

Chemical Analysis Report

SO-DIST-2018-09-07-01

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

Event Description: **Charlotte Harbor**
Request ID: **RQ-2018-08-13-28**
Customer: **SO-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2295 Victoria Ave.
Suite 364
Fort Myers, FL 33901-3381
Attn: Nicole Reistad

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

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

Date Certified: 02-OCT-2018 10:28

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 "T" and a long horizontal stroke at the end.

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 groups are included in this report: Metals and 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 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: Whidden Creek-South Pt

Collection Date/Time: 09/06/2018 10:45

Field ID: G2SD0029

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2023114	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P351324	
	SM 2320 B-97	Total Alkalinity	120		mg CaCO3/L	P351707	
	SM 2540 D-97	TSS	3	IA	mg/L	P351733	
	SM 4500 F-C-97	Fluoride	0.83		mg F/L	P351710	
2023116	EPA 350.1 Rev. 2.0	Ammonia-N	0.019		mg N/L	P351575	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P351479	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P351505	
	EPA 365.1 Rev. 2.0	Total-P	0.076		mg P/L	P351398	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P352044	
2023118	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.046		mg P/L	P351306	

Ref. Method and Comment:

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

Sample Location: Whidden Creek South Pt

Collection Date/Time: 09/06/2018 10:50

Field ID: BLANK_09062018

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2023115	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P351324	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P351534	
	SM 2540 D-97	TSS	2	U	mg/L	P351731	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P351537	
2023117	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P351606	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P351484	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P351586	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P351473	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P352043	
2023119	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P351303	

Ref. Method and Comment:

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

Sample Location: Myakka Cutoff (Western)

Collection Date/Time: 09/06/2018 12:20

Field ID: G3SD0073

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2023120	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P351325	
	SM 2320 B-97	Total Alkalinity	72		mg CaCO3/L	P351707	
	SM 2540 D-97	TSS	3	U	mg/L	P351733	
	SM 4500 F-C-97	Fluoride	0.47		mg F/L	P351710	
2023121	EPA 350.1 Rev. 2.0	Ammonia-N	0.036		mg N/L	P351575	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.90		mg N/L	P351493	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.10		mg N/L	P351505	
	EPA 365.1 Rev. 2.0	Total-P	0.29		mg P/L	P351398	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P352043	
2023122	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.28		mg P/L	P351306	

Ref. Method and Comment:

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

Sample Location: TrailerParkCanal@Mouth

Collection Date/Time: 09/06/2018 12:35

Field ID: G3SD0072

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2023111	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P351324	
	SM 2320 B-97	Total Alkalinity	57		mg CaCO3/L	P351534	
	SM 2540 D-97	TSS	4	I	mg/L	P351731	
	SM 4500 F-C-97	Fluoride	0.26		mg F/L	P351537	
2023112	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P351575	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P351479	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.079		mg N/L	P351505	
	EPA 365.1 Rev. 2.0	Total-P	0.29		mg P/L	P351398	
	SM 5310 B-00	Organic Carbon	20		mg C/L	P352043	
2023113	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.26		mg P/L	P351306	
2023154	EPA 200.7 Rev. 4.4	Iron	360		ug/L	P351394	
		Zinc	5.0	U	ug/L	P351394	
	EPA 200.8 Rev. 5.4	Arsenic	1.30		ug/L	P351394	
		Cadmium	0.020	U	ug/L	P351394	
		Chromium	0.40	U	ug/L	P351394	
		Copper	0.94		ug/L	P351394	
		Lead	0.13	I	ug/L	P351394	
		Nickel	0.36	I	ug/L	P351394	
		Silver	0.010	U	ug/L	P352390	

Ref. Method and Comment:

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P351324

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P351325

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P351394

Component	Result	Code	Units
Iron	30	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P351394

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352390

Component	Result	Code	Units
Silver	0.010	U	ug/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351575

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351606

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351479

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351484

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351493

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351505

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351586

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351398

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351473

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351303

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351306

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

Reference Method: SM 2320 B-97
Batch ID: P351534

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P351707

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 D-97
Batch ID: P351731

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P351733

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P351537

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P351710

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P352043

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

Reference Method: SM 5310 B-00
Batch ID: P352044

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P351394

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Iron	108		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P351394

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	99.4		P	85 - 115
Cadmium	96.9		P	85 - 115
Chromium	94.7		P	85 - 115
Copper	97.8		P	85 - 115
Lead	90.8		P	85 - 115
Nickel	97.2		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352390

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Silver	96.9		P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351575

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351606

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351479

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351484

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351493

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351505

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: P351586

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351398

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351473

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.1		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351303

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351306

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

Reference Method: SM 2320 B-97
Batch ID: P351534

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P351707

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P351537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.2		P	91 - 105

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P351710

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

Reference Method: SM 5310 B-00
Batch ID: P352043

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P352044

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	102		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P351394

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2022955	Iron	105	105	P/P	80 - 120
2022955	Zinc	98.7	98.5	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P351394

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2022955	Arsenic	98.2	97.2	P/P	80 - 120
2022955	Cadmium	100	97.9	P/P	80 - 120
2022955	Chromium	92.1	91.0	P/P	80 - 120
2022955	Copper	94.2	94.6	P/P	80 - 120
2022955	Lead	91.0	90.6	P/P	80 - 120
2022955	Nickel	95.0	95.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352390

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028316	Silver	94.6		P	80 - 120
2028580	Silver	94.2	89.9	P/P	80 - 120

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351575

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2022522	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351606

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023020	Ammonia-N	95.1	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351479

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2022732	Kjeldahl Nitrogen	106	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351484

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023164	Kjeldahl Nitrogen	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351493

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023137	Kjeldahl Nitrogen	94.6	99.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351505

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2022669	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351586

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023022	NO2NO3-N	105	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351398

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023134	Total-P	94.6	93.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351473

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023230	Total-P	96.4	99.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351303

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023170	O-Phosphate-P	99.3	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351306

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023118	O-Phosphate-P	98.2	98.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P351537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023223	Fluoride	98.2	98.2	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P351710

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023220	Fluoride	95.6	96.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P352043

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2023023	Organic Carbon	99.4	101	P/P	85 - 115

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P352044

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2022478	Organic Carbon	98.5	98.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P351324

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023070	Turbidity	1.29	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P351325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023163	Turbidity	2.21	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P351394

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2022955	Iron	0.00840	Spike	P	0 - 20
2022955	Zinc	0.121	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P351394

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2022955	Arsenic	1.01	Spike	P	0 - 20
2022955	Cadmium	2.15	Spike	P	0 - 20
2022955	Chromium	1.12	Spike	P	0 - 20
2022955	Copper	0.468	Spike	P	0 - 20
2022955	Lead	0.463	Spike	P	0 - 20
2022955	Nickel	0.989	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P352390

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028580	Silver	4.63	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2022522	Ammonia-N	0.523	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P351606

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023020	Ammonia-N	3.35	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2022732	Kjeldahl Nitrogen	2.67	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351484

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023164	Kjeldahl Nitrogen	0.530	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P351493

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023137	Kjeldahl Nitrogen	4.72	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351505

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2022669	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P351586

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023022	NO2NO3-N	0.948	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351398

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023134	Total-P	1.76	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P351473

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023230	Total-P	2.37	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P351303

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023170	O-Phosphate-P	0.302	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P351306

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023118	O-Phosphate-P	0.484	Spike	P	0 - 20

Reference Method: SM 2320 B-97
 Batch ID: P351534

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023223	Total Alkalinity	1.14	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
 Batch ID: P351707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023220	Total Alkalinity	0.204	Sample	P	0 - 1.6

Reference Method: SM 4500 F-C-97
 Batch ID: P351537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023223	Fluoride	0.0	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
 Batch ID: P351710

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023220	Fluoride	0.480	Spike	P	0 - 3.5

Reference Method: SM 5310 B-00
 Batch ID: P352043

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2023023	Organic Carbon	0.996	Spike	P	0 - 20

Reference Method: SM 5310 B-00
 Batch ID: P352044

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2022478	Organic Carbon	0.161	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
 Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A86353

Included Lab Sample IDs: 2023113, 2023118, 2023119, 2023122

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	100	P/P	90 - 110
O-Phosphate-P	101	102	P/P	90 - 110
O-Phosphate-P	102	100	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A86366

Included Lab Sample IDs: 2023111, 2023114, 2023115, 2023120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	102	102	P/P	95 - 105
Turbidity	104	102	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86427

Included Lab Sample IDs: 2023112, 2023121

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86436

Included Lab Sample IDs: 2023112, 2023116, 2023121

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86437

Included Lab Sample IDs: 2023116

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A86447

Included Lab Sample IDs: 2023154

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	101	99.4	P/P	90 - 110
Zinc	102	98.4	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A86448

Included Lab Sample IDs: 2023111, 2023115

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	102	P/P	90 - 110
Total Alkalinity	102	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A86448

Included Lab Sample IDs: 2023111, 2023115

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86458

Included Lab Sample IDs: 2023112, 2023116, 2023121

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86459

Included Lab Sample IDs: 2023117

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86460

Included Lab Sample IDs: 2023117

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86462

Included Lab Sample IDs: 2023117

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86503

Included Lab Sample IDs: 2023112, 2023116

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86508

Included Lab Sample IDs: 2023117, 2023121

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	108	109	P/P	90 - 110
Kjeldahl Nitrogen	109	97.7	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A86511

Included Lab Sample IDs: 2023114, 2023120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A86511

Included Lab Sample IDs: 2023114, 2023120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	104	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A86511

Included Lab Sample IDs: 2023114, 2023120

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	99.5	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86599

Included Lab Sample IDs: 2023154

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	95.2	95.6	P/P	90 - 110
Cadmium	95.5	96.0	P/P	90 - 110
Chromium	94.7	91.7	P/P	90 - 110
Lead	91.1	92.0	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A86629

Included Lab Sample IDs: 2023112, 2023116, 2023117, 2023121

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.2	99.9	P/P	90 - 110
Organic Carbon	99.2	97.4	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86670

Included Lab Sample IDs: 2023154

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	100	98.8	P/P	90 - 110
Nickel	99.3	98.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86783

Included Lab Sample IDs: 2023154

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	94.3	92.7	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					1.29	
	Turbidity					2.21	
EPA 200.7 Rev. 4.4	Iron	108	105	105			0.0084
	Zinc	102	98.7	98.5			0.121
EPA 200.8 Rev. 5.4	Arsenic	99.4	98.2	97.2			1.01
	Cadmium	96.9	100	97.9			2.15
	Chromium	94.7	92.1	91.0			1.12
	Copper	97.8	94.2	94.6			0.468
	Lead	90.8	91.0	90.6			0.463
	Nickel	97.2	95.0	95.9			0.989
	Silver	96.9	94.6	94.2	89.9		4.63
EPA 350.1 Rev. 2.0	Ammonia-N	102	102	102			0.523
	Ammonia-N	99.4	95.1	100			3.35
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	106	103			2.67
	Kjeldahl Nitrogen	102	102	102			0.530
	Kjeldahl Nitrogen	102	94.6	99.8			4.72
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.0
	NO2NO3-N	104	105	106			0.948
EPA 365.1 Rev. 2.0	Total-P	99.7	94.6	93.0			1.76
	Total-P	99.1	96.4	99.3			2.37
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	99.3	99.6			0.302
	O-Phosphate-P	102	98.2	98.9			0.484
SM 2320 B-97	Total Alkalinity	103				1.14	
	Total Alkalinity	103				0.204	
SM 4500 F-C-97	Fluoride	99.2	98.2	98.2			0.0
	Fluoride	97.9	95.6	96.4			0.480
SM 5310 B-00	Organic Carbon	101	99.4	101			0.996
	Organic Carbon	102	98.5	98.3			0.161

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2023111, 2023114, 2023115, 2023120
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2023154
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2023154
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2023112, 2023116, 2023117, 2023121
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2023112, 2023116, 2023117, 2023121
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2023112, 2023116, 2023117, 2023121
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2023112, 2023116, 2023117, 2023121
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2023113, 2023118, 2023119, 2023122
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2023111, 2023114, 2023115, 2023120
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2023111, 2023114, 2023115, 2023120
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2023111, 2023114, 2023115, 2023120
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2023112, 2023116, 2023117, 2023121

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	09/07/2018			09/07/2018 16:38	Megan Treadwell	2023111, 2023114, 2023115, 2023120
EPA 200.7 Rev. 4.4	09/07/2018	09/11/2018 13:25	Elliott D. Healy	09/12/2018 17:25	Betina Topolski	2023154
EPA 200.8 Rev. 5.4	09/07/2018	09/11/2018 13:25	Elliott D. Healy	09/19/2018 16:08	Robert K Palmer	2023154
	09/07/2018	09/11/2018 13:25	Elliott D. Healy	09/20/2018 19:23	Robert K Palmer	2023154
	09/07/2018	09/27/2018 16:45	Elliott D. Healy	09/28/2018 13:41	Robert K Palmer	2023154
EPA 350.1 Rev. 2.0	09/07/2018			09/11/2018 13:20	Ping Hua	2023112
	09/07/2018			09/11/2018 13:21	Ping Hua	2023116
	09/07/2018			09/11/2018 13:23	Ping Hua	2023121
	09/07/2018			09/12/2018 13:17	Ping Hua	2023117
EPA 351.2 Rev. 2.0	09/07/2018	09/12/2018 10:45	Adrian Shelby	09/14/2018 13:56	Joseph Suarez	2023112
	09/07/2018	09/12/2018 10:45	Adrian Shelby	09/14/2018 13:57	Joseph Suarez	2023116
	09/07/2018	09/12/2018 10:45	Adrian Shelby	09/14/2018 17:22	Joseph Suarez	2023117
	09/07/2018	09/12/2018 10:45	Adrian Shelby	09/14/2018 17:37	Joseph Suarez	2023121
EPA 353.2 Rev. 2.0	09/07/2018			09/12/2018 11:28	Lauren Bottorf	2023112
	09/07/2018			09/12/2018 11:30	Lauren Bottorf	2023116
	09/07/2018			09/12/2018 11:31	Lauren Bottorf	2023121
	09/07/2018			09/13/2018 12:25	Lauren Bottorf	2023117
EPA 365.1 Rev. 2.0	09/07/2018	09/11/2018 12:05	Sima Feizi	09/12/2018 10:06	Beverly Y. Sanders	2023112
	09/07/2018	09/11/2018 12:05	Sima Feizi	09/12/2018 10:08	Beverly Y. Sanders	2023121
	09/07/2018	09/11/2018 12:05	Sima Feizi	09/12/2018 12:24	Beverly Y. Sanders	2023116
	09/07/2018	09/12/2018 12:10	Sima Feizi	09/13/2018 13:07	Beverly Y. Sanders	2023117
EPA 365.1 Rev. 2.0 dissolved	09/07/2018			09/07/2018 15:36	Julia Storbeck	2023118
	09/07/2018			09/07/2018 15:45	Julia Storbeck	2023119
	09/07/2018			09/07/2018 15:58	Julia Storbeck	2023113
	09/07/2018			09/07/2018 15:59	Julia Storbeck	2023122
SM 2320 B-97	09/07/2018			09/13/2018 04:08	Dale L. Simmons	2023115
	09/07/2018			09/13/2018 07:03	Dale L. Simmons	2023111
	09/07/2018			09/14/2018 03:58	Dale L. Simmons	2023120
	09/07/2018			09/14/2018 04:08	Dale L. Simmons	2023114
SM 2540 D-97	09/07/2018			09/12/2018 15:16	Yijie Li	2023111, 2023114, 2023115, 2023120
SM 4500 F-C-97	09/07/2018			09/13/2018 04:08	Dale L. Simmons	2023115
	09/07/2018			09/13/2018 07:03	Dale L. Simmons	2023111
	09/07/2018			09/14/2018 02:24	Dale L. Simmons	2023120
	09/07/2018			09/14/2018 02:28	Dale L. Simmons	2023114
SM 5310 B-00	09/07/2018			09/20/2018 04:49	Megan Treadwell	2023112
	09/07/2018			09/20/2018 05:01	Megan Treadwell	2023117
	09/07/2018			09/20/2018 05:13	Megan Treadwell	2023121
	09/07/2018			09/20/2018 11:13	Megan Treadwell	2023116