

Chemical Analysis Report

NE-DIST-2020-02-11-01

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

Event Description: **GTM NERR-Guana River SMP 7 site, 1FB**
Request ID: **RQ-2020-02-03-17**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd.
MS 3560
Tallahassee, FL 32399-2400
Attn: Alicia Hogue

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Certified by: Kerry Tate, Ph.D., Environmental Administrator

Date Certified: 10-MAR-2020 12:35

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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: DepGR3

Collection Date/Time: 02/10/2020 10:42

Field ID: GTMGR3NUT

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156393	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P378687	
	EPA 300.0 Rev. 2.1	Bromide	67		mg Br/L	P379449	
	SM 2320 B-2011	Total Alkalinity	120		mg CaCO3/L	P379246	
	SM 2540 D-2011	TSS	6	IA	mg/L	P378964	
	SM 4500 F-C-2011	Fluoride	1.2		mg F/L	P379250	
2156400	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P379083	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27	I	mg N/L	P328929	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P379256	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P379277	
	SM 5310 B-2011	Organic Carbon	2.5		mg C/L	P378971	
2156407	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	0.30	I	mg N/L	P328929	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: DepGR2

Collection Date/Time: 02/10/2020 10:55

Field ID: GTMGRNUT

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156394	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P378687	
	EPA 300.0 Rev. 2.1	Bromide	63		mg Br/L	P379449	
	SM 2320 B-2011	Total Alkalinity	120		mg CaCO3/L	P379246	
	SM 2540 D-2011	TSS	6	I	mg/L	P378964	
	SM 4500 F-C-2011	Fluoride	1.1		mg F/L	P379250	
2156401	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P379083	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27	I	mg N/L	P378929	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P379256	
	EPA 365.1 Rev. 2.0	Total-P	0.028		mg P/L	P379277	
	SM 5310 B-2011	Organic Carbon	3.7		mg C/L	P378971	
2156408	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	0.31	I	mg N/L	P378929	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: DepGR1

Collection Date/Time: 02/10/2020 11:10

Field ID: GTMGR1NUT

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156395	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P378687	
	EPA 300.0 Rev. 2.1	Bromide	53		mg Br/L	P379449	
	SM 2320 B-2011	Total Alkalinity	119		mg CaCO3/L	P379246	
	SM 2540 D-2011	TSS	6	I	mg/L	P378964	
	SM 4500 F-C-2011	Fluoride	0.98		mg F/L	P379250	
2156402	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P379083	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P328929	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P379256	
	EPA 365.1 Rev. 2.0	Total-P	0.042		mg P/L	P379277	
	SM 5310 B-2011	Organic Carbon	6.2		mg C/L	P378971	
2156409	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	0.41		mg N/L	P328929	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: DepGL4

Collection Date/Time: 02/10/2020 12:27

Field ID: GTMGL4NUT

Matrix: W-BRACKISH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156396	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P378687	
	EPA 300.0 Rev. 2.1	Bromide	31		mg Br/L	P379449	
	SM 2320 B-2011	Total Alkalinity	97		mg CaCO3/L	P379246	
	SM 2540 D-2011	TSS	6	I	mg/L	P378964	
	SM 4500 F-C-2011	Fluoride	0.63		mg F/L	P379250	
2156403	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P379083	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.92		mg N/L	P328929	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P379256	
	EPA 365.1 Rev. 2.0	Total-P	0.033		mg P/L	P379277	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P378971	
2156410	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	0.86		mg N/L	P328929	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: DepGL3

Collection Date/Time: 02/10/2020 12:47

Field ID: GTMLMNUT

Matrix: W-BRACKISH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156397	EPA 180.1 Rev. 2.0	Turbidity	7.3		NTU	P378687	
	EPA 300.0 Rev. 2.1	Bromide	27		mg Br/L	P379449	
	SM 2320 B-2011	Total Alkalinity	96		mg CaCO3/L	P379246	
	SM 2540 D-2011	TSS	10		mg/L	P378964	
	SM 4500 F-C-2011	Fluoride	0.58		mg F/L	P379250	
2156404	EPA 350.1 Rev. 2.0	Ammonia-N	0.016		mg N/L	P379083	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P328929	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P379256	
	EPA 365.1 Rev. 2.0	Total-P	0.039		mg P/L	P379277	
	SM 5310 B-2011	Organic Carbon	15		mg C/L	P378971	
2156411	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	1.1		mg N/L	P379026	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: DepGL2

Collection Date/Time: 02/10/2020 13:02

Field ID: GTMGL2NUT

Matrix: W-BRACKISH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156398	EPA 180.1 Rev. 2.0	Turbidity	9.2		NTU	P378687	
	EPA 300.0 Rev. 2.1	Bromide	18		mg Br/L	P379449	
	SM 2320 B-2011	Total Alkalinity	115		mg CaCO3/L	P379246	
	SM 2540 D-2011	TSS	20		mg/L	P378964	
	SM 4500 F-C-2011	Fluoride	0.45		mg F/L	P379250	
2156405	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P379083	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.5		mg N/L	P328929	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P379256	
	EPA 365.1 Rev. 2.0	Total-P	0.060		mg P/L	P379277	
	SM 5310 B-2011	Organic Carbon	19		mg C/L	P378971	
2156412	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	1.2		mg N/L	P379026	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: DepGL1

Collection Date/Time: 02/10/2020 13:23

Field ID: GTMGL1NUT

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2156399	EPA 180.1 Rev. 2.0	Turbidity	6.9		NTU	P378687	
	EPA 300.0 Rev. 2.1	Bromide	1.1		mg Br/L	P379449	
	SM 2320 B-2011	Total Alkalinity	150		mg CaCO3/L	P379405	
	SM 2540 D-2011	TSS	18		mg/L	P378964	
	SM 4500 F-C-2011	Fluoride	0.26		mg F/L	P379408	
2156406	EPA 350.1 Rev. 2.0	Ammonia-N	0.37		mg N/L	P379067	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.6		mg N/L	P378930	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	I	mg N/L	P379428	
	EPA 365.1 Rev. 2.0	Total-P	0.26		mg P/L	P379358	
	SM 5310 B-2011	Organic Carbon	20		mg C/L	P378968	
2156413	EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	1.4		mg N/L	P378930	

Ref. Method and Comment:

SM 2540 D-2011: 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: P378687

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379449

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379067

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379083

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328929

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378930

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

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P328929

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

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P378930

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

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P379026

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379256

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379428

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379277

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379358

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

Reference Method: SM 2320 B-2011
Batch ID: P379246

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

Reference Method: SM 2320 B-2011
Batch ID: P379405

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

Reference Method: SM 2540 D-2011
Batch ID: P378964

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P379250

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P379408

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P378968

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

Reference Method: SM 5310 B-2011
Batch ID: P378971

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: P379449

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379067

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379083

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378930

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

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P328929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.1		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P378930

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

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P379026

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379256

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379428

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: P379277

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379358

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

Reference Method: SM 2320 B-2011
Batch ID: P379246

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 2320 B-2011
Batch ID: P379405

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	98 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P379250

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	92 - 103

Reference Method: SM 4500 F-C-2011
Batch ID: P379408

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

Reference Method: SM 5310 B-2011
Batch ID: P378968

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

Reference Method: SM 5310 B-2011
Batch ID: P378971

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379449

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156692	Bromide	96.0	96.7	P/P	90 - 110
2157502	Bromide	95.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379067

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156509	Ammonia-N	99.8	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379083

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156400	Ammonia-N	106	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156410	Kjeldahl Nitrogen	92.7	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156427	Kjeldahl Nitrogen	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P328929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156410	Kjeldahl Nitrogen	92.7	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P378930

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156427	Kjeldahl Nitrogen	101	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P379026

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156503	Kjeldahl Nitrogen	95.6	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379256

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156400	NO2NO3-N	102	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379428

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156361	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379277

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156087	Total-P	106	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379358

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156406	Total-P	106	107	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P379250

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2157001	Fluoride	97.3	98.6	P/P	89 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P379408

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2157223	Fluoride	98.1	99.9	P/P	89 - 106

Reference Method: SM 5310 B-2011
Batch ID: P378968

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156427	Organic Carbon	96.4	97.8	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P378971

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2156401	Organic Carbon	95.7	96.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P378687

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156593	Turbidity	6.84	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P379449

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156692	Bromide	0.725	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379067

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156509	Ammonia-N	0.360	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P379083

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156400	Ammonia-N	0.209	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P328929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156410	Kjeldahl Nitrogen	4.49	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P378930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156427	Kjeldahl Nitrogen	0.425	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P328929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156410	Kjeldahl Nitrogen	4.49	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P378930

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156427	Kjeldahl Nitrogen	0.425	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0 dissolved
Batch ID: P379026

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156503	Kjeldahl Nitrogen	5.15	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379256

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156400	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P379428

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156361	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379277

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156087	Total-P	1.64	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P379358

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156406	Total-P	0.393	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P379246

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157001	Total Alkalinity	0.118	Sample	P	0 - 2.8

Reference Method: SM 2320 B-2011
Batch ID: P379405

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157223	Total Alkalinity	0.373	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-2011
Batch ID: P379250

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157001	Fluoride	0.946	Spike	P	0 - 2.5

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P379408

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2157223	Fluoride	1.48	Spike	P	0 - 2.5

Reference Method: SM 5310 B-2011
Batch ID: P378968

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156427	Organic Carbon	1.06	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P378971

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2156401	Organic Carbon	1.04	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: A97441

Included Lab Sample IDs: 2156393, 2156394, 2156395, 2156396, 2156397, 2156398, 2156399

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

Reference Method: SM 5310 B-2011

Run ID: A97553

Included Lab Sample IDs: 2156400, 2156401, 2156402, 2156403, 2156404, 2156405, 2156406

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.8	98.2	P/P	90 - 110
Organic Carbon	99.0	99.0	P/P	90 - 110
Organic Carbon	99.0	100	P/P	90 - 110
Organic Carbon	99.8	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A97580

Included Lab Sample IDs: 2156400, 2156402, 2156403, 2156404, 2156405, 2156406

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	94.5	P/P	90 - 110
Kjeldahl Nitrogen	98.7	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0 dissolved

Run ID: A97580

Included Lab Sample IDs: 2156407, 2156409, 2156410, 2156413

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	94.5	P/P	90 - 110
Kjeldahl Nitrogen	98.7	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A97582

Included Lab Sample IDs: 2156401

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.1	93.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0 dissolved

Run ID: A97582

Included Lab Sample IDs: 2156408

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	93.6	93.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A97588

Included Lab Sample IDs: 2156406

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A97592

Included Lab Sample IDs: 2156400, 2156401, 2156402, 2156403, 2156404, 2156405

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

Reference Method: EPA 351.2 Rev. 2.0 dissolved

Run ID: A97615

Included Lab Sample IDs: 2156411, 2156412

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	97.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A97644

Included Lab Sample IDs: 2156400, 2156401, 2156402, 2156403, 2156404, 2156405

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

Reference Method: SM 2320 B-2011

Run ID: A97673

Included Lab Sample IDs: 2156393, 2156394, 2156395, 2156396, 2156397, 2156398

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

Reference Method: SM 4500 F-C-2011

Run ID: A97673

Included Lab Sample IDs: 2156393, 2156394, 2156395, 2156396, 2156397, 2156398

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.5	99.5	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A97738

Included Lab Sample IDs: 2156399

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

Reference Method: SM 4500 F-C-2011

Run ID: A97738

Included Lab Sample IDs: 2156399

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A97741

Included Lab Sample IDs: 2156406

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A97750

Included Lab Sample IDs: 2156393, 2156394, 2156395, 2156396, 2156397, 2156398, 2156399

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A97757

Included Lab Sample IDs: 2156400, 2156401, 2156402, 2156403, 2156404, 2156405

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	98.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A97820

Included Lab Sample IDs: 2156406

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	100	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					6.84	
EPA 300.0 Rev. 2.1	Bromide	101	96.0	96.7	95.5		0.725
EPA 350.1 Rev. 2.0	Ammonia-N	103	99.8	100			0.360
	Ammonia-N	101	106	106			0.209
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.1	92.7	98.6			4.49
	Kjeldahl Nitrogen	98.5	101	100			0.425
EPA 351.2 Rev. 2.0 dissolved	Kjeldahl Nitrogen	96.1	92.7	98.6			4.49
	Kjeldahl Nitrogen	98.5	101	100			0.425
	Kjeldahl Nitrogen	104	95.6	101			5.15
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102	102			0.0
	NO2NO3-N	102	102	102			0.0
EPA 365.1 Rev. 2.0	Total-P	104	106	104			1.64
	Total-P	106	106	107			0.393
SM 2320 B-2011	Total Alkalinity	103				0.118	
	Total Alkalinity	104				0.373	
SM 4500 F-C-2011	Fluoride	96.6	97.3	98.6			0.946
	Fluoride	97.9	98.1	99.9			1.48
SM 5310 B-2011	Organic Carbon	99.6	96.4	97.8			1.06
	Organic Carbon	98.0	95.7	96.8			1.04

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2156393, 2156394, 2156395, 2156396, 2156397, 2156398, 2156399
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2156393, 2156394, 2156395, 2156396, 2156397, 2156398, 2156399
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2156400, 2156401, 2156402, 2156403, 2156404, 2156405, 2156406
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2156400, 2156401, 2156402, 2156403, 2156404, 2156405, 2156406
EPA 351.2 Rev. 2.0 dissolved	Total Kjeldahl Nitrogen, dissolved, in filtered, aqueous matrices	2156407, 2156408, 2156409, 2156410, 2156411, 2156412, 2156413
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2156400, 2156401, 2156402, 2156403, 2156404, 2156405, 2156406
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2156400, 2156401, 2156402, 2156403, 2156404, 2156405, 2156406
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2156393, 2156394, 2156395, 2156396, 2156397, 2156398, 2156399
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2156393, 2156394, 2156395, 2156396, 2156397, 2156398, 2156399
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2156393, 2156394, 2156395, 2156396, 2156397, 2156398, 2156399
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2156400, 2156401, 2156402, 2156403, 2156404, 2156405, 2156406

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	02/11/2020			02/11/2020 14:57	Yen Ta	2156393, 2156394, 2156395, 2156396, 2156397, 2156398, 2156399
EPA 300.0 Rev. 2.1	02/11/2020			02/22/2020 05:11	Lipi Saha	2156393
	02/11/2020			02/22/2020 05:28	Lipi Saha	2156394
	02/11/2020			02/22/2020 05:45	Lipi Saha	2156395
	02/11/2020			02/22/2020 06:03	Lipi Saha	2156396
	02/11/2020			02/22/2020 06:54	Lipi Saha	2156397
	02/11/2020			02/22/2020 07:11	Lipi Saha	2156398
	02/11/2020			02/22/2020 07:28	Lipi Saha	2156399
EPA 350.1 Rev. 2.0	02/11/2020			02/17/2020 10:03	Ping Hua	2156400
	02/11/2020			02/17/2020 10:13	Ping Hua	2156401
	02/11/2020			02/17/2020 10:15	Ping Hua	2156402
	02/11/2020			02/17/2020 10:16	Ping Hua	2156403
	02/11/2020			02/17/2020 10:18	Ping Hua	2156404
	02/11/2020			02/17/2020 10:19	Ping Hua	2156405
	02/11/2020			02/17/2020 10:56	Ping Hua	2156406
EPA 351.2 Rev. 2.0	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 12:06	Jhamieka S. Greenwood	2156400
	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 12:09	Jhamieka S. Greenwood	2156402
	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 12:10	Jhamieka S. Greenwood	2156403
	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 12:12	Jhamieka S. Greenwood	2156404
	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 12:13	Jhamieka S. Greenwood	2156405
	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 12:31	Jhamieka S. Greenwood	2156406
	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 15:13	Jhamieka S. Greenwood	2156401
EPA 351.2 Rev. 2.0 dissolved	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 12:01	Jhamieka S. Greenwood	2156410
	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 12:15	Jhamieka S. Greenwood	2156407
	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 12:21	Jhamieka S. Greenwood	2156409
	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 12:32	Jhamieka S. Greenwood	2156413
	02/11/2020	02/14/2020 09:30	Elliott Rodriguez	02/17/2020 15:19	Jhamieka S. Greenwood	2156408
	02/11/2020	02/17/2020 15:05	Sima Feizi	02/18/2020 12:24	Jhamieka S. Greenwood	2156411
	02/11/2020	02/17/2020 15:05	Sima Feizi	02/18/2020 12:25	Jhamieka S. Greenwood	2156412
EPA 353.2 Rev. 2.0	02/11/2020			02/19/2020 10:47	Beverly Y. Sanders	2156400
	02/11/2020			02/19/2020 10:53	Beverly Y. Sanders	2156401
	02/11/2020			02/19/2020 10:54	Beverly Y. Sanders	2156402
	02/11/2020			02/19/2020 10:56	Beverly Y. Sanders	2156403
	02/11/2020			02/19/2020 10:57	Beverly Y. Sanders	2156404
	02/11/2020			02/19/2020 10:58	Beverly Y. Sanders	2156405
	02/11/2020			02/20/2020 11:21	Beverly Y. Sanders	2156406
EPA 365.1 Rev. 2.0	02/11/2020	02/20/2020 15:00	Lipi Saha	02/24/2020 12:13	Benjamin T. Nordmann	2156400
	02/11/2020	02/20/2020 15:00	Lipi Saha	02/24/2020 12:14	Benjamin T. Nordmann	2156401
	02/11/2020	02/20/2020 15:00	Lipi Saha	02/24/2020 12:15	Benjamin T. Nordmann	2156402

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	02/11/2020	02/20/2020 15:00	Lipi Saha	02/24/2020 12:16	Benjamin T. Nordmann	2156403
	02/11/2020	02/20/2020 15:00	Lipi Saha	02/24/2020 12:17	Benjamin T. Nordmann	2156404
	02/11/2020	02/20/2020 15:00	Lipi Saha	02/24/2020 12:18	Benjamin T. Nordmann	2156405
	02/11/2020	02/21/2020 14:16	Yen Ta	02/24/2020 15:12	Benjamin T. Nordmann	2156406
SM 2320 B-2011	02/11/2020			02/18/2020 21:39	Dale L. Simmons	2156398
	02/11/2020			02/18/2020 22:14	Dale L. Simmons	2156393
	02/11/2020			02/18/2020 22:26	Dale L. Simmons	2156394
	02/11/2020			02/18/2020 22:39	Dale L. Simmons	2156395
	02/11/2020			02/18/2020 22:50	Dale L. Simmons	2156396
	02/11/2020			02/18/2020 23:02	Dale L. Simmons	2156397
	02/11/2020			02/21/2020 03:52	Dale L. Simmons	2156399
SM 2540 D-2011	02/11/2020			02/12/2020 17:00	Blanca Fach	2156393, 2156394, 2156395, 2156396, 2156397, 2156398, 2156399
SM 4500 F-C-2011	02/11/2020			02/18/2020 19:13	Dale L. Simmons	2156398
	02/11/2020			02/18/2020 19:33	Dale L. Simmons	2156393
	02/11/2020			02/18/2020 19:38	Dale L. Simmons	2156394
	02/11/2020			02/18/2020 19:42	Dale L. Simmons	2156395
	02/11/2020			02/18/2020 19:46	Dale L. Simmons	2156396
	02/11/2020			02/18/2020 19:50	Dale L. Simmons	2156397
	02/11/2020			02/21/2020 03:52	Dale L. Simmons	2156399
SM 5310 B-2011	02/11/2020			02/14/2020 01:07	Lauren Lees	2156406
	02/11/2020			02/14/2020 05:05	Lauren Lees	2156401
	02/11/2020			02/14/2020 07:45	Lauren Lees	2156400
	02/11/2020			02/14/2020 07:57	Lauren Lees	2156402
	02/11/2020			02/14/2020 08:10	Lauren Lees	2156403
	02/11/2020			02/14/2020 08:22	Lauren Lees	2156404
	02/11/2020			02/14/2020 08:59	Lauren Lees	2156405