

Chemical Analysis Report

NW-DIST-2019-09-20-01

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

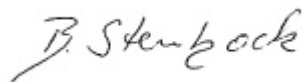
Event Description: **Navarre Run/ Dune Lake Drain**
Request ID: **RQ-2019-09-16-39**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
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Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 08-OCT-2019 17:41



NON-CONFORMANCE REPORT INCLUDED

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: Discharge from Tiger Point Golf Course at
 Maplewood Drive**

Collection Date/Time: 09/19/2019 09:45

Field ID: G4NW0211

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121361	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P371075	
	EPA 300.0	Bromide	0.091		mg Br/L	P371116	
	SM 2320 B-97	Total Alkalinity	26		mg CaCO3/L	P371527	
	SM 2540 D-97	TSS	3	I	mg/L	P371584	
	SM 4500 F-C-97	Fluoride	0.036	I	mg F/L	P371531	
2121363	EPA 350.1 Rev. 2.0	Ammonia-N	1.1		mg N/L	P371595	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P371192	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P371294	
	EPA 365.1 Rev. 2.0	Total-P	0.35		mg P/L	P371314	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P371257	
2121365	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.30		mg P/L	P371084	

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: Discharge from Tiger Point Golf Course at
 Maplewood Drive**

Collection Date/Time: 09/19/2019 09:50

Field ID: G4NW0211_DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121362	EPA 180.1 Rev. 2.0	Turbidity	2.4	A	NTU	P371076	
	EPA 300.0	Bromide	0.10		mg Br/L	P371116	
	SM 2320 B-97	Total Alkalinity	27		mg CaCO3/L	P371527	
	SM 2540 D-97	TSS	3	I	mg/L	P371584	
	SM 4500 F-C-97	Fluoride	0.038	I	mg F/L	P371531	
2121364	EPA 350.1 Rev. 2.0	Ammonia-N	1.1		mg N/L	P371595	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P371212	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P371294	
	EPA 365.1 Rev. 2.0	Total-P	0.37		mg P/L	P371314	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P371257	
2121366	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.30		mg P/L	P371084	

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: Discharge from Tiger Point Golf Course at
 Maplewood Drive**

Collection Date/Time: 09/19/2019 09:55

Field ID: FB_09192019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121367	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P371074	
	EPA 300.0	Bromide	0.013	U	mg Br/L	P371215	
	SM 2320 B-97	Total Alkalinity	0.65	UY	mg CaCO3/L	P371527	
	SM 2540 D-97	TSS	2	UY	mg/L	P371586	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P371531	
2121368	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P371597	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P371212	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P371294	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P371314	
	SM 5310 B-00	Organic Carbon	0.79	I	mg C/L	P371257	
2121369	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P371084	

Ref. Method and Comment:

SM 2320 B-97: Sample was left out at room temperature overnight, should be stored below 6 degC.

SM 2540 D-97: Sample was left out at room temperature overnight, should be stored below 6 degC.

SM 5310 B-00: The result was confirmed on 09/25/2019.

Sample Location: TOM KING CREEK

Collection Date/Time: 09/19/2019 11:35

Field ID: G4NW0193

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121355	EPA 180.1 Rev. 2.0	Turbidity	5.7	A	NTU	P371075	
	EPA 300.0 Rev. 2.1	Chloride	27		mg Cl/L	P371224	
		Sulfate	9.5		mg SO4/L	P371227	
	SM 2120 B	Color (true)	40	A	PCU	P371080	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P371527	
	SM 2540 C-97	TDS	82		mg/L	P371614	
	SM 2540 D-97	TSS	2	I	mg/L	P371581	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P371531	
2121357	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P371595	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.21		mg N/L	P371192	
	EPA 353.2 Rev. 2.0	NO2NO3-N	1.2		mg N/L	P371294	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P371314	
	SM 5310 B-00	Organic Carbon	3.0		mg C/L	P371257	
2121359	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.014		mg P/L	P371084	

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: Williams Creek below Frankfort Avenue

Collection Date/Time: 09/19/2019 12:20

Field ID: G4NW0198

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2121356	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P371075	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P371224	
		Sulfate	4.9		mg SO4/L	P371227	
		Color (true)	27		PCU	P371080	
	SM 2320 B-97	Total Alkalinity	6.0		mg CaCO3/L	P371527	
	SM 2540 C-97	TDS	41		mg/L	P371614	
	SM 2540 D-97	TSS	4	I	mg/L	P371581	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P371531	
2121358	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P371595	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.15	I	mg N/L	P371192	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.034		mg N/L	P371294	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P371314	
	SM 5310 B-00	Organic Carbon	3.5		mg C/L	P371257	
2121360	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P371084	

Ref. Method and Comment:

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

Non-Conformance Report

NCR ID: 7939

Event(s)

NW-DIST-2019-09-20-01

Job(s)

TLH-2019-09-20-18

Sample(s)

2121367

Test(s)

NCR Type: SHIPPING/RECEIVING

NCR Category: Preservation Not Intact

Observation: Samples stored outside of the acceptable temperature range overnight.

Resolution: Samples returned to refrigerator on 9/24/19 @ 08:40. Data will be qualified as appropriate when analyzed after this date/time.

Authorized by/Date: Peter D. Kaus 10/7/2019

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P371074

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P371075

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P371076

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0
Batch ID: P371116

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0
Batch ID: P371215

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371224

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371227

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371595

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371597

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371192

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371212

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371294

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371314

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371084

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

Reference Method: SM 2120 B
Batch ID: P371080

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P371527

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

Reference Method: SM 2540 C-97
Batch ID: P371614

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P371581

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P371584

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P371586

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P371531

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P371257

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: P371116

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

Reference Method: EPA 300.0
Batch ID: P371215

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Bromide	97.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371224

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371227

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371595

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371597

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	95.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371192

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: P371212

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371294

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371314

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371084

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

Reference Method: SM 2120 B
Batch ID: P371080

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

Reference Method: SM 2320 B-97
Batch ID: P371527

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P371531

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P371257

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0
 Batch ID: P371116

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2120060	Bromide	95.7	96.1	P/P	90 - 110
2120064	Bromide	95.2		P	90 - 110

Reference Method: EPA 300.0
 Batch ID: P371215

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121387	Bromide	96.0	95.9	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P371224

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121188	Chloride	101		P	90 - 110
2121278	Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P371227

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121188	Sulfate	101		P	90 - 110
2121278	Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P371595

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121279	Ammonia-N	98.5	98.9	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P371597

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121455	Ammonia-N	96.1	96.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P371192

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121279	Kjeldahl Nitrogen	106	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P371212

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121427	Kjeldahl Nitrogen	102	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P371294

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121288	NO2NO3-N	102	100	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371314

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121335	Total-P	101	94.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371084

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121360	O-Phosphate-P	95.9	96.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P371531

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121189	Fluoride	97.1	96.5	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P371257

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2121199	Organic Carbon	96.8	97.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P371074

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121287	Turbidity	5.92	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P371075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121355	Turbidity	0.350	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P371076

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121362	Turbidity	3.39	Sample	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P371116

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2120060	Bromide	0.450	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P371215

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121387	Bromide	0.0178	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371224

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121188	Chloride	0.356	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P371227

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121188	Sulfate	0.278	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371595

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121279	Ammonia-N	0.294	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P371597

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121455	Ammonia-N	0.107	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121279	Kjeldahl Nitrogen	1.33	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P371212

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121427	Kjeldahl Nitrogen	1.12	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P371294

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121288	NO2NO3-N	1.73	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P371314

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121335	Total-P	6.39	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P371084

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121360	O-Phosphate-P	0.966	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P371080

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121355	Color (true)	1.90	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P371527

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121189	Total Alkalinity	0.487	Sample	P	0 - 2.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
Batch ID: P371614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121278	TDS	0.905	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P371586

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121387	TSS	4.35	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P371531

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121189	Fluoride	0.487	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P371257

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2121199	Organic Carbon	0.926	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A94382

Included Lab Sample IDs: 2121355, 2121356, 2121361, 2121362, 2121367

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	101	P/P	95 - 105
Turbidity	100	100	P/P	95 - 105
Turbidity	101	101	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A94384

Included Lab Sample IDs: 2121355, 2121356

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.8	103	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A94385

Included Lab Sample IDs: 2121359, 2121360, 2121365, 2121366, 2121369

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.8	96.2	P/P	90 - 110
O-Phosphate-P	97.6	96.8	P/P	90 - 110
O-Phosphate-P	98.5	98.0	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A94401

Included Lab Sample IDs: 2121361, 2121362

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	104	105	P/P	90 - 110

Reference Method: EPA 300.0

Run ID: A94448

Included Lab Sample IDs: 2121367

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A94452

Included Lab Sample IDs: 2121355, 2121356

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Sulfate	104	103	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A94471

Included Lab Sample IDs: 2121357, 2121358, 2121363, 2121364, 2121368

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.1	97.3	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A94489

Included Lab Sample IDs: 2121357, 2121358, 2121363, 2121364, 2121368

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110
NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A94517

Included Lab Sample IDs: 2121363, 2121364

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A94532

Included Lab Sample IDs: 2121357, 2121358, 2121368

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A94536

Included Lab Sample IDs: 2121357, 2121358, 2121363, 2121364, 2121368

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

Reference Method: SM 2320 B-97

Run ID: A94582

Included Lab Sample IDs: 2121355, 2121356, 2121361, 2121362, 2121367

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

Reference Method: SM 4500 F-C-97

Run ID: A94582

Included Lab Sample IDs: 2121355, 2121356, 2121361, 2121362, 2121367

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A94610

Included Lab Sample IDs: 2121357, 2121358, 2121363, 2121364, 2121368

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.1	97.2	P/P	90 - 110
Ammonia-N	97.5	97.1	P/P	90 - 110
Ammonia-N	99.1	97.0	P/P	90 - 110

Quality Assurance Report

Calibration Verification

* 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					5.92	
	Turbidity					0.350	
	Turbidity					3.39	
EPA 300.0	Bromide	98.2	95.7	96.1	95.2		0.450
	Bromide	97.1	96.0	95.9			0.0178
EPA 300.0 Rev. 2.1	Chloride	99.3	101	99.4		0.356	
	Sulfate	100	101	97.3		0.278	
EPA 350.1 Rev. 2.0	Ammonia-N	98.3	98.5	98.9			0.294
	Ammonia-N	95.3	96.1	96.2			0.107
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	106	108			1.33
	Kjeldahl Nitrogen	98.9	102	100			1.12
EPA 353.2 Rev. 2.0	NO2NO3-N	104	102	100			1.73
EPA 365.1 Rev. 2.0	Total-P	96.5	101	94.8			6.39
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.1	95.9	96.9			0.966
SM 2120 B	Color (true)	101				1.90	
SM 2320 B-97	Total Alkalinity	102				0.487	
SM 2540 C-97	TDS					0.905	
SM 2540 D-97	TSS					4.35	
SM 4500 F-C-97	Fluoride	97.4	97.1	96.5			0.487
SM 5310 B-00	Organic Carbon	94.6	96.8	97.6			0.926

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2121355, 2121356, 2121361, 2121362, 2121367
EPA 300.0 / E31780	Bromide in aqueous matrices	2121361, 2121362, 2121367
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2121355, 2121356
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2121355, 2121356
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2121357, 2121358, 2121363, 2121364, 2121368
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2121357, 2121358, 2121363, 2121364, 2121368
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2121357, 2121358, 2121363, 2121364, 2121368
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2121357, 2121358, 2121363, 2121364, 2121368
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2121359, 2121360, 2121365, 2121366, 2121369
SM 2120 B / E31780	True Color measured at 450 nm	2121355, 2121356
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2121355, 2121356, 2121361, 2121362, 2121367
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2121355, 2121356
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2121355, 2121356, 2121361, 2121362, 2121367
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2121355, 2121356, 2121361, 2121362, 2121367
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2121357, 2121358, 2121363, 2121364, 2121368

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	09/20/2019			09/20/2019 16:56	Samantha Davila	2121355, 2121356, 2121361, 2121362, 2121367
EPA 300.0	09/20/2019			09/21/2019 01:56	Jhamieka S. Greenwood	2121361
	09/20/2019			09/21/2019 02:13	Jhamieka S. Greenwood	2121362
	09/20/2019			09/23/2019 21:47	Jhamieka S. Greenwood	2121367
EPA 300.0 Rev. 2.1	09/20/2019			09/24/2019 05:26	Jhamieka S. Greenwood	2121355
	09/20/2019			09/24/2019 05:38	Jhamieka S. Greenwood	2121356
EPA 350.1 Rev. 2.0	09/20/2019			09/27/2019 14:05	Ping Hua	2121357
	09/20/2019			09/27/2019 14:06	Ping Hua	2121358
	09/20/2019			09/27/2019 14:51	Ping Hua	2121368
	09/20/2019			09/27/2019 15:12	Ping Hua	2121363
	09/20/2019			09/27/2019 15:14	Ping Hua	2121364
EPA 351.2 Rev. 2.0	09/20/2019	09/24/2019 12:39	Sima Feizi	09/25/2019 17:15	Julia Storbeck	2121357
	09/20/2019	09/24/2019 12:39	Sima Feizi	09/25/2019 17:16	Julia Storbeck	2121358
	09/20/2019	09/24/2019 12:39	Sima Feizi	09/25/2019 17:18	Julia Storbeck	2121363
	09/20/2019	09/24/2019 12:39	Sima Feizi	09/25/2019 17:30	Julia Storbeck	2121364
	09/20/2019	09/24/2019 12:39	Sima Feizi	09/25/2019 17:32	Julia Storbeck	2121368
EPA 353.2 Rev. 2.0	09/20/2019			09/25/2019 11:03	Beverly Y. Sanders	2121363
	09/20/2019			09/25/2019 11:04	Beverly Y. Sanders	2121364
	09/20/2019			09/25/2019 11:05	Beverly Y. Sanders	2121368
	09/20/2019			09/25/2019 11:55	Beverly Y. Sanders	2121357
	09/20/2019			09/25/2019 11:56	Beverly Y. Sanders	2121358
EPA 365.1 Rev. 2.0	09/20/2019	09/25/2019 14:00	Lipi Saha	09/26/2019 11:46	Lipi Saha	2121363
	09/20/2019	09/25/2019 14:00	Lipi Saha	09/26/2019 11:47	Lipi Saha	2121364
	09/20/2019	09/25/2019 14:00	Lipi Saha	09/26/2019 14:06	Lipi Saha	2121357
	09/20/2019	09/25/2019 14:00	Lipi Saha	09/26/2019 14:07	Lipi Saha	2121358
	09/20/2019	09/25/2019 14:00	Lipi Saha	09/26/2019 14:08	Lipi Saha	2121368
EPA 365.1 Rev. 2.0 dissolved	09/20/2019			09/20/2019 17:40	Jhamieka S. Greenwood	2121360
	09/20/2019			09/20/2019 18:30	Jhamieka S. Greenwood	2121369
	09/20/2019			09/20/2019 18:31	Jhamieka S. Greenwood	2121359
	09/20/2019			09/20/2019 18:43	Jhamieka S. Greenwood	2121365
	09/20/2019			09/20/2019 18:45	Jhamieka S. Greenwood	2121366
SM 2120 B	09/20/2019			09/20/2019 17:05	Madeline Funaro	2121355
	09/20/2019			09/20/2019 17:06	Madeline Funaro	2121356
SM 2320 B-97	09/20/2019			09/28/2019 08:13	Dale L. Simmons	2121355
	09/20/2019			09/28/2019 08:24	Dale L. Simmons	2121356
	09/20/2019			09/28/2019 08:36	Dale L. Simmons	2121361
	09/20/2019			09/28/2019 09:30	Dale L. Simmons	2121362
	09/20/2019			09/28/2019 09:43	Dale L. Simmons	2121367
SM 2540 C-97	09/20/2019			09/25/2019 14:25	Yijie Li	2121355, 2121356

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2540 D-97	09/20/2019			09/25/2019 14:25	Yijie Li	2121355, 2121356, 2121361, 2121362, 2121367
SM 4500 F-C-97	09/20/2019			09/28/2019 08:13	Dale L. Simmons	2121355
	09/20/2019			09/28/2019 08:24	Dale L. Simmons	2121356
	09/20/2019			09/28/2019 08:36	Dale L. Simmons	2121361
	09/20/2019			09/28/2019 09:30	Dale L. Simmons	2121362
SM 5310 B-00	09/20/2019			09/28/2019 09:43	Dale L. Simmons	2121367
	09/20/2019			09/25/2019 02:22	Madeline Funaro	2121357
	09/20/2019			09/25/2019 02:34	Madeline Funaro	2121358
	09/20/2019			09/25/2019 02:47	Madeline Funaro	2121363
	09/20/2019			09/25/2019 02:59	Madeline Funaro	2121364
	09/20/2019			09/25/2019 03:11	Madeline Funaro	2121368