

Chemical Analysis Report

SW-DIST-2018-03-06-01

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

Event Description: **Lakes: Neff, Tooke, Thomas**
Request ID: **RQ-2018-03-05-14**
Customer: **SW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926
Attn: Ben Paswater

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 27-MAR-2018 17:29



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: Tooke Lake N

Collection Date/Time: 03/05/2018 10:00

Field ID: G5SW0122

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972069	EPA 180.1 Rev. 2.0	Turbidity	4.3		NTU	P341075	
	EPA 300.0 Rev. 2.1	Chloride	7.4		mg Cl/L	P341225	
		Sulfate	4.8		mg SO4/L	P341229	
	SM 2120 B	Color (true)	22		PCU	P341021	
	SM 2320 B-97	Total Alkalinity	8.6		mg CaCO3/L	P341453	
	SM 2540 C-97	TDS	52		mg/L	P341468	
	SM 2540 D-97	TSS	5	I	mg/L	P341376	
1972074	SM 4500 F-C-97	Fluoride	0.042	I	mg F/L	P341458	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P341407	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.0		mg N/L	P341176	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P341202	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P341166	
1972079	SM 5310 B-00	Organic Carbon	9.4		mg C/L	P341194	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P341051	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 03/06/2018.

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

Sample Location: Tooke Lake N Dup

Collection Date/Time: 03/05/2018 10:05

Field ID: G5SW0122 DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972070	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P341075	
	EPA 300.0 Rev. 2.1	Chloride	7.2		mg Cl/L	P341225	
		Sulfate	4.8		mg SO4/L	P341229	
	SM 2120 B	Color (true)	21		PCU	P341021	
	SM 2320 B-97	Total Alkalinity	8.6		mg CaCO3/L	P341454	
	SM 2540 C-97	TDS	55		mg/L	P341468	
	SM 2540 D-97	TSS	4	I	mg/L	P341376	
1972075	SM 4500 F-C-97	Fluoride	0.044	I	mg F/L	P341459	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P341407	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.97		mg N/L	P341176	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P341202	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P341167	
1972080	SM 5310 B-00	Organic Carbon	9.0		mg C/L	P341194	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P341051	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 03/06/2018.

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

Sample Location: BLANK

Collection Date/Time: 03/05/2018 10:15

Field ID: BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972071	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P341075	

Field ID: BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972071	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P341225	
		Sulfate	0.20	U	mg SO4/L	P341229	
	SM 2120 B	Color (true)	2.5	U	PCU	P341022	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P341454	
	SM 2540 C-97	TDS	15	U	mg/L	P341463	
	SM 2540 D-97	TSS	2	U	mg/L	P341371	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P341459	
1972076	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P341407	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P341176	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341202	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P341167	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P341194	
1972081	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P341052	

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: Lake Thomas

Collection Date/Time: 03/05/2018 13:00

Field ID: G5SW0111

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972072	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P341075	
	EPA 300.0 Rev. 2.1	Chloride	22	A	mg Cl/L	P341225	
		Sulfate	9.7	A	mg SO4/L	P341229	
	SM 2120 B	Color (true)	34	A	PCU	P341022	
	SM 2320 B-97	Total Alkalinity	1.2	I	mg CaCO3/L	P341454	
	SM 2540 C-97	TDS	75		mg/L	P341468	
	SM 2540 D-97	TSS	4	I	mg/L	P341376	
1972077	SM 4500 F-C-97	Fluoride	0.082	I	mg F/L	P341459	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P341407	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.73		mg N/L	P341176	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341202	
	EPA 365.1 Rev. 2.0	Total-P	0.031		mg P/L	P341167	
1972082	SM 5310 B-00	Organic Carbon	8.0		mg C/L	P341194	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P341052	

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: Neff Lake Center

Collection Date/Time: 03/05/2018 11:35

Field ID: G4SW0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972073	EPA 180.1 Rev. 2.0	Turbidity	3.3		NTU	P341075	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P341225	
		Sulfate	3.9		mg SO4/L	P341229	
	SM 2120 B	Color (true)	230		PCU	P341022	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P341454	

Field ID: G4SW0087

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972073	SM 2540 C-97	TDS	103		mg/L	P341468	
	SM 2540 D-97	TSS	4	I	mg/L	P341376	
	SM 4500 F-C-97	Fluoride	0.070	I	mg F/L	P341459	
1972078	EPA 350.1 Rev. 2.0	Ammonia-N	0.26		mg N/L	P341408	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P341176	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.16		mg N/L	P341202	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P341167	
	SM 5310 B-00	Organic Carbon	23		mg C/L	P341194	
1972083	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.046		mg P/L	P341052	

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: P341075

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P341225

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P341229

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P341407

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P341408

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P341176

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341202

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341166

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341167

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341051

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341052

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

Reference Method: SM 2120 B
Batch ID: P341021

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P341022

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P341453

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

Reference Method: SM 2320 B-97
Batch ID: P341454

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

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 C-97
Batch ID: P341463

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P341468

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P341371

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P341376

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P341458

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P341459

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P341194

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341225

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341229

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341229

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341407

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341408

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: P341176

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341202

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341166

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341167

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341051

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: P341052

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P341453

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.4		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P341454

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.8		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P341458

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	95.0		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P341459

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P341194

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341225

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972072	Chloride	98.2		P	90 - 110
1972073	Chloride	95.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341229

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972072	Sulfate	99.7		P	90 - 110
1972073	Sulfate	97.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341407

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972008	Ammonia-N	101	103	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341408

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972107	Ammonia-N	104	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341176

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972007	Kjeldahl Nitrogen	92.4	94.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341202

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972007	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341166

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972001	Total-P	96.4	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341167

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972075	Total-P	102	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341051

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971797	O-Phosphate-P	98.3	98.3	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341052

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972010	O-Phosphate-P	96.6	98.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P341458

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971581	Fluoride	92.6	93.7	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P341459

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972110	Fluoride	95.7	96.3	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P341194

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1971865	Organic Carbon	95.6	96.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P341075

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972005	Turbidity	0.712	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341225

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972072	Chloride	0.0448	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341229

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972072	Sulfate	0.223	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341407

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972008	Ammonia-N	0.902	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341408

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972107	Ammonia-N	0.324	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341176

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972007	Kjeldahl Nitrogen	0.918	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341202

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972007	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341166

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972001	Total-P	2.05	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972075	Total-P	1.37	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341051

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971797	O-Phosphate-P	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341052

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972010	O-Phosphate-P	0.928	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P341021

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972005	Color (true)	0.582	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P341022

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972072	Color (true)	1.88	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P341453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971581	Total Alkalinity	0.296	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P341454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972110	Total Alkalinity	0.246	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P341463

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971226	TDS	8.66	Sample	P	0 - 10

Reference Method: SM 2540 C-97
Batch ID: P341468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972000	TDS	2.05	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P341458

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971581	Fluoride	0.987	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P341459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972110	Fluoride	0.477	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P341194

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1971865	Organic Carbon	0.624	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: SM 2120 B
Run ID: A82460
Included Lab Sample IDs: 1972069, 1972070, 1972071, 1972072, 1972073

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	101	P/P	85 - 115
Color (true)	101	101	P/P	85 - 115

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A82460

Included Lab Sample IDs: 1972069, 1972070, 1972071, 1972072, 1972073

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	100	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A82474

Included Lab Sample IDs: 1972079, 1972080, 1972081, 1972082, 1972083

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

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A82476

Included Lab Sample IDs: 1972069, 1972070, 1972071, 1972072, 1972073

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

Reference Method: SM 5310 B-00

Run ID: A82505

Included Lab Sample IDs: 1972074, 1972075, 1972076, 1972077, 1972078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	97.0	P/P	90 - 110
Organic Carbon	97.0	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A82506

Included Lab Sample IDs: 1972074, 1972075, 1972076, 1972077, 1972078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A82509

Included Lab Sample IDs: 1972069, 1972070, 1972071, 1972072, 1972073

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	94.1	95.4	P/P	90 - 110
Chloride	95.4	95.0	P/P	90 - 110
Chloride	96.9	94.1	P/P	90 - 110
Sulfate	95.7	97.2	P/P	90 - 110
Sulfate	97.2	96.8	P/P	90 - 110
Sulfate	98.2	95.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82526

Included Lab Sample IDs: 1972078

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A82533

Included Lab Sample IDs: 1972074, 1972075, 1972076, 1972077

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	99.8	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82539

Included Lab Sample IDs: 1972074, 1972075, 1972076, 1972077, 1972078

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82558

Included Lab Sample IDs: 1972074, 1972075, 1972076, 1972077, 1972078

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

Reference Method: SM 2320 B-97

Run ID: A82571

Included Lab Sample IDs: 1972069, 1972070, 1972071, 1972072, 1972073

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.8	101	P/P	90 - 110
Total Alkalinity	99.7	97.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82571

Included Lab Sample IDs: 1972069, 1972070, 1972071, 1972072, 1972073

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	99.0	P/P	90 - 110
Fluoride	106	101	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision SMP	MS
			LCS			
EPA 180.1 Rev. 2.0	Turbidity				0.712	
EPA 300.0 Rev. 2.1	Chloride	97.3	98.2	95.0	0.0448	
	Sulfate	98.5	99.7	97.0	0.223	
EPA 350.1 Rev. 2.0	Ammonia-N	101	101	103		0.902
	Ammonia-N	102	104	104		0.324
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.6	92.4	94.0		0.918
EPA 353.2 Rev. 2.0	NO2NO3-N	103	102	102		0.0

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	MS
EPA 365.1 Rev. 2.0	Total-P	98.9	96.4	99.2		2.05
	Total-P	100	102	100		1.37
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	98.3	98.3		0.0
	O-Phosphate-P	98.8	96.6	98.0		0.928
SM 2120 B	Color (true)				0.582	
	Color (true)				1.88	
SM 2320 B-97	Total Alkalinity	99.4			0.296	
	Total Alkalinity	99.8			0.246	
SM 2540 C-97	TDS				8.66	
	TDS				2.05	
SM 4500 F-C-97	Fluoride	95.0	92.6	93.7		0.987
	Fluoride	96.8	95.7	96.3		0.477
SM 5310 B-00	Organic Carbon	96.5	95.6	96.6		0.624

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1972069, 1972070, 1972071, 1972072, 1972073
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1972069, 1972070, 1972071, 1972072, 1972073
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1972069, 1972070, 1972071, 1972072, 1972073
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1972074, 1972075, 1972076, 1972077, 1972078
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1972074, 1972075, 1972076, 1972077, 1972078
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1972074, 1972075, 1972076, 1972077, 1972078
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1972074, 1972075, 1972076, 1972077, 1972078
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1972079, 1972080, 1972081, 1972082, 1972083
SM 2120 B / E31780	True Color measured at 450 nm	1972069, 1972070, 1972071, 1972072, 1972073
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1972069, 1972070, 1972071, 1972072, 1972073
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1972069, 1972070, 1972071, 1972072, 1972073
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1972069, 1972070, 1972071, 1972072, 1972073
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1972069, 1972070, 1972071, 1972072, 1972073
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1972074, 1972075, 1972076, 1972077, 1972078

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	03/06/2018			03/06/2018 17:11	DeAsia Armster	1972069, 1972070, 1972071, 1972072, 1972073
EPA 300.0 Rev. 2.1	03/06/2018			03/08/2018	Julia Storbeck	1972069, 1972070, 1972071, 1972072, 1972073
EPA 350.1 Rev. 2.0	03/06/2018			03/09/2018	Ping Hua	1972074, 1972075, 1972076, 1972077, 1972078
EPA 351.2 Rev. 2.0	03/06/2018	03/08/2018	Adrian Shelby	03/09/2018	Joseph Suarez	1972074, 1972075, 1972076, 1972077, 1972078
EPA 353.2 Rev. 2.0	03/06/2018			03/08/2018	Lauren Bottorf	1972074, 1972075, 1972076, 1972077, 1972078
EPA 365.1 Rev. 2.0	03/06/2018	03/08/2018	Lipi Saha	03/09/2018	Lipi Saha	1972074, 1972075, 1972076, 1972077, 1972078
EPA 365.1 Rev. 2.0 dissolved	03/06/2018			03/06/2018 17:09	Megan Treadwell	1972079, 1972080
	03/06/2018			03/06/2018 17:10	Megan Treadwell	1972081
	03/06/2018			03/06/2018 17:11	Megan Treadwell	1972082
	03/06/2018			03/06/2018 17:12	Megan Treadwell	1972083
	03/06/2018			03/06/2018 14:44	Tanya Welborn	1972069
SM 2120 B	03/06/2018			03/06/2018 14:45	Tanya Welborn	1972070
	03/06/2018			03/06/2018 14:48	Tanya Welborn	1972071
	03/06/2018			03/06/2018 14:50	Tanya Welborn	1972072
	03/06/2018			03/06/2018 15:05	Tanya Welborn	1972073
	03/06/2018			03/13/2018	Dale L. Simmons	1972069, 1972070, 1972071, 1972072, 1972073
SM 2320 B-97	03/06/2018			03/07/2018	Yijie Li	1972069, 1972070, 1972071, 1972072, 1972073
SM 2540 C-97	03/06/2018			03/07/2018	Yijie Li	1972069, 1972070, 1972071, 1972072, 1972073
SM 2540 D-97	03/06/2018			03/13/2018	Dale L. Simmons	1972069, 1972070, 1972071, 1972072, 1972073
SM 4500 F-C-97	03/06/2018			03/08/2018	Megan Treadwell	1972074, 1972075, 1972076, 1972077, 1972078
SM 5310 B-00	03/06/2018					