

Chemical Analysis Report

CEN-DIST-2019-01-18-01

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

Event Description: **Bird X2 / Faulk / Florence / SRJ (Puzz)**
Request ID: **RQ-2019-01-14-18**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

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Certified by: Colin Wright, Program Administrator

Date Certified: 11-FEB-2019 11:46

A handwritten signature in black ink, appearing to read "Colin Wright", is shown on a light-colored 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: FLORENCE LAKE @ CENTER

Collection Date/Time: 01/17/2019 10:43

Field ID: G3CE0012

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2055451	EPA 180.1 Rev. 2.0	Turbidity	7.8	A	NTU	P357559	
	EPA 300.0 Rev. 2.1	Chloride	460		mg Cl/L	P357691	
		Sulfate	210		mg SO4/L	P357692	
	SM 2120 B	Color (true)	67		PCU	P357583	
	SM 2320 B-97	Total Alkalinity	131		mg CaCO3/L	P357951	
	SM 2540 C-97	TDS	1.12E+03		mg/L	P357972	
	SM 2540 D-97	TSS	7	I	mg/L	P357979	
	SM 4500 F-C-97	Fluoride	0.16		mg F/L	P357954	
2055452	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P358012	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P357627	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.034		mg N/L	P357737	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P357708	
	SM 5310 B-00	Organic Carbon	18		mg C/L	P357654	
2055453	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P357579	

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: SJR @ Power line crossing

Collection Date/Time: 01/17/2019 12:03

Field ID: G3CE0015

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2055442	EPA 180.1 Rev. 2.0	Turbidity	9.8		NTU	P357560	
	EPA 300.0 Rev. 2.1	Chloride	330		mg Cl/L	P357691	
		Sulfate	130		mg SO4/L	P357692	
	SM 2120 B	Color (true)	100		PCU	P357582	
	SM 2320 B-97	Total Alkalinity	88		mg CaCO3/L	P357951	
	SM 2540 C-97	TDS	836		mg/L	P357972	
	SM 2540 D-97	TSS	8	I	mg/L	P357979	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P357954	
2055445	EPA 350.1 Rev. 2.0	Ammonia-N	0.062		mg N/L	P357878	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P357626	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P357736	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P357708	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P357654	
2055448	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.018		mg P/L	P357579	

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: SJR @ POWER LINE CROSSING

Collection Date/Time: 01/17/2019 12:07

Field ID: G3CE0015_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2055454	EPA 180.1 Rev. 2.0	Turbidity	11		NTU	P357560	
	EPA 300.0 Rev. 2.1	Chloride	330		mg Cl/L	P357691	
		Sulfate	130		mg SO4/L	P357692	
	SM 2120 B	Color (true)	100		PCU	P357582	
	SM 2320 B-97	Total Alkalinity	88		mg CaCO3/L	P357951	
	SM 2540 C-97	TDS	866		mg/L	P357972	
	SM 2540 D-97	TSS	9	I	mg/L	P357979	
	SM 4500 F-C-97	Fluoride	0.17		mg F/L	P357954	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.062		mg N/L	P358012	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P357627	
2055455	EPA 353.2 Rev. 2.0	NO2NO3-N	0.12		mg N/L	P357736	
	EPA 365.1 Rev. 2.0	Total-P	0.061		mg P/L	P357720	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P357654	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.018		mg P/L	P357579	
	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: FB_01172019

Collection Date/Time: 01/17/2019 12:15

Field ID: FB_01172019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2055457	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P357560	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P357832	
		Sulfate	0.20	U	mg SO4/L	P357834	
	SM 2120 B	Color (true)	2.5	U	PCU	P357583	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P357951	
	SM 2540 C-97	TDS	15	U	mg/L	P357972	
	SM 2540 D-97	TSS	2	U	mg/L	P357979	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P357954	
2055458	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P358012	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P357627	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P357737	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P357720	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P357654	
2055459	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P357579	

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: BIRD LAKE DITCHES @ SOUTH FORK

Collection Date/Time: 01/17/2019 11:07

Field ID: G3CE0013

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2055443	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P357559	
	EPA 300.0 Rev. 2.1	Chloride	87		mg Cl/L	P357691	
		Sulfate	43		mg SO4/L	P357692	
	SM 2120 B	Color (true)	24	A	PCU	P357582	
	SM 2320 B-97	Total Alkalinity	278		mg CaCO3/L	P357951	
	SM 2540 C-97	TDS	508		mg/L	P357972	
	SM 2540 D-97	TSS	2	I	mg/L	P357979	
	SM 4500 F-C-97	Fluoride	0.066	I	mg F/L	P357954	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.069		mg N/L	P357878	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P357626	
2055446	EPA 353.2 Rev. 2.0	NO2NO3-N	0.066		mg N/L	P357736	
	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P357708	
	SM 5310 B-00	Organic Carbon	7.5		mg C/L	P357654	
	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.038		mg P/L	P357579	
	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: FALK CANAL @ 200M DS OF FISKE BLVD

Collection Date/Time: 01/17/2019 12:20

Field ID: G3CE0016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2055444	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P357559	
	EPA 300.0 Rev. 2.1	Chloride	290		mg Cl/L	P357691	
		Sulfate	75		mg SO4/L	P357692	
	SM 2120 B	Color (true)	63		PCU	P357583	
	SM 2320 B-97	Total Alkalinity	77		mg CaCO3/L	P357951	
	SM 2540 C-97	TDS	672		mg/L	P357972	
	SM 2540 D-97	TSS	2	U	mg/L	P357979	
	SM 4500 F-C-97	Fluoride	0.054	I	mg F/L	P357954	
2055447	EPA 350.1 Rev. 2.0	Ammonia-N	0.020		mg N/L	P358012	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.78		mg N/L	P357626	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P357737	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P357708	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P357654	
2055450	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P357579	

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: P357559

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357560

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357691

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357692

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357832

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357834

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357878

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358012

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357626

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357627

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357736

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357737

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357708

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357720

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357579

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

Reference Method: SM 2120 B
Batch ID: P357582

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P357583

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P357951

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P357972

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P357979

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P357954

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P357654

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: P357691

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357692

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	91.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357832

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357834

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	95.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357878

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358012

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357626

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357627

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357736

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 353.2 Rev. 2.0
Batch ID: P357737

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: P357708

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357720

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357579

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

Reference Method: SM 2120 B
Batch ID: P357582

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.5		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P357583

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.3		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P357951

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P357954

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

Reference Method: SM 5310 B-00
Batch ID: P357654

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357691

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055093	Chloride	98.2		P	90 - 110
2055414	Chloride	96.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357692

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055093	Sulfate	95.8		P	90 - 110
2055414	Sulfate	92.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357832

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055532	Chloride	98.4		P	90 - 110
2055638	Chloride	98.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357834

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055532	Sulfate	94.2		P	90 - 110
2055638	Sulfate	95.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357878

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055288	Ammonia-N	100	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358012

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055452	Ammonia-N	98.3	98.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357626

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055446	Kjeldahl Nitrogen	105	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357627

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055487	Kjeldahl Nitrogen	99.7	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357736

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357736

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055288	NO2NO3-N	103	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357737

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055447	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357708

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055446	Total-P	99.9	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357720

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055487	Total-P	105	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357579

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055488	O-Phosphate-P	93.9	95.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P357954

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055094	Fluoride	96.9	96.9	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P357654

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2055412	Organic Carbon	103		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055451	Turbidity	7.35	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P357560

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055474	Turbidity	9.86	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055414	Chloride	0.921	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055414	Sulfate	0.779	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357832

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055532	Chloride	2.83	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P357834

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055532	Sulfate	1.37	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P357878

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055288	Ammonia-N	1.51	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P358012

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055452	Ammonia-N	0.0168	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357626

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055446	Kjeldahl Nitrogen	0.884	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P357627

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055487	Kjeldahl Nitrogen	0.870	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357736

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055288	NO2NO3-N	1.52	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P357737

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055447	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357708

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055446	Total-P	1.48	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P357720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055487	Total-P	6.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P357579

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055488	O-Phosphate-P	2.11	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P357582

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055443	Color (true)	0.396	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P357583

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055486	Color (true)	0.00378	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P357951

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055094	Total Alkalinity	0.187	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P357972

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055431	TDS	1.18	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P357954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055094	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
Batch ID: P357654

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2055412	Organic Carbon	0.538	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 180.1 Rev. 2.0

Run ID: A88912

Included Lab Sample IDs: 2055442, 2055443, 2055444, 2055451, 2055454, 2055457

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A88916

Included Lab Sample IDs: 2055448, 2055449, 2055450, 2055453, 2055456, 2055459

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.7	98.9	P/P	90 - 110
O-Phosphate-P	98.9	98.1	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A88917

Included Lab Sample IDs: 2055442, 2055443, 2055444, 2055451, 2055454, 2055457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	90 - 115
Color (true)	99.5	101	P/P	90 - 115

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A88931

Included Lab Sample IDs: 2055442, 2055443, 2055444, 2055451, 2055454, 2055457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Chloride	98.8	99.9	P/P	90 - 110
Chloride	100	100	P/P	90 - 110
Sulfate	97.0	97.9	P/P	90 - 110
Sulfate	98.1	98.1	P/P	90 - 110
Sulfate	98.1	99.1	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A88948

Included Lab Sample IDs: 2055445, 2055446, 2055447, 2055452, 2055455, 2055458

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	101	102	P/P	90 - 110
Organic Carbon	102	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A88976

Included Lab Sample IDs: 2055445, 2055446, 2055447, 2055452, 2055455, 2055458

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A88990

Included Lab Sample IDs: 2055445, 2055446, 2055447

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: A88990

Included Lab Sample IDs: 2055445, 2055446, 2055447

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.5	99.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89017

Included Lab Sample IDs: 2055445, 2055446, 2055455

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	102	P/P	90 - 110
Total-P	101	103	P/P	90 - 110
Total-P	102	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89029

Included Lab Sample IDs: 2055445, 2055446

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A89035

Included Lab Sample IDs: 2055447, 2055452, 2055458

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A89041

Included Lab Sample IDs: 2055452, 2055455, 2055458

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	103	97.0	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A89058

Included Lab Sample IDs: 2055442, 2055443, 2055444, 2055451, 2055454, 2055457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	99.8	P/P	90 - 110
Total Alkalinity	99.8	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A89058

Included Lab Sample IDs: 2055442, 2055443, 2055444, 2055451, 2055454, 2055457

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	101	P/P	90 - 110
Fluoride	99.5	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A89078

Included Lab Sample IDs: 2055447, 2055452, 2055455, 2055458

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	101	P/P	90 - 110
Ammonia-N	101	101	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	MS
EPA 180.1 Rev. 2.0	Turbidity				7.35	
	Turbidity				9.86	
EPA 300.0 Rev. 2.1	Chloride	100	96.4	98.2	0.921	
	Chloride	98.2	98.4	98.1	2.83	
	Sulfate	91.4	92.7	95.8	0.779	
	Sulfate	95.2	94.2	95.9	1.37	
EPA 350.1 Rev. 2.0	Ammonia-N	102	100	102		1.51
	Ammonia-N	96.6	98.3	98.3		0.0168
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	105	104		0.884
	Kjeldahl Nitrogen	106	99.7	98.2		0.870
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	103	101		1.52
	NO ₂ NO ₃ -N	102	102	102		0.489
EPA 365.1 Rev. 2.0	Total-P	98.6	99.9	98.2		1.48
	Total-P	103	105	98.3		6.16
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.4	93.9	95.9		2.11
SM 2120 B	Color (true)	97.5			0.396	
	Color (true)	97.3			0.0037	
SM 2320 B-97	Total Alkalinity	101			0.187	
SM 2540 C-97	TDS				1.18	
SM 4500 F-C-97	Fluoride	97.9	96.9	96.9		0.0
SM 5310 B-00	Organic Carbon	96.4	103			0.538

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2055442, 2055443, 2055444, 2055451, 2055454, 2055457
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2055442, 2055443, 2055444, 2055451, 2055454, 2055457
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2055442, 2055443, 2055444, 2055451, 2055454, 2055457
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2055445, 2055446, 2055447, 2055452, 2055455, 2055458
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2055445, 2055446, 2055447, 2055452, 2055455, 2055458
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2055445, 2055446, 2055447, 2055452, 2055455, 2055458
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2055445, 2055446, 2055447, 2055452, 2055455, 2055458
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2055448, 2055449, 2055450, 2055453, 2055456, 2055459
SM 2120 B / E31780	True Color measured at 450 nm	2055442, 2055443, 2055444, 2055451, 2055454, 2055457
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2055442, 2055443, 2055444, 2055451, 2055454, 2055457
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2055442, 2055443, 2055444, 2055451, 2055454, 2055457
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2055442, 2055443, 2055444, 2055451, 2055454, 2055457
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2055442, 2055443, 2055444, 2055451, 2055454, 2055457
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2055445, 2055446, 2055447, 2055452, 2055455, 2055458

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	01/18/2019			01/18/2019 14:49	Megan Treadwell	2055442, 2055443, 2055444, 2055451, 2055454, 2055457
EPA 300.0 Rev. 2.1	01/18/2019			01/22/2019 20:52	Lipi Saha	2055442
	01/18/2019			01/22/2019 21:04	Lipi Saha	2055443
	01/18/2019			01/22/2019 21:40	Lipi Saha	2055444
	01/18/2019			01/22/2019 21:52	Lipi Saha	2055451
	01/18/2019			01/22/2019 22:04	Lipi Saha	2055454
	01/18/2019			01/24/2019 15:37	Lipi Saha	2055457
EPA 350.1 Rev. 2.0	01/18/2019			01/25/2019 12:25	Adrian Shelby	2055445
	01/18/2019			01/25/2019 12:27	Adrian Shelby	2055446
	01/18/2019			01/29/2019 11:32	Ping Hua	2055452
	01/18/2019			01/29/2019 11:36	Ping Hua	2055447
	01/18/2019			01/29/2019 11:38	Ping Hua	2055458
	01/18/2019			01/29/2019 11:45	Ping Hua	2055455
EPA 351.2 Rev. 2.0	01/18/2019	01/22/2019 12:00	Adrian Shelby	01/24/2019 10:42	Joseph Suarez	2055445
	01/18/2019	01/22/2019 12:00	Adrian Shelby	01/24/2019 10:44	Joseph Suarez	2055446
	01/18/2019	01/22/2019 12:00	Adrian Shelby	01/24/2019 10:48	Joseph Suarez	2055447
	01/18/2019	01/22/2019 12:00	Adrian Shelby	01/28/2019 09:02	Joseph Suarez	2055452
	01/18/2019	01/22/2019 12:00	Adrian Shelby	01/28/2019 09:04	Joseph Suarez	2055455
	01/18/2019	01/22/2019 12:00	Adrian Shelby	01/28/2019 09:05	Joseph Suarez	2055458
EPA 353.2 Rev. 2.0	01/18/2019			01/23/2019 11:49	Beverly Y. Sanders	2055445
	01/18/2019			01/23/2019 11:50	Beverly Y. Sanders	2055455
	01/18/2019			01/23/2019 11:51	Beverly Y. Sanders	2055446
	01/18/2019			01/23/2019 11:58	Beverly Y. Sanders	2055447
	01/18/2019			01/23/2019 12:04	Beverly Y. Sanders	2055452
	01/18/2019			01/23/2019 12:05	Beverly Y. Sanders	2055458
EPA 365.1 Rev. 2.0	01/18/2019	01/23/2019 11:50	Sima Feizi	01/24/2019 17:44	Rosalyn Ballman	2055446
	01/18/2019	01/23/2019 11:50	Sima Feizi	01/24/2019 17:55	Rosalyn Ballman	2055445
	01/18/2019	01/23/2019 11:50	Sima Feizi	01/24/2019 18:06	Rosalyn Ballman	2055455
	01/18/2019	01/23/2019 11:50	Sima Feizi	01/25/2019 17:06	Rosalyn Ballman	2055447
	01/18/2019	01/23/2019 11:50	Sima Feizi	01/25/2019 17:07	Rosalyn Ballman	2055452
	01/18/2019	01/23/2019 11:50	Sima Feizi	01/25/2019 17:09	Rosalyn Ballman	2055458
EPA 365.1 Rev. 2.0 dissolved	01/18/2019			01/18/2019 14:54	Jhamieka S. Greenwood	2055448, 2055456
	01/18/2019			01/18/2019 14:55	Jhamieka S. Greenwood	2055459
	01/18/2019			01/18/2019 15:05	Jhamieka S. Greenwood	2055449
	01/18/2019			01/18/2019 15:06	Jhamieka S. Greenwood	2055450, 2055453
SM 2120 B	01/18/2019			01/18/2019 16:32	Julia Storbeck	2055443
	01/18/2019			01/18/2019 16:36	Julia Storbeck	2055442
	01/18/2019			01/18/2019 16:37	Julia Storbeck	2055454
	01/18/2019			01/18/2019 16:42	Julia Storbeck	2055444

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2120 B	01/18/2019			01/18/2019 16:43	Julia Storbeck	2055451
	01/18/2019			01/18/2019 16:44	Julia Storbeck	2055457
SM 2320 B-97	01/18/2019			01/24/2019 10:59	Dale L. Simmons	2055443
	01/18/2019			01/24/2019 11:27	Dale L. Simmons	2055457
	01/18/2019			01/24/2019 12:22	Dale L. Simmons	2055444
	01/18/2019			01/24/2019 12:34	Dale L. Simmons	2055442
	01/18/2019			01/24/2019 12:45	Dale L. Simmons	2055454
	01/18/2019			01/24/2019 12:57	Dale L. Simmons	2055451
SM 2540 C-97	01/18/2019			01/23/2019 15:21	Yijie Li	2055442, 2055443, 2055444, 2055451, 2055454, 2055457
SM 2540 D-97	01/18/2019			01/23/2019 15:21	Yijie Li	2055442, 2055443, 2055444, 2055451, 2055454, 2055457
SM 4500 F-C-97	01/18/2019			01/24/2019 10:59	Dale L. Simmons	2055443
	01/18/2019			01/24/2019 11:27	Dale L. Simmons	2055457
	01/18/2019			01/24/2019 12:22	Dale L. Simmons	2055444
	01/18/2019			01/24/2019 12:34	Dale L. Simmons	2055442
	01/18/2019			01/24/2019 12:45	Dale L. Simmons	2055454
	01/18/2019			01/24/2019 12:57	Dale L. Simmons	2055451
SM 5310 B-00	01/18/2019			01/22/2019 22:49	Megan Treadwell	2055445
	01/18/2019			01/22/2019 23:02	Megan Treadwell	2055446
	01/18/2019			01/22/2019 23:38	Megan Treadwell	2055447
	01/18/2019			01/22/2019 23:50	Megan Treadwell	2055452
	01/18/2019			01/23/2019 00:03	Megan Treadwell	2055455
	01/18/2019			01/23/2019 00:15	Megan Treadwell	2055458