

Chemical Analysis Report

CEN-DIST-2018-11-16-01

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

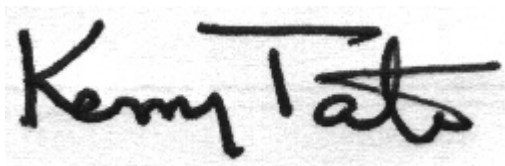
Event Description: **Bass / Silver / Drawdy X2**
Request ID: **RQ-2018-10-29-40**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

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

Date Certified: 03-DEC-2018 14:46

A handwritten signature in black ink that reads "Kerry Tate". The signature is written in a cursive, flowing style with a horizontal line above the first name.

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 DRAWDY @ 150M S OF CENTER

Collection Date/Time: 11/15/2018 10:31

Field ID: G2CE0078

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2042094	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P354881	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P355287	
		Sulfate	7.2		mg SO4/L	P355290	
	SM 2120 B	Color (true)	260		PCU	P354839	
	SM 2320 B-97	Total Alkalinity	5.7		mg CaCO3/L	P355189	
	SM 2540 C-97	TDS	92		mg/L	P355136	
	SM 2540 D-97	TSS	3	I	mg/L	P354861	
	SM 4500 F-C-97	Fluoride	0.036	I	mg F/L	P355192	
2042096	EPA 350.1 Rev. 2.0	Ammonia-N	0.16		mg N/L	P355073	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.97		mg N/L	P354976	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.094		mg N/L	P355089	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P354987	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P354966	
2042098	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P354843	
2042103	EPA 200.7 Rev. 4.4	Calcium	6.21		mg/L	P355002	
		Iron	260		ug/L	P355002	
		Magnesium	1.95		mg/L	P355002	
		Potassium	2.4		mg/L	P355002	
		Sodium	12.7		mg/L	P355002	
		Zinc	5.0	U	ug/L	P355002	
	EPA 200.8 Rev. 5.4	Arsenic	1.36		ug/L	P355002	
		Cadmium	0.020	U	ug/L	P355002	
		Chromium	0.56	I	ug/L	P355002	
		Copper	1.07		ug/L	P355002	
		Lead	0.35		ug/L	P355002	
		Nickel	0.22	I	ug/L	P355002	
		Silver	0.010	U	ug/L	P355002	

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 DRAWDY @ 150M NNE OF CENTER

Collection Date/Time: 11/15/2018 10:20

Field ID: G2CE0079

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2042095	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P354881	
	EPA 300.0 Rev. 2.1	Chloride	22		mg Cl/L	P355287	
		Sulfate	7.2		mg SO4/L	P355290	
	SM 2120 B	Color (true)	260		PCU	P354839	
	SM 2320 B-97	Total Alkalinity	6.0		mg CaCO3/L	P355189	
	SM 2540 C-97	TDS	111		mg/L	P355136	
	SM 2540 D-97	TSS	3	I	mg/L	P354861	
	SM 4500 F-C-97	Fluoride	0.039	I	mg F/L	P355192	
2042097	EPA 350.1 Rev. 2.0	Ammonia-N	0.16		mg N/L	P355073	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.94		mg N/L	P354976	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.097		mg N/L	P355089	
	EPA 365.1 Rev. 2.0	Total-P	0.022		mg P/L	P354987	
	SM 5310 B-00	Organic Carbon	22		mg C/L	P354966	
2042099	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P354843	
2042104	EPA 200.7 Rev. 4.4	Calcium	6.31		mg/L	P355002	
		Iron	260		ug/L	P355002	
		Magnesium	1.97		mg/L	P355002	
		Potassium	2.4		mg/L	P355002	
		Sodium	12.9		mg/L	P355002	
		Zinc	5.0	U	ug/L	P355002	
	EPA 200.8 Rev. 5.4	Arsenic	1.33		ug/L	P355002	
		Cadmium	0.020	U	ug/L	P355002	
		Chromium	0.55	I	ug/L	P355002	
		Copper	1.09		ug/L	P355002	
		Lead	0.34		ug/L	P355002	
		Nickel	0.20	U	ug/L	P355002	
		Silver	0.010	U	ug/L	P355002	

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 BASS @ CENTER OF LAKE

Collection Date/Time: 11/15/2018 11:24

Field ID: G4CE0147

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2042091	EPA 180.1 Rev. 2.0	Turbidity	2.5		NTU	P354881	
	EPA 300.0 Rev. 2.1	Chloride	22	A	mg Cl/L	P355287	
		Sulfate	21	A	mg SO4/L	P355290	
	SM 2120 B	Color (true)	10		PCU	P354839	
	SM 2320 B-97	Total Alkalinity	45		mg CaCO3/L	P355189	
	SM 2540 C-97	TDS	113		mg/L	P355136	
	SM 2540 D-97	TSS	3	I	mg/L	P354861	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P355192	
2042092	EPA 350.1 Rev. 2.0	Ammonia-N	0.065		mg N/L	P355073	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.78		mg N/L	P354976	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.19		mg N/L	P355089	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P354987	
	SM 5310 B-00	Organic Carbon	5.1		mg C/L	P354966	
2042093	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P354843	

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: P354881

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355002

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: P355002

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: P355287

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355290

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355073

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354976

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: P355089

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354987

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354843

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

Reference Method: SM 2120 B
Batch ID: P354839

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P355189

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

Reference Method: SM 2540 C-97
Batch ID: P355136

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P354861

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P355192

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P354966

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: P355002

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	102		P	85 - 115
Iron	104		P	85 - 115
Magnesium	100		P	85 - 115
Potassium	102		P	85 - 115
Sodium	102		P	85 - 115
Zinc	96.3		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355002

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	106		P	85 - 115
Cadmium	99.7		P	85 - 115
Chromium	99.8		P	85 - 115
Copper	103		P	85 - 115
Lead	94.5		P	85 - 115
Nickel	102		P	85 - 115
Silver	105		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355287

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355290

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355073

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354976

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355089

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: P354987

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: P354843

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	97.4		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P354839

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.1		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P355189

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P355192

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.8		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354966

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355002

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042008	Calcium	102		P	80 - 120
2042008	Iron	99.7		P	80 - 120
2042008	Magnesium	102		P	80 - 120
2042008	Potassium	98.8		P	80 - 120
2042008	Sodium	100		P	80 - 120
2042008	Zinc	97.3		P	80 - 120
2042120	Calcium	96.2		P	80 - 120
2042120	Iron	92.5	101	P/P	80 - 120
2042120	Magnesium	95.4		P	80 - 120
2042120	Potassium	94.2	102	P/P	80 - 120
2042120	Sodium	97.3		P	80 - 120
2042120	Zinc	94.0	94.7	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355002

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042008	Arsenic	101		P	80 - 120
2042008	Cadmium	98.1		P	80 - 120
2042008	Chromium	97.8		P	80 - 120
2042008	Copper	97.1		P	80 - 120
2042008	Lead	93.9		P	80 - 120
2042008	Nickel	97.3		P	80 - 120
2042008	Silver	102		P	80 - 120
2042120	Arsenic	105	106	P/P	80 - 120
2042120	Cadmium	102	99.9	P/P	80 - 120
2042120	Chromium	96.9	97.2	P/P	80 - 120
2042120	Copper	98.0	98.3	P/P	80 - 120
2042120	Lead	95.3	95.6	P/P	80 - 120
2042120	Nickel	97.4	98.0	P/P	80 - 120
2042120	Silver	100	101	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355287

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042091	Chloride	103		P	90 - 110
2042180	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355290

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042091	Sulfate	102		P	90 - 110
2042180	Sulfate	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355073

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2041902	Ammonia-N	97.5	98.9	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354976

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042092	Kjeldahl Nitrogen	96.8	96.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355089

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2041869	NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354987

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042092	Total-P	101	99.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354843

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042110	O-Phosphate-P	95.3	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P355192

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2042491	Fluoride	102	102	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P354966

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2041973	Organic Carbon	96.4	95.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P354881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042108	Turbidity	0.847	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P355002

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042120	Calcium	6.39	Spike	P	0 - 20
2042120	Iron	8.78	Spike	P	0 - 20
2042120	Magnesium	10.1	Spike	P	0 - 20
2042120	Potassium	4.61	Spike	P	0 - 20
2042120	Sodium	5.69	Spike	P	0 - 20
2042120	Zinc	0.739	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P355002

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042120	Arsenic	0.372	Spike	P	0 - 20
2042120	Cadmium	1.88	Spike	P	0 - 20
2042120	Chromium	0.253	Spike	P	0 - 20
2042120	Copper	0.379	Spike	P	0 - 20
2042120	Lead	0.289	Spike	P	0 - 20
2042120	Nickel	0.555	Spike	P	0 - 20
2042120	Silver	1.41	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355287

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042091	Chloride	1.72	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P355290

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042091	Sulfate	0.192	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P355073

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041902	Ammonia-N	0.906	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P354976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042092	Kjeldahl Nitrogen	0.0567	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P355089

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041869	NO2NO3-N	0.995	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P354987

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042092	Total-P	1.79	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P354843

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042110	O-Phosphate-P	1.77	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P354839

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042124	Color (true)	0.340	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P355189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042491	Total Alkalinity	0.155	Sample	P	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P355136

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041972	TDS	3.36	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P355192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2042491	Fluoride	0.463	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P354966

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2041973	Organic Carbon	0.938	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: A87829

Included Lab Sample IDs: 2042091, 2042094, 2042095

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	99.2	P/P	85 - 115
Color (true)	98.4	99.7	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A87830

Included Lab Sample IDs: 2042093, 2042098, 2042099

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.6	98.8	P/P	90 - 110
O-Phosphate-P	99.7	99.6	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A87844

Included Lab Sample IDs: 2042091, 2042094, 2042095

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

Reference Method: SM 5310 B-00

Run ID: A87888

Included Lab Sample IDs: 2042092, 2042096, 2042097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.8	94.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A87911

Included Lab Sample IDs: 2042092, 2042096, 2042097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A87925

Included Lab Sample IDs: 2042092, 2042096, 2042097

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A87946

Included Lab Sample IDs: 2042092, 2042096, 2042097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	99.6	P/P	90 - 110
Ammonia-N	99.6	98.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A87948

Included Lab Sample IDs: 2042092, 2042096, 2042097

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	100	P/P	90 - 110
NO2NO3-N	99.5	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A87958

Included Lab Sample IDs: 2042103, 2042104

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	98.9	P/P	90 - 110
Cadmium	96.3	95.4	P/P	90 - 110
Chromium	97.0	96.9	P/P	90 - 110
Copper	101	97.6	P/P	90 - 110
Lead	94.4	93.7	P/P	90 - 110
Nickel	100	98.3	P/P	90 - 110
Silver	99.1	97.9	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A87982

Included Lab Sample IDs: 2042103, 2042104

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	98.9	P/P	90 - 110
Iron	101	97.1	P/P	90 - 110
Magnesium	101	97.5	P/P	90 - 110
Potassium	101	97.7	P/P	90 - 110
Sodium	102	99.5	P/P	90 - 110
Zinc	95.3	98.8	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A87993

Included Lab Sample IDs: 2042091, 2042094, 2042095

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

Reference Method: SM 2320 B-97

Run ID: A87997

Included Lab Sample IDs: 2042091, 2042094, 2042095

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A87997

Included Lab Sample IDs: 2042091, 2042094, 2042095

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

Quality Assurance Report

Calibration Verification

* 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	
						LCS	SMP MS
EPA 180.1 Rev. 2.0	Turbidity						0.847
EPA 200.7 Rev. 4.4	Calcium	102	102	96.2			6.39
	Iron	104	99.7	92.5	101		8.78
	Magnesium	100	102	95.4			10.1
	Potassium	102	98.8	94.2	102		4.61
	Sodium	102	100	97.3			5.69
	Zinc	96.3	97.3	94.0	94.7		0.739
EPA 200.8 Rev. 5.4	Arsenic	106	101	105	106		0.372
	Cadmium	99.7	98.1	102	99.9		1.88
	Chromium	99.8	97.8	96.9	97.2		0.253
	Copper	103	97.1	98.0	98.3		0.379
	Lead	94.5	93.9	95.3	95.6		0.289
	Nickel	102	97.3	97.4	98.0		0.555
	Silver	105	102	100	101		1.41
EPA 300.0 Rev. 2.1	Chloride	99.8	103	102		1.72	
	Sulfate	99.4	102	101		0.192	
EPA 350.1 Rev. 2.0	Ammonia-N	98.4	97.5	98.9			0.906
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	96.8	96.7			0.0567
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	100	101			0.995
EPA 365.1 Rev. 2.0	Total-P	102	101	99.2			1.79
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	97.4	95.3	97.0			1.77
SM 2120 B	Color (true)	98.1				0.340	
SM 2320 B-97	Total Alkalinity	100				0.155	
SM 2540 C-97	TDS					3.36	
SM 4500 F-C-97	Fluoride	99.8	102	102			0.463
SM 5310 B-00	Organic Carbon	91.8	96.4	95.6			0.938

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2042091, 2042094, 2042095
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2042103, 2042104
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2042103, 2042104
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2042091, 2042094, 2042095
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2042091, 2042094, 2042095
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2042092, 2042096, 2042097
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2042092, 2042096, 2042097
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2042092, 2042096, 2042097
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2042092, 2042096, 2042097
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2042093, 2042098, 2042099
SM 2120 B / E31780	True Color measured at 450 nm	2042091, 2042094, 2042095
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2042091, 2042094, 2042095
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2042091, 2042094, 2042095
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2042091, 2042094, 2042095
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2042091, 2042094, 2042095

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2042092, 2042096, 2042097

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	11/16/2018			11/16/2018 16:18	Megan Treadwell	2042091, 2042094, 2042095
EPA 200.7 Rev. 4.4	11/16/2018	11/20/2018 17:25	Elliott D. Healy	11/27/2018 16:20	Betina Topolski	2042103
	11/16/2018	11/20/2018 17:25	Elliott D. Healy	11/27/2018 16:28	Betina Topolski	2042104
EPA 200.8 Rev. 5.4	11/16/2018	11/20/2018 17:25	Elliott D. Healy	11/27/2018 05:35	Robert K Palmer	2042103
	11/16/2018	11/20/2018 17:25	Elliott D. Healy	11/27/2018 05:44	Robert K Palmer	2042104
EPA 300.0 Rev. 2.1	11/16/2018			11/29/2018 05:27	Lipi Saha	2042091
	11/16/2018			11/29/2018 07:04	Lipi Saha	2042094
	11/16/2018			11/29/2018 07:40	Lipi Saha	2042095
EPA 350.1 Rev. 2.0	11/16/2018			11/19/2018 15:04	Ping Hua	2042092
	11/16/2018			11/19/2018 15:12	Ping Hua	2042096
	11/16/2018			11/19/2018 15:19	Ping Hua	2042097
EPA 351.2 Rev. 2.0	11/16/2018	11/20/2018 10:20	Adrian Shelby	11/21/2018 09:49	Joseph Suarez	2042092
	11/16/2018	11/20/2018 10:20	Adrian Shelby	11/21/2018 09:53	Joseph Suarez	2042096
	11/16/2018	11/20/2018 10:20	Adrian Shelby	11/21/2018 09:55	Joseph Suarez	2042097
EPA 353.2 Rev. 2.0	11/16/2018			11/26/2018 12:06	Lauren Bottorf	2042096
	11/16/2018			11/26/2018 12:07	Lauren Bottorf	2042097
	11/16/2018			11/26/2018 12:51	Lauren Bottorf	2042092
EPA 365.1 Rev. 2.0	11/16/2018	11/20/2018 12:35	Sima Feizi	11/21/2018 13:31	Beverly Y. Sanders	2042092
	11/16/2018	11/20/2018 12:35	Sima Feizi	11/21/2018 13:32	Beverly Y. Sanders	2042096
	11/16/2018	11/20/2018 12:35	Sima Feizi	11/21/2018 13:33	Beverly Y. Sanders	2042097
EPA 365.1 Rev. 2.0 dissolved	11/16/2018			11/16/2018 16:44	Jhamieka S. Greenwood	2042093
	11/16/2018			11/16/2018 16:52	Jhamieka S. Greenwood	2042098, 2042099
SM 2120 B	11/16/2018			11/16/2018 16:06	Chelsea Hernandez	2042091
	11/16/2018			11/16/2018 16:33	Chelsea Hernandez	2042094
	11/16/2018			11/16/2018 16:34	Chelsea Hernandez	2042095
SM 2320 B-97	11/16/2018			11/27/2018 07:13	Dale L. Simmons	2042091
	11/16/2018			11/27/2018 07:24	Dale L. Simmons	2042094
	11/16/2018			11/27/2018 07:36	Dale L. Simmons	2042095
SM 2540 C-97	11/16/2018			11/16/2018 17:06	Yijie Li	2042091, 2042094, 2042095
SM 2540 D-97	11/16/2018			11/16/2018 17:06	Yijie Li	2042091, 2042094, 2042095
SM 4500 F-C-97	11/16/2018			11/27/2018 07:13	Dale L. Simmons	2042091
	11/16/2018			11/27/2018 07:24	Dale L. Simmons	2042094
	11/16/2018			11/27/2018 07:36	Dale L. Simmons	2042095
SM 5310 B-00	11/16/2018			11/19/2018 23:57	Megan Treadwell	2042092
	11/16/2018			11/20/2018 00:10	Megan Treadwell	2042096
	11/16/2018			11/20/2018 00:24	Megan Treadwell	2042097