Chemical Analysis Report

NE-DIST-2017-04-04-01

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

Event Description: **UEC Biology, Cracker, St.Joe**
Request ID: **RQ-2017-04-03-20**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Jacksonville, FL 32256-7577
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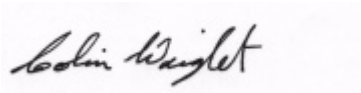
Certified by: Colin Wright, Program Administrator

Date Certified: 28-APR-2017 17:07



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. @ 1.5 MILE NORTH OF CR204 **Collection Date/Time: 04/03/2017 12:00**

Field ID: G5NE058004032017 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1885326	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P322755	
	EPA 300.0 Rev. 2.1	Chloride	95		mg Cl/L	P323119	
		Sulfate	28		mg SO4/L	P323122	
	SM 2120 B	Color (true)	44	A	PCU	P322757	
	SM 2320 B-97	Total Alkalinity	147		mg CaCO3/L	P323167	
	SM 2540 C-97	TDS	375		mg/L	P322988	
	SM 2540 D-97	TSS	2	I	mg/L	P323025	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P323170	
1885328	EPA 350.1 Rev. 2.0	Ammonia-N	0.017		mg N/L	P322764	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.35		mg N/L	P322810	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P322871	
	EPA 365.1 Rev. 2.0	Total-P	0.29		mg P/L	P322820	
	SM 5310 B-00	Organic Carbon	5.8		mg C/L	P322901	
1885330	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.22		mg P/L	P322740	
1885441	EPA 200.7 Rev. 4.4	Calcium	67.2		mg/L	P322847	
		Iron	450		ug/L	P322847	MS
		Magnesium	9.52		mg/L	P322847	
		Potassium	1.3		mg/L	P322847	
		Sodium	46.3		mg/L	P322847	
		Zinc	5.0	U	ug/L	P322847	
	EPA 200.8 Rev. 5.4	Arsenic	0.53		ug/L	P322847	
		Cadmium	0.020	U	ug/L	P322847	
		Chromium	0.40	U	ug/L	P322847	
		Copper	0.20	U	ug/L	P322847	
		Lead	0.080	I	ug/L	P322847	
		Nickel	0.20	U	ug/L	P322847	
		Silver	0.010	U	ug/L	P322847	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: CRACKER BR. @ CR 204 **Collection Date/Time: 04/03/2017 11:05**

Field ID: G5NE007904032017 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1885327	EPA 180.1 Rev. 2.0	Turbidity	1.3		NTU	P322755	
	EPA 300.0 Rev. 2.1	Chloride	480		mg Cl/L	P323119	
		Sulfate	75		mg SO4/L	P323122	
	SM 2120 B	Color (true)	37		PCU	P322757	
	SM 2320 B-97	Total Alkalinity	94		mg CaCO3/L	P323167	
	SM 2540 C-97	TDS	874		mg/L	P322988	
	SM 2540 D-97	TSS	3	I	mg/L	P323025	

Field ID: G5NE007904032017 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1885327	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P323170	
1885329	EPA 350.1 Rev. 2.0	Ammonia-N	0.023		mg N/L	P322764	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33		mg N/L	P322810	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.024		mg N/L	P322871	
	EPA 365.1 Rev. 2.0	Total-P	0.22		mg P/L	P322820	
	SM 5310 B-00	Organic Carbon	4.6		mg C/L	P322901	
1885331	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.16		mg P/L	P322740	
1885442	EPA 200.7 Rev. 4.4	Calcium	48.6		mg/L	P322847	
		Iron	240		ug/L	P322847	MS
		Magnesium	31.6		mg/L	P322847	
		Potassium	8.8		mg/L	P322847	
		Sodium	248		mg/L	P322847	
		Zinc	5.1	I	ug/L	P322847	
	EPA 200.8 Rev. 5.4	Arsenic	0.32		ug/L	P322847	
		Cadmium	0.020	U	ug/L	P322847	
		Chromium	0.40	U	ug/L	P322847	
		Copper	0.20	U	ug/L	P322847	
		Lead	0.073	I	ug/L	P322847	
		Nickel	0.20	U	ug/L	P322847	
		Silver	0.010	U	ug/L	P322847	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-P: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: ST. JOE CANAL @ OLD KINGS **Collection Date/Time: 04/03/2017 10:15**

Field ID: G5NE000504032017 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1885323	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P322755	
	EPA 300.0 Rev. 2.1	Chloride	56		mg Cl/L	P323119	
		Sulfate	24		mg SO4/L	P323122	
	SM 2120 B	Color (true)	34		PCU	P322757	
	SM 2320 B-97	Total Alkalinity	198		mg CaCO3/L	P323167	
	SM 2540 C-97	TDS	329		mg/L	P322988	
	SM 2540 D-97	TSS	4	I	mg/L	P323025	
	SM 4500 F-C-97	Fluoride	0.21		mg F/L	P323170	
1885324	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P322764	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.70		mg N/L	P322810	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P323065	
	EPA 365.1 Rev. 2.0	Total-P	0.16		mg P/L	P322820	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P322901	
1885325	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.072		mg P/L	P322740	

Field ID: G5NE000504032017 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Chloride: Batch matrix spike recoveries for one of two spiked samples are unavailable because of high analyte concentration in the QC sample.
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 365.1 Rev. 2.0: Total-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: P322755

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322847

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: P322847

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: P323119

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323122

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322764

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322810

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322871

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323065

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322820

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322740

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

Reference Method: SM 2120 B
Batch ID: P322757

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P323167

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

Reference Method: SM 2540 C-97
Batch ID: P322988

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P323025

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 4500 F-C-97
Batch ID: P323170

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P322901

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: P322847

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	107		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	99.7		P	85 - 115
Sodium	104		P	85 - 115
Zinc	99.5		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322847

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	104		P	85 - 115
Cadmium	101		P	85 - 115
Chromium	100		P	85 - 115
Copper	99.8		P	85 - 115
Lead	102		P	85 - 115
Nickel	103		P	85 - 115
Silver	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323119

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323122

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322764

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	109		P	90 - 110

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322810

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322871

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	98.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323065

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322820

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322740

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

Reference Method: SM 2320 B-97
Batch ID: P323167

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P323170

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P322901

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.8		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885320	Iron	129		F	80 - 120
1885320	Magnesium	101		P	80 - 120
1885320	Potassium	98.5		P	80 - 120
1885320	Sodium	99.8		P	80 - 120
1885320	Zinc	104		P	80 - 120
1885582	Calcium	106		P	80 - 120
1885582	Iron	107	109	P/P	80 - 120
1885582	Magnesium	106		P	80 - 120
1885582	Potassium	97.0	99.8	P/P	80 - 120
1885582	Sodium	107		P	80 - 120
1885582	Zinc	103	103	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322847

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885320	Arsenic	107		P	80 - 120
1885320	Cadmium	103		P	80 - 120
1885320	Chromium	97.8		P	80 - 120
1885320	Copper	98.4		P	80 - 120
1885320	Lead	103		P	80 - 120
1885320	Nickel	99.2		P	80 - 120
1885320	Silver	102		P	80 - 120
1885582	Arsenic	108	107	P/P	80 - 120
1885582	Cadmium	102	102	P/P	80 - 120
1885582	Chromium	101	101	P/P	80 - 120
1885582	Copper	104	102	P/P	80 - 120
1885582	Lead	105	104	P/P	80 - 120
1885582	Nickel	103	101	P/P	80 - 120
1885582	Silver	104	103	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323119

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885255	Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323122

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885255	Sulfate	99.8		P	90 - 110
1885448	Sulfate	98.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322764

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885258	Ammonia-N	108	106	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322810

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885324	Kjeldahl Nitrogen	98.7	96.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322871

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885354	NO2NO3-N	96.9	97.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323065

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885324	NO2NO3-N	106	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322740

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885261	O-Phosphate-P	94.6	96.9	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P323170

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885134	Fluoride	97.6	98.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P322901

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1885269	Organic Carbon	95.0	97.4	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P322755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885256	Turbidity	8.25	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885582	Calcium	1.38	Spike	P	0 - 20
1885582	Iron	1.29	Spike	P	0 - 20
1885582	Magnesium	0.382	Spike	P	0 - 20
1885582	Potassium	1.76	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P322847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885582	Sodium	1.72	Spike	P	0 - 20
1885582	Zinc	0.171	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P322847

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885582	Arsenic	0.860	Spike	P	0 - 20
1885582	Cadmium	0.00334	Spike	P	0 - 20
1885582	Chromium	0.186	Spike	P	0 - 20
1885582	Copper	2.26	Spike	P	0 - 20
1885582	Lead	1.46	Spike	P	0 - 20
1885582	Nickel	1.34	Spike	P	0 - 20
1885582	Silver	1.29	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323119

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885255	Chloride	0.402	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P323122

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885255	Sulfate	0.0484	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P322764

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885258	Ammonia-N	2.20	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P322810

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885324	Kjeldahl Nitrogen	1.60	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P322871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885354	NO2NO3-N	0.980	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P323065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885324	NO2NO3-N	0.471	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P322820

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885269	Total-P	0.419	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P322740

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885261	O-Phosphate-P	1.93	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P322757

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885326	Color (true)	2.05	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P323167

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885134	Total Alkalinity	0.499	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P322988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885159	TDS	5.08	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P323170

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885134	Fluoride	0.473	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P322901

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1885269	Organic Carbon	1.38	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 365.1 Rev. 2.0 dissolved
Run ID: A75557
Included Lab Sample IDs: 1885325, 1885330, 1885331

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.5	98.3	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A75563
Included Lab Sample IDs: 1885323, 1885326, 1885327

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.0	100	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A75565
Included Lab Sample IDs: 1885323, 1885326, 1885327

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	102	P/P	85 - 115

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A75567
Included Lab Sample IDs: 1885324, 1885328, 1885329

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A75599
Included Lab Sample IDs: 1885328, 1885329

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.5	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A75600
Included Lab Sample IDs: 1885324, 1885328, 1885329

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	105	104	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A75618
Included Lab Sample IDs: 1885324, 1885328, 1885329

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	93.8	94.3	P/P	90 - 110
Organic Carbon	94.3	94.6	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A75630
Included Lab Sample IDs: 1885324, 1885328, 1885329

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.0	101	P/P	90 - 110
Kjeldahl Nitrogen	99.3	97.0	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A75631
Included Lab Sample IDs: 1885441, 1885442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	98.6	98.7	P/P	90 - 110
Cadmium	97.1	96.9	P/P	90 - 110
Chromium	95.2	97.4	P/P	90 - 110
Copper	97.1	97.4	P/P	90 - 110
Lead	97.7	96.7	P/P	90 - 110
Nickel	97.5	98.1	P/P	90 - 110
Silver	96.1	96.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A75706
Included Lab Sample IDs: 1885324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A75723
Included Lab Sample IDs: 1885323, 1885326, 1885327

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	105	107	P/P	90 - 110
Sulfate	104	103	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A75733
Included Lab Sample IDs: 1885323, 1885326, 1885327

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

Reference Method: SM 4500 F-C-97
Run ID: A75733
Included Lab Sample IDs: 1885323, 1885326, 1885327

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	97.5	98.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A75782
Included Lab Sample IDs: 1885441, 1885442

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

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A75782
Included Lab Sample IDs: 1885441, 1885442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Iron	102	102	P/P	90 - 110
Magnesium	102	101	P/P	90 - 110
Potassium	99.7	98.4	P/P	90 - 110
Sodium	102	100	P/P	90 - 110
Zinc	99.5	97.7	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A76018
Included Lab Sample IDs: 1885442

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sodium	99.9	103	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						8.25	
EPA 200.7 Rev. 4.4	Calcium	104	106					1.38
	Iron	107	129	107	109			1.29
	Magnesium	105	101	106				0.382
	Potassium	99.7	98.5	97.0	99.8			1.76
	Sodium	104	99.8	107				1.72
	Zinc	99.5	104	103	103			0.171
EPA 200.8 Rev. 5.4	Arsenic	104	107	108	107			0.860
	Cadmium	101	103	102	102			0.0033
	Chromium	100	97.8	101	101			0.186
	Copper	99.8	98.4	104	102			2.26
	Lead	102	103	105	104			1.46
	Nickel	103	99.2	103	101			1.34
	Silver	102	102	104	103			1.29
EPA 300.0 Rev. 2.1	Chloride	103	103				0.402	
	Sulfate	99.7	99.8	98.6			0.0484	
EPA 350.1 Rev. 2.0	Ammonia-N	109	108	106				2.20
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	98.7	96.2				1.60
EPA 353.2 Rev. 2.0	NO2NO3-N	98.5	96.9	97.9				0.980
	NO2NO3-N	103	106	106				0.471
EPA 365.1 Rev. 2.0	Total-P	105						0.419
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.6	94.6	96.9				1.93
SM 2120 B	Color (true)						2.05	
SM 2320 B-97	Total Alkalinity	104					0.499	
SM 2540 C-97	TDS						5.08	
SM 4500 F-C-97	Fluoride	96.5	97.6	98.4				0.473
SM 5310 B-00	Organic Carbon	95.8	95.0	97.4				1.38

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1885323, 1885326, 1885327
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1885441, 1885442
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1885441, 1885442
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1885323, 1885326, 1885327
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1885323, 1885326, 1885327
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1885324, 1885328, 1885329
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1885324, 1885328, 1885329
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1885324, 1885328, 1885329
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1885324, 1885328, 1885329
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1885325, 1885330, 1885331
SM 2120 B / E31780	True Color measured at 450 nm	1885323, 1885326, 1885327
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1885323, 1885326, 1885327
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1885323, 1885326, 1885327
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1885323, 1885326, 1885327
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1885323, 1885326, 1885327
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1885324, 1885328, 1885329

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	04/04/2017			04/04/2017 14:54	Sima Feizi	1885323, 1885326, 1885327
EPA 200.7 Rev. 4.4	04/04/2017	04/05/2017	Elliott D. Healy	04/13/2017	Martin Acosta	1885441, 1885442
	04/04/2017	04/05/2017	Elliott D. Healy	04/26/2017	Martin Acosta	1885442
EPA 200.8 Rev. 5.4	04/04/2017	04/05/2017	Elliott D. Healy	04/06/2017	Betina Topolski	1885441, 1885442
EPA 300.0 Rev. 2.1	04/04/2017			04/11/2017	Ping Hua	1885323, 1885326, 1885327
EPA 350.1 Rev. 2.0	04/04/2017			04/04/2017	Julie Michelle Frank	1885324, 1885328, 1885329
EPA 351.2 Rev. 2.0	04/04/2017	04/05/2017	Adrian Shelby	04/06/2017	Joseph Suarez	1885324, 1885328, 1885329
EPA 353.2 Rev. 2.0	04/04/2017			04/06/2017	Beverly Y. Sanders	1885328, 1885329
	04/04/2017			04/11/2017	Beverly Y. Sanders	1885324
EPA 365.1 Rev. 2.0	04/04/2017	04/05/2017	Vijayalakshmi Reddy	04/06/2017	Lipi Saha	1885324, 1885328, 1885329
EPA 365.1 Rev. 2.0 dissolved	04/04/2017			04/04/2017 13:26	Lipi Saha	1885325
	04/04/2017			04/04/2017 13:27	Lipi Saha	1885330
	04/04/2017			04/04/2017 13:28	Lipi Saha	1885331
SM 2120 B	04/04/2017			04/04/2017 15:14	Julia Storbeck	1885326
	04/04/2017			04/04/2017 15:20	Julia Storbeck	1885323
	04/04/2017			04/04/2017 15:21	Julia Storbeck	1885327
SM 2320 B-97	04/04/2017			04/12/2017	Dale L. Simmons	1885323, 1885326, 1885327
SM 2540 C-97	04/04/2017			04/05/2017	Yijie Li	1885323, 1885326, 1885327
SM 2540 D-97	04/04/2017			04/05/2017	Yijie Li	1885323, 1885326, 1885327
SM 4500 F-C-97	04/04/2017			04/12/2017	Dale L. Simmons	1885323, 1885326, 1885327
SM 5310 B-00	04/04/2017			04/05/2017	Julie Michelle Frank	1885324, 1885328, 1885329