

Chemical Analysis Report

NE-DIST-2019-06-28-02

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

Event Description: **Continuous Monitoring Event**

Request ID: **RQ-2019-06-10-66**

Customer: **NE-DIST**

Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 11-JUL-2019 13:39



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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Hopkins Creek at Kings Rd

Collection Date/Time: 06/27/2019 12:45

Field ID: 20030758

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2099450	EPA 180.1 Rev. 2.0	Turbidity	14	A	NTU	P366499	
	EPA 300.0	Bromide	43		mg Br/L	P366795	
	SM 2320 B-97	Total Alkalinity	121		mg CaCO3/L	P366672	
	SM 2540 D-97	TSS	28		mg/L	P366874	
	SM 4500 F-C-97	Fluoride	0.82		mg F/L	P366859	
2099451	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.050		mg P/L	P366507	
	SM 4500 F-C-97 dissolved	Fluoride	0.82		mg F/L	P366859	
2099452	EPA 350.1 Rev. 2.0	Ammonia-N	0.015		mg N/L	P366786	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.82		mg N/L	P366769	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.016		mg N/L	P366686	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P366561	
	SM 5310 B-00	Organic Carbon	9.5		mg C/L	P366800	
2099454	EPA 200.7 Rev. 4.4	Barium	24		ug/L	P366605	
		Calcium	267		mg/L	P366605	
		Iron	640		ug/L	P366605	
		Manganese	46		ug/L	P366605	
		Potassium	275		mg/L	P366605	
		Sodium	6.35E+03		mg/L	P366605	
		Zinc	15	U	ug/L	P366605	
	EPA 200.8 Rev. 5.4	Aluminum	910		ug/L	P366605	
		Antimony	0.21	I	ug/L	P366605	
		Arsenic	3.46		ug/L	P366605	
		Cadmium	0.080	U	ug/L	P366605	
		Chromium	1.6	U	ug/L	P366605	
		Copper	1.6	U	ug/L	P366605	
		Lead	1.2	I	ug/L	P366605	
		Nickel	2.0	U	ug/L	P366605	
		Selenium	2.0	U	ug/L	P366605	
		Silver	0.040	U	ug/L	P366605	
		Thallium	0.40	U	ug/L	P366605	

Ref. Method and Comment:

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, potassium and sodium 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: P366499

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366605

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Manganese	1.0	U	ug/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: P366605

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0
Batch ID: P366795

Component	Result	Code	Units
Bromide	0.013	U	mg Br/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366786

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366769

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366686

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366686

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366561

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366507

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

Reference Method: SM 2320 B-97
Batch ID: P366672

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

Reference Method: SM 2540 D-97
Batch ID: P366874

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P366859

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P366859

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P366800

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: P366605

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	80 - 120
Calcium	102		P	80 - 120
Iron	105		P	80 - 120
Manganese	102		P	80 - 120
Potassium	102		P	80 - 120
Sodium	103		P	80 - 120
Zinc	99.4		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366605

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.8		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	104		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	106		P	85 - 115
Copper	99.3		P	85 - 115
Lead	99.8		P	85 - 115
Nickel	100		P	85 - 115
Selenium	100		P	85 - 115
Silver	98.0		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P366795

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366786

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366769

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366686

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366561

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366561

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: P366507

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

Reference Method: SM 2320 B-97
Batch ID: P366672

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P366859

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P366859

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P366800

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.2		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P366605

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099531	Barium	94.1		P	70 - 130
2099531	Iron	101		P	70 - 130
2099531	Manganese	92.9		P	70 - 130
2099531	Zinc	98.2		P	70 - 130
2099533	Barium	96.2	97.7	P/P	70 - 130
2099533	Iron	99.1	105	P/P	70 - 130
2099533	Manganese	95.5	96.9	P/P	70 - 130
2099533	Zinc	101	101	P/P	70 - 130

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P366605

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099531	Aluminum	107		P	70 - 130
2099531	Antimony	99.1		P	80 - 120
2099531	Arsenic	103		P	80 - 120
2099531	Cadmium	88.5		P	80 - 120
2099531	Chromium	85.8		P	80 - 120
2099531	Copper	94.3		P	80 - 120
2099531	Lead	105		P	80 - 120
2099531	Nickel	100		P	80 - 120
2099531	Selenium	92.1		P	70 - 130
2099531	Silver	87.6		P	80 - 120
2099531	Thallium	105		P	80 - 120
2099533	Aluminum	109	107	P/P	70 - 130
2099533	Antimony	104	102	P/P	80 - 120
2099533	Arsenic	109	108	P/P	80 - 120
2099533	Cadmium	92.2	92.1	P/P	80 - 120
2099533	Chromium	90.0	87.8	P/P	80 - 120
2099533	Copper	88.3	86.3	P/P	80 - 120
2099533	Lead	106	104	P/P	80 - 120
2099533	Nickel	102	100	P/P	80 - 120
2099533	Selenium	98.9	97.7	P/P	70 - 130
2099533	Silver	91.1	90.3	P/P	80 - 120
2099533	Thallium	106	105	P/P	80 - 120

Reference Method: EPA 300.0
 Batch ID: P366795

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099104	Bromide	95.7	96.3	P/P	90 - 110
2099566	Bromide	96.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P366786

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099464	Ammonia-N	107	108	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366769

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099330	Kjeldahl Nitrogen	93.2	93.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366686

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099452	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366561

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099334	Total-P	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366507

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099565	O-Phosphate-P	96.1	97.6	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P366859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099567	Fluoride	98.1	98.1	P/P	89 - 106

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P366859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099567	Fluoride	98.1	98.1	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P366800

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2099325	Organic Carbon	92.5	91.7	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P366499

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099450	Turbidity	5.88	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P366605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099533	Barium	1.42	Spike	P	0 - 20
2099533	Calcium	2.19	Spike	P	0 - 20
2099533	Iron	5.43	Spike	P	0 - 20
2099533	Manganese	1.32	Spike	P	0 - 20
2099533	Potassium	0.814	Spike	P	0 - 20
2099533	Sodium	0.356	Spike	P	0 - 20
2099533	Zinc	0.679	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P366605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099533	Aluminum	1.43	Spike	P	0 - 20
2099533	Antimony	1.99	Spike	P	0 - 20
2099533	Arsenic	1.25	Spike	P	0 - 20
2099533	Cadmium	0.116	Spike	P	0 - 20
2099533	Chromium	2.51	Spike	P	0 - 20
2099533	Copper	2.07	Spike	P	0 - 20
2099533	Lead	2.10	Spike	P	0 - 20
2099533	Nickel	1.70	Spike	P	0 - 20
2099533	Selenium	1.26	Spike	P	0 - 20
2099533	Silver	0.917	Spike	P	0 - 20
2099533	Thallium	0.762	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P366795

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099104	Bromide	0.496	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P366786

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099464	Ammonia-N	0.908	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366769

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P366769

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099330	Kjeldahl Nitrogen	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P366686

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099452	NO2NO3-N	0.449	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P366561

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099334	Total-P	0.737	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P366507

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099565	O-Phosphate-P	1.55	Spike	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P366672

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099566	Total Alkalinity	0.276	Sample	P	0 - 2.8

Reference Method: SM 4500 F-C-97
Batch ID: P366859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099567	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 4500 F-C-97 dissolved
Batch ID: P366859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099567	Fluoride	0.0	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P366800

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2099325	Organic Carbon	0.816	Spike	P	0 - 20

Quality Assurance Report

Precision

* 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 180.1 Rev. 2.0

Run ID: A92446

Included Lab Sample IDs: 2099450

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	101	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A92447

Included Lab Sample IDs: 2099451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	96.8	96.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A92503

Included Lab Sample IDs: 2099452

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

Reference Method: EPA 300.0

Run ID: A92511

Included Lab Sample IDs: 2099450

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	106	104	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A92529

Included Lab Sample IDs: 2099450

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A92533

Included Lab Sample IDs: 2099452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A92579

Included Lab Sample IDs: 2099452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	106	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A92582

Included Lab Sample IDs: 2099454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	101	P/P	90 - 110
Calcium	99.6	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A92582

Included Lab Sample IDs: 2099454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	102	P/P	90 - 110
Manganese	102	102	P/P	90 - 110
Potassium	105	107	P/P	90 - 110
Zinc	100	100	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A92585

Included Lab Sample IDs: 2099452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	95.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A92586

Included Lab Sample IDs: 2099454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	101	101	P/P	90 - 110
Arsenic	103	103	P/P	90 - 110
Cadmium	100	99.3	P/P	90 - 110
Chromium	102	98.2	P/P	90 - 110
Copper	99.7	99.0	P/P	90 - 110
Lead	98.0	96.4	P/P	90 - 110
Nickel	99.7	100	P/P	90 - 110
Silver	95.3	94.6	P/P	90 - 110
Thallium	94.1	93.3	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A92602

Included Lab Sample IDs: 2099454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	98.0	96.6	P/P	95 - 105

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A92606

Included Lab Sample IDs: 2099452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	91.7	95.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A92633

Included Lab Sample IDs: 2099450

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	99.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97 dissolved

Run ID: A92633

Included Lab Sample IDs: 2099451

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A92668

Included Lab Sample IDs: 2099454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	103	P/P	90 - 110
Selenium	101	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					5.88	
EPA 200.7 Rev. 4.4	Barium	101	94.1	96.2	97.7		1.42
	Calcium	102					2.19
	Iron	105	101	99.1	105		5.43
	Manganese	102	92.9	95.5	96.9		1.32
	Potassium	102					0.814
	Sodium	103					0.356
	Zinc	99.4	98.2	101	101		0.679
EPA 200.8 Rev. 5.4	Aluminum	99.8	107	109	107		1.43
	Antimony	101	99.1	104	102		1.99
	Arsenic	104	103	109	108		1.25
	Cadmium	102	92.2	92.1	88.5		0.116
	Chromium	106	85.8	90.0	87.8		2.51
	Copper	99.3	94.3	88.3	86.3		2.07
	Lead	99.8	105	106	104		2.10
	Nickel	100	100	102	100		1.70
	Selenium	100	92.1	98.9	97.7		1.26
	Silver	98.0	91.1	90.3	87.6		0.917
	Thallium	102	105	106	105		0.762
EPA 300.0	Bromide	97.6	95.7	96.3	96.0		0.496
EPA 350.1 Rev. 2.0	Ammonia-N	104	107	108			0.908
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	98.5	93.2	93.2			0.0
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	101	103	103			0.449
EPA 365.1 Rev. 2.0	Total-P	102	104	104			0.737
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.1	96.1	97.6			1.55
SM 2320 B-97	Total Alkalinity	103				0.276	
SM 4500 F-C-97	Fluoride	101	98.1	98.1			0.0
SM 4500 F-C-97 dissolved	Fluoride	101	98.1	98.1			0.0
SM 5310 B-00	Organic Carbon	96.2	92.5	91.7			0.816

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2099450
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2099454
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2099454
EPA 300.0 / E31780	Bromide in aqueous matrices	2099450
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2099452
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2099452
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2099452
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2099452
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2099451
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2099450
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2099450
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2099450
SM 4500 F-C-97 dissolved / E31780	Fluoride, dissolved, in filtered aqueous matrices, without distillation (not valid for NPDES monitoring)	2099451

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2099452

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	06/28/2019			06/28/2019 16:42	Samantha Davila	2099450
EPA 200.7 Rev. 4.4	06/28/2019	07/02/2019 13:45	Elliott D. Healy	07/05/2019 13:21	Vijayalakshmi Reddy	2099454
	06/28/2019	07/02/2019 13:45	Elliott D. Healy	07/05/2019 13:28	Vijayalakshmi Reddy	2099454
	06/28/2019	07/02/2019 13:45	Elliott D. Healy	07/08/2019 11:14	Vijayalakshmi Reddy	2099454
EPA 200.8 Rev. 5.4	06/28/2019	07/02/2019 13:45	Elliott D. Healy	07/04/2019 07:40	Robert K Palmer	2099454
	06/28/2019	07/02/2019 13:45	Elliott D. Healy	07/09/2019 15:00	Robert K Palmer	2099454
EPA 300.0	06/28/2019			07/05/2019 16:42	Jhamieka S. Greenwood	2099450
EPA 350.1 Rev. 2.0	06/28/2019			07/05/2019 13:47	Ping Hua	2099452
EPA 351.2 Rev. 2.0	06/28/2019	07/05/2019 13:30	Adrian Shelby	07/08/2019 13:13	Virginia P. Brown	2099452
EPA 353.2 Rev. 2.0	06/28/2019			07/03/2019 09:49	Beverly Y. Sanders	2099452
EPA 365.1 Rev. 2.0	06/28/2019	07/01/2019 12:00	Lipi Saha	07/02/2019 13:57	Rosalyn Ballman	2099452
EPA 365.1 Rev. 2.0 dissolved	06/28/2019			06/28/2019 16:45	Jhamieka S. Greenwood	2099451
SM 2320 B-97	06/28/2019			07/03/2019 00:09	Dale L. Simmons	2099450
SM 2540 D-97	06/28/2019			07/03/2019 15:12	Yijie Li	2099450
SM 4500 F-C-97	06/28/2019			07/09/2019 06:23	Dale L. Simmons	2099450
SM 4500 F-C-97 dissolved	06/28/2019			07/09/2019 04:54	Dale L. Simmons	2099451
SM 5310 B-00	06/28/2019			07/06/2019 08:28	Madeline Funaro	2099452