Chemical Analysis Report

CEN-DIST-2016-09-29-01

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

Event Description: **Lake Charles REFLVI**
Request ID: **RQ-2016-09-26-35**
Customer: **CEN-DIST**
Project ID: **LAKESREF**

Send Reports to:
FL Dept. of Environmental Protection
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3319 Maguire Blvd., Suite 232
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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 25-OCT-2016 11:25

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 CHARLES @ 400M S. OF CENTER **Collection Date/Time: 09/28/2016 12:53**

Field ID: G1CE0030 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1836180	EPA 300.0	Bromide**	0.062		mg Br/L	P312450	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P312475	
		Sulfate	3.8		mg SO4/L	P312471	
	SM 2120 B	Color (true)	430		PCU	P312149	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P312748	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P312355	
1836181	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P312902	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P312782	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.01	I	mg N/L	P312621	
	EPA 365.1 Rev. 2.0	Total-P	0.049		mg P/L	P313109	
1836182	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P312155	
1836185	EPA 200.7 Rev. 4.4	Calcium	11.5		mg/L	P312340	
		Iron	1.20E+03		ug/L	P312340	
		Magnesium	4.05		mg/L	P312340	
		Potassium	0.30	U	mg/L	P312340	
		Sodium	7.5		mg/L	P312340	
		Zinc	5.0	U	ug/L	P312340	
	EPA 200.8 Rev. 5.4	Arsenic	0.91		ug/L	P312340	
		Cadmium	0.020	U	ug/L	P312340	
		Chromium	0.46		ug/L	P312340	
		Copper	0.34	I	ug/L	P312340	
		Lead	0.85		ug/L	P312340	
		Nickel	0.26		ug/L	P312340	
		Silver	0.0050	U	ug/L	P312340	

Ref. Method and Comment:
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for potassium and sodium are unavailble for one of two spiked samples because of high analyte concentration in the QC sample.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P312340

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: P312340

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L

Quality Assurance Report
Method Blank Results

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P312340

Component	Result	Code	Units
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 300.0
Batch ID: P312450

Component	Result	Code	Units
Bromide	0.016	U	mg Br/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312471

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312475

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312902

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312782

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312621

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313109

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312155

Component	Result	Code	Units

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312155

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

Reference Method: SM 2120 B
Batch ID: P312149

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P312748

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

Reference Method: SM 4500 F-C-97
Batch ID: P312355

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P312340

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	101		P	85 - 115
Iron	102		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	98.5		P	85 - 115
Sodium	99.1		P	85 - 115
Zinc	97.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P312340

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	99.3		P	85 - 115
Chromium	100		P	85 - 115
Copper	94.9		P	85 - 115
Lead	97.1		P	85 - 115
Nickel	101		P	85 - 115
Silver	98.0		P	85 - 115

Reference Method: EPA 300.0
Batch ID: P312450

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312471

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	90.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312475

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312902

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312782

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	94.6		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312621

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: P313109

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312155

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

Reference Method: SM 2320 B-97
Batch ID: P312748

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

Reference Method: SM 4500 F-C-97
Batch ID: P312355

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.3		P	92 - 103

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P312340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1835358	Calcium	104		P	80 - 120
1835358	Iron	99.5		P	80 - 120
1835358	Magnesium	99.5		P	80 - 120
1835358	Zinc	95.2		P	80 - 120
1836960	Calcium	97.7		P	80 - 120
1836960	Iron	97.7	105	P/P	80 - 120
1836960	Magnesium	98.3	106	P/P	80 - 120
1836960	Potassium	100	101	P/P	80 - 120
1836960	Sodium	98.5		P	80 - 120
1836960	Zinc	96.4	95.1	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P312340

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1835358	Arsenic	105		P	80 - 120
1835358	Cadmium	99.5		P	80 - 120
1835358	Chromium	95.4		P	80 - 120
1835358	Copper	92.8		P	80 - 120
1835358	Lead	97.6		P	80 - 120
1835358	Nickel	97.8		P	80 - 120
1835358	Silver	94.2		P	80 - 120
1836960	Arsenic	103	102	P/P	80 - 120
1836960	Cadmium	98.5	98.1	P/P	80 - 120
1836960	Chromium	98.7	98.0	P/P	80 - 120
1836960	Copper	96.8	95.6	P/P	80 - 120
1836960	Lead	97.0	96.5	P/P	80 - 120
1836960	Nickel	98.6	99.0	P/P	80 - 120
1836960	Silver	97.4	97.6	P/P	80 - 120

Reference Method: EPA 300.0
Batch ID: P312450

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1833161	Bromide	102		P	90 - 110
1837469	Bromide	104	104	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312471

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1833161	Sulfate	95.8		P	90 - 110
1837469	Sulfate	95.0	94.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312475

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1833161	Chloride	98.8		P	90 - 110
1837469	Chloride	96.3	92.0	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312902

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836159	Ammonia-N	98.5	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312782

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836192	Kjeldahl Nitrogen	90.6	99.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312621

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836135	NO2NO3-N	104	107	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313109

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836159	Total-P	99.7	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312155

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836259	O-Phosphate-P	102	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P312355

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1836244	Fluoride	98.7	98.7	P/P	91 - 105

Quality Assurance Report
Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P312340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836960	Calcium	0.511	Spike	P	0 - 20
1836960	Iron	5.81	Spike	P	0 - 20
1836960	Magnesium	4.25	Spike	P	0 - 20
1836960	Potassium	0.952	Spike	P	0 - 20
1836960	Sodium	1.86	Spike	P	0 - 20
1836960	Zinc	1.28	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P312340

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836960	Arsenic	0.316	Spike	P	0 - 20
1836960	Cadmium	0.317	Spike	P	0 - 20
1836960	Chromium	0.691	Spike	P	0 - 20
1836960	Copper	1.19	Spike	P	0 - 20
1836960	Lead	0.549	Spike	P	0 - 20
1836960	Nickel	0.368	Spike	P	0 - 20
1836960	Silver	0.188	Spike	P	0 - 20

Reference Method: EPA 300.0
Batch ID: P312450

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837469	Bromide	0.343	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312471

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837469	Sulfate	0.570	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P312475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1837469	Chloride	4.23	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P312902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836159	Ammonia-N	0.0676	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P312782

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836192	Kjeldahl Nitrogen	4.51	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P312621

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836135	NO2NO3-N	1.44	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313109

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836159	Total-P	3.50	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312155

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836259	O-Phosphate-P	0.681	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P312149

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836152	Color (true)	1.40	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P312748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836244	Total Alkalinity	0.724	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
Batch ID: P312355

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1836244	Fluoride	0.0	Spike	P	0 - 3.0

* 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: A71923
Included Lab Sample IDs: 1836180

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	106	101	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A71924
Included Lab Sample IDs: 1836182

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.4	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 300.0
Run ID: A71988
Included Lab Sample IDs: 1836180

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Bromide	98.7	98.2	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A71988
Included Lab Sample IDs: 1836180

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.8	98.9	P/P	90 - 110
Sulfate	99.2	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A71991
Included Lab Sample IDs: 1836180

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72059
Included Lab Sample IDs: 1836181

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	106	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A72082
Included Lab Sample IDs: 1836185

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	101	P/P	90 - 110
Cadmium	98.3	97.1	P/P	90 - 110
Chromium	99.3	97.6	P/P	90 - 110
Lead	95.6	95.3	P/P	90 - 110
Nickel	101	102	P/P	90 - 110
Silver	98.2	97.6	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A72087
Included Lab Sample IDs: 1836185

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Copper	96.0	96.8	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A72099
Included Lab Sample IDs: 1836180

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A72107
Included Lab Sample IDs: 1836185

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	100	99.8	P/P	90 - 110
Iron	101	99.5	P/P	90 - 110
Magnesium	101	101	P/P	90 - 110
Potassium	101	99.4	P/P	90 - 110
Sodium	99.5	99.0	P/P	90 - 110
Zinc	100	99.5	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A72156
Included Lab Sample IDs: 1836181

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A72189
Included Lab Sample IDs: 1836181

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.2	96.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A72233
Included Lab Sample IDs: 1836181

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	100	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 200.7 Rev. 4.4	Calcium	101	104	97.7				0.511
	Iron	102	99.5	97.7	105			5.81
	Magnesium	104	99.5	98.3	106			4.25
	Potassium	98.5	100	101				0.952
	Sodium	99.1	98.5					1.86
	Zinc	97.6	95.2	96.4	95.1			1.28
EPA 200.8 Rev. 5.4	Arsenic	102	105	103	102			0.316
	Cadmium	99.3	99.5	98.5	98.1			0.317
	Chromium	100	95.4	98.7	98.0			0.691
	Copper	94.9	92.8	96.8	95.6			1.19
	Lead	97.1	97.6	97.0	96.5			0.549
	Nickel	101	97.8	98.6	99.0			0.368
	Silver	98.0	94.2	97.4	97.6			0.188

Quality Assurance Report
Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision		
						LCS	SMP	MS
EPA 300.0	Bromide	102	104	104	102			0.343
EPA 300.0 Rev. 2.1	Chloride	97.3	96.3	92.0	98.8			4.23
	Sulfate	90.9	95.0	94.5	95.8			0.570
EPA 350.1 Rev. 2.0	Ammonia-N	103	98.5	98.6				0.0676
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	94.6	90.6	99.2				4.51
EPA 353.2 Rev. 2.0	NO2NO3-N	101	104	107				1.44
EPA 365.1 Rev. 2.0	Total-P	98.3	99.7	96.0				3.50
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	102	103				0.681
SM 2120 B	Color (true)						1.40	
SM 2320 B-97	Total Alkalinity	103					0.724	
SM 4500 F-C-97	Fluoride	99.3	98.7	98.7				0.0

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	1836185
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1836185
EPA 300.0 / E31780	Bromide in aqueous matrices	1836180
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1836180
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1836180
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1836181
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1836181
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1836181
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1836181
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1836182
SM 2120 B / E31780	True Color measured at 450 nm	1836180
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1836180
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1836180

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	09/29/2016	10/03/2016	Elliott D. Healy	10/05/2016	Betina Topolski	1836185
EPA 200.8 Rev. 5.4	09/29/2016	10/03/2016	Elliott D. Healy	10/05/2016	Charles J. Peterson	1836185
	09/29/2016	10/03/2016	Elliott D. Healy	10/06/2016	Charles J. Peterson	1836185
EPA 300.0	09/29/2016			10/05/2016	Ping Hua	1836180
EPA 300.0 Rev. 2.1	09/29/2016			10/05/2016	Ping Hua	1836180
EPA 350.1 Rev. 2.0	09/29/2016			10/07/2016	Sofia Elnemr	1836181
EPA 351.2 Rev. 2.0	09/29/2016	10/10/2016	Adrian Shelby	10/12/2016	Joseph Suarez	1836181
EPA 353.2 Rev. 2.0	09/29/2016			10/06/2016	Beverly Y. Sanders	1836181
EPA 365.1 Rev. 2.0	09/29/2016	10/13/2016	Vijayalakshmi Reddy	10/14/2016	Lipi Saha	1836181
EPA 365.1 Rev. 2.0 dissolved	09/29/2016			09/29/2016 15:31	Julia Storbeck	1836182
SM 2120 B	09/29/2016			09/29/2016 15:44	Julie Michelle Frank	1836180
SM 2320 B-97	09/29/2016			10/08/2016	Dale L. Simmons	1836180
SM 4500 F-C-97	09/29/2016			10/04/2016	Dale L. Simmons	1836180