Chemical Analysis Report

NE-DIST-2017-02-07-01

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

Event Description: **UEC South**
Request ID: **RQ-2017-01-30-12**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8000 Baymeadows Way W.
Jacksonville, FL 32256
Attn: Jeremy Parrish

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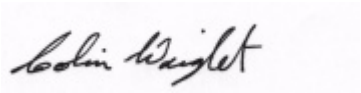
Certified by: Colin Wright, Program Administrator

Date Certified: 06-MAR-2017 13:41



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: Cracker Br. 1.5mi abv 204 **Collection Date/Time: 02/06/2017 10:15**

Field ID: G5NE0580 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1870218	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P319448	
	EPA 300.0 Rev. 2.1	Chloride	38		mg Cl/L	P319981	
		Sulfate	2.6		mg SO4/L	P319984	
	SM 2120 B	Color (true)	47		PCU	P319438	
	SM 2320 B-97	Total Alkalinity	130	A	mg CaCO3/L	P319770	
	SM 2540 C-97	TDS	208		mg/L	P319719	
	SM 2540 D-97	TSS	2	I	mg/L	P319576	
	SM 4500 F-C-97	Fluoride	0.13		mg F/L	P319772	
1870219	EPA 350.1 Rev. 2.0	Ammonia-N	0.01		mg N/L	P319568	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.27		mg N/L	P319546	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P319740	
	EPA 365.1 Rev. 2.0	Total-P	0.14		mg P/L	P319550	
	SM 5310 B-00	Organic Carbon	6.9		mg C/L	P319572	
1870220	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.12		mg P/L	P319408	
1870222	EPA 200.7 Rev. 4.4	Calcium	50.7		mg/L	P319629	
		Iron	310		ug/L	P319629	
		Magnesium	3.61		mg/L	P319629	
		Potassium	0.63	I	mg/L	P319629	
		Sodium	22.2		mg/L	P319629	
		Zinc	5.0	U	ug/L	P319629	
	EPA 200.8 Rev. 5.4	Arsenic	0.41		ug/L	P319629	
		Cadmium	0.020	U	ug/L	P319629	
		Chromium	0.40	U	ug/L	P319629	
		Copper	0.20	U	ug/L	P319629	
		Lead	0.075	I	ug/L	P319629	
		Nickel	0.20	U	ug/L	P319629	
		Silver	0.010	U	ug/L	P319629	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0 dissolved: O-Phosphate-P: 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: P319448

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P319629

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P319629

Component	Result	Code	Units
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: P319629

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: P319981

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319984

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319568

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319546

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319740

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319550

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319408

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

Reference Method: SM 2120 B
Batch ID: P319438

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P319770

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

Reference Method: SM 2540 C-97
Batch ID: P319719

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P319576

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P319772

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P319572

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: P319629

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	99.4		P	85 - 115
Iron	96.9		P	85 - 115
Magnesium	98.3		P	85 - 115
Potassium	98.9		P	85 - 115
Sodium	103		P	85 - 115
Zinc	100		P	85 - 115

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P319629

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	97.0		P	85 - 115
Cadmium	97.3		P	85 - 115
Chromium	95.2		P	85 - 115
Copper	96.7		P	85 - 115
Lead	97.4		P	85 - 115
Nickel	98.1		P	85 - 115
Silver	95.4		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319981

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319984

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319568

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319546

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319740

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319550

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.3		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319408

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P319770

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

Reference Method: SM 4500 F-C-97
Batch ID: P319772

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P319572

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.1		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P319629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870222	Calcium	103		P	80 - 120
1870222	Iron	95.6		P	80 - 120
1870222	Magnesium	93.9		P	80 - 120
1870222	Potassium	99.0		P	80 - 120
1870222	Sodium	99.9		P	80 - 120
1870222	Zinc	101		P	80 - 120
1870672	Calcium	103		P	80 - 120
1870672	Iron	101	99.2	P/P	80 - 120
1870672	Magnesium	101		P	80 - 120
1870672	Potassium	108		P	80 - 120
1870672	Sodium	102		P	80 - 120
1870672	Zinc	101	104	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P319629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870222	Arsenic	98.9		P	80 - 120
1870222	Cadmium	100		P	80 - 120
1870222	Chromium	94.9		P	80 - 120
1870222	Copper	97.1		P	80 - 120
1870222	Lead	97.6		P	80 - 120
1870222	Nickel	97.0		P	80 - 120
1870222	Silver	96.4		P	80 - 120
1870672	Arsenic	107	106	P/P	80 - 120
1870672	Cadmium	108	104	P/P	80 - 120
1870672	Chromium	101	99.3	P/P	80 - 120
1870672	Copper	104	103	P/P	80 - 120
1870672	Lead	107	106	P/P	80 - 120
1870672	Nickel	103	102	P/P	80 - 120

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P319629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870672	Silver	104	102	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319981

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870259	Chloride	101		P	90 - 110
1870260	Chloride	102		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319984

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870259	Sulfate	98.4		P	90 - 110
1870260	Sulfate	99.5		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319546

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870226	Kjeldahl Nitrogen	101	96.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319740

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870219	NO2NO3-N	107	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319550

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870224	Total-P	93.1	95.8	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P319772

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1870218	Fluoride	104	102	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P319572

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1869587	Organic Carbon	91.0	93.0	P/P	85 - 115

Quality Assurance Report
Precision

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P319448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870288	Turbidity	1.12	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P319629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870672	Calcium	0.0694	Spike	P	0 - 20
1870672	Iron	1.62	Spike	P	0 - 20
1870672	Magnesium	0.336	Spike	P	0 - 20
1870672	Potassium	0.208	Spike	P	0 - 20
1870672	Sodium	0.132	Spike	P	0 - 20
1870672	Zinc	2.15	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P319629

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870672	Arsenic	1.56	Spike	P	0 - 20
1870672	Cadmium	3.82	Spike	P	0 - 20
1870672	Chromium	1.49	Spike	P	0 - 20
1870672	Copper	1.12	Spike	P	0 - 20
1870672	Lead	1.10	Spike	P	0 - 20
1870672	Nickel	1.47	Spike	P	0 - 20
1870672	Silver	1.65	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319981

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870260	Chloride	0.0590	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P319984

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870260	Sulfate	1.11	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P319568

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870202	Ammonia-N	2.91	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P319546

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870226	Kjeldahl Nitrogen	3.46	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P319740

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870219	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P319550

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870224	Total-P	2.77	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P319408

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870007	O-Phosphate-P	1.02	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P319438

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870150	Color (true)	3.24	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P319770

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870218	Total Alkalinity	0.0924	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P319719

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870199	TDS	5.79	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P319772

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1870218	Fluoride	1.48	Spike	P	0 - 3.0

Quality Assurance Report
Precision

Reference Method: SM 5310 B-00
Batch ID: P319572

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1869587	Organic Carbon	1.08	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: A74316
Included Lab Sample IDs: 1870220

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

Reference Method: SM 2120 B
Run ID: A74327
Included Lab Sample IDs: 1870218

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A74328
Included Lab Sample IDs: 1870218

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	100	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A74364
Included Lab Sample IDs: 1870219

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.5	101	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A74366
Included Lab Sample IDs: 1870219

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	97.7	98.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A74426
Included Lab Sample IDs: 1870219

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	98.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A74430
Included Lab Sample IDs: 1870219

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

Reference Method: SM 2320 B-97
Run ID: A74444
Included Lab Sample IDs: 1870218

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

Reference Method: SM 4500 F-C-97
Run ID: A74444
Included Lab Sample IDs: 1870218

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A74449
Included Lab Sample IDs: 1870219

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A74527
Included Lab Sample IDs: 1870218

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	104	101	P/P	90 - 110
Sulfate	91.9	97.2	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A74549
Included Lab Sample IDs: 1870222

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	96.1	97.9	P/P	90 - 110
Iron	93.5	94.6	P/P	90 - 110
Magnesium	95.5	96.8	P/P	90 - 110
Potassium	96.4	97.0	P/P	90 - 110
Zinc	101	101	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A74596
Included Lab Sample IDs: 1870222

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	98.3	98.9	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A74724
Included Lab Sample IDs: 1870222

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	97.2	96.5	P/P	90 - 110
Cadmium	96.6	97.3	P/P	90 - 110
Chromium	94.3	94.4	P/P	90 - 110
Copper	97.4	98.1	P/P	90 - 110
Lead	94.4	95.5	P/P	90 - 110
Nickel	97.4	98.6	P/P	90 - 110
Silver	95.2	96.7	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		
						LCS	SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						1.12	
EPA 200.7 Rev. 4.4	Calcium	99.4	103	103				0.0694
	Iron	96.9	95.6	101	99.2			1.62
	Magnesium	98.3	93.9	101				0.336
	Potassium	98.9	99.0	108				0.208
	Sodium	103	99.9	102				0.132
	Zinc	100	101	101	104			2.15
EPA 200.8 Rev. 5.4	Arsenic	97.0	98.9	107	106			1.56
	Cadmium	97.3	100	108	104			3.82
	Chromium	95.2	94.9	101	99.3			1.49
	Copper	96.7	97.1	104	103			1.12
	Lead	97.4	97.6	107	106			1.10
	Nickel	98.1	97.0	103	102			1.47
	Silver	95.4	96.4	104	102			1.65
EPA 300.0 Rev. 2.1	Chloride	102	102	101			0.0590	
	Sulfate	98.1	99.5	98.4			1.11	
EPA 350.1 Rev. 2.0	Ammonia-N	100						2.91
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	101	96.8				3.46
EPA 353.2 Rev. 2.0	NO2NO3-N	106	107	107				0.0
EPA 365.1 Rev. 2.0	Total-P	96.3	93.1	95.8				2.77
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103						1.02
SM 2120 B	Color (true)						3.24	
SM 2320 B-97	Total Alkalinity	103					0.0924	
SM 2540 C-97	TDS						5.79	
SM 4500 F-C-97	Fluoride	100	104	102				1.48
SM 5310 B-00	Organic Carbon	98.1	91.0	93.0				1.08

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1870218

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1870222
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1870222
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1870218
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1870218
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1870219
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1870219
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1870219
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1870219
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1870220
SM 2120 B / E31780	True Color measured at 450 nm	1870218
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1870218
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1870218
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1870218
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1870218
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1870219

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	02/07/2017			02/07/2017 19:50	Julie Michelle Frank	1870218
EPA 200.7 Rev. 4.4	02/07/2017	02/09/2017	Elliott D. Healy	02/16/2017	Joshua Ayres	1870222
	02/07/2017	02/09/2017	Elliott D. Healy	02/20/2017	Joshua Ayres	1870222
EPA 200.8 Rev. 5.4	02/07/2017	02/09/2017	Elliott D. Healy	02/26/2017	Robert K Palmer	1870222
EPA 300.0 Rev. 2.1	02/07/2017			02/15/2017	Ping Hua	1870218
EPA 350.1 Rev. 2.0	02/07/2017			02/08/2017	Sofia Elnemr	1870219
EPA 351.2 Rev. 2.0	02/07/2017	02/09/2017	Adrian Shelby	02/13/2017	Joseph Suarez	1870219
EPA 353.2 Rev. 2.0	02/07/2017			02/13/2017	Beverly Y. Sanders	1870219
EPA 365.1 Rev. 2.0	02/07/2017	02/09/2017	Adrian Shelby	02/13/2017	Lipi Saha	1870219
EPA 365.1 Rev. 2.0 dissolved	02/07/2017			02/07/2017 13:45	Lipi Saha	1870220
SM 2120 B	02/07/2017			02/07/2017 22:16	Julie Michelle Frank	1870218
SM 2320 B-97	02/07/2017			02/14/2017	Dale L. Simmons	1870218
SM 2540 C-97	02/07/2017			02/08/2017	Christopher Armour	1870218
SM 2540 D-97	02/07/2017			02/08/2017	Christopher Armour	1870218
SM 4500 F-C-97	02/07/2017			02/14/2017	Dale L. Simmons	1870218
SM 5310 B-00	02/07/2017			02/08/2017	Julie Michelle Frank	1870219