

Chemical Analysis Report

NW-DIST-2019-01-17-01

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

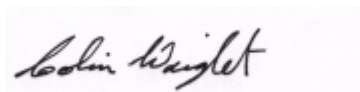
Event Description: **EGLIN RUN EAST**
Request ID: **RQ-2019-01-14-17**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 308
Pensacola, FL 32502-5794
Attn: cheryl bunch

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Colin Wright, Program Administrator

Date Certified: 11-FEB-2019 11:11

A handwritten signature in black ink, appearing to read "Colin Wright", is written over a light blue rectangular background.

Case Narrative

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

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

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

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

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program 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: Alaqua Creek at Park boat ramp

Collection Date/Time: 01/16/2019 10:15

Field ID: G3NW0163

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2054875	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P357468	
	EPA 300.0	Bromide	0.013	U	mg Br/L	P358025	
	SM 2320 B-97	Total Alkalinity	1.9	I	mg CaCO3/L	P357950	
	SM 2540 D-97	TSS	2	I	mg/L	P357694	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357953	
2054876	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P357685	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.15	I	mg N/L	P357528	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.049		mg N/L	P357565	
	EPA 365.1 Rev. 2.0	Total-P	0.006		mg P/L	P357539	
	SM 5310 B-00	Organic Carbon	2.4		mg C/L	P357592	
2054877	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P357462	

Ref. Method and Comment:

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

Sample Location: Mouth of Mullet Creek @ Hwy 20

Collection Date/Time: 01/16/2019 10:50

Field ID: FB_01162019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2054878	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P357468	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P357605	
		Sulfate	0.20	U	mg SO4/L	P357607	
	SM 2120 B	Color (true)	2.5	U	PCU	P357473	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P357950	
	SM 2540 C-97	TDS	15	U	mg/L	P357674	
	SM 2540 D-97	TSS	2	U	mg/L	P357694	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357953	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P357685	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P357529	
2054879	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P357565	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P357539	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P357592	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P357462	
2054880	EPA 365.1 Rev. 2.0 dissolved						

Ref. Method and Comment:

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

Sample Location: Mouth of Mullet Creek @ Hwy 20

Collection Date/Time: 01/16/2019 10:45

Field ID: G3NW0137_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2054860	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P357468	
	EPA 300.0 Rev. 2.1	Chloride	4.8		mg Cl/L	P357605	
		Sulfate	2.1		mg SO4/L	P357607	
	SM 2120 B	Color (true)	21		PCU	P357473	
	SM 2320 B-97	Total Alkalinity	2.6		mg CaCO3/L	P357949	
	SM 2540 C-97	TDS	15	U	mg/L	P357674	
	SM 2540 D-97	TSS	4	I	mg/L	P357694	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357952	
2054865	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P357685	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P357528	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P357564	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P357539	
	SM 5310 B-00	Organic Carbon	1.8		mg C/L	P357592	
2054870	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P357462	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The result was confirmed on 01/17/2019.

Sample Location: Mouth of Mullet Creek @ Hwy 20

Collection Date/Time: 01/16/2019 10:40

Field ID: G3NW0137

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2054861	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P357468	
	EPA 300.0 Rev. 2.1	Chloride	4.8		mg Cl/L	P357605	
		Sulfate	2.1		mg SO4/L	P357607	
	SM 2120 B	Color (true)	21		PCU	P357473	
	SM 2320 B-97	Total Alkalinity	2.6		mg CaCO3/L	P357950	
	SM 2540 C-97	TDS	15	U	mg/L	P357674	
	SM 2540 D-97	TSS	4	I	mg/L	P357694	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357953	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.011		mg N/L	P357685	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.19	I	mg N/L	P357528	
2054866	EPA 353.2 Rev. 2.0	NO2NO3-N	0.023		mg N/L	P357564	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P357539	
	SM 5310 B-00	Organic Carbon	1.8		mg C/L	P357592	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.021		mg P/L	P357462	
	dissolved						
2054871	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.021		mg P/L	P357462	

Ref. Method and Comment:

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

EPA 365.1 Rev. 2.0: Total-P: The result was confirmed on 01/29/2019.

EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: The result was confirmed on 01/17/2019.

Sample Location: Eagle Creek upstream of Hwy 20

Collection Date/Time: 01/16/2019 11:05

Field ID: G3NW0151

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2054862	EPA 180.1 Rev. 2.0	Turbidity	0.50		NTU	P357468	
	EPA 300.0 Rev. 2.1	Chloride	5.0		mg Cl/L	P357605	
		Sulfate	1.9		mg SO4/L	P357607	
	SM 2120 B	Color (true)	35	A	PCU	P357473	
	SM 2320 B-97	Total Alkalinity	1.1	I	mg CaCO3/L	P357950	
	SM 2540 C-97	TDS	15	U	mg/L	P357674	
	SM 2540 D-97	TSS	2	U	mg/L	P357694	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357953	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P357685	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P357528	
2054867	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P357565	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P357539	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P357592	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P357462	
	dissolved						

Ref. Method and Comment:

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

Sample Location: Deer Moss Creek below College Blvd

Collection Date/Time: 01/16/2019 11:30

Field ID: G3NW0138

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2054863	EPA 180.1 Rev. 2.0	Turbidity	1.2	A	NTU	P357468	
	EPA 300.0 Rev. 2.1	Chloride	14		mg Cl/L	P357605	
		Sulfate	10		mg SO4/L	P357607	
	SM 2120 B	Color (true)	7.0		PCU	P357473	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P357950	
	SM 2540 C-97	TDS	79		mg/L	P357674	
	SM 2540 D-97	TSS	3	I	mg/L	P357694	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357953	
2054868	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P357685	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21		mg N/L	P357528	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.5		mg N/L	P357565	
	EPA 365.1 Rev. 2.0	Total-P	0.048		mg P/L	P357539	
	SM 5310 B-00	Organic Carbon	1.4		mg C/L	P357592	
2054873	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P357462	

Ref. Method and Comment:

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

Sample Location: Shaw Still Branch upstream E College Blvd

Collection Date/Time: 01/16/2019 11:45

Field ID: G3NW0162

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2054864	EPA 180.1 Rev. 2.0	Turbidity	0.55		NTU	P357468	
	EPA 300.0 Rev. 2.1	Chloride	17		mg Cl/L	P357605	
		Sulfate	15		mg SO4/L	P357607	
	SM 2120 B	Color (true)	7.0		PCU	P357473	
	SM 2320 B-97	Total Alkalinity	42		mg CaCO3/L	P357950	
	SM 2540 C-97	TDS	110		mg/L	P357674	
	SM 2540 D-97	TSS	2	U	mg/L	P357694	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357953	
2054869	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P357685	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.22		mg N/L	P357528	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.8		mg N/L	P357565	
	EPA 365.1 Rev. 2.0	Total-P	0.002	I	mg P/L	P357539	
	SM 5310 B-00	Organic Carbon	1.8		mg C/L	P357592	
2054874	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P357462	

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: P357468

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P358025

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357605

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357607

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357685

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357528

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357529

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357564

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357565

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357539

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357462

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

Reference Method: SM 2120 B
Batch ID: P357473

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P357949

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

Reference Method: SM 2320 B-97
Batch ID: P357950

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

Reference Method: SM 2540 C-97
Batch ID: P357674

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P357694

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P357952

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P357953

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: P357592

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0
Batch ID: P358025

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357605

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357607

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357685

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357528

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357529

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357564

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: P357565

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357539

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 dissolved
Batch ID: P357462

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.9		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P357473

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

Reference Method: SM 2320 B-97
Batch ID: P357949

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P357950

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P357952

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.1		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P357953

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

Reference Method: SM 5310 B-00
Batch ID: P357592

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0
Batch ID: P358025

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054875	Bromide	107	92.9	P/P	90 - 110
2056871	Bromide	104	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357605

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054644	Chloride	98.1		P	90 - 110
2054860	Chloride	99.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357607

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054644	Sulfate	96.4		P	90 - 110
2054860	Sulfate	97.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357685

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054867	Ammonia-N	97.9	97.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357528

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054866	Kjeldahl Nitrogen	105	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357529

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054912	Kjeldahl Nitrogen	103	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357564

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054744	NO2NO3-N	99.5	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357565

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054867	NO2NO3-N	100	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357539

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054868	Total-P	103	99.2	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054877	O-Phosphate-P	98.8	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P357952

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055317	Fluoride	95.6	96.1	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P357953

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054944	Fluoride	95.2	96.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P357592

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2054865	Organic Carbon	97.6	97.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054863	Turbidity	7.66	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P358025

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054875	Bromide	14.1	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054644	Chloride	1.60	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357607

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054644	Sulfate	1.26	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357685

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054867	Ammonia-N	0.570	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357528

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054866	Kjeldahl Nitrogen	1.25	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357529

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054912	Kjeldahl Nitrogen	2.54	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357564

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054744	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357565

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054867	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357539

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054868	Total-P	3.32	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054877	O-Phosphate-P	1.21	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P357473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054862	Color (true)	0.647	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P357949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055317	Total Alkalinity	0.0891	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P357950

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054944	Total Alkalinity	0.961	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P357674

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054923	TDS	6.19	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P357952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055317	Fluoride	0.472	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P357953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054944	Fluoride	0.986	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P357592

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2054865	Organic Carbon	0.0469	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: A88882

Included Lab Sample IDs: 2054870, 2054871, 2054872, 2054873, 2054874, 2054877, 2054880

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.1	P/P	90 - 110
O-Phosphate-P	99.1	99.4	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A88883

Included Lab Sample IDs: 2054860, 2054861, 2054862, 2054863, 2054864, 2054875, 2054878

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

Reference Method: SM 2120 B

Run ID: A88884

Included Lab Sample IDs: 2054860, 2054861, 2054862, 2054863, 2054864, 2054878

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.8	102	P/P	90 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88910

Included Lab Sample IDs: 2054865, 2054866, 2054867, 2054868, 2054869, 2054876, 2054879

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

Reference Method: SM 5310 B-00

Run ID: A88923

Included Lab Sample IDs: 2054865, 2054866, 2054867, 2054868, 2054869, 2054876, 2054879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.8	99.8	P/P	90 - 110
Organic Carbon	99.8	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A88931

Included Lab Sample IDs: 2054860, 2054861, 2054862, 2054863, 2054864, 2054878

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	104	P/P	90 - 110
Chloride	104	104	P/P	90 - 110
Sulfate	103	103	P/P	90 - 110
Sulfate	103	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88936

Included Lab Sample IDs: 2054879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.3	97.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A88950

Included Lab Sample IDs: 2054865, 2054866, 2054867, 2054868, 2054869, 2054876, 2054879

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A88964

Included Lab Sample IDs: 2054865, 2054866, 2054867, 2054868, 2054869, 2054876, 2054879

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	100	P/P	90 - 110
Ammonia-N	98.7	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88978

Included Lab Sample IDs: 2054865, 2054866, 2054867, 2054868, 2054869, 2054876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.3	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A89058

Included Lab Sample IDs: 2054860, 2054861, 2054862, 2054863, 2054864, 2054875, 2054878

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	99.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A89058

Included Lab Sample IDs: 2054860, 2054861, 2054862, 2054863, 2054864, 2054875, 2054878

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.5	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A89080

Included Lab Sample IDs: 2054875

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	102	104	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	SMP	MS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity					7.66	
EPA 300.0	Bromide	106	107	92.9	104		14.1
			103				
EPA 300.0 Rev. 2.1	Chloride	100	98.1	99.5		1.60	
	Sulfate	98.7	96.4	97.6		1.26	
EPA 350.1 Rev. 2.0	Ammonia-N	96.4	97.9	97.3			0.570
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	105	106			1.25
	Kjeldahl Nitrogen	107	103	99.2			2.54
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.5	99.5			0.0
	NO2NO3-N	102	100	99.8			0.489
EPA 365.1 Rev. 2.0	Total-P	100	103	99.2			3.32
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.9	98.8	100			1.21
SM 2120 B	Color (true)	101				0.647	
SM 2320 B-97	Total Alkalinity	100				0.0891	
	Total Alkalinity	102				0.961	
SM 2540 C-97	TDS					6.19	
SM 4500 F-C-97	Fluoride	95.1	95.6	96.1			0.472
	Fluoride	97.9	95.2	96.5			0.986
SM 5310 B-00	Organic Carbon	97.8	97.6	97.5			0.0469

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2054860, 2054861, 2054862, 2054863, 2054864, 2054875, 2054878
EPA 300.0 / E31780	Bromide in aqueous matrices	2054875
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2054860, 2054861, 2054862, 2054863, 2054864, 2054878
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2054860, 2054861, 2054862, 2054863, 2054864, 2054878
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2054865, 2054866, 2054867, 2054868, 2054869, 2054876, 2054879
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2054865, 2054866, 2054867, 2054868, 2054869, 2054876, 2054879
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2054865, 2054866, 2054867, 2054868, 2054869, 2054876, 2054879
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2054865, 2054866, 2054867, 2054868, 2054869, 2054876, 2054879
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2054870, 2054871, 2054872, 2054873, 2054874, 2054877, 2054880
SM 2120 B / E31780	True Color measured at 450 nm	2054860, 2054861, 2054862, 2054863, 2054864, 2054878
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2054860, 2054861, 2054862, 2054863, 2054864, 2054875, 2054878
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2054860, 2054861, 2054862, 2054863, 2054864, 2054878
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2054860, 2054861, 2054862, 2054863, 2054864, 2054875, 2054878
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2054860, 2054861, 2054862, 2054863, 2054864, 2054875, 2054878
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2054865, 2054866, 2054867, 2054868, 2054869, 2054876, 2054879

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	01/17/2019			01/17/2019 16:08	Sima Feizi	2054860, 2054861, 2054862, 2054863, 2054864, 2054875, 2054878
EPA 300.0	01/17/2019			01/29/2019 16:05	Lipi Saha	2054875
EPA 300.0 Rev. 2.1	01/17/2019			01/19/2019 01:12	Lipi Saha	2054860
	01/17/2019			01/19/2019 03:54	Lipi Saha	2054861
	01/17/2019			01/19/2019 04:06	Lipi Saha	2054862
	01/17/2019			01/19/2019 04:18	Lipi Saha	2054863
	01/17/2019			01/19/2019 04:31	Lipi Saha	2054864
	01/17/2019			01/19/2019 04:43	Lipi Saha	2054878
EPA 350.1 Rev. 2.0	01/17/2019			01/22/2019 10:58	Ping Hua	2054867
	01/17/2019			01/22/2019 11:03	Ping Hua	2054865
	01/17/2019			01/22/2019 11:04	Ping Hua	2054866
	01/17/2019			01/22/2019 11:12	Ping Hua	2054868
	01/17/2019			01/22/2019 11:13	Ping Hua	2054869
	01/17/2019			01/22/2019 11:15	Ping Hua	2054876
	01/17/2019			01/22/2019 11:21	Ping Hua	2054879
EPA 351.2 Rev. 2.0	01/17/2019	01/18/2019 11:15	Adrian Shelby	01/22/2019 11:54	Joseph Suarez	2054879
	01/17/2019	01/18/2019 11:15	Adrian Shelby	01/22/2019 15:31	Joseph Suarez	2054865
	01/17/2019	01/18/2019 11:15	Adrian Shelby	01/22/2019 15:32	Joseph Suarez	2054866
	01/17/2019	01/18/2019 11:15	Adrian Shelby	01/22/2019 15:37	Joseph Suarez	2054867
	01/17/2019	01/18/2019 11:15	Adrian Shelby	01/22/2019 15:39	Joseph Suarez	2054868
	01/17/2019	01/18/2019 11:15	Adrian Shelby	01/22/2019 15:40	Joseph Suarez	2054869
	01/17/2019	01/18/2019 11:15	Adrian Shelby	01/22/2019 15:42	Joseph Suarez	2054876
EPA 353.2 Rev. 2.0	01/17/2019			01/18/2019 12:16	Beverly Y. Sanders	2054865
	01/17/2019			01/18/2019 12:18	Beverly Y. Sanders	2054866
	01/17/2019			01/18/2019 12:25	Beverly Y. Sanders	2054867
	01/17/2019			01/18/2019 12:34	Beverly Y. Sanders	2054879
	01/17/2019			01/18/2019 12:51	Beverly Y. Sanders	2054868
	01/17/2019			01/18/2019 12:52	Beverly Y. Sanders	2054869
	01/17/2019			01/18/2019 12:53	Beverly Y. Sanders	2054876
EPA 365.1 Rev. 2.0	01/17/2019	01/18/2019 12:35	Sima Feizi	01/22/2019 17:55	Rosalyn Ballman	2054865
	01/17/2019	01/18/2019 12:35	Sima Feizi	01/22/2019 17:56	Rosalyn Ballman	2054866
	01/17/2019	01/18/2019 12:35	Sima Feizi	01/22/2019 17:57	Rosalyn Ballman	2054867
	01/17/2019	01/18/2019 12:35	Sima Feizi	01/22/2019 17:58	Rosalyn Ballman	2054868
	01/17/2019	01/18/2019 12:35	Sima Feizi	01/22/2019 17:59	Rosalyn Ballman	2054869
	01/17/2019	01/18/2019 12:35	Sima Feizi	01/22/2019 18:00	Rosalyn Ballman	2054876
	01/17/2019	01/18/2019 12:35	Sima Feizi	01/22/2019 18:08	Rosalyn Ballman	2054879
EPA 365.1 Rev. 2.0 dissolved	01/17/2019			01/17/2019 13:45	Jhamieka S. Greenwood	2054877
	01/17/2019			01/17/2019 13:47	Jhamieka S. Greenwood	2054880
	01/17/2019			01/17/2019 13:48	Jhamieka S. Greenwood	2054870

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0 dissolved	01/17/2019			01/17/2019 13:49	Jhamieka S. Greenwood	2054871
	01/17/2019			01/17/2019 13:50	Jhamieka S. Greenwood	2054872
	01/17/2019			01/17/2019 13:51	Jhamieka S. Greenwood	2054873
	01/17/2019			01/17/2019 13:56	Jhamieka S. Greenwood	2054874
SM 2120 B	01/17/2019			01/17/2019 15:20	Chelsea Hernandez	2054860, 2054861
	01/17/2019			01/17/2019 15:22	Chelsea Hernandez	2054862
	01/17/2019			01/17/2019 15:23	Chelsea Hernandez	2054863, 2054864
	01/17/2019			01/17/2019 15:24	Chelsea Hernandez	2054878
SM 2320 B-97	01/17/2019			01/24/2019 01:29	Dale L. Simmons	2054860
	01/17/2019			01/24/2019 02:57	Dale L. Simmons	2054861
	01/17/2019			01/24/2019 03:10	Dale L. Simmons	2054862
	01/17/2019			01/24/2019 03:23	Dale L. Simmons	2054863
	01/17/2019			01/24/2019 03:38	Dale L. Simmons	2054864
	01/17/2019			01/24/2019 03:50	Dale L. Simmons	2054875
SM 2540 C-97	01/17/2019			01/24/2019 04:04	Dale L. Simmons	2054878
	01/17/2019			01/18/2019 20:10	Mariam Hanna	2054860, 2054861, 2054862, 2054863, 2054864, 2054878
SM 2540 D-97	01/17/2019			01/18/2019 20:10	Mariam Hanna	2054860, 2054861, 2054862, 2054863, 2054864, 2054875, 2054878
SM 4500 F-C-97	01/17/2019			01/24/2019 01:29	Dale L. Simmons	2054860
	01/17/2019			01/24/2019 02:57	Dale L. Simmons	2054861
	01/17/2019			01/24/2019 03:10	Dale L. Simmons	2054862
	01/17/2019			01/24/2019 03:23	Dale L. Simmons	2054863
	01/17/2019			01/24/2019 03:38	Dale L. Simmons	2054864
	01/17/2019			01/24/2019 03:50	Dale L. Simmons	2054875
SM 5310 B-00	01/17/2019			01/24/2019 04:04	Dale L. Simmons	2054878
	01/17/2019			01/18/2019 15:20	Megan Treadwell	2054865
	01/17/2019			01/18/2019 16:23	Megan Treadwell	2054866
	01/17/2019			01/18/2019 16:47	Megan Treadwell	2054867
	01/17/2019			01/18/2019 16:59	Megan Treadwell	2054868
	01/17/2019			01/18/2019 17:36	Megan Treadwell	2054869
	01/17/2019			01/18/2019 17:48	Megan Treadwell	2054876
	01/17/2019			01/18/2019 18:00	Megan Treadwell	2054879