

Chemical Analysis Report

NW-DIST-2021-09-03-01

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

Event Description: **Perdido Bayou Run**
Request ID: **RQ-2021-08-23-09**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
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Pensacola, FL 32502-5794
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Certified by: Colin Wright, Program Administrator

Date Certified: 28-SEP-2021 09:01

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

Case Narrative

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

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

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

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

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: Weekly Bayou Creek @ County Rd. 293

Collection Date/Time: 09/02/2021 11:47

Field ID: G5NW0163

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2273484	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P403387	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P403580	
	SM 2540 D-2011	TSS	2	U	mg/L	P403669	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P403582	
2273490	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P403422	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P403450	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.019		mg N/L	P403443	
	EPA 365.1 Rev. 2.0	Total-P	0.008		mg P/L	P403466	
	SM 5310 B-2011	Organic Carbon	25		mg C/L	P403550	
2273496	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P403374	

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: Field Blank

Collection Date/Time: 09/02/2021 11:55

Field ID: FB_09022021

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2273502	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P403388	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P403580	
	SM 2540 D-2011	TSS	2	U	mg/L	P403669	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P403582	
2273503	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P403422	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P403450	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P403444	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P403466	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P403550	
2273504	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P403376	

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: Weekly Bayou Middle Portion

Collection Date/Time: 09/02/2021 12:52

Field ID: G5NW0157

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2273485	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P403387	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P403580	
	SM 2540 D-2011	TSS	2	U	mg/L	P403669	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P403582	
2273491	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P403422	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P403450	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P403443	
	EPA 365.1 Rev. 2.0	Total-P	0.009		mg P/L	P403466	
	SM 5310 B-2011	Organic Carbon	25		mg C/L	P403550	
2273497	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P403374	

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: Bridge Creek Near Bridge Creek Landing

Collection Date/Time: 09/02/2021 13:50

Field ID: G5NW0153

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2273486	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P403387	
	SM 2320 B-2011	Total Alkalinity	1.6	I	mg CaCO3/L	P403580	
	SM 2540 D-2011	TSS	3	I	mg/L	P403669	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P403582	
2273492	EPA 350.1 Rev. 2.0	Ammonia-N	0.066		mg N/L	P403422	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.79		mg N/L	P403450	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.038		mg N/L	P403443	
	EPA 365.1 Rev. 2.0	Total-P	0.038		mg P/L	P403466	
	SM 5310 B-2011	Organic Carbon	22		mg C/L	P403550	
2273498	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.008	I	mg P/L	P403376	

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: Bayou Grande at CR-297

Collection Date/Time: 09/02/2021 10:30

Field ID: G4NW0521

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2273487	EPA 180.1 Rev. 2.0	Turbidity	2.6	A	NTU	P403388	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P403580	
	SM 2540 D-2011	TSS	2	I	mg/L	P403669	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P403582	
2273493	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P403422	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P403450	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P403575	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P403466	
	SM 5310 B-2011	Organic Carbon	22		mg C/L	P403550	
2273499	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P403376	

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: Bayou Grande Near Navy Point Boat Ramp

Collection Date/Time: 09/02/2021 09:35

Field ID: G4NW0501

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2273488	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P403388	
	SM 2320 B-2011	Total Alkalinity	51	A	mg CaCO3/L	P403581	
	SM 2540 D-2011	TSS	5	I	mg/L	P403670	
	SM 4500 F-C-2011	Fluoride	0.40		mg F/L	P403583	
2273494	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P403423	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41	J	mg N/L	P403510	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.047		mg N/L	P403390	
	EPA 365.1 Rev. 2.0	Total-P	0.024		mg P/L	P403426	
	SM 5310 B-2011	Organic Carbon	7.3		mg C/L	P403620	
2273500	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P403375	

Ref. Method and Comment:

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

EPA 351.2 Rev. 2.0: Refer to the Lab Analysis Report for an explanation of QC Codes.

Sample Location: Bayou Grande

Collection Date/Time: 09/02/2021 09:50

Field ID: G4NW0500

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2273489	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P403388	
	SM 2320 B-2011	Total Alkalinity	48		mg CaCO3/L	P403581	
	SM 2540 D-2011	TSS	3	IA	mg/L	P403670	
	SM 4500 F-C-2011	Fluoride	0.39		mg F/L	P403583	
2273495	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P403423	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P403510	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P403390	
	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P403426	
	SM 5310 B-2011	Organic Carbon	8.3		mg C/L	P403620	
2273501	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P403375	

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: P403387

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P403388

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403422

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403423

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403450

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403510

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403390

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403443

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403444

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403575

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403426

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403466

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403374

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403375

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403376

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

Reference Method: SM 2320 B-2011
Batch ID: P403580

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

Reference Method: SM 2320 B-2011
Batch ID: P403581

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

Reference Method: SM 2540 D-2011
Batch ID: P403669

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 D-2011
Batch ID: P403670

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P403582

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P403583

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P403550

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

Reference Method: SM 5310 B-2011
Batch ID: P403620

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403422

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403423

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403450

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: P403510

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403390

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403443

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403444

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403575

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403426

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P403466

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P403374

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P403375

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P403376

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

Reference Method: SM 2320 B-2011

Batch ID: P403580

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	94 - 106

Reference Method: SM 2320 B-2011

Batch ID: P403581

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	94 - 106

Reference Method: SM 4500 F-C-2011

Batch ID: P403582

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.4		P	93 - 104

Reference Method: SM 4500 F-C-2011

Batch ID: P403583

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	93 - 104

Reference Method: SM 5310 B-2011

Batch ID: P403550

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.4		P	85 - 115

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P403620

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403422

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273519	Ammonia-N	98.2	98.2	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403423

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273494	Ammonia-N	97.0	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403450

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273469	Kjeldahl Nitrogen	102	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273494	Kjeldahl Nitrogen	112	104	F/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403390

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273394	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403443

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273456	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403444

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273519	NO2NO3-N	104	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403575

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273817	NO2NO3-N	99.5	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403426

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273394	Total-P	98.4	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403466

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273475	Total-P	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403374

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273457	O-Phosphate-P	98.5	98.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403375

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273400	O-Phosphate-P	104	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403376

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273523	O-Phosphate-P	97.9	99.4	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P403582

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273455	Fluoride	99.0	101	P/P	92 - 107

Reference Method: SM 4500 F-C-2011
Batch ID: P403583

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273488	Fluoride	97.8	97.1	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P403550

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2273534	Organic Carbon	95.8	97.4	P/P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P403620

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2272930	Organic Carbon	94.2	94.8	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P403387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273357	Turbidity	2.26	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P403388

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273487	Turbidity	7.00	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403422

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273519	Ammonia-N	0.0	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403423

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273494	Ammonia-N	1.35	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403450

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273469	Kjeldahl Nitrogen	0.393	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403510

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273494	Kjeldahl Nitrogen	6.41	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403390

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273394	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403443

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273456	NO2NO3-N	0.0	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P403444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273519	NO2NO3-N	0.971	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P403575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273817	NO2NO3-N	1.01	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P403426

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273394	Total-P	4.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P403466

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273475	Total-P	0.218	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P403374

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273457	O-Phosphate-P	0.407	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P403375

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273400	O-Phosphate-P	1.09	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P403376

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273523	O-Phosphate-P	1.11	Spike	P	0 - 20

Reference Method: SM 2320 B-2011

Batch ID: P403580

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273455	Total Alkalinity	1.27	Sample	P	0 - 5.2

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P403581

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273488	Total Alkalinity	1.38	Sample	P	0 - 5.2

Reference Method: SM 4500 F-C-2011
Batch ID: P403582

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273455	Fluoride	1.42	Spike	P	0 - 2.1

Reference Method: SM 4500 F-C-2011
Batch ID: P403583

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273488	Fluoride	0.460	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P403550

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2273534	Organic Carbon	1.02	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P403620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2272930	Organic Carbon	0.584	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A107645

Included Lab Sample IDs: 2273496, 2273497, 2273498, 2273499, 2273500, 2273501, 2273504

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.6	P/P	90 - 110
O-Phosphate-P	98.4	100	P/P	90 - 110
O-Phosphate-P	99.1	100	P/P	90 - 110
O-Phosphate-P	99.6	99.9	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A107651

Included Lab Sample IDs: 2273484, 2273485, 2273486, 2273487, 2273488, 2273489, 2273502

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.5	99.5	P/P	95 - 105
Turbidity	99.5	100	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A107653

Included Lab Sample IDs: 2273494, 2273495

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A107663

Included Lab Sample IDs: 2273490, 2273491, 2273492, 2273493, 2273494, 2273495, 2273503

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.6	99.9	P/P	90 - 110
Ammonia-N	99.2	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A107671

Included Lab Sample IDs: 2273490, 2273491, 2273492, 2273503

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	102	102	P/P	90 - 110
NO2NO3-N	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A107678

Included Lab Sample IDs: 2273494, 2273495

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A107697

Included Lab Sample IDs: 2273490, 2273491, 2273492, 2273493, 2273503

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

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-2011

Run ID: A107704

Included Lab Sample IDs: 2273490, 2273491, 2273492, 2273493, 2273503

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.7	98.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A107706

Included Lab Sample IDs: 2273490, 2273491, 2273492, 2273493, 2273503

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.5	98.2	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A107726

Included Lab Sample IDs: 2273484, 2273485, 2273486, 2273487, 2273488, 2273489, 2273502

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

Reference Method: SM 4500 F-C-2011

Run ID: A107726

Included Lab Sample IDs: 2273484, 2273485, 2273486, 2273487, 2273488, 2273489, 2273502

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A107728

Included Lab Sample IDs: 2273493

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A107739

Included Lab Sample IDs: 2273494, 2273495

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

Reference Method: SM 5310 B-2011

Run ID: A107751

Included Lab Sample IDs: 2273494, 2273495

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	98.0	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 180.1 Rev. 2.0	Turbidity				2.26	
	Turbidity				7.00	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	98.2	98.2		0.0
	Ammonia-N	98.0	97.0	98.6		1.35
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	102	101		0.393
	Kjeldahl Nitrogen	99.3	112	104		6.41
EPA 353.2 Rev. 2.0	NO2NO3-N	100	101	101		0.0
	NO2NO3-N	102	102	102		0.0
	NO2NO3-N	103	104	102		0.971
	NO2NO3-N	99.0	99.5	98.5		1.01
EPA 365.1 Rev. 2.0	Total-P	105	98.4	103		4.50
	Total-P	108	105	106		0.218
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	98.5	98.1		0.407
	O-Phosphate-P	99.8	104	102		1.09
	O-Phosphate-P	101	97.9	99.4		1.11
SM 2320 B-2011	Total Alkalinity	102			1.27	
	Total Alkalinity	104			1.38	
SM 4500 F-C-2011	Fluoride	97.4	99.0	101		1.42
	Fluoride	100	97.8	97.1		0.460
SM 5310 B-2011	Organic Carbon	95.4	95.8	97.4		1.02
	Organic Carbon	97.6	94.2	94.8		0.584

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2273484, 2273485, 2273486, 2273487, 2273488, 2273489, 2273502
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2273490, 2273491, 2273492, 2273493, 2273494, 2273495, 2273503
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2273490, 2273491, 2273492, 2273493, 2273494, 2273495, 2273503
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2273490, 2273491, 2273492, 2273493, 2273494, 2273495, 2273503
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2273490, 2273491, 2273492, 2273493, 2273494, 2273495, 2273503
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2273496, 2273497, 2273498, 2273499, 2273500, 2273501, 2273504
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO3/L	2273484, 2273485, 2273486, 2273487, 2273488, 2273489, 2273502
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2273484, 2273485, 2273486, 2273487, 2273488, 2273489, 2273502
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2273484, 2273485, 2273486, 2273487, 2273488, 2273489, 2273502
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2273490, 2273491, 2273492, 2273493, 2273494, 2273495, 2273503

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	09/03/2021			09/03/2021 17:37	Blanca Fach	2273484, 2273485, 2273486, 2273487, 2273488, 2273489, 2273502
EPA 350.1 Rev. 2.0	09/03/2021			09/07/2021 13:30	Ping Hua	2273490
	09/03/2021			09/07/2021 13:32	Ping Hua	2273491
	09/03/2021			09/07/2021 13:33	Ping Hua	2273492
	09/03/2021			09/07/2021 13:34	Ping Hua	2273493
	09/03/2021			09/07/2021 13:38	Ping Hua	2273503
	09/03/2021			09/07/2021 14:14	Ping Hua	2273494
	09/03/2021			09/07/2021 14:18	Ping Hua	2273495
EPA 351.2 Rev. 2.0	09/03/2021	09/08/2021 16:15	Benjamin T. Nordmann	09/09/2021 12:50	Alexandra J Mattheus	2273490
	09/03/2021	09/08/2021 16:15	Benjamin T. Nordmann	09/09/2021 12:55	Alexandra J Mattheus	2273491
	09/03/2021	09/08/2021 16:15	Benjamin T. Nordmann	09/09/2021 12:56	Alexandra J Mattheus	2273492
	09/03/2021	09/08/2021 16:15	Benjamin T. Nordmann	09/09/2021 12:58	Alexandra J Mattheus	2273493
	09/03/2021	09/08/2021 16:15	Benjamin T. Nordmann	09/09/2021 13:00	Alexandra J Mattheus	2273503
	09/03/2021	09/09/2021 12:30	Benjamin T. Nordmann	09/10/2021 11:39	Virginia P. Brown	2273494
	09/03/2021	09/09/2021 12:30	Benjamin T. Nordmann	09/10/2021 11:47	Virginia P. Brown	2273495
EPA 353.2 Rev. 2.0	09/03/2021			09/07/2021 09:43	Beverly Y. Sanders	2273494
	09/03/2021			09/07/2021 09:44	Beverly Y. Sanders	2273495
	09/03/2021			09/08/2021 09:22	Beverly Y. Sanders	2273490
	09/03/2021			09/08/2021 09:24	Beverly Y. Sanders	2273491
	09/03/2021			09/08/2021 09:25	Beverly Y. Sanders	2273492
	09/03/2021			09/08/2021 09:44	Beverly Y. Sanders	2273503
	09/03/2021			09/10/2021 09:38	Beverly Y. Sanders	2273493
EPA 365.1 Rev. 2.0	09/03/2021	09/07/2021 15:50	Simonne.V. Calhoun	09/08/2021 14:53	Lipi Saha	2273494
	09/03/2021	09/07/2021 15:50	Simonne.V. Calhoun	09/08/2021 14:54	Lipi Saha	2273495
	09/03/2021	09/08/2021 14:30	Simonne.V. Calhoun	09/09/2021 16:26	Shengyu Ding	2273503
	09/03/2021	09/08/2021 14:30	Simonne.V. Calhoun	09/09/2021 16:27	Shengyu Ding	2273490
	09/03/2021	09/08/2021 14:30	Simonne.V. Calhoun	09/09/2021 16:28	Shengyu Ding	2273491
	09/03/2021	09/08/2021 14:30	Simonne.V. Calhoun	09/09/2021 16:29	Shengyu Ding	2273492, 2273493
EPA 365.1 Rev. 2.0 dissolved	09/03/2021			09/03/2021 15:44	James L Waggeberby	2273496
	09/03/2021			09/03/2021 15:45	James L Waggeberby	2273497
	09/03/2021			09/03/2021 16:12	James L Waggeberby	2273500
	09/03/2021			09/03/2021 16:13	James L Waggeberby	2273501
	09/03/2021			09/03/2021 16:28	James L Waggeberby	2273498
	09/03/2021			09/03/2021 16:29	James L Waggeberby	2273499
	09/03/2021			09/03/2021 16:34	James L Waggeberby	2273504
SM 2320 B-2011	09/03/2021			09/09/2021 18:16	Dale L. Simmons	2273484
	09/03/2021			09/09/2021 18:25	Dale L. Simmons	2273486
	09/03/2021			09/09/2021 18:34	Dale L. Simmons	2273487
	09/03/2021			09/09/2021 18:42	Dale L. Simmons	2273502

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 2320 B-2011	09/03/2021			09/09/2021 19:41	Dale L. Simmons	2273485
	09/03/2021			09/09/2021 22:02	Dale L. Simmons	2273488
	09/03/2021			09/09/2021 22:16	Dale L. Simmons	2273489
SM 2540 D-2011	09/03/2021			09/08/2021 13:06	Yijie Li	2273484, 2273485, 2273486, 2273487, 2273488, 2273489, 2273502
SM 4500 F-C-2011	09/03/2021			09/09/2021 18:16	Dale L. Simmons	2273484
	09/03/2021			09/09/2021 18:25	Dale L. Simmons	2273486
	09/03/2021			09/09/2021 18:34	Dale L. Simmons	2273487
	09/03/2021			09/09/2021 18:42	Dale L. Simmons	2273502
	09/03/2021			09/09/2021 19:41	Dale L. Simmons	2273485
	09/03/2021			09/09/2021 21:21	Dale L. Simmons	2273488
	09/03/2021			09/09/2021 21:35	Dale L. Simmons	2273489
SM 5310 B-2011	09/03/2021			09/09/2021 08:34	Madeline Gruver	2273490
	09/03/2021			09/09/2021 08:47	Madeline Gruver	2273491
	09/03/2021			09/09/2021 09:00	Madeline Gruver	2273492
	09/03/2021			09/09/2021 09:13	Madeline Gruver	2273493
	09/03/2021			09/09/2021 09:26	Madeline Gruver	2273503
	09/03/2021			09/11/2021 01:28	Madeline Gruver	2273494
	09/03/2021			09/11/2021 01:46	Madeline Gruver	2273495