Chemical Analysis Report

SO-DIST-2016-12-29-01

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

Event Description: **SMP: Yucca Yucca Alligator 2081**
Request ID: **RQ-2016-12-26-02**
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: 19-JAN-2017 14:44

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: ZURICH CANAL AT BANJO CANAL **Collection Date/Time: 12/28/2016 11:11**

Field ID: G2SD0020 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1860404	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P317559	
	EPA 300.0 Rev. 2.1	Chloride	58		mg Cl/L	P317849	
		Sulfate	21		mg SO4/L	P317846	
	SM 2120 B	Color (true)	42		PCU	P317564	
	SM 2320 B-97	Total Alkalinity	232		mg CaCO3/L	P317578	
	SM 2540 C-97	TDS	367		mg/L	P318137	
	SM 2540 D-97	TSS	3	I	mg/L	P318127	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P317581	
1860409	EPA 350.1 Rev. 2.0	Ammonia-N	0.053		mg N/L	P317752	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.80		mg N/L	P317631	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.094		mg N/L	P317610	
	EPA 365.1 Rev. 2.0	Total-P	0.027		mg P/L	P317576	
	SM 5310 B-00	Organic Carbon	9.9		mg C/L	P317612	
1860414	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P317555	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: ZURICH CANAL AT BANJO CANAL-DUP **Collection Date/Time: 12/28/2016 11:16**

Field ID: G2SD0020-D Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1860405	EPA 180.1 Rev. 2.0	Turbidity	2.3		NTU	P317559	
	EPA 300.0 Rev. 2.1	Chloride	59		mg Cl/L	P317849	
		Sulfate	21		mg SO4/L	P317846	
	SM 2120 B	Color (true)	43		PCU	P317564	
	SM 2320 B-97	Total Alkalinity	235		mg CaCO3/L	P317578	
	SM 2540 C-97	TDS	395	A	mg/L	P318137	
	SM 2540 D-97	TSS	3	I	mg/L	P318127	
	SM 4500 F-C-97	Fluoride	0.20		mg F/L	P317581	
1860410	EPA 350.1 Rev. 2.0	Ammonia-N	0.050		mg N/L	P317752	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.81		mg N/L	P317631	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.096		mg N/L	P317610	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P317576	
	SM 5310 B-00	Organic Carbon	9.8		mg C/L	P317612	
1860415	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P317555	

Ref. Method and Comment:
SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: FIELD BLANK **Collection Date/Time: 12/28/2016 12:50**

Field ID: G2SD122816-B Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1860406	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P317559	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P317849	
		Sulfate	0.20	U	mg SO4/L	P317846	

Field ID: G2SD122816-B Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1860406	SM 2120 B	Color (true)	2.5	U	PCU	P317564	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P317578	
	SM 2540 C-97	TDS	15	U	mg/L	P318137	
	SM 2540 D-97	TSS	2	U	mg/L	P318127	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317581	
1860411	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P317752	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P317631	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P317610	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P317576	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P317612	
1860416	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P317555	

Ref. Method and Comment:
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 dissolved: O-Phosphate-P: The result was confirmed on 12/29/2016.

Sample Location: 2081 @ BURNT STORE ROAD **Collection Date/Time: 12/28/2016 14:40**

Field ID: G2SD0016 Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1860407	EPA 180.1 Rev. 2.0	Turbidity	7.3	A	NTU	P317559	
	EPA 300.0 Rev. 2.1	Chloride	46		mg Cl/L	P317849	
		Sulfate	16		mg SO4/L	P317846	
	SM 2120 B	Color (true)	66	A	PCU	P317564	
	SM 2320 B-97	Total Alkalinity	192		mg CaCO3/L	P317578	
	SM 2540 C-97	TDS	323		mg/L	P318137	
	SM 2540 D-97	TSS	6	I	mg/L	P318127	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P317581	
1860412	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P317752	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.67		mg N/L	P317631	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P317610	
	EPA 365.1 Rev. 2.0	Total-P	0.068		mg P/L	P317576	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P317612	
1860417	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P317555	

Ref. Method and Comment:
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: The result was confirmed on 01/09/2017.

Sample Location: 2081 @ BURNT STORE ROAD-DUP **Collection Date/Time: 12/28/2016 14:45**

Field ID: G2SD0016-D Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1860408	EPA 180.1 Rev. 2.0	Turbidity	6.9		NTU	P317559	
	EPA 300.0 Rev. 2.1	Chloride	46		mg Cl/L	P317849	
		Sulfate	16		mg SO4/L	P317846	
	SM 2120 B	Color (true)	69		PCU	P317564	
	SM 2320 B-97	Total Alkalinity	192		mg CaCO3/L	P317578	

Field ID: G2SD0016-D Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1860408	SM 2540 C-97	TDS	320		mg/L	P318137	
	SM 2540 D-97	TSS	6	I	mg/L	P318127	
	SM 4500 F-C-97	Fluoride	0.15		mg F/L	P317581	
1860413	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P317752	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.68		mg N/L	P317631	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P317610	
	EPA 365.1 Rev. 2.0	Total-P	0.10		mg P/L	P317882	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P317612	
1860418	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.032		mg P/L	P317555	

Ref. Method and Comment:
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: The result was confirmed on 01/17/2017.

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P317559

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317846

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317849

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317752

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317631

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317610

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317576

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317882

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317555

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

Reference Method: SM 2120 B
Batch ID: P317564

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P317578

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

Reference Method: SM 2540 C-97
Batch ID: P318137

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318127

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P317581

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P317612

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: P317846

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.2		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317849

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317752

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317631

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317610

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317576

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	93.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317882

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	94.5		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317555

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	96.6		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P317578

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	102		P	95 - 108

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P317581

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P317612

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	101		P	85 - 115

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317846

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860246	Sulfate	95.4		P	90 - 110
1860746	Sulfate	96.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317849

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860246	Chloride	99.3		P	90 - 110
1860746	Chloride	100		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317752

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860330	Ammonia-N	98.7	98.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317631

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860432	Kjeldahl Nitrogen	100	94.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317610

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860327	NO2NO3-N	100	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860409	Total-P	92.8	90.1	P/P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1861207	Total-P	96.5	95.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317555

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860414	O-Phosphate-P	92.7	95.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P317581

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860521	Fluoride	100	101	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P317612

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1860198	Organic Carbon	95.7	94.8	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P317559

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860407	Turbidity	0.964	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317846

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860746	Sulfate	0.248	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317849

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860746	Chloride	0.0155	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317752

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860330	Ammonia-N	0.502	Spike	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P317631

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860432	Kjeldahl Nitrogen	3.90	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317610

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860327	NO2NO3-N	5.33	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860409	Total-P	2.74	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1861207	Total-P	1.04	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P317555

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860414	O-Phosphate-P	2.44	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P317564

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860407	Color (true)	2.78	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P317578

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860521	Total Alkalinity	0.312	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P318137

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860405	TDS	1.52	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 4500 F-C-97
Batch ID: P317581

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860521	Fluoride	0.483	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P317612

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1860198	Organic Carbon	0.473	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: A73649
Included Lab Sample IDs: 1860414, 1860415, 1860416, 1860417, 1860418

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.8	99.6	P/P	90 - 110
O-Phosphate-P	99.6	98.7	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A73654
Included Lab Sample IDs: 1860404, 1860405, 1860406, 1860407, 1860408

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	99.0	P/P	95 - 105

Reference Method: SM 2120 B
Run ID: A73655
Included Lab Sample IDs: 1860404, 1860405, 1860406, 1860407, 1860408

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	99.8	P/P	85 - 115

Reference Method: SM 2320 B-97
Run ID: A73661
Included Lab Sample IDs: 1860404, 1860405, 1860406, 1860407, 1860408

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.3	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A73661
Included Lab Sample IDs: 1860404, 1860405, 1860406, 1860407, 1860408

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.0	102	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A73672
Included Lab Sample IDs: 1860409, 1860410, 1860411, 1860412, 1860413

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

Reference Method: SM 5310 B-00
Run ID: A73673
Included Lab Sample IDs: 1860409, 1860410, 1860411, 1860412, 1860413

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.0	95.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73687
Included Lab Sample IDs: 1860412

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

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73706
Included Lab Sample IDs: 1860409, 1860410, 1860411

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	97.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A73709
Included Lab Sample IDs: 1860409, 1860410, 1860411, 1860412, 1860413

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	100	P/P	90 - 110
Kjeldahl Nitrogen	99.0	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A73745
Included Lab Sample IDs: 1860409, 1860410, 1860411, 1860412, 1860413

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.7	100	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A73754
Included Lab Sample IDs: 1860404, 1860405, 1860406, 1860407, 1860408

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110
Chloride	103	103	P/P	90 - 110
Sulfate	96.1	96.0	P/P	90 - 110
Sulfate	99.1	96.1	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A73829
Included Lab Sample IDs: 1860413

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	104	106	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					0.964	
EPA 300.0 Rev. 2.1	Chloride	102	100	99.3		0.0155	
	Sulfate	97.2	96.8	95.4		0.248	
EPA 350.1 Rev. 2.0	Ammonia-N	101	98.7	98.2			0.502
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	100	94.4			3.90
EPA 353.2 Rev. 2.0	NO2NO3-N	106	100	106			5.33
EPA 365.1 Rev. 2.0	Total-P	93.5	92.8	90.1			2.74
	Total-P	94.5	96.5	95.4			1.04
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	96.6	92.7	95.1			2.44
SM 2120 B	Color (true)					2.78	
SM 2320 B-97	Total Alkalinity	102				0.312	
SM 2540 C-97	TDS					1.52	
SM 4500 F-C-97	Fluoride	96.9	100	101			0.483
SM 5310 B-00	Organic Carbon	101	95.7	94.8			0.473

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1860404, 1860405, 1860406, 1860407, 1860408
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1860404, 1860405, 1860406, 1860407, 1860408
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1860404, 1860405, 1860406, 1860407, 1860408
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1860409, 1860410, 1860411, 1860412, 1860413
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1860409, 1860410, 1860411, 1860412, 1860413
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1860409, 1860410, 1860411, 1860412, 1860413
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1860409, 1860410, 1860411, 1860412, 1860413
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1860414, 1860415, 1860416, 1860417, 1860418
SM 2120 B / E31780	True Color measured at 450 nm	1860404, 1860405, 1860406, 1860407, 1860408
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1860404, 1860405, 1860406, 1860407, 1860408
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1860404, 1860405, 1860406, 1860407, 1860408

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1860404, 1860405, 1860406, 1860407, 1860408
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1860404, 1860405, 1860406, 1860407, 1860408
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1860409, 1860410, 1860411, 1860412, 1860413

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	12/29/2016			12/29/2016 15:54	Julie Michelle Frank	1860404, 1860405, 1860406, 1860407, 1860408
EPA 300.0 Rev. 2.1	12/29/2016			01/06/2017	Ping Hua	1860404, 1860405, 1860406, 1860407, 1860408
EPA 350.1 Rev. 2.0	12/29/2016			01/04/2017	Sofia Elnemr	1860409, 1860410, 1860411, 1860412, 1860413
EPA 351.2 Rev. 2.0	12/29/2016	01/03/2017	Adrian Shelby	01/03/2017	Joseph Suarez	1860409, 1860410, 1860411, 1860412, 1860413
EPA 353.2 Rev. 2.0	12/29/2016			12/30/2016	Beverly Y. Sanders	1860409, 1860410, 1860411, 1860412, 1860413
EPA 365.1 Rev. 2.0	12/29/2016	01/06/2017	Vijayalakshmi Reddy	01/09/2017	Beverly Y. Sanders	1860413
	12/29/2016	12/30/2016	Vijayalakshmi Reddy	01/03/2017	Beverly Y. Sanders	1860412
	12/29/2016	12/30/2016	Vijayalakshmi Reddy	01/03/2017	Lipi Saha	1860409, 1860410, 1860411
EPA 365.1 Rev. 2.0 dissolved	12/29/2016			12/29/2016 15:07	Virginia P. Brown	1860414
	12/29/2016			12/29/2016 15:23	Virginia P. Brown	1860415
	12/29/2016			12/29/2016 15:24	Virginia P. Brown	1860416, 1860417
	12/29/2016			12/29/2016 15:25	Virginia P. Brown	1860418
SM 2120 B	12/29/2016			12/29/2016 15:32	Julie Michelle Frank	1860404
	12/29/2016			12/29/2016 15:33	Julie Michelle Frank	1860405, 1860406
	12/29/2016			12/29/2016 15:35	Julie Michelle Frank	1860407
	12/29/2016			12/29/2016 15:36	Julie Michelle Frank	1860408
SM 2320 B-97	12/29/2016			12/29/2016	Dale L. Simmons	1860404, 1860405, 1860406, 1860407, 1860408
SM 2540 C-97	12/29/2016			01/03/2017	Sima Feizi	1860404, 1860405, 1860406, 1860407, 1860408
SM 2540 D-97	12/29/2016			01/03/2017	Sima Feizi	1860404, 1860405, 1860406, 1860407, 1860408
SM 4500 F-C-97	12/29/2016			12/29/2016	Dale L. Simmons	1860404, 1860405, 1860406, 1860407, 1860408
SM 5310 B-00	12/29/2016			12/29/2016	Julie Michelle Frank	1860409, 1860410, 1860411, 1860412, 1860413