

Chemical Analysis Report

TLH-ROC-2018-02-13-04

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

Event Description: **kit B-b (WBIDs 8029, 3473A1, 3402A) DUP/Blank**
Request ID: **RQ-2018-02-12-46**
Customer: **TLH-ROC**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
2600 Blair Stone Rd
Tallahassee, FL 32399
Attn: Michael Eckles

For additional information please contact
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Certified by: Colin Wright, Program Administrator

Date Certified: 06-MAR-2018 15:59

A handwritten signature in black ink, appearing to read "Colin Wright", is written on a light-colored 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 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: ECONFINA RIVER @ MOUTH

Collection Date/Time: 02/13/2018 14:10

Field ID: G1TLHR0031

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1967036	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P339985	
	SM 2320 B-97	Total Alkalinity	145		mg CaCO3/L	P340382	
	SM 2540 D-97	TSS	3	U	mg/L	P340229	
	SM 4500 F-C-97	Fluoride	0.84		mg F/L	P340384	
1967039	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P340462	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P339995	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P340119	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P340399	
	SM 5310 B-00	Organic Carbon	7.8		mg C/L	P340337	
1967042	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P339883	

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: ECONFINA RIVER @ MOUTH

Collection Date/Time: 02/13/2018 14:12

Field ID: G1TLHR0031_DUP

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1967037	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P339985	
	SM 2320 B-97	Total Alkalinity	145		mg CaCO3/L	P340382	
	SM 2540 D-97	TSS	3	U	mg/L	P340229	
	SM 4500 F-C-97	Fluoride	0.84		mg F/L	P340384	
1967040	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P340462	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.47		mg N/L	P339995	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P340119	
	EPA 365.1 Rev. 2.0	Total-P	0.020		mg P/L	P340399	
	SM 5310 B-00	Organic Carbon	7.6		mg C/L	P340337	
1967043	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P339883	

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: BLANK_02_14_2018

Collection Date/Time: 02/13/2018 13:50

Field ID: DI CARBOY

Matrix: DI-WATER

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1967045	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P339985	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P340526	
	SM 2540 D-97	TSS	2	U	mg/L	P340228	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P340530	
1967046	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P340463	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P339996	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P340370	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P340097	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P340335	
1967047	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P339882	

Field ID: DI CARBOY

Matrix: DI-WATER

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:

SM 2540 D-97: 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 are unavailable because of high analyte concentration in the QC sample.

Sample Location: Gulf of Mexico (Econfina River)

Collection Date/Time: 02/13/2018 14:25

Field ID: G1TLHR0043

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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1967038	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P339985	
	SM 2320 B-97	Total Alkalinity	140		mg CaCO3/L	P340382	
	SM 2540 D-97	TSS	4	I	mg/L	P340229	
	SM 4500 F-C-97	Fluoride	0.95		mg F/L	P340384	
1967041	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P340462	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P339995	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P340119	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P340098	
	SM 5310 B-00	Organic Carbon	6.6		mg C/L	P340337	
1967044	EPA 365.1 Rev. 2.0	O-Phosphate-P	0.004	U	mg P/L	P339883	

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: P339985

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P340462

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P340463

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P339995

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P339996

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339996

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340119

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340370

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340097

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340098

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340399

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339882

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339883

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

Reference Method: SM 2320 B-97
Batch ID: P340382

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2320 B-97
 Batch ID: P340526

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

Reference Method: SM 2540 D-97
 Batch ID: P340228

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P340229

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P340384

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
 Batch ID: P340530

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P340335

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

Reference Method: SM 5310 B-00
 Batch ID: P340337

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: P340462

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P340463

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340463

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339995

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	93.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339996

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	93.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340119

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340370

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: P340097

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340098

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340399

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339882

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339883

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

Reference Method: SM 2320 B-97
Batch ID: P340382

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.3		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P340526

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.1		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P340384

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	93.9		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P340530

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P340335

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.0		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P340337

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: P340462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967111	Ammonia-N	107	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340463

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
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Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340463

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967002	Ammonia-N	96.3	97.9	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339995

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1966824	Kjeldahl Nitrogen	92.6	94.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339996

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967002	Kjeldahl Nitrogen	99.4	98.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340119

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967041	NO2NO3-N	104	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340370

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967002	NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340097

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967002	Total-P	98.6	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340098

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1966824	Total-P	96.3	95.5	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340399

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967991	Total-P	95.0	94.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339883

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1966827	O-Phosphate-P	98.9	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P340384

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1966819	Fluoride	92.4	93.7	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P340530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1966697	Fluoride	97.2	96.0	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P340335

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1967002	Organic Carbon	96.8	97.6	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P340337

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1966826	Organic Carbon	98.0	99.3	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P339985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967001	Turbidity	1.80	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967111	Ammonia-N	0.986	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P340463

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967002	Ammonia-N	1.40	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339995

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966824	Kjeldahl Nitrogen	1.61	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P339996

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967002	Kjeldahl Nitrogen	0.991	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967041	NO2NO3-N	0.477	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P340370

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967002	NO2NO3-N	0.172	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340097

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967002	Total-P	1.88	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340098

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966824	Total-P	0.860	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P340399

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967991	Total-P	0.844	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966816	O-Phosphate-P	0.379	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P339883

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966827	O-Phosphate-P	2.69	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P340382

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966819	Total Alkalinity	0.167	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P340526

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966697	Total Alkalinity	0.378	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P340384

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966819	Fluoride	0.946	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P340530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966697	Fluoride	0.992	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P340335

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1967002	Organic Carbon	0.694	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P340337

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1966826	Organic Carbon	1.31	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: A82036
Included Lab Sample IDs: 1967042, 1967043, 1967044, 1967047

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	101	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A82076

Included Lab Sample IDs: 1967036, 1967037, 1967038, 1967045

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82121

Included Lab Sample IDs: 1967039, 1967040, 1967041

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: A82125

Included Lab Sample IDs: 1967039, 1967040, 1967041, 1967046

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	97.2	P/P	90 - 110
Kjeldahl Nitrogen	97.2	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82141

Included Lab Sample IDs: 1967041, 1967046

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

Reference Method: SM 5310 B-00

Run ID: A82196

Included Lab Sample IDs: 1967039, 1967040, 1967041, 1967046

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.9	95.0	P/P	90 - 110
Organic Carbon	95.6	96.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82217

Included Lab Sample IDs: 1967046

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

Reference Method: SM 2320 B-97

Run ID: A82220

Included Lab Sample IDs: 1967036, 1967037, 1967038

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	96.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A82220

Included Lab Sample IDs: 1967036, 1967037, 1967038

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	100	109	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82241

Included Lab Sample IDs: 1967039, 1967040, 1967041, 1967046

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	104	P/P	90 - 110
Ammonia-N	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82258

Included Lab Sample IDs: 1967039, 1967040

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.8	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A82266

Included Lab Sample IDs: 1967045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.0	99.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82266

Included Lab Sample IDs: 1967045

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.1	96.7	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 SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				1.80	
EPA 350.1 Rev. 2.0	Ammonia-N	97.5	107	105		0.986
	Ammonia-N	102	96.3	97.9		1.40
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	93.7	92.6	94.2		1.61
	Kjeldahl Nitrogen	93.7	99.4	98.2		0.991
EPA 353.2 Rev. 2.0	NO2NO3-N	105	104	105		0.477
	NO2NO3-N	104	104			0.172
EPA 365.1 Rev. 2.0	Total-P	101	98.6	101		1.88
	Total-P	104	96.3	95.5		0.860
	Total-P	102	95.0	94.2		0.844

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102				0.379
	O-Phosphate-P	99.8	98.9	102		2.69
SM 2320 B-97	Total Alkalinity	99.3			0.167	
	Total Alkalinity	99.1			0.378	
SM 4500 F-C-97	Fluoride	93.9	92.4	93.7		0.946
	Fluoride	95.9	97.2	96.0		0.992
SM 5310 B-00	Organic Carbon	97.0	96.8	97.6		0.694
	Organic Carbon	97.6	98.0	99.3		1.31

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1967036, 1967037, 1967038, 1967045
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1967039, 1967040, 1967041, 1967046
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1967039, 1967040, 1967041, 1967046
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1967039, 1967040, 1967041, 1967046
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1967039, 1967040, 1967041, 1967046
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1967042, 1967043, 1967044, 1967047
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1967036, 1967037, 1967038, 1967045
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1967036, 1967037, 1967038, 1967045
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1967036, 1967037, 1967038, 1967045
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1967039, 1967040, 1967041, 1967046

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	02/13/2018			02/14/2018 17:19	Sima Feizi	1967036, 1967037, 1967038, 1967045
EPA 350.1 Rev. 2.0	02/13/2018			02/22/2018	Ping Hua	1967039, 1967040, 1967041, 1967046
EPA 351.2 Rev. 2.0	02/13/2018	02/15/2018	Adrian Shelby	02/16/2018	Joseph Suarez	1967039, 1967040, 1967041, 1967046
EPA 353.2 Rev. 2.0	02/13/2018			02/16/2018	Lauren Bottorf	1967039, 1967040, 1967041
	02/13/2018			02/21/2018	Lauren Bottorf	1967046
EPA 365.1 Rev. 2.0	02/13/2018	02/16/2018	Sima Feizi	02/19/2018	Beverly Y. Sanders	1967041, 1967046
	02/13/2018	02/22/2018	Sima Feizi	02/23/2018	Lipi Saha	1967039, 1967040
EPA 365.1 Rev. 2.0 dissolved	02/13/2018			02/13/2018 18:14	Megan Treadwell	1967042, 1967043
	02/13/2018			02/13/2018 18:15	Megan Treadwell	1967044
	02/13/2018			02/13/2018 18:16	Megan Treadwell	1967047
SM 2320 B-97	02/13/2018			02/22/2018	Dale L. Simmons	1967036, 1967037, 1967038
	02/13/2018			02/23/2018	Dale L. Simmons	1967045
SM 2540 D-97	02/13/2018			02/14/2018	DeAsia Armster	1967045
	02/13/2018			02/15/2018	DeAsia Armster	1967036, 1967037, 1967038
SM 4500 F-C-97	02/13/2018			02/21/2018	Dale L. Simmons	1967036, 1967037, 1967038
	02/13/2018			02/23/2018	Dale L. Simmons	1967045
SM 5310 B-00	02/13/2018			02/20/2018	Megan Treadwell	1967046
	02/13/2018			02/21/2018	Megan Treadwell	1967039, 1967040, 1967041