Chemical Analysis Report

NW-DIST-2020-09-04-03

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

Event Description: **Perdido Run**
Request ID: **RQ-2020-08-24-21**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 208
Pensacola, FL 32502-5794
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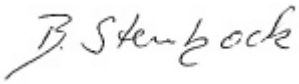
Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator Date Certified: 01-OCT-2020 14:54



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: Weekly Bayou Near Mouth **Collection Date/Time: 09/03/2020 12:22**

Field ID: G5NW0158 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2194644	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P387000	
	EPA 300.0 Rev. 2.1	Bromide	6.9		mg Br/L	P387264	
		Chloride	2.0E+03		mg Cl/L	P387331	
		Sulfate	280		mg SO4/L	P387334	
	SM 2120 B-2011	Color (true)	240		PCU	P387010	
	SM 2320 B-2011	Total Alkalinity	11		mg CaCO3/L	P387255	
	SM 2540 C-2011	TDS	3.80E+03		mg/L	P387385	
	SM 2540 D-2011	TSS	4	I	mg/L	P387381	
	SM 4500 F-C-2011	Fluoride	0.15		mg F/L	P387131	
2194647	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P387294	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P387211	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P387371	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P387732	
	SM 5310 B-2011	Organic Carbon	9.7		mg C/L	P387315	
2194650	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P387013	

Ref. Method and Comment:
SM 2540 C-2011: The reported result is consistent with the conductivity measured in the laboratory, 6500 umhos/cm.
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Field Blank **Collection Date/Time: 09/03/2020 12:32**

Field ID: FB090320 Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2194653	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P387000	
	EPA 300.0 Rev. 2.1	Bromide	0.013	U	mg Br/L	P387264	
		Chloride	0.20	U	mg Cl/L	P387331	
		Sulfate	0.20	U	mg SO4/L	P387334	
	SM 2120 B-2011	Color (true)	2.5	U	PCU	P387010	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P387255	
	SM 2540 C-2011	TDS	15	U	mg/L	P387383	
	SM 2540 D-2011	TSS	2	U	mg/L	P387376	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P387131	
2194654	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P387292	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P387212	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P387137	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P387731	MS
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P387314	
2194655	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P387012	

Ref. Method and Comment:
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: Batch matrix spike recoveries and relative percent difference are unavailable because of high analyte concentration in the QC sample.

Sample Location: Weekly Bayou Middle Portion **Collection Date/Time: 09/03/2020 12:00**

Field ID: G5NW0157 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2194645	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P387000	
	EPA 300.0 Rev. 2.1	Bromide	1.9		mg Br/L	P387264	
		Chloride	540		mg Cl/L	P387331	
		Sulfate	74		mg SO4/L	P387334	
	SM 2120 B-2011	Color (true)	250		PCU	P387010	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P387255	
	SM 2540 C-2011	TDS	910		mg/L	P387385	
	SM 2540 D-2011	TSS	2	I	mg/L	P387378	
	SM 4500 F-C-2011	Fluoride	0.052	I	mg F/L	P387131	
2194648	EPA 350.1 Rev. 2.0	Ammonia-N	0.034		mg N/L	P387294	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P387238	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.033		mg N/L	P387787	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P387732	
	SM 5310 B-2011	Organic Carbon	25		mg C/L	P387314	
2194651	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P387013	

Ref. Method and Comment:
SM 2540 C-2011: The reported result is consistent with the conductivity measured in the laboratory, 1924 umhos/cm.
SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Bayou Garcon **Collection Date/Time: 09/03/2020 13:00**

Field ID: G5NW0152 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2194646	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P387000	
	EPA 300.0 Rev. 2.1	Bromide	28		mg Br/L	P387264	
		Chloride	8.3E+03		mg Cl/L	P387331	
		Sulfate	1.2E+03		mg SO4/L	P387334	
	SM 2120 B-2011	Color (true)	84		PCU	P387010	
	SM 2320 B-2011	Total Alkalinity	61		mg CaCO3/L	P387255	
	SM 2540 C-2011	TDS	1.38E+04		mg/L	P387385	
	SM 2540 D-2011	TSS	3	I	mg/L	P387381	
	SM 4500 F-C-2011	Fluoride	0.58		mg F/L	P387132	
2194649	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P387294	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.51		mg N/L	P387238	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P387371	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P387732	
	SM 5310 B-2011	Organic Carbon	9.3		mg C/L	P387315	
2194652	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P387013	

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: P387000

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387264

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387331

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387334

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387292

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387294

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387211

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387212

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387238

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: P387137

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387371

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387787

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387731

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387732

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387012

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387013

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

Reference Method: SM 2120 B-2011
Batch ID: P387010

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P387255

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

Quality Assurance Report
Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P387383

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-2011
Batch ID: P387385

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P387376

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P387378

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P387381

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P387131

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P387132

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P387314

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

Reference Method: SM 5310 B-2011
Batch ID: P387315

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: P387264

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387331

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387334

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387292

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387294

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.8		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387211

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387212

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387238

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387137

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: P387371

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387787

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387731

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	108		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387732

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	109		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387012

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387013

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

Reference Method: SM 2120 B-2011
Batch ID: P387010

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	96.4		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P387255

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.3		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P387131

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.8		P	90 - 106

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P387132

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.4		P	90 - 106

Reference Method: SM 5310 B-2011
Batch ID: P387314

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.1		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P387315

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387264

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194487	Bromide	92.9	93.8	P/P	90 - 110
2194489	Bromide	94.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387331

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194472	Chloride	99.1		P	90 - 110
2194716	Chloride	98.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387334

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194472	Sulfate	93.8		P	90 - 110
2194716	Sulfate	95.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387292

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194619	Ammonia-N	95.3	99.3	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387294

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194558	Ammonia-N	94.3	99.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387211

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194551	Kjeldahl Nitrogen	107	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387212

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194619	Kjeldahl Nitrogen	107	112	P/F	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387238

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194215	Kjeldahl Nitrogen	109	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387137

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194490	NO2NO3-N	100	100	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387371

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194557	NO2NO3-N	98.6	98.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387787

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2197561	NO2NO3-N	94.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194491	Total-P	109	112	P/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387732

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194552	Total-P	99.0	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387013

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194498	O-Phosphate-P	94.4	95.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P387131

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194487	Fluoride	94.5	95.1	P/P	94 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P387132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194496	Fluoride	94.5	96.0	P/P	94 - 107

Reference Method: SM 5310 B-2011
Batch ID: P387314

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194492	Organic Carbon	96.6	98.4	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P387315

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2194647	Organic Carbon	96.1	96.9	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P387000

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194621	Turbidity	11.7	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387264

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194487	Bromide	0.808	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387331

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194472	Chloride	0.0776	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P387334

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194472	Sulfate	0.218	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387292

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194619	Ammonia-N	3.78	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P387294

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194558	Ammonia-N	4.59	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387211

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194551	Kjeldahl Nitrogen	1.79	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387212

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194619	Kjeldahl Nitrogen	4.14	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P387238

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194215	Kjeldahl Nitrogen	0.554	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387137

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194490	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387371

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194557	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P387787

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2197561	NO2NO3-N	0.400	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194491	Total-P	1.72	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P387732

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194552	Total-P	0.303	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P387013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194498	O-Phosphate-P	1.39	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P387010

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194621	Color (true)	4.48	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: SM 2320 B-2011
Batch ID: P387255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194755	Total Alkalinity	0.520	Sample	P	0 - 8.1

Reference Method: SM 2540 C-2011
Batch ID: P387383

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194066	TDS	8.52	Sample	P	0 - 10

Reference Method: SM 2540 C-2011
Batch ID: P387385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194481	TDS	5.61	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P387131

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194487	Fluoride	0.462	Spike	P	0 - 2.8

Reference Method: SM 4500 F-C-2011
Batch ID: P387132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194496	Fluoride	0.959	Spike	P	0 - 2.8

Reference Method: SM 5310 B-2011
Batch ID: P387314

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194492	Organic Carbon	1.41	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P387315

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2194647	Organic Carbon	0.704	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: A100828
Included Lab Sample IDs: 2194644, 2194645, 2194646, 2194653

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

Reference Method: SM 2120 B-2011
Run ID: A100830
Included Lab Sample IDs: 2194644, 2194645, 2194646, 2194653

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.7	98.2	P/P	90 - 115
Color (true)	99.5	99.7	P/P	90 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A100831
Included Lab Sample IDs: 2194650, 2194651, 2194652, 2194655

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.9	96.9	P/P	90 - 110
O-Phosphate-P	97.4	96.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Run ID: A100873
Included Lab Sample IDs: 2194644, 2194645, 2194646, 2194653

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	95.9	96.7	P/P	90 - 110
Fluoride	96.7	95.9	P/P	90 - 110
Fluoride	96.7	97.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A100874
Included Lab Sample IDs: 2194654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A100925
Included Lab Sample IDs: 2194644, 2194645, 2194646, 2194653

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

Reference Method: SM 2320 B-2011
Run ID: A100928
Included Lab Sample IDs: 2194644, 2194645, 2194646, 2194653

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	105	99.7	P/P	90 - 110
Total Alkalinity	99.7	104	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A100938
Included Lab Sample IDs: 2194647

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.8	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A100944
Included Lab Sample IDs: 2194647, 2194648, 2194649, 2194654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.4	99.2	P/P	90 - 110
Ammonia-N	99.2	97.0	P/P	90 - 110
Ammonia-N	99.9	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A100951
Included Lab Sample IDs: 2194654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.6	103	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A100952
Included Lab Sample IDs: 2194647, 2194648, 2194649, 2194654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	91.6	94.8	P/P	90 - 110
Organic Carbon	97.6	97.8	P/P	90 - 110
Organic Carbon	97.8	91.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A100958
Included Lab Sample IDs: 2194644, 2194645, 2194646, 2194653

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A100964
Included Lab Sample IDs: 2194648, 2194649

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.6	97.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A100978
Included Lab Sample IDs: 2194647, 2194649

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.5	100	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A101175
Included Lab Sample IDs: 2194648

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	97.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A101180
Included Lab Sample IDs: 2194647, 2194648, 2194649, 2194654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	93.8	94.2	P/P	90 - 110
Total-P	94.2	93.8	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						11.7	
EPA 300.0 Rev. 2.1	Bromide	96.6	92.9	93.8	94.0			0.808
	Chloride	100	99.1	98.5			0.0776	
	Sulfate	98.8	93.8	95.1			0.218	
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	95.3	99.3				3.78
	Ammonia-N	98.8	94.3	99.3				4.59
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	107	105				1.79
	Kjeldahl Nitrogen	106	107	112				4.14
	Kjeldahl Nitrogen	101	109	109				0.554
EPA 353.2 Rev. 2.0	NO2NO3-N	100	100	100				0.0
	NO2NO3-N	98.5	98.6	98.6				0.0
	NO2NO3-N	98.5	94.8					0.400
EPA 365.1 Rev. 2.0	Total-P	108	109	112				1.72
	Total-P	109	99.0	98.7				0.303
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.4						
	O-Phosphate-P	98.8	94.4	95.9				1.39
SM 2120 B-2011	Color (true)	96.4					4.48	
SM 2320 B-2011	Total Alkalinity	99.3					0.520	
SM 2540 C-2011	TDS						8.52	
	TDS						5.61	
SM 4500 F-C-2011	Fluoride	93.8	94.5	95.1				0.462
	Fluoride	93.4	94.5	96.0				0.959
SM 5310 B-2011	Organic Carbon	98.1	96.6	98.4				1.41
	Organic Carbon	96.0	96.1	96.9				0.704

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2194644, 2194645, 2194646, 2194653
EPA 300.0 Rev. 2.1	Bromide in aqueous matrices	2194644, 2194645, 2194646, 2194653
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2194644, 2194645, 2194646, 2194653
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2194644, 2194645, 2194646, 2194653
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2194647, 2194648, 2194649, 2194654
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2194647, 2194648, 2194649, 2194654
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2194647, 2194648, 2194649, 2194654
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2194647, 2194648, 2194649, 2194654
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2194650, 2194651, 2194652, 2194655
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2194644, 2194645, 2194646, 2194653
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2194644, 2194645, 2194646, 2194653
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2194644, 2194645, 2194646, 2194653
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2194644, 2194645, 2194646, 2194653
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2194644, 2194645, 2194646, 2194653
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2194647, 2194648, 2194649, 2194654

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	09/04/2020			09/04/2020 15:07	Yen Ta	2194644, 2194645, 2194646, 2194653
EPA 300.0 Rev. 2.1	09/04/2020			09/11/2020 00:30	Lipi Saha	2194644
	09/04/2020			09/11/2020 00:48	Lipi Saha	2194645
	09/04/2020			09/11/2020 01:05	Lipi Saha	2194646
	09/04/2020			09/11/2020 01:22	Lipi Saha	2194653
	09/04/2020			09/11/2020 11:49	Elliott Rodriguez	2194644
	09/04/2020			09/11/2020 12:28	Elliott Rodriguez	2194645
	09/04/2020			09/11/2020 12:41	Elliott Rodriguez	2194646
	09/04/2020			09/11/2020 12:54	Elliott Rodriguez	2194653
EPA 350.1 Rev. 2.0	09/04/2020			09/12/2020 13:42	Ping Hua	2194654
	09/04/2020			09/12/2020 14:24	Ping Hua	2194647
	09/04/2020			09/12/2020 14:31	Ping Hua	2194648
	09/04/2020			09/12/2020 14:33	Ping Hua	2194649
EPA 351.2 Rev. 2.0	09/04/2020	09/10/2020 11:36	Sima Feizi	09/11/2020 12:12	Elliott Rodriguez	2194647
	09/04/2020	09/10/2020 11:36	Sima Feizi	09/11/2020 15:50	Elliott Rodriguez	2194654
	09/04/2020	09/11/2020 10:15	Sima Feizi	09/14/2020 13:56	Elliott Rodriguez	2194648
	09/04/2020	09/11/2020 10:15	Sima Feizi	09/14/2020 13:57	Elliott Rodriguez	2194649
EPA 353.2 Rev. 2.0	09/04/2020			09/09/2020 11:07	Beverly Y. Sanders	2194654
	09/04/2020			09/15/2020 09:46	Beverly Y. Sanders	2194647
	09/04/2020			09/15/2020 09:49	Beverly Y. Sanders	2194649
	09/04/2020			09/24/2020 10:17	Beverly Y. Sanders	2194648
EPA 365.1 Rev. 2.0	09/04/2020	09/23/2020 12:23	Yen Ta	09/24/2020 13:04	Lipi Saha	2194654
	09/04/2020	09/23/2020 12:23	Yen Ta	09/24/2020 13:20	Lipi Saha	2194647
	09/04/2020	09/23/2020 12:23	Yen Ta	09/24/2020 13:21	Lipi Saha	2194648
	09/04/2020	09/23/2020 12:23	Yen Ta	09/24/2020 13:22	Lipi Saha	2194649
EPA 365.1 Rev. 2.0 dissolved	09/04/2020			09/04/2020 15:16	Samantha Davila	2194655
	09/04/2020			09/04/2020 15:29	Samantha Davila	2194650
	09/04/2020			09/04/2020 15:30	Samantha Davila	2194651, 2194652
SM 2120 B-2011	09/04/2020			09/04/2020 16:02	Samantha Davila	2194646, 2194653
	09/04/2020			09/04/2020 16:24	Samantha Davila	2194644
	09/04/2020			09/04/2020 16:25	Samantha Davila	2194645
SM 2320 B-2011	09/04/2020			09/10/2020 17:20	Dale L. Simmons	2194653
	09/04/2020			09/10/2020 17:26	Dale L. Simmons	2194645
	09/04/2020			09/10/2020 18:52	Dale L. Simmons	2194644
	09/04/2020			09/10/2020 19:02	Dale L. Simmons	2194646
SM 2540 C-2011	09/04/2020			09/08/2020 15:01	Yijie Li	2194644, 2194645, 2194646, 2194653
SM 2540 D-2011	09/04/2020			09/08/2020 15:26	Yijie Li	2194644, 2194645, 2194646, 2194653
SM 4500 F-C-2011	09/04/2020			09/08/2020 22:52	Dale L. Simmons	2194653
	09/04/2020			09/08/2020 23:56	Dale L. Simmons	2194644
	09/04/2020			09/09/2020 00:23	Dale L. Simmons	2194645

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 4500 F-C-2011	09/04/2020			09/09/2020 02:33	Dale L. Simmons	2194646
SM 5310 B-2011	09/04/2020			09/12/2020 03:55	David Boose	2194648
	09/04/2020			09/12/2020 04:08	David Boose	2194654
	09/04/2020			09/12/2020 06:40	David Boose	2194647
	09/04/2020			09/12/2020 10:18	David Boose	2194649