

Chemical Analysis Report

SO-DIST-2016-10-07-01

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

Event Description: **SMP: Myrtle and Myrtle?**

Request ID: **RQ-2016-08-08-11**

Customer: **SO-DIST**

Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FLDEP South District Office
2295 Victoria Ave. Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 31-OCT-2016 12:05



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: MYRTLE 1995 UPSTREAM OF PRAIRIE CR.

Collection Date/Time: 10/06/2016 09:25

Field ID: G3SD080816-

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1839090	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P312818	
	EPA 300.0 Rev. 2.1	Chloride	24		mg Cl/L	P313652	
		Sulfate	3.5		mg SO4/L	P313655	
	SM 2120 B	Color (true)	270		PCU	P312715	
	SM 2320 B-97	Total Alkalinity	39		mg CaCO3/L	P312949	
	SM 2540 C-97	TDS	116	A	mg/L	P313420	
	SM 2540 D-97	TSS	6	I	mg/L	P313428	
	SM 4500 F-C-97	Fluoride	0.12		mg F/L	P312950	
1839091	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P313502	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.7		mg N/L	P313630	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P313103	
	EPA 365.1 Rev. 2.0	Total-P	0.050		mg P/L	P313707	
	SM 5310 B-00	Organic Carbon	28		mg C/L	P313030	
1839092	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.019		mg P/L	P312718	
1839094	EPA 200.7 Rev. 4.4	Calcium	16.8		mg/L	P313032	
		Iron	820		ug/L	P313032	
		Magnesium	4.81		mg/L	P313032	
		Potassium	2.6		mg/L	P313032	
		Sodium	12.1		mg/L	P313032	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P313032	
		Arsenic	1.05		ug/L	P313032	
		Cadmium	0.020	U	ug/L	P313032	
		Chromium	0.40		ug/L	P313032	
		Copper	0.50		ug/L	P313032	
		Lead	0.20		ug/L	P313032	
		Nickel	0.22		ug/L	P313032	
		Silver	0.0050	U	ug/L	P313032	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: 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.

SM 5310 B-00: 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: P312818

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P313032

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: P313032

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: P313032

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
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 Rev. 2.1
Batch ID: P313652

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313655

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P313502

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P313630

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313103

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313707

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: P312718

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

Reference Method: SM 2120 B
Batch ID: P312715

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P312949

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

Reference Method: SM 2540 C-97
Batch ID: P313420

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P313428

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P312950

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P313030

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: P313032

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	102		P	85 - 115
Magnesium	104		P	85 - 115
Potassium	99.3		P	85 - 115
Sodium	103		P	85 - 115
Zinc	99.9		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P313032

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	102		P	85 - 115
Cadmium	98.6		P	85 - 115
Chromium	97.8		P	85 - 115
Copper	99.3		P	85 - 115
Lead	96.1		P	85 - 115
Nickel	101		P	85 - 115
Silver	100		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P313652

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

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P313655

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P313502

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: P313630

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P313103

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P313707

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P312718

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P312949

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

Reference Method: SM 4500 F-C-97
Batch ID: P312950

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.1		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P313030

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P313032

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1839186	Calcium	98.5		P	80 - 120
1839186	Iron	107	101	P/P	80 - 120
1839186	Magnesium	107	101	P/P	80 - 120
1839186	Potassium	104	98.5	P/P	80 - 120
1839186	Sodium	105	99.2	P/P	80 - 120
1839186	Zinc	97.3	97.2	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P313032

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1839186	Arsenic	101	103	P/P	80 - 120
1839186	Cadmium	102	104	P/P	80 - 120
1839186	Chromium	98.0	100	P/P	80 - 120
1839186	Copper	95.8	97.1	P/P	80 - 120
1839186	Lead	96.5	97.1	P/P	80 - 120
1839186	Nickel	97.4	98.6	P/P	80 - 120
1839186	Silver	101	103	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313652

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1839083	Chloride	96.9		P	90 - 110
1839090	Chloride	95.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313655

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313655

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1839090	Sulfate	93.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P313502

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1839066	Ammonia-N	100	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P313630

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1839123	Kjeldahl Nitrogen	97.4	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313103

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1839065	NO2NO3-N	100	98.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313707

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1838739	Total-P	101	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312718

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1839126	O-Phosphate-P	97.1	98.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P312950

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1838791	Fluoride	99.1	99.1	P/P	91 - 105

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P312818

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839083	Turbidity	2.17	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P313032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839186	Calcium	3.25	Spike	P	0 - 20
1839186	Iron	5.46	Spike	P	0 - 20
1839186	Magnesium	4.30	Spike	P	0 - 20
1839186	Potassium	4.43	Spike	P	0 - 20
1839186	Sodium	3.07	Spike	P	0 - 20
1839186	Zinc	0.0277	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P313032

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839186	Arsenic	1.87	Spike	P	0 - 20
1839186	Cadmium	1.80	Spike	P	0 - 20
1839186	Chromium	1.54	Spike	P	0 - 20
1839186	Copper	1.32	Spike	P	0 - 20
1839186	Lead	0.673	Spike	P	0 - 20
1839186	Nickel	1.19	Spike	P	0 - 20
1839186	Silver	2.00	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313652

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839083	Chloride	0.187	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P313655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839083	Sulfate	0.499	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P313502

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839066	Ammonia-N	0.928	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P313630

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839123	Kjeldahl Nitrogen	2.15	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P313103

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839065	NO2NO3-N	1.25	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P313707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1838739	Total-P	0.742	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P312718

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839126	O-Phosphate-P	0.976	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P312715

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839083	Color (true)	3.48	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P312949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1838791	Total Alkalinity	0.0488	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P313420

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839090	TDS	7.79	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P312950

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1838791	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P313030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1839065	Organic Carbon	0.495	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: SM 2120 B
Run ID: A72088
Included Lab Sample IDs: 1839090

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A72090
Included Lab Sample IDs: 1839092

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

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A72128
Included Lab Sample IDs: 1839090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	101	100	P/P	95 - 105

Reference Method: SM 2320 B-97
Run ID: A72166
Included Lab Sample IDs: 1839090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.9	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A72166
Included Lab Sample IDs: 1839090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A72184
Included Lab Sample IDs: 1839091

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A72206
Included Lab Sample IDs: 1839091

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A72259

Included Lab Sample IDs: 1839094

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	101	99.9	P/P	90 - 110
Cadmium	98.4	99.1	P/P	90 - 110
Chromium	98.2	97.6	P/P	90 - 110
Copper	100	98.4	P/P	90 - 110
Lead	94.1	95.2	P/P	90 - 110
Nickel	102	99.4	P/P	90 - 110
Silver	97.4	96.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A72269

Included Lab Sample IDs: 1839094

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	103	102	P/P	90 - 110
Iron	100	100	P/P	90 - 110
Magnesium	102	101	P/P	90 - 110
Potassium	101	100	P/P	90 - 110
Sodium	102	100	P/P	90 - 110
Zinc	102	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A72305

Included Lab Sample IDs: 1839090

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	100	P/P	90 - 110
Sulfate	98.1	96.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A72319

Included Lab Sample IDs: 1839091

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A72409

Included Lab Sample IDs: 1839091

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A72456

Included Lab Sample IDs: 1839091

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.3	99.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				2.17	
EPA 200.7 Rev. 4.4	Calcium	105	98.5			3.25
	Iron	102	107 101			5.46
	Magnesium	104	107 101			4.30
	Potassium	99.3	104 98.5			4.43
	Sodium	103	105 99.2			3.07
	Zinc	99.9	97.3 97.2			0.0277
EPA 200.8 Rev. 5.4	Arsenic	102	101 103			1.87
	Cadmium	98.6	102 104			1.80
	Chromium	97.8	98.0 100			1.54
	Copper	99.3	95.8 97.1			1.32
	Lead	96.1	96.5 97.1			0.673
	Nickel	101	97.4 98.6			1.19
	Silver	100	101 103			2.00
EPA 300.0 Rev. 2.1	Chloride	97.6	96.9 95.0		0.187	
	Sulfate	94.4	93.6		0.499	
EPA 350.1 Rev. 2.0	Ammonia-N	104	100 102			0.928
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	97.4 99.8			2.15
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	105	100 98.7			1.25
EPA 365.1 Rev. 2.0	Total-P	100	101 100			0.742
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	97.1 98.1			0.976
SM 2120 B	Color (true)				3.48	
SM 2320 B-97	Total Alkalinity	103			0.0488	
SM 2540 C-97	TDS				7.79	
SM 4500 F-C-97	Fluoride	96.1	99.1 99.1			0.0
SM 5310 B-00	Organic Carbon	99.8				0.495

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1839090
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1839094
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1839094
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1839090
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1839090
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1839091
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1839091
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1839091

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1839091
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1839092
SM 2120 B / E31780	True Color measured at 450 nm	1839090
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1839090
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1839090
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1839090
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1839090
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1839091

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	10/07/2016			10/07/2016 16:29	Blanca Fach	1839090
EPA 200.7 Rev. 4.4	10/07/2016	10/12/2016	Elliott D. Healy	10/17/2016	Joshua Ayres	1839094
EPA 200.8 Rev. 5.4	10/07/2016	10/12/2016	Elliott D. Healy	10/14/2016	Charles J. Peterson	1839094
EPA 300.0 Rev. 2.1	10/07/2016			10/20/2016	Ping Hua	1839090
EPA 350.1 Rev. 2.0	10/07/2016			10/19/2016	Sofia Elnemr	1839091
EPA 351.2 Rev. 2.0	10/07/2016	10/21/2016	Adrian Shelby	10/27/2016	Christopher Armour	1839091
EPA 353.2 Rev. 2.0	10/07/2016			10/13/2016	Beverly Y. Sanders	1839091
EPA 365.1 Rev. 2.0	10/07/2016	10/24/2016	Vijayalakshmi Reddy	10/25/2016	Lipi Saha	1839091
EPA 365.1 Rev. 2.0 dissolved	10/07/2016			10/07/2016 15:38	Julia Storbeck	1839092
SM 2120 B	10/07/2016			10/07/2016 15:09	Julie Michelle Frank	1839090
SM 2320 B-97	10/07/2016			10/11/2016	Dale L. Simmons	1839090
SM 2540 C-97	10/07/2016			10/12/2016	Yijie Li	1839090
SM 2540 D-97	10/07/2016			10/12/2016	Yijie Li	1839090
SM 4500 F-C-97	10/07/2016			10/11/2016	Dale L. Simmons	1839090
SM 5310 B-00	10/07/2016			10/12/2016	Julie Michelle Frank	1839091