Chemical Analysis Report

NE-DIST-2019-04-18-02

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

Event Description: **LSJR East**
Request ID: **RQ-2019-04-08-16**
Customer: **NE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
8800 Baymeadows Way West
Suite 100
Jacksonville, FL 32256
Attn: Jeremy Parrish

For additional information please contact
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Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 10-MAY-2019 10:51

NON-CONFORMANCE REPORT INCLUDED

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 by the Florida Department of Health Environmental Laboratory Certification Program 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: GREENFIELD CREEK @ QUEENS HARBOUR BLVD. **Collection Date/Time: 04/17/2019 11:10**

Field ID: 20030809 Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2079415	EPA 180.1 Rev. 2.0	Turbidity	5.3		NTU	P362456	
	EPA 300.0 Rev. 2.1	Chloride	1.0E+04		mg Cl/L	P362757	
		Sulfate	1.4E+03	Y	mg SO4/L	P362760	
	SM 2120 B	Color (true)	46		PCU	P362452	
	SM 2320 B-97	Total Alkalinity	104	Y	mg CaCO3/L	P363131	
	SM 2540 C-97	TDS	2.09E+04	Y	mg/L	P362974	
	SM 2540 D-97	TSS	24	Y	mg/L	P362755	
	SM 4500 F-C-97	Fluoride	0.68		mg F/L	P363132	
2079416	EPA 350.1 Rev. 2.0	Ammonia-N	0.059		mg N/L	P362694	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.65		mg N/L	P363092	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.053		mg N/L	P362649	
	EPA 365.1 Rev. 2.0	Total-P	0.075		mg P/L	P362687	
	SM 5310 B-00	Organic Carbon	11		mg C/L	P362592	
2079417	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.029		mg P/L	P362465	
2079428	EPA 200.7 Rev. 4.4	Barium	27		ug/L	P362810	
		Calcium	233		mg/L	P362810	
		Iron	280	I	ug/L	P362810	
		Magnesium	716		mg/L	P362810	
		Potassium	216		mg/L	P362810	
		Sodium	5.79E+03		mg/L	P362810	
		Zinc	15	U	ug/L	P362810	
	EPA 200.8 Rev. 5.4	Aluminum	214		ug/L	P362810	
		Antimony	0.20	U	ug/L	P362810	
		Arsenic	2.08		ug/L	P362810	
		Boron**	2.05E+03		ug/L	P362810	
		Cadmium	0.080	U	ug/L	P362810	
		Chromium	4.0	U	ug/L	P362810	
		Copper	1.6	U	ug/L	P362810	
		Lead	0.80	U	ug/L	P362810	
		Nickel	2.0	U	ug/L	P362810	
		Selenium	0.80	U	ug/L	P362810	
		Silver	0.040	U	ug/L	P362810	
		Thallium	0.40	U	ug/L	P362810	

Ref. Method and Comment:
EPA 300.0 Rev. 2.1: Sulfate: Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 2320 B-97: Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 2540 C-97: Sample was left out at room temperature overnight, should be stored below 6 degC.
SM 2540 D-97: Sample was left out at room temperature overnight, should be stored below 6 degC. Sample contains particulates that settle out quickly.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium, potassium and sodium are unavailable because of high analyte concentration in the QC sample.

Non-Conformance Report

NCR ID: 7647

Event(s)	Job(s)	Sample(s)	Test(s)
NE-DIST-2019-04-18-02	TLH-2019-04-18-93	2079415	

NCR Type: CUSTODY **NCR Category: General**

Observation: Samples stored at room temperature overnight on 04/18/2019.

Resolution: Chemistry Administrator notified, samples returned to refrigerator on 04/19/2019 at 12:00. Data will be qualified as appropriate.

Authorized by/Date: Peter D. Kaus 5/9/2019

The Non-Conformance Report details exceptions or problems encountered with the events/jobs/samples/test.
Please address questions to:

Chemistry	Colin Wright	(850) 245-8085
Biology	Cheryl Swanson	(850) 245-8177

Quality Assurance Report
Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362456

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P362810

Component	Result	Code	Units
Barium	1.0	U	ug/L
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: P362810

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362757

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362760

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362694

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

Quality Assurance Report
Method Blank Results

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363092

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362649

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362687

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362465

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

Reference Method: SM 2120 B
Batch ID: P362452

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P363131

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

Reference Method: SM 2540 C-97
Batch ID: P362974

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P362755

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P363132

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report
Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P362592

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: P362810

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	101		P	85 - 115
Calcium	102		P	85 - 115
Iron	105		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	102		P	85 - 115
Sodium	101		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P362810

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	95.7		P	85 - 115
Antimony	98.4		P	85 - 115
Arsenic	101		P	85 - 115
Boron	96.5		P	85 - 115
Cadmium	99.9		P	85 - 115
Chromium	90.5		P	85 - 115
Copper	98.4		P	85 - 115
Lead	91.9		P	85 - 115
Nickel	99.5		P	85 - 115
Selenium	101		P	85 - 115
Silver	95.4		P	85 - 115
Thallium	102		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362757

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362760

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362694

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: P363092

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

Quality Assurance Report
Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362649

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: P362687

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362465

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

Reference Method: SM 2120 B
Batch ID: P362452

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

Reference Method: SM 2320 B-97
Batch ID: P363131

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	98 - 106

Reference Method: SM 4500 F-C-97
Batch ID: P363132

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.6		P	92 - 103

Reference Method: SM 5310 B-00
Batch ID: P362592

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

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P362810

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079824	Barium	94.6		P	70 - 130
2079824	Iron	104		P	70 - 130
2079824	Zinc	102		P	70 - 130
2080086	Barium	96.1	96.2	P/P	80 - 120
2080086	Iron	104	105	P/P	80 - 120
2080086	Zinc	100	100	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P362810

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079824	Aluminum	94.9		P	70 - 130
2079824	Antimony	101		P	70 - 130
2079824	Arsenic	109		P	70 - 130
2079824	Boron	99.1		P	70 - 130
2079824	Cadmium	96.9		P	70 - 130
2079824	Chromium	88.5		P	70 - 130
2079824	Copper	95.5		P	70 - 130
2079824	Lead	96.8		P	70 - 130
2079824	Nickel	99.4		P	70 - 130
2079824	Selenium	103		P	70 - 130
2079824	Silver	90.3		P	70 - 130
2079824	Thallium	106		P	70 - 130
2080086	Aluminum	96.6	94.5	P/P	70 - 130
2080086	Antimony	105	103	P/P	70 - 130
2080086	Arsenic	112	110	P/P	70 - 130
2080086	Boron	87.0	79.7	P/P	70 - 130
2080086	Cadmium	101	97.9	P/P	70 - 130
2080086	Chromium	88.6	91.4	P/P	70 - 130
2080086	Copper	97.0	96.3	P/P	70 - 130
2080086	Lead	98.0	97.2	P/P	70 - 130
2080086	Nickel	98.9	97.0	P/P	70 - 130
2080086	Selenium	103	104	P/P	70 - 130
2080086	Silver	90.0	89.1	P/P	70 - 130
2080086	Thallium	106	106	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362757

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079142	Chloride	99.3		P	90 - 110
2079243	Chloride	97.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362760

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079142	Sulfate	100		P	90 - 110
2079243	Sulfate	97.7		P	90 - 110

Quality Assurance Report
Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362694

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079431	Ammonia-N	105	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079304	Kjeldahl Nitrogen	99.4	96.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362649

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079292	NO2NO3-N	94.9	94.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362687

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079305	Total-P	99.5	99.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362465

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079417	O-Phosphate-P	99.0	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P363132

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2080079	Fluoride	97.9	99.6	P/P	89 - 106

Reference Method: SM 5310 B-00
Batch ID: P362592

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2079272	Organic Carbon	101	100	P/P	85 - 115

Quality Assurance Report
Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P362456

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079303	Turbidity	1.71	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P362810

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080086	Barium	0.0604	Spike	P	0 - 20
2080086	Calcium	0.649	Spike	P	0 - 20
2080086	Iron	0.149	Spike	P	0 - 20
2080086	Magnesium	0.553	Spike	P	0 - 20
2080086	Potassium	0.352	Spike	P	0 - 20
2080086	Sodium	1.51	Spike	P	0 - 20
2080086	Zinc	0.0135	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P362810

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080086	Aluminum	2.06	Spike	P	0 - 20
2080086	Antimony	1.42	Spike	P	0 - 20
2080086	Arsenic	1.09	Spike	P	0 - 20
2080086	Boron	1.24	Spike	P	0 - 20
2080086	Cadmium	2.65	Spike	P	0 - 20
2080086	Chromium	3.10	Spike	P	0 - 20
2080086	Copper	0.732	Spike	P	0 - 20
2080086	Lead	0.799	Spike	P	0 - 20
2080086	Nickel	1.92	Spike	P	0 - 20
2080086	Selenium	1.48	Spike	P	0 - 20
2080086	Silver	1.02	Spike	P	0 - 20
2080086	Thallium	0.296	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362757

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079243	Chloride	0.375	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P362760

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079243	Sulfate	0.0690	Sample	P	0 - 20

Quality Assurance Report
Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P362694

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079431	Ammonia-N	0.102	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P363092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079304	Kjeldahl Nitrogen	2.35	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P362649

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079292	NO2NO3-N	0.528	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P362687

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079305	Total-P	0.0606	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P362465

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079417	O-Phosphate-P	1.32	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P362452

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079334	Color (true)	2.23	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P363131

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080079	Total Alkalinity	0.508	Sample	P	0 - 2.8

Reference Method: SM 2540 C-97
Batch ID: P362974

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079234	TDS	1.79	Sample	P	0 - 10

Quality Assurance Report
Precision

Reference Method: SM 2540 D-97
Batch ID: P362755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079177	TSS	4.17	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P363132

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2080079	Fluoride	0.940	Spike	P	0 - 2.5

Reference Method: SM 5310 B-00
Batch ID: P362592

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2079272	Organic Carbon	0.522	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: SM 2120 B
Run ID: A90831
Included Lab Sample IDs: 2079415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	104	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A90832
Included Lab Sample IDs: 2079415

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A90833
Included Lab Sample IDs: 2079417

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	99.6	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A90876
Included Lab Sample IDs: 2079416

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	103	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A90918
Included Lab Sample IDs: 2079416

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A90940
Included Lab Sample IDs: 2079416

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

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A90961
Included Lab Sample IDs: 2079415

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

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A91009
Included Lab Sample IDs: 2079428

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	102	P/P	95 - 105

Quality Assurance Report
Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4
Run ID: A91009
Included Lab Sample IDs: 2079428

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	102	P/P	95 - 105
Iron	101	102	P/P	95 - 105
Magnesium	101	102	P/P	95 - 105
Potassium	100	101	P/P	95 - 105
Sodium	100	103	P/P	95 - 105
Zinc	102	102	P/P	95 - 105

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A91017
Included Lab Sample IDs: 2079416

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A91019
Included Lab Sample IDs: 2079428

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	92.7	93.1	P/P	90 - 110
Antimony	99.1	99.9	P/P	90 - 110
Arsenic	99.2	99.7	P/P	90 - 110
Boron	93.4	92.6	P/P	90 - 110
Cadmium	97.3	97.2	P/P	90 - 110
Copper	98.4	98.1	P/P	90 - 110
Lead	90.6	91.4	P/P	90 - 110
Nickel	97.7	98.4	P/P	90 - 110
Selenium	97.3	99.8	P/P	90 - 110
Silver	95.9	95.7	P/P	90 - 110
Thallium	96.2	96.4	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A91108
Included Lab Sample IDs: 2079415

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	105	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Run ID: A91108
Included Lab Sample IDs: 2079415

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

Reference Method: EPA 200.8 Rev. 5.4
Run ID: A91145
Included Lab Sample IDs: 2079428

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chromium	93.2	94.0	P/P	90 - 110

Quality Assurance Report
Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A91156
Included Lab Sample IDs: 2079416

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.6	95.7	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						1.71	
EPA 200.7 Rev. 4.4	Barium	101	94.6	96.1	96.2			0.0604
	Calcium	102						0.649
	Iron	105	104	104	105			0.149
	Magnesium	103						0.553
	Potassium	102						0.352
	Sodium	101						1.51
	Zinc	102	102	100	100			0.0135
EPA 200.8 Rev. 5.4	Aluminum	95.7	94.9	96.6	94.5			2.06
	Antimony	98.4	101	105	103			1.42
	Arsenic	101	109	112	110			1.09
	Boron	96.5	99.1	87.0	79.7			1.24
	Cadmium	99.9	96.9	101	97.9			2.65
	Chromium	90.5	88.6	91.4	88.5			3.10
	Copper	98.4	95.5	97.0	96.3			0.732
	Lead	91.9	96.8	98.0	97.2			0.799
	Nickel	99.5	99.4	98.9	97.0			1.92
	Selenium	101	103	103	104			1.48
	Silver	95.4	90.3	90.0	89.1			1.02
	Thallium	102	106	106	106			0.296
EPA 300.0 Rev. 2.1	Chloride	98.0	97.6	99.3			0.375	
	Sulfate	98.7	97.7	100			0.0690	
EPA 350.1 Rev. 2.0	Ammonia-N	104	105	105				0.102
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.7	99.4	96.4				2.35
EPA 353.2 Rev. 2.0	NO2NO3-N	100	94.9	94.4				0.528
EPA 365.1 Rev. 2.0	Total-P	99.0	99.5	99.6				0.0606
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	99.0	101				1.32
SM 2120 B	Color (true)	102					2.23	
SM 2320 B-97	Total Alkalinity	100					0.508	
SM 2540 C-97	TDS						1.79	
SM 2540 D-97	TSS						4.17	
SM 4500 F-C-97	Fluoride	96.6	97.9	99.6				0.940
SM 5310 B-00	Organic Carbon	101	101	100				0.522

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2079415
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2079428
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2079428
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2079415
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2079415
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2079416
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2079416
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2079416
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2079416

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2079417
SM 2120 B / E31780	True Color measured at 450 nm	2079415
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	2079415
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2079415
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2079415
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2079415
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2079416

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	04/18/2019			04/18/2019 16:29	Adrian Shelby	2079415
EPA 200.7 Rev. 4.4	04/18/2019	04/24/2019 17:30	Elliott D. Healy	04/25/2019 14:32	Betina Topolski	2079428
	04/18/2019	04/24/2019 17:30	Elliott D. Healy	04/25/2019 14:41	Betina Topolski	2079428
EPA 200.8 Rev. 5.4	04/18/2019	04/24/2019 17:30	Elliott D. Healy	04/26/2019 00:13	Martin Acosta	2079428
	04/18/2019	04/24/2019 17:30	Elliott D. Healy	04/26/2019 05:55	Martin Acosta	2079428
	04/18/2019	04/24/2019 17:30	Elliott D. Healy	05/01/2019 17:57	Martin Acosta	2079428
EPA 300.0 Rev. 2.1	04/18/2019			04/23/2019 20:16	Jhamieka S. Greenwood	2079415
EPA 350.1 Rev. 2.0	04/18/2019			04/23/2019 15:25	Julia Storbeck	2079416
EPA 351.2 Rev. 2.0	04/18/2019	04/30/2019 12:15	Adrian Shelby	05/02/2019 12:51	Joseph Suarez	2079416
EPA 353.2 Rev. 2.0	04/18/2019			04/23/2019 11:30	Beverly Y. Sanders	2079416
EPA 365.1 Rev. 2.0	04/18/2019	04/24/2019 15:26	Sima Feizi	04/25/2019 19:13	Rosalyn Ballman	2079416
EPA 365.1 Rev. 2.0 dissolved	04/18/2019			04/18/2019 16:48	Julia Storbeck	2079417
SM 2120 B	04/18/2019			04/18/2019 16:14	Mariam Hanna	2079415
SM 2320 B-97	04/18/2019			04/30/2019 23:38	Dale L. Simmons	2079415
SM 2540 C-97	04/18/2019			04/22/2019 18:03	Mariam Hanna	2079415
SM 2540 D-97	04/18/2019			04/22/2019 18:35	Mariam Hanna	2079415
SM 4500 F-C-97	04/18/2019			04/30/2019 18:51	Dale L. Simmons	2079415
SM 5310 B-00	04/18/2019			04/20/2019 07:02	Julia Storbeck	2079416