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P316803

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857709	Color (true)	2.99	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P317138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857881	Total Alkalinity	0.776	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P317405

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857006	TDS	4.03	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P317407

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857531	TDS	4.37	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P317329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857834	Fluoride	0.0	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P316965

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857478	Organic Carbon	2.49	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: A73374
Included Lab Sample IDs: 1857685, 1857686, 1857687

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.8	99.0	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A73378
Included Lab Sample IDs: 1857679, 1857680, 1857681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A73379
Included Lab Sample IDs: 1857679, 1857680, 1857681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	98.0	P/P	95 - 105

Reference Method: SM 5310 B-00
Run ID: A73440
Included Lab Sample IDs: 1857682, 1857683, 1857684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.9	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73465
Included Lab Sample IDs: 1857683

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	90.6	92.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73481
Included Lab Sample IDs: 1857682

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73485

Included Lab Sample IDs: 1857682, 1857683, 1857684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.0	96.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73493

Included Lab Sample IDs: 1857684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.9	100	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A73497

Included Lab Sample IDs: 1857691, 1857692, 1857693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	101	101	P/P	90 - 110
Calcium	101	101	P/P	90 - 110
Iron	101	102	P/P	90 - 110
Iron	101	102	P/P	90 - 110
Magnesium	102	102	P/P	90 - 110
Magnesium	102	102	P/P	90 - 110
Potassium	100	101	P/P	90 - 110
Potassium	101	101	P/P	90 - 110
Sodium	99.2	99.0	P/P	90 - 110
Sodium	99.7	102	P/P	90 - 110
Zinc	101	101	P/P	90 - 110
Zinc	101	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A73503

Included Lab Sample IDs: 1857679, 1857680, 1857681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A73513

Included Lab Sample IDs: 1857691, 1857692, 1857693

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	102	101	P/P	90 - 110
Arsenic	98.2	97.4	P/P	90 - 110
Cadmium	99.3	99.0	P/P	90 - 110
Cadmium	99.9	101	P/P	90 - 110
Chromium	100	101	P/P	90 - 110
Chromium	98.7	98.9	P/P	90 - 110
Copper	101	99.3	P/P	90 - 110
Copper	96.8	95.0	P/P	90 - 110
Lead	97.1	97.3	P/P	90 - 110
Lead	99.7	98.8	P/P	90 - 110
Nickel	101	99.9	P/P	90 - 110
Nickel	97.3	96.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A73513

Included Lab Sample IDs: 1857691, 1857692, 1857693

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73516

Included Lab Sample IDs: 1857682, 1857683

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73559

Included Lab Sample IDs: 1857682, 1857683, 1857684

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

Reference Method: SM 4500 F-C-97

Run ID: A73565

Included Lab Sample IDs: 1857679, 1857680, 1857681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73576

Included Lab Sample IDs: 1857679, 1857680, 1857681

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	98.9	P/P	90 - 110
Chloride	101	101	P/P	90 - 110
Sulfate	96.0	93.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73674

Included Lab Sample IDs: 1857684

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.8	95.8	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	Precision LCS	Precision SMP	MS
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Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision	
						LCS	SMP MS
EPA 180.1 Rev. 2.0	Turbidity						1.71
EPA 200.7 Rev. 4.4	Calcium	104	102	103			2.89
	Iron	108	105	108	105		2.36
	Magnesium	104	109	104			2.56
	Potassium	110	105	103	104		1.40
	Sodium	103	102	103			2.27
	Zinc	99.5	99.8	101	98.5		3.02
EPA 200.8 Rev. 5.4	Arsenic	102	103	104	102		1.57
	Cadmium	100	102	104	105		0.649
	Chromium	99.9	100	105	103		1.51
	Copper	99.9	102	101	98.3		2.21
	Lead	100	101	104	103		1.53
	Nickel	101	101	102	105		2.73
	Silver	101	101	103	103		0.0671
EPA 300.0 Rev. 2.1	Chloride	100	100	96.0		0.151	
	Sulfate	94.3	95.9	91.8		0.927	
EPA 350.1 Rev. 2.0	Ammonia-N	104	102	97.8			1.98
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	102	98.3			2.67
	Kjeldahl Nitrogen	99.4	101	98.5			1.90
EPA 353.2 Rev. 2.0	NO2NO3-N	101	93.5	94.0			0.303
EPA 365.1 Rev. 2.0	Total-P	100	98.2	102			3.15
	Total-P	96.6	96.8	97.6			0.817
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.8	99.4			0.491
SM 2120 B	Color (true)					2.99	
SM 2320 B-97	Total Alkalinity	99.6				0.776	
SM 2540 C-97	TDS					4.03	
	TDS					4.37	
SM 4500 F-C-97	Fluoride	98.5	103	103			0.0
SM 5310 B-00	Organic Carbon	101	95.1	99.6			2.49

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1857679, 1857680, 1857681
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1857691, 1857692, 1857693
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1857691, 1857692, 1857693
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1857679, 1857680, 1857681
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1857679, 1857680, 1857681
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1857682, 1857683, 1857684
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1857682, 1857683, 1857684
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1857682, 1857683, 1857684
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1857682, 1857683, 1857684
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1857685, 1857686, 1857687
SM 2120 B / E31780	True Color measured at 450 nm	1857679, 1857680, 1857681
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1857679, 1857680, 1857681

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1857679, 1857680, 1857681
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1857679, 1857680, 1857681
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1857679, 1857680, 1857681
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1857682, 1857683, 1857684

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	12/14/2016			12/14/2016 16:19	Julie Michelle Frank	1857679, 1857680, 1857681
EPA 200.7 Rev. 4.4	12/14/2016	12/19/2016	Elliott D. Healy	12/20/2016	Joshua Ayres	1857691, 1857692, 1857693
EPA 200.8 Rev. 5.4	12/14/2016	12/19/2016	Elliott D. Healy	12/20/2016	Charles J. Peterson	1857691, 1857692, 1857693
	12/14/2016	12/29/2016	Elliott D. Healy	12/20/2016	Charles J. Peterson	1857692
EPA 300.0 Rev. 2.1	12/14/2016			12/22/2016	Ping Hua	1857679, 1857680, 1857681
EPA 350.1 Rev. 2.0	12/14/2016			12/22/2016	Sofia Elnemr	1857682, 1857683, 1857684
EPA 351.2 Rev. 2.0	12/14/2016	12/16/2016	Adrian Shelby	12/19/2016	Joseph Suarez	1857683
	12/14/2016	12/16/2016	Adrian Shelby	12/20/2016	Joseph Suarez	1857682
	12/14/2016	12/19/2016	Adrian Shelby	12/20/2016	Joseph Suarez	1857684
EPA 353.2 Rev. 2.0	12/14/2016			12/20/2016	Beverly Y. Sanders	1857682, 1857683, 1857684
EPA 365.1 Rev. 2.0	12/14/2016	12/20/2016	Vijayalakshmi Reddy	12/21/2016	Lipi Saha	1857682, 1857683
	12/14/2016	12/27/2016	Vijayalakshmi Reddy	12/30/2016	Lipi Saha	1857684
EPA 365.1 Rev. 2.0 dissolved	12/14/2016			12/14/2016 14:58	Julia Storbeck	1857687
	12/14/2016			12/14/2016 15:01	Julia Storbeck	1857685
	12/14/2016			12/14/2016 15:02	Julia Storbeck	1857686
SM 2120 B	12/14/2016			12/14/2016 16:21	Jared I. Manley	1857679
	12/14/2016			12/14/2016 16:22	Jared I. Manley	1857680
	12/14/2016			12/14/2016 16:23	Jared I. Manley	1857681
SM 2320 B-97	12/14/2016			12/17/2016	Dale L. Simmons	1857679, 1857680, 1857681
SM 2540 C-97	12/14/2016			12/15/2016	Yijie Li	1857679, 1857680, 1857681
SM 2540 D-97	12/14/2016			12/15/2016	Yijie Li	1857679, 1857680, 1857681
SM 4500 F-C-97	12/14/2016			12/23/2016	Dale L. Simmons	1857679, 1857680, 1857681
SM 5310 B-00	12/14/2016			12/16/2016	Julie Michelle Frank	1857682, 1857683, 1857684