

Chemical Analysis Report

CEN-DIST-2018-09-26-02

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

Event Description: **Waunatta + LVI**
Request ID: **RQ-2018-09-24-48**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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3319 Maguire Blvd., Suite 232
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 19-OCT-2018 14:09

A handwritten signature in black ink, appearing to read "Liang Lin", on a light-colored 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 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: LAKE WAUNATTA @ CENTER (3009A)

Collection Date/Time: 09/25/2018 10:59

Field ID: G2CE0193

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2028311	EPA 180.1 Rev. 2.0	Turbidity	2.1		NTU	P352393	
	EPA 300.0 Rev. 2.1	Chloride	15		mg Cl/L	P352628	
		Sulfate	4.5		mg SO4/L	P352631	
		Color (true)	20		PCU	P352318	
	SM 2320 B-97	Total Alkalinity	52		mg CaCO3/L	P352645	
	SM 2540 C-97	TDS	88		mg/L	P352741	
	SM 2540 D-97	TSS	3	I	mg/L	P352592	
	SM 4500 F-C-97	Fluoride	0.052	I	mg F/L	P352650	
2028312	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P352716	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.59		mg N/L	P352587	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P352490	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P352456	
	SM 5310 B-00	Organic Carbon	7.1		mg C/L	P352429	
2028313	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P352314	
2028316	EPA 200.7 Rev. 4.4	Calcium	20.1		mg/L	P352390	
		Iron	80	I	ug/L	P352390	
		Magnesium	1.92		mg/L	P352390	
		Potassium	1.3		mg/L	P352390	
		Sodium	9.5		mg/L	P352390	
		Zinc	5.0	U	ug/L	P352390	
	EPA 200.8 Rev. 5.4	Arsenic	2.14		ug/L	P352390	
		Cadmium	0.020	U	ug/L	P352390	
		Chromium	0.40	U	ug/L	P352390	
		Copper	0.56	I	ug/L	P352390	
		Lead	0.050	U	ug/L	P352390	
		Nickel	0.20	U	ug/L	P352390	
		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.

SM 4500 F-C-97: Batch matrix spike recoveries 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: P352393

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352390

Component	Result	Code	Units
Calcium	0.075	U	mg/L
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: P352390

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
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352628

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352631

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352716

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352587

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: P352490

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352456

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352314

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

Reference Method: SM 2120 B
Batch ID: P352318

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P352645

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

Reference Method: SM 2540 C-97
Batch ID: P352741

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P352592

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P352650

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P352429

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: P352390

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	103		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	107		P	85 - 115
Sodium	112		P	85 - 115
Zinc	101		P	85 - 115

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

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	103		P	85 - 115
Cadmium	98.4		P	85 - 115
Chromium	98.1		P	85 - 115
Copper	101		P	85 - 115
Lead	96.4		P	85 - 115
Nickel	101		P	85 - 115
Silver	96.9		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352628

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352631

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352716

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352587

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	107		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352490

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352456

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352314

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

Reference Method: SM 2120 B
Batch ID: P352318

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.9		P	85 - 115

Reference Method: SM 2320 B-97
Batch ID: P352645

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

Reference Method: SM 4500 F-C-97
Batch ID: P352650

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P352429

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352390

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028316	Calcium	99.8		P	80 - 120
2028316	Iron	103		P	80 - 120
2028316	Magnesium	107		P	80 - 120
2028316	Potassium	108		P	80 - 120
2028316	Sodium	104		P	80 - 120
2028316	Zinc	99.2		P	80 - 120
2028580	Calcium	102	101	P/P	80 - 120
2028580	Iron	100	101	P/P	80 - 120
2028580	Magnesium	105	105	P/P	80 - 120
2028580	Potassium	106	104	P/P	80 - 120
2028580	Sodium	110	108	P/P	80 - 120
2028580	Zinc	97.5	97.8	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	Arsenic	103		P	80 - 120
2028316	Cadmium	100		P	80 - 120
2028316	Chromium	97.4		P	80 - 120
2028316	Copper	100		P	80 - 120
2028316	Lead	96.1		P	80 - 120
2028316	Nickel	99.7		P	80 - 120
2028316	Silver	94.6		P	80 - 120
2028580	Arsenic	102	99.1	P/P	80 - 120
2028580	Cadmium	99.8	95.0	P/P	80 - 120
2028580	Chromium	99.9	96.2	P/P	80 - 120
2028580	Copper	101	98.1	P/P	80 - 120
2028580	Lead	97.0	94.4	P/P	80 - 120
2028580	Nickel	101	98.3	P/P	80 - 120
2028580	Silver	94.2	89.9	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352628

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028248	Chloride	97.3		P	90 - 110
2028432	Chloride	94.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352631

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028248	Sulfate	95.4		P	90 - 110
2028432	Sulfate	96.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352716

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028252	Ammonia-N	99.1	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352587

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028312	Kjeldahl Nitrogen	103	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352490

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028306	NO2NO3-N	100	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352456

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028306	Total-P	98.6	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352314

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028313	O-Phosphate-P	97.5	98.6	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P352429

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2028252	Organic Carbon	95.5	93.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P352393

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028248	Turbidity	1.85	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P352390

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028580	Calcium	0.490	Spike	P	0 - 20
2028580	Iron	0.148	Spike	P	0 - 20
2028580	Magnesium	0.0184	Spike	P	0 - 20
2028580	Potassium	1.70	Spike	P	0 - 20
2028580	Sodium	1.75	Spike	P	0 - 20
2028580	Zinc	0.260	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	Arsenic	2.53	Spike	P	0 - 20
2028580	Cadmium	4.98	Spike	P	0 - 20
2028580	Chromium	3.84	Spike	P	0 - 20
2028580	Copper	2.44	Spike	P	0 - 20
2028580	Lead	2.69	Spike	P	0 - 20
2028580	Nickel	2.52	Spike	P	0 - 20
2028580	Silver	4.63	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352628

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028248	Chloride	0.103	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P352631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028248	Sulfate	2.62	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P352716

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028252	Ammonia-N	2.05	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P352587

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028312	Kjeldahl Nitrogen	2.61	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P352490

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028306	NO2NO3-N	0.499	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P352456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028306	Total-P	4.30	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P352314

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028313	O-Phosphate-P	1.12	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P352318

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028542	Color (true)	0.470	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P352645

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028706	Total Alkalinity	0.0871	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P352741

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028248	TDS	5.85	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P352650

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028706	Fluoride	0.0	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P352429

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2028252	Organic Carbon	1.37	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: A86732

Included Lab Sample IDs: 2028313

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

Reference Method: SM 2120 B

Run ID: A86733

Included Lab Sample IDs: 2028311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.1	97.7	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A86757

Included Lab Sample IDs: 2028311

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

Reference Method: SM 5310 B-00

Run ID: A86766

Included Lab Sample IDs: 2028312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.0	94.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A86790

Included Lab Sample IDs: 2028312

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A86803

Included Lab Sample IDs: 2028316

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	97.6	94.9	P/P	90 - 110
Iron	97.7	95.6	P/P	90 - 110
Magnesium	98.4	94.9	P/P	90 - 110
Potassium	99.7	98.2	P/P	90 - 110
Sodium	103	101	P/P	90 - 110
Zinc	96.0	95.7	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86804

Included Lab Sample IDs: 2028316

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	99.2	97.1	P/P	90 - 110
Cadmium	96.7	95.9	P/P	90 - 110
Lead	97.7	95.5	P/P	90 - 110
Nickel	99.4	98.4	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86804

Included Lab Sample IDs: 2028316

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	94.7	94.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86828

Included Lab Sample IDs: 2028316

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	96.4	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A86831

Included Lab Sample IDs: 2028312

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A86839

Included Lab Sample IDs: 2028311

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A86855

Included Lab Sample IDs: 2028316

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	98.9	99.0	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A86860

Included Lab Sample IDs: 2028311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	100	105	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A86860

Included Lab Sample IDs: 2028311

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.6	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A86893

Included Lab Sample IDs: 2028312

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A86944

Included Lab Sample IDs: 2028312

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	94.0	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						1.85	
EPA 200.7 Rev. 4.4	Calcium	106	99.8	102	101			0.490
	Iron	103	103	100	101			0.148
	Magnesium	110	107	105	105			0.0184
	Potassium	107	108	106	104			1.70
	Sodium	112	104	110	108			1.75
	Zinc	101	99.2	97.5	97.8			0.260
EPA 200.8 Rev. 5.4	Arsenic	103	103	102	99.1			2.53
	Cadmium	98.4	100	99.8	95.0			4.98
	Chromium	98.1	97.4	99.9	96.2			3.84
	Copper	101	100	101	98.1			2.44
	Lead	96.4	96.1	97.0	94.4			2.69
	Nickel	101	99.7	101	98.3			2.52
	Silver	96.9	94.6	94.2	89.9			4.63
EPA 300.0 Rev. 2.1	Chloride	99.2	97.3	94.3			0.103	
	Sulfate	97.1	95.4	96.2			2.62	
EPA 350.1 Rev. 2.0	Ammonia-N	97.2	99.1	102				2.05
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	107	103	99.4				2.61
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	100	100				0.499
EPA 365.1 Rev. 2.0	Total-P	99.6	98.6	103				4.30
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	97.5	98.6				1.12
SM 2120 B	Color (true)	98.9					0.470	
SM 2320 B-97	Total Alkalinity	103					0.0871	
SM 2540 C-97	TDS						5.85	
SM 4500 F-C-97	Fluoride	96.6						0.0
SM 5310 B-00	Organic Carbon	98.4	95.5	93.7				1.37

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2028311
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2028316
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2028316
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2028311
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2028311
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2028312
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2028312
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2028312
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2028312
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2028313
SM 2120 B / E31780	True Color measured at 450 nm	2028311
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2028311
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2028311
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2028311
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2028311

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2028312

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	09/26/2018			09/26/2018 16:41	Megan Treadwell	2028311
EPA 200.7 Rev. 4.4	09/26/2018	09/27/2018 16:45	Elliott D. Healy	09/28/2018 18:22	Betina Topolski	2028316
EPA 200.8 Rev. 5.4	09/26/2018	09/27/2018 16:45	Elliott D. Healy	09/30/2018 22:04	Robert K Palmer	2028316
	09/26/2018	09/27/2018 16:45	Elliott D. Healy	10/01/2018 13:46	Robert K Palmer	2028316
	09/26/2018	09/27/2018 16:45	Elliott D. Healy	10/02/2018 16:56	Robert K Palmer	2028316
EPA 300.0 Rev. 2.1	09/26/2018			10/02/2018 19:51	Lipi Saha	2028311
EPA 350.1 Rev. 2.0	09/26/2018			10/02/2018 12:30	Ping Hua	2028312
EPA 351.2 Rev. 2.0	09/26/2018	10/02/2018 15:30	Adrian Shelby	10/05/2018 13:05	Joseph Suarez	2028312
EPA 353.2 Rev. 2.0	09/26/2018			09/28/2018 13:41	Lauren Bottorf	2028312
EPA 365.1 Rev. 2.0	09/26/2018	09/28/2018 12:15	Sima Feizi	10/01/2018 13:31	Beverly Y. Sanders	2028312
EPA 365.1 Rev. 2.0 dissolved	09/26/2018			09/26/2018 15:19	Julia Storbeck	2028313
SM 2120 B	09/26/2018			09/26/2018 15:46	DeAsia Armster	2028311
SM 2320 B-97	09/26/2018			10/02/2018 20:09	Dale L. Simmons	2028311
SM 2540 C-97	09/26/2018			09/28/2018 15:48	Yijie Li	2028311
SM 2540 D-97	09/26/2018			09/28/2018 15:48	Yijie Li	2028311
SM 4500 F-C-97	09/26/2018			10/02/2018 20:09	Dale L. Simmons	2028311
SM 5310 B-00	09/26/2018			09/28/2018 00:31	Megan Treadwell	2028312