

Chemical Analysis Report

NE-DIST-2016-07-07-02

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

Event Description: **Reference Lakes**
Request ID: **RQ-2016-07-04-25**
Customer: **NE-DIST**
Project ID: **LAKESREF**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256-7577
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 27-JUL-2016 11:25



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: Low Lake Center

Collection Date/Time: 07/06/2016 09:35

Field ID: 21020065 Low Lake Center

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1814208	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P307533	
	EPA 300.0	Bromide**	0.038	I	mg Br/L	P307527	
	EPA 300.0 Rev. 2.1	Chloride	11		mg Cl/L	P307575	
		Sulfate	3.1		mg SO4/L	P307576	
	SM 2120 B	Color (true)	180		PCU	P307507	
	SM 2320 B-97	Total Alkalinity	5.2		mg CaCO3/L	P307894	
	SM 2540 C-97	TDS	62		mg/L	P308243	
	SM 2540 D-97	TSS	4	I	mg/L	P308174	
	SM 4500 F-C-97	Fluoride	0.10		mg F/L	P307897	
1814209	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P307840	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P307775	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P307927	
	EPA 365.1 Rev. 2.0	Total-P	0.055		mg P/L	P307690	
	SM 5310 B-00	Organic Carbon	20		mg C/L	P308255	
1814210	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.007	I	mg P/L	P307500	
1814227	EPA 200.7 Rev. 4.4	Calcium	4.81		mg/L	P307730	
		Iron	68	I	ug/L	P307730	
		Magnesium	1.50		mg/L	P307730	
		Potassium	2.3		mg/L	P307730	
		Sodium	5.8		mg/L	P307730	
		Zinc	5.0	U	ug/L	P307730	
	EPA 200.8 Rev. 5.4	Arsenic	0.42		ug/L	P307730	
		Cadmium	0.020	U	ug/L	P307730	
		Chromium	0.18	I	ug/L	P307730	
		Copper	0.18	I	ug/L	P307730	
		Lead	0.098	I	ug/L	P307730	
		Nickel	0.16	I	ug/L	P307730	
		Silver	0.0050	U	ug/L	P307730	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 200.7 Rev. 4.4: The potassium matrix spike recovery data for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P307533

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P307730

Component	Result	Code	Units
Calcium	0.075	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P307730

Component	Result	Code	Units
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P307730

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 300.0
Batch ID: P307527

Component	Result	Code	Units
Bromide	0.016	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307575

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307576

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307840

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307775

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307927

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307927

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307690

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307500

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

Reference Method: SM 2120 B
Batch ID: P307507

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P307894

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

Reference Method: SM 2540 C-97
Batch ID: P308243

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P308174

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P307897

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P308255

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: P307730

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	105		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	103		P	85 - 115
Sodium	102		P	85 - 115
Zinc	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P307730

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	97.1		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	95.5		P	85 - 115
Copper	94.0		P	85 - 115
Lead	96.4		P	85 - 115
Nickel	96.1		P	85 - 115
Silver	97.9		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P307527

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307575

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307576

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307840

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: P307775

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: P307927

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: P307690

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P307500

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

Reference Method: SM 2320 B-97
 Batch ID: P307894

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
 Batch ID: P307897

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.3		P	92 - 103

Reference Method: SM 5310 B-00
 Batch ID: P308255

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	92.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P307730

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814019	Calcium	102		P	80 - 120
1814019	Iron	102	102	P/P	80 - 120
1814019	Magnesium	101		P	80 - 120
1814019	Sodium	101		P	80 - 120
1814019	Zinc	101	100	P/P	80 - 120
1814768	Calcium	103		P	80 - 120
1814768	Iron	103		P	80 - 120
1814768	Magnesium	104		P	80 - 120
1814768	Potassium	96.2		P	80 - 120
1814768	Sodium	102		P	80 - 120
1814768	Zinc	101		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P307730

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814019	Arsenic	100	101	P/P	80 - 120
1814019	Cadmium	99.7	99.3	P/P	80 - 120
1814019	Chromium	94.1	94.9	P/P	80 - 120
1814019	Copper	90.8	91.8	P/P	80 - 120
1814019	Lead	95.9	97.0	P/P	80 - 120
1814019	Nickel	92.8	95.1	P/P	80 - 120
1814019	Silver	95.6	95.8	P/P	80 - 120
1814768	Arsenic	100		P	80 - 120
1814768	Cadmium	102		P	80 - 120
1814768	Chromium	97.5		P	80 - 120
1814768	Copper	91.2		P	80 - 120
1814768	Lead	97.5		P	80 - 120
1814768	Nickel	92.2		P	80 - 120
1814768	Silver	96.5		P	80 - 120

Reference Method: EPA 300.0
Batch ID: P307527

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1810758	Bromide	106	106	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307575

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1810758	Chloride	103	103	P/P	90 - 110
1810759	Chloride	106		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1810758	Sulfate	99.8	100	P/P	90 - 110
1810759	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307840

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814399	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307775

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814196	Kjeldahl Nitrogen	96.8	99.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307927

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814127	NO2NO3-N	105	106	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307690

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814195	Total-P	99.8	95.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307500

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814198	O-Phosphate-P	94.3	95.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P307897

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814395	Fluoride	98.7	100	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P308255

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1814178	Organic Carbon	91.8	88.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P307533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814154	Turbidity	5.67	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P307730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814019	Calcium	0.543	Spike	P	0 - 20
1814019	Iron	0.545	Spike	P	0 - 20
1814019	Magnesium	0.131	Spike	P	0 - 20
1814019	Potassium	0.244	Spike	P	0 - 20
1814019	Sodium	0.358	Spike	P	0 - 20
1814019	Zinc	0.948	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P307730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814019	Arsenic	0.264	Spike	P	0 - 20
1814019	Cadmium	0.382	Spike	P	0 - 20
1814019	Chromium	0.848	Spike	P	0 - 20
1814019	Copper	1.00	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P307730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814019	Lead	1.13	Spike	P	0 - 20
1814019	Nickel	2.44	Spike	P	0 - 20
1814019	Silver	0.219	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P307527

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1810758	Bromide	0.0325	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307575

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1810758	Chloride	0.321	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P307576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1810758	Sulfate	0.181	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P307840

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814399	Ammonia-N	0.632	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P307775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814196	Kjeldahl Nitrogen	1.90	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P307927

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814127	NO2NO3-N	0.475	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P307690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814195	Total-P	4.44	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P307500

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814198	O-Phosphate-P	0.861	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P307507

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814286	Color (true)	1.38	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P307894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814395	Total Alkalinity	0.425	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P308243

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814155	TDS	0.0	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P307897

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814395	Fluoride	0.933	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P308255

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1814178	Organic Carbon	1.79	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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A70438

Included Lab Sample IDs: 1814210

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	97.8	98.0	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A70439

Included Lab Sample IDs: 1814208

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	94.2	93.0	P/P	90 - 115

Reference Method: EPA 300.0

Run ID: A70443

Included Lab Sample IDs: 1814208

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	91.7	97.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A70443

Included Lab Sample IDs: 1814208

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	107	107	P/P	90 - 110
Sulfate	107	103	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A70445

Included Lab Sample IDs: 1814208

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A70515

Included Lab Sample IDs: 1814209

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A70530

Included Lab Sample IDs: 1814209

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A70538

Included Lab Sample IDs: 1814227

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A70538

Included Lab Sample IDs: 1814227

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	100	101	P/P	90 - 110
Magnesium	102	103	P/P	90 - 110
Potassium	101	99.7	P/P	90 - 110
Sodium	99.7	99.8	P/P	90 - 110
Zinc	99.3	102	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A70542

Included Lab Sample IDs: 1814208

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: A70542

Included Lab Sample IDs: 1814208

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A70551

Included Lab Sample IDs: 1814209

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A70552

Included Lab Sample IDs: 1814209

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A70553

Included Lab Sample IDs: 1814227

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	99.7	99.4	P/P	90 - 110
Cadmium	98.9	98.9	P/P	90 - 110
Chromium	95.9	98.1	P/P	90 - 110
Copper	96.3	95.7	P/P	90 - 110
Lead	95.3	94.8	P/P	90 - 110
Nickel	97.0	95.4	P/P	90 - 110
Silver	96.5	96.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 5310 B-00
Run ID: A70641
Included Lab Sample IDs: 1814209

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.0	95.4	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				5.67	
EPA 200.7 Rev. 4.4	Calcium	102	102	103		0.543
	Iron	105	102	102		0.545
	Magnesium	104	101	104		0.131
	Potassium	103	96.2			0.244
	Sodium	102	101	102		0.358
	Zinc	100	101	100		0.948
EPA 200.8 Rev. 5.4	Arsenic	97.1	100	101		0.264
	Cadmium	100	99.7	99.3		0.382
	Chromium	95.5	94.1	94.9		0.848
	Copper	94.0	90.8	91.8		1.00
	Lead	96.4	95.9	97.0		1.13
	Nickel	96.1	92.8	95.1		2.44
	Silver	97.9	95.6	95.8		0.219
EPA 300.0	Bromide	108	106	106		0.0325
EPA 300.0 Rev. 2.1	Chloride	104	103	103		0.321
	Sulfate	101	99.8	100		0.181
EPA 350.1 Rev. 2.0	Ammonia-N	102	101	102		0.632
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	96.8	99.3		1.90
EPA 353.2 Rev. 2.0	NO2NO3-N	104	105	106		0.475
EPA 365.1 Rev. 2.0	Total-P	96.6	99.8	95.4		4.44
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	94.3	95.2		0.861
SM 2120 B	Color (true)				1.38	
SM 2320 B-97	Total Alkalinity	103			0.425	
SM 2540 C-97	TDS				0.0	
SM 4500 F-C-97	Fluoride	98.3	98.7	100		0.933
SM 5310 B-00	Organic Carbon	92.4	91.8	88.4		1.79

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1814208
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1814227
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1814227
EPA 300.0 / E31780	Bromide in aqueous matrices	1814208

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1814208
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1814208
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1814209
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1814209
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1814209
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1814209
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1814210
SM 2120 B / E31780	True Color measured at 450 nm	1814208
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1814208
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1814208
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1814208
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1814208
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1814209

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	07/07/2016			07/07/2016 15:16	Sima Feizi	1814208
EPA 200.7 Rev. 4.4	07/07/2016	07/12/2016	Elliott D. Healy	07/13/2016	Joshua Ayres	1814227
EPA 200.8 Rev. 5.4	07/07/2016	07/12/2016	Elliott D. Healy	07/13/2016	Charles J. Peterson	1814227
EPA 300.0	07/07/2016			07/08/2016	Ping Hua	1814208
EPA 300.0 Rev. 2.1	07/07/2016			07/07/2016	Ping Hua	1814208
EPA 350.1 Rev. 2.0	07/07/2016			07/13/2016	Julie Michelle Frank	1814209
EPA 351.2 Rev. 2.0	07/07/2016	07/13/2016	Sofia Elhemr	07/14/2016	Christopher Armour	1814209
EPA 353.2 Rev. 2.0	07/07/2016			07/14/2016	Beverly Y. Sanders	1814209
EPA 365.1 Rev. 2.0	07/07/2016	07/12/2016	Vijayalakshmi Reddy	07/13/2016	Lipi Saha	1814209
EPA 365.1 Rev. 2.0 dissolved	07/07/2016			07/07/2016 16:09	Julia Storbeck	1814210
SM 2120 B	07/07/2016			07/07/2016 18:09	Rochelle Y Jackson	1814208
SM 2320 B-97	07/07/2016			07/13/2016	Dale L. Simmons	1814208
SM 2540 C-97	07/07/2016			07/11/2016	Sima Feizi	1814208
SM 2540 D-97	07/07/2016			07/11/2016	Sima Feizi	1814208
SM 4500 F-C-97	07/07/2016			07/13/2016	Dale L. Simmons	1814208
SM 5310 B-00	07/07/2016			07/18/2016	Sofia Elhemr	1814209