

Chemical Analysis Report

SO-DIST-2016-08-25-01

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

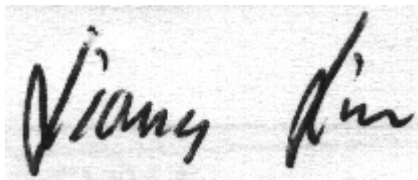
Event Description: **SMP: L-28 Tieback & Marco Island South**
Request ID: **RQ-2016-08-08-06**
Customer: **SO-DIST**
Project ID: **SMP**

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: Liang Lin, Environmental Administrator

Date Certified: 16-SEP-2016 15:29

A handwritten signature in black ink, appearing to read "Liang Lin", is written over a light gray rectangular background.

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 group are included in this report: 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: L-28 TIEBACK @ I75

Collection Date/Time: 08/24/2016 11:40

Field ID: G1SD082416-1

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826984	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P310379	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P310388	
		Sulfate	6.3		mg SO4/L	P310387	
	SM 2120 B	Color (true)	120		PCU	P310372	
	SM 2320 B-97	Total Alkalinity	195		mg CaCO3/L	P310444	
	SM 2540 C-97	TDS	278	A	mg/L	P311092	
	SM 2540 D-97	TSS	4	I	mg/L	P310778	
1826986	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P310448	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P310454	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.4		mg N/L	P310516	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P310736	MS
	EPA 365.1 Rev. 2.0	Total-P	0.094		mg P/L	P310731	
1826988	SM 5310 B-00	Organic Carbon	21		mg C/L	P311163	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.044		mg P/L	P310353	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 08/30/2016.

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. The result was confirmed on 08/26/2016.

Sample Location: L-28 TIEBACK @ I75 DUPLICATE

Collection Date/Time: 08/24/2016 11:45

Field ID: G1SD082416-2

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826985	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P310379	
	EPA 300.0 Rev. 2.1	Chloride	23		mg Cl/L	P310388	
		Sulfate	6.3		mg SO4/L	P310387	
	SM 2120 B	Color (true)	120		PCU	P310373	
	SM 2320 B-97	Total Alkalinity	194		mg CaCO3/L	P310444	
	SM 2540 C-97	TDS	278		mg/L	P311092	
	SM 2540 D-97	TSS	4	I	mg/L	P310778	
1826987	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P310448	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P310454	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.3		mg N/L	P310516	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P310736	MS
	EPA 365.1 Rev. 2.0	Total-P	0.092		mg P/L	P310731	
1826989	SM 5310 B-00	Organic Carbon	21		mg C/L	P310903	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P310353	

Ref. Method and Comment:

EPA 180.1 Rev. 2.0: The result was confirmed on 08/30/2016.

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. The result was confirmed on 08/26/2016.

Sample Location: 3278P @ #4 SOUTH OF GOODLAND

Collection Date/Time: 08/24/2016 13:20

Field ID: G1SD0037

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1826990	EPA 180.1 Rev. 2.0	Turbidity	5.0		NTU	P310379	
	SM 2320 B-97	Total Alkalinity	151		mg CaCO3/L	P310717	
	SM 2540 D-97	TSS	18	A	mg/L	P310779	
	SM 4500 F-C-97	Fluoride	1.1		mg F/L	P310720	
1826991	EPA 350.1 Rev. 2.0	Ammonia-N	0.018		mg N/L	P310453	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.64		mg N/L	P310703	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P310672	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P310730	MS
	SM 5310 B-00	Organic Carbon	6.2		mg C/L	P311164	
1826992	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.013		mg P/L	P310354	

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P310379

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310387

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310388

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310453

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310454

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310516

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

Quality Assurance Report

Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310703

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310672

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310736

Component	Result	Code	Units
NO ₂ NO ₃ -N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310730

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310731

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310353

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310354

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

Reference Method: SM 2120 B
Batch ID: P310372

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P310373

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2320 B-97
Batch ID: P310444

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2320 B-97
Batch ID: P310717

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P311092

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P310778

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P310779

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P310448

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P310720

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P310903

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Reference Method: SM 5310 B-00
Batch ID: P311163

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P311164

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310387

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.9		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310388

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310453

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310454

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310516

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310703

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310672

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	102		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310736

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310736

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310730

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	99.8		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310731

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310353

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310354

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: P310444

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

Reference Method: SM 2320 B-97
Batch ID: P310717

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

Reference Method: SM 4500 F-C-97
Batch ID: P310448

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.9		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P310720

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.2		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P310903

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	103		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P311163

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	104		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P311164

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	107		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310387

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826931	Sulfate	98.3		P	90 - 110
1826934	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310388

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826931	Chloride	98.8		P	90 - 110
1826934	Chloride	98.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310453

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826991	Ammonia-N	105	106	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310516

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826919	Kjeldahl Nitrogen	102	104	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1827392	Kjeldahl Nitrogen	102	95.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310672

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826991	NO2NO3-N	106	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310736

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826976	NO2NO3-N	88.0	87.0	F/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310730

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826894	Total-P	90.5	87.7	P/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310731

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826986	Total-P	98.4	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310353

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826921	O-Phosphate-P	98.1	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310354

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826992	O-Phosphate-P	97.0	98.2	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P310448

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826851	Fluoride	97.9	97.9	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P310720

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1827975	Fluoride	97.2	98.7	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P310903

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826987	Organic Carbon	108		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
Batch ID: P311163

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1829587	Organic Carbon	110		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P311164

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1826897	Organic Carbon	95.2	96.4	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P310379

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826975	Turbidity	3.21	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826934	Sulfate	0.173	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P310388

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826934	Chloride	0.117	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310453

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826991	Ammonia-N	0.598	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P310454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826976	Ammonia-N	0.483	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826919	Kjeldahl Nitrogen	1.59	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P310703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1827392	Kjeldahl Nitrogen	4.45	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310672

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826991	NO2NO3-N	0.917	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P310736

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826976	NO2NO3-N	1.14	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310730

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826894	Total-P	3.05	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P310731

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826986	Total-P	1.97	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310353

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826921	O-Phosphate-P	0.711	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P310354

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826992	O-Phosphate-P	1.09	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P310372

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826932	Color (true)	0.748	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P310373

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1827040	Color (true)	1.64	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P310444

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826851	Total Alkalinity	0.354	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P310717

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1827975	Total Alkalinity	0.532	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P311092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826984	TDS	0.360	Sample	P	0 - 10

Reference Method: SM 2540 D-97
Batch ID: P310779

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826990	TSS	0.0	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P310448

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826851	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
Batch ID: P310720

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1827975	Fluoride	0.979	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P310903

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826987	Organic Carbon	0.576	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P311163

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1829587	Organic Carbon	0.0381	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P311164

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1826897	Organic Carbon	1.10	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: A71326
Included Lab Sample IDs: 1826988, 1826989, 1826992

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.6	99.5	P/P	90 - 110
O-Phosphate-P	99.5	98.4	P/P	90 - 110

Reference Method: SM 2120 B
Run ID: A71333
Included Lab Sample IDs: 1826984, 1826985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.8	96.4	P/P	85 - 115
Color (true)	96.4	96.8	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A71334
Included Lab Sample IDs: 1826984, 1826985, 1826990

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.0	P/P	95 - 105

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A71337
Included Lab Sample IDs: 1826984, 1826985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A71337

Included Lab Sample IDs: 1826984, 1826985

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	100	P/P	90 - 110
Sulfate	99.4	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A71361

Included Lab Sample IDs: 1826984, 1826985

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

Reference Method: SM 4500 F-C-97

Run ID: A71361

Included Lab Sample IDs: 1826984, 1826985

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A71364

Included Lab Sample IDs: 1826986, 1826987, 1826991

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71419

Included Lab Sample IDs: 1826986, 1826987

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	105	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A71443

Included Lab Sample IDs: 1826991

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

Reference Method: SM 2320 B-97

Run ID: A71460

Included Lab Sample IDs: 1826990

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

Reference Method: SM 4500 F-C-97

Run ID: A71460

Included Lab Sample IDs: 1826990

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
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Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A71460

Included Lab Sample IDs: 1826990

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: A71461

Included Lab Sample IDs: 1826986, 1826987

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71488

Included Lab Sample IDs: 1826986, 1826987

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A71489

Included Lab Sample IDs: 1826991

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

Reference Method: SM 5310 B-00

Run ID: A71508

Included Lab Sample IDs: 1826987

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A71520

Included Lab Sample IDs: 1826991

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

Reference Method: SM 5310 B-00

Run ID: A71630

Included Lab Sample IDs: 1826986, 1826991

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	105	99.4	P/P	90 - 110
Organic Carbon	105	105	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	MS
EPA 180.1 Rev. 2.0	Turbidity				3.21	
EPA 300.0 Rev. 2.1	Chloride	99.4	98.1	98.8	0.117	
	Sulfate	99.9	101	98.3	0.173	
EPA 350.1 Rev. 2.0	Ammonia-N	103	105	106		0.598
	Ammonia-N	102				0.483
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	102	104		1.59
	Kjeldahl Nitrogen	103	102	95.3		4.45
EPA 353.2 Rev. 2.0	NO2NO3-N	102	106	105		0.917
	NO2NO3-N	100	88.0	87.0		1.14
EPA 365.1 Rev. 2.0	Total-P	99.8	90.5	87.7		3.05
	Total-P	98.5	98.4	101		1.97
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	98.1	98.8		0.711
	O-Phosphate-P	98.6	97.0	98.2		1.09
SM 2120 B	Color (true)				0.748	
	Color (true)				1.64	
SM 2320 B-97	Total Alkalinity	103			0.354	
	Total Alkalinity	104			0.532	
SM 2540 C-97	TDS				0.360	
SM 2540 D-97	TSS				0.0	
SM 4500 F-C-97	Fluoride	99.9	97.9	97.9		0.0
	Fluoride	98.2	97.2	98.7		0.979
SM 5310 B-00	Organic Carbon	103	108			0.576
	Organic Carbon	104	110			0.0381
	Organic Carbon	107	95.2	96.4		1.10

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1826984, 1826985, 1826990
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1826984, 1826985
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1826984, 1826985
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1826986, 1826987, 1826991
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1826986, 1826987, 1826991
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1826986, 1826987, 1826991
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1826986, 1826987, 1826991
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1826988, 1826989, 1826992
SM 2120 B / E31780	True Color measured at 450 nm	1826984, 1826985
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1826984, 1826985, 1826990
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1826984, 1826985
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1826984, 1826985, 1826990
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1826984, 1826985, 1826990
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1826986, 1826987, 1826991

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	08/25/2016			08/25/2016 15:05	Sima Feizi	1826984, 1826985, 1826990
EPA 300.0 Rev. 2.1	08/25/2016			08/26/2016	Ping Hua	1826984, 1826985
EPA 350.1 Rev. 2.0	08/25/2016			08/26/2016	Julie Michelle Frank	1826986, 1826987, 1826991
EPA 351.2 Rev. 2.0	08/25/2016	08/30/2016	Adrian Shelby	08/31/2016	Christopher Armour	1826986, 1826987
	08/25/2016	09/07/2016	Adrian Shelby	09/09/2016	Virginia P. Brown	1826991
EPA 353.2 Rev. 2.0	08/25/2016			09/01/2016	Beverly Y. Sanders	1826991
	08/25/2016			09/07/2016	Beverly Y. Sanders	1826986, 1826987
EPA 365.1 Rev. 2.0	08/25/2016	09/07/2016	Vijayalakshmi Reddy	09/08/2016	Lipi Saha	1826986, 1826987, 1826991
EPA 365.1 Rev. 2.0 dissolved	08/25/2016			08/25/2016 15:46	Julia Storbeck	1826992
	08/25/2016			08/25/2016 16:03	Julia Storbeck	1826988
	08/25/2016			08/25/2016 16:04	Julia Storbeck	1826989
SM 2120 B	08/25/2016			08/25/2016 15:32	Blanca Fach	1826984
	08/25/2016			08/25/2016 15:37	Blanca Fach	1826985
SM 2320 B-97	08/25/2016			08/27/2016	Dale L. Simmons	1826984, 1826985
	08/25/2016			09/01/2016	Dale L. Simmons	1826990
SM 2540 C-97	08/25/2016			08/29/2016	Sima Feizi	1826984, 1826985
SM 2540 D-97	08/25/2016			08/29/2016	Sima Feizi	1826984, 1826985, 1826990
SM 4500 F-C-97	08/25/2016			08/27/2016	Dale L. Simmons	1826984, 1826985
	08/25/2016			09/01/2016	Dale L. Simmons	1826990
SM 5310 B-00	08/25/2016			09/08/2016	Sofia Elnemr	1826987
	08/25/2016			09/14/2016	Sofia Elnemr	1826986
	08/25/2016			09/15/2016	Sofia Elnemr	1826991