

Chemical Analysis Report

CEN-DIST-2021-12-14-02

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

Event Description: **Long Branch**
Request ID: **RQ-2021-12-13-12**
Customer: **CEN-DIST**
Project ID: **BMAP**

Send Reports to:
FL Dept. of Environmental Protection
3319 Maguire Blvd. Suite 232
Orlando, FL 32803-3767
Attn: Matt Bearden

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Kerry Tate, Ph.D.
Dr. rer. nat. Bettina Steinbock
Thekkekalathil Chandrasekhar, Ph.D, QA Officer
Phone (850) 245-8085

Report Comment: The BOD sample 2294835 was received at Eurofins TestAmerica Tampa 12/14/2021 at 09:25.

Certified by: Thekkekalathil Chandrasekhar, Environmental Consultant

Date Certified: 06-JAN-2022 10:29



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, Nutrients and Pesticides.

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: Long Branch @ 0.7 mi DS OF CR 13

Collection Date/Time: 12/13/2021 11:25

Field ID: G2CE0036

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2294827	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P407432	
	EPA 300.0 Rev. 2.1	Chloride	26		mg Cl/L	P407527	
		Sulfate	31		mg SO4/L	P407530	
		Color (true)	110		PCU	P407438	
	SM 2320 B-2011	Total Alkalinity	78		mg CaCO3/L	P407541	
	SM 2540 C-2011	TDS	198	A	mg/L	P407760	
	SM 2540 D-2011	TSS	2	IA	mg/L	P407763	
2294828	SM 4500 F-C-2011	Fluoride	0.086	I	mg F/L	P407544	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P407816	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.58		mg N/L	P407863	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.086		mg N/L	P407533	
	EPA 365.1 Rev. 2.0	Total-P	0.11		mg P/L	P407656	
2294829	SM 5310 B-2011	Organic Carbon	16		mg C/L	P407894	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.076		mg P/L	P407442	
2294851	EPA 8321B	Sucralose	0.20		ug/L	P407282	
2294852	EPA 200.7 Rev. 4.4	Calcium	45.3		mg/L	P407537	
		Iron	440		ug/L	P407537	
		Magnesium	2.65		mg/L	P407537	
		Potassium	1.5		mg/L	P407537	
		Sodium	15.1		mg/L	P407537	
		Zinc	6.0	I	ug/L	P407869	
		Arsenic	0.76		ug/L	P407537	
	EPA 200.8 Rev. 5.4	Cadmium	0.020	U	ug/L	P407537	
		Chromium	0.41	I	ug/L	P407537	
		Copper	0.45	I	ug/L	P407537	
		Lead	0.24	I	ug/L	P407537	
		Nickel	0.50	U	ug/L	P407537	
		Silver	0.010	U	ug/L	P407537	

Ref. Method and Comment:

SM 2120 B-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: FB

Collection Date/Time: 12/13/2021 11:40

Field ID: FB_12132021

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2294830	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P407432	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P407527	
		Sulfate	0.20	U	mg SO4/L	P407530	
		Color (true)	2.5	U	PCU	P407438	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P407541	
	SM 2540 C-2011	TDS	15	U	mg/L	P407760	
	SM 2540 D-2011	TSS	2	U	mg/L	P407763	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P407544	
2294831	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P408036	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P407863	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P407532	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P407656	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P407990	
2294832	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P407442	
2294853	EPA 200.7 Rev. 4.4	Calcium	0.075	U	mg/L	P407537	
		Iron	30	U	ug/L	P407537	
		Magnesium	0.040	U	mg/L	P407537	
		Potassium	0.30	U	mg/L	P407537	
		Sodium	0.50	U	mg/L	P407537	
		Zinc	5.0	U	ug/L	P407869	
	EPA 200.8 Rev. 5.4	Arsenic	0.050	U	ug/L	P407537	
		Cadmium	0.020	U	ug/L	P407537	
		Chromium	0.40	U	ug/L	P407537	
		Copper	0.40	U	ug/L	P407537	
		Lead	0.20	U	ug/L	P407537	
		Nickel	0.50	U	ug/L	P407537	
		Silver	0.010	U	ug/L	P407537	

Ref. Method and Comment:

SM 2120 B-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P407432

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407537

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407869

Component	Result	Code	Units
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P407537

Component	Result	Code	Units
Arsenic	0.050	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
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407527

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407530

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407816

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P408036

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P408036

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407863

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P407532

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P407533

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P407656

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P407442

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

Reference Method: EPA 8321B
Batch ID: P407282

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2120 B-2011
Batch ID: P407438

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P407541

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2011
Batch ID: P407760

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P407763

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P407544

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P407894

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

Reference Method: SM 5310 B-2011
Batch ID: P407990

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: P407537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	107		P	85 - 115
Magnesium	110		P	85 - 115
Potassium	99.4		P	85 - 115
Sodium	101		P	85 - 115

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407869

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

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P407537

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	103		P	85 - 115
Cadmium	102		P	85 - 115
Chromium	101		P	85 - 115
Copper	104		P	85 - 115
Lead	97.6		P	85 - 115
Nickel	104		P	85 - 115
Silver	101		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407527

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.3		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407530

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407816

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P408036

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407863

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

Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P407863

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.2		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P407532

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	99.5		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P407533

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: P407656

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	108		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P407442

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

Reference Method: EPA 8321B

Batch ID: P407282

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	93.3		P	40 - 150

Reference Method: SM 2120 B-2011

Batch ID: P407438

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	90 - 110

Reference Method: SM 2320 B-2011

Batch ID: P407541

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	100		P	94 - 106

Reference Method: SM 4500 F-C-2011

Batch ID: P407544

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.6		P	93 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P407894

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.4		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P407990

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P407537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2295090	Calcium	109		P	80 - 120
2295090	Iron	99.6	106	P/P	80 - 120
2295090	Magnesium	103	113	P/P	80 - 120
2295090	Potassium	93.1	101	P/P	80 - 120
2295090	Sodium	104		P	80 - 120
2295171	Calcium	102		P	80 - 120
2295171	Iron	108		P	80 - 120
2295171	Magnesium	101		P	80 - 120
2295171	Potassium	101		P	80 - 120
2295171	Sodium	99.8		P	80 - 120

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P407869

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2295295	Zinc	95.1	96.8	P/P	80 - 120
2295421	Zinc	96.4		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P407537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2295090	Arsenic	108	105	P/P	80 - 120
2295090	Cadmium	106	104	P/P	80 - 120
2295090	Chromium	106	105	P/P	80 - 120
2295090	Copper	105	106	P/P	80 - 120
2295090	Lead	101	99.5	P/P	80 - 120
2295090	Nickel	107	107	P/P	80 - 120
2295090	Silver	102	100	P/P	80 - 120
2295171	Arsenic	104		P	80 - 120
2295171	Cadmium	103		P	80 - 120
2295171	Chromium	101		P	80 - 120
2295171	Copper	101		P	80 - 120
2295171	Lead	96.9		P	80 - 120
2295171	Nickel	102		P	80 - 120
2295171	Silver	99.5		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P407527

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294763	Chloride	99.7		P	90 - 110
2294827	Chloride	98.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P407530

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294763	Sulfate	97.4		P	90 - 110
2294827	Sulfate	96.2		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294828	Ammonia-N	96.0	98.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P408036

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2295158	Ammonia-N	98.2	98.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407863

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294036	Kjeldahl Nitrogen	97.9	96.2	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P407532

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294788	NO2NO3-N	99.0	99.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P407533

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294828	NO2NO3-N	97.8	98.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P407656

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2295071	Total-P	107	106	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P407442

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294767	O-Phosphate-P	98.1	99.3	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P407282

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294551	Sucralose	89.9	96.0	P/P	40 - 150

Reference Method: SM 4500 F-C-2011
Batch ID: P407544

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294787	Fluoride	101	101	P/P	92 - 107

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P407894

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2294456	Organic Carbon	99.4		P	85 - 115

Reference Method: SM 5310 B-2011
Batch ID: P407990

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2295629	Organic Carbon	95.2	96.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P407432

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294941	Turbidity	13.8	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2295090	Calcium	6.88	Spike	P	0 - 20
2295090	Iron	5.45	Spike	P	0 - 20
2295090	Magnesium	5.17	Spike	P	0 - 20
2295090	Potassium	5.01	Spike	P	0 - 20
2295090	Sodium	4.13	Spike	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P407869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2295295	Zinc	1.73	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P407537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2295090	Arsenic	2.10	Spike	P	0 - 20
2295090	Cadmium	2.24	Spike	P	0 - 20
2295090	Chromium	1.07	Spike	P	0 - 20
2295090	Copper	1.13	Spike	P	0 - 20
2295090	Lead	1.31	Spike	P	0 - 20
2295090	Nickel	0.770	Spike	P	0 - 20
2295090	Silver	2.04	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407527

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294763	Chloride	1.87	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P407530

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294763	Sulfate	1.77	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P407816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294828	Ammonia-N	1.95	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P408036

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2295158	Ammonia-N	0.352	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P407863

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294036	Kjeldahl Nitrogen	1.73	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P407532

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294788	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P407533

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294828	NO2NO3-N	0.709	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P407656

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2295071	Total-P	0.491	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P407442

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294767	O-Phosphate-P	1.08	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P407282

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294551	Sucralose	5.57	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P407541

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294787	Total Alkalinity	0.792	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P407760

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294827	TDS	5.54	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P407544

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294787	Fluoride	0.0	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P407894

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2294456	Organic Carbon	0.716	Spike	P	0 - 20

Reference Method: SM 5310 B-2011
Batch ID: P407990

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2295629	Organic Carbon	1.14	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2294851
Field Sample ID: G2CE0036

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	90.9	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A109375

Included Lab Sample IDs: 2294827, 2294830

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	100	P/P	95 - 105

Reference Method: SM 2120 B-2011

Run ID: A109376

Included Lab Sample IDs: 2294827, 2294830

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	103	105	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A109377

Included Lab Sample IDs: 2294829, 2294832

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.9	99.5	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A109387

Included Lab Sample IDs: 2294827, 2294830

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	102	P/P	90 - 110
Sulfate	99.9	100	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A109396

Included Lab Sample IDs: 2294851

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	93.3	82.7	P/P	60 - 160

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A109420

Included Lab Sample IDs: 2294828, 2294831

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

Reference Method: SM 2320 B-2011

Run ID: A109427

Included Lab Sample IDs: 2294827, 2294830

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.2	101	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A109427

Included Lab Sample IDs: 2294827, 2294830

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

Reference Method: SM 4500 F-C-2011

Run ID: A109427

Included Lab Sample IDs: 2294827, 2294830

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A109520

Included Lab Sample IDs: 2294852, 2294853

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	103	P/P	95 - 105
Calcium	103	103	P/P	90 - 110
Iron	102	103	P/P	95 - 105
Iron	103	103	P/P	90 - 110
Magnesium	103	103	P/P	95 - 105
Magnesium	103	104	P/P	90 - 110
Potassium	96.0	96.6	P/P	95 - 105
Potassium	96.6	97.0	P/P	90 - 110
Sodium	99.5	101	P/P	90 - 110
Sodium	99.7	99.5	P/P	95 - 105

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A109523

Included Lab Sample IDs: 2294852, 2294853

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	96.1	96.3	P/P	90 - 110
Arsenic	98.7	96.1	P/P	90 - 110
Cadmium	94.3	95.4	P/P	90 - 110
Cadmium	95.4	95.5	P/P	90 - 110
Chromium	91.1	93.3	P/P	90 - 110
Chromium	91.9	91.1	P/P	90 - 110
Copper	93.9	93.7	P/P	90 - 110
Copper	95.9	93.9	P/P	90 - 110
Nickel	92.9	93.3	P/P	90 - 110
Nickel	96.0	92.9	P/P	90 - 110
Silver	94.5	94.6	P/P	90 - 110
Silver	94.6	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A109528

Included Lab Sample IDs: 2294828

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A109539

Included Lab Sample IDs: 2294828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.7	97.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A109542

Included Lab Sample IDs: 2294831

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.5	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A109567

Included Lab Sample IDs: 2294828

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.1	96.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A109571

Included Lab Sample IDs: 2294852, 2294853

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Lead	92600	92600	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A109598

Included Lab Sample IDs: 2294828, 2294831

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.2	90.7	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A109635

Included Lab Sample IDs: 2294831

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.2	96.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A109642

Included Lab Sample IDs: 2294852, 2294853

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	95.1	93.5	P/P	90 - 110
Zinc	96.7	95.1	P/P	95 - 105

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A109647

Included Lab Sample IDs: 2294831

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	97.6	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 SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					13.8	
EPA 200.7 Rev. 4.4	Calcium	106	109	102			6.88
	Iron	107	99.6	106	108		5.45
	Magnesium	110	103	113	101		5.17
	Potassium	99.4	93.1	101	101		5.01
	Sodium	101	104	99.8			4.13
	Zinc	99.8	95.1	96.8	96.4		1.73
EPA 200.8 Rev. 5.4	Arsenic	103	104	108	105		2.10
	Cadmium	102	103	106	104		2.24
	Chromium	101	101	106	105		1.07
	Copper	104	101	105	106		1.13
	Lead	97.6	101	99.5	96.9		1.31
	Nickel	104	102	107	107		0.770
	Silver	101	99.5	102	100		2.04
EPA 300.0 Rev. 2.1	Chloride	99.3	99.7	98.1		1.87	
	Sulfate	98.1	97.4	96.2		1.77	
EPA 350.1 Rev. 2.0	Ammonia-N	96.0	96.0	98.4			1.95
	Ammonia-N	99.0	98.2	98.6			0.352
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.2	97.9	96.2			1.73
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	99.5	99.0	99.0			0.0
	NO ₂ NO ₃ -N	100	97.8	98.8			0.709
EPA 365.1 Rev. 2.0	Total-P	108	107	106			0.491
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.7	98.1	99.3			1.08
EPA 8321B	Sucralose	93.3	89.9	96.0			5.57
SM 2120 B-2011	Color (true)	103					
SM 2320 B-2011	Total Alkalinity	100				0.792	
SM 2540 C-2011	TDS					5.54	
SM 4500 F-C-2011	Fluoride	99.6	101	101			0.0
SM 5310 B-2011	Organic Carbon	98.4	99.4				0.716
	Organic Carbon	96.5	95.2	96.6			1.14

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2294827, 2294830
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2294852, 2294853
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2294852, 2294853
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2294827, 2294830
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2294827, 2294830
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2294828, 2294831
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2294828, 2294831
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2294828, 2294831
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2294828, 2294831
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2294829, 2294832
EPA 8321B	Water soluble organic compounds by HPLC/MS/MS	2294851
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2294827, 2294830
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2294827, 2294830
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2294827, 2294830
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2294827, 2294830
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2294827, 2294830

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2294828, 2294831

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	12/14/2021			12/14/2021 16:32	Khloe J Berg	2294827, 2294830
EPA 200.7 Rev. 4.4	12/14/2021	12/16/2021 10:35	Vijayalakshmi Reddy	12/21/2021 13:03	Josef B Mick	2294853
	12/14/2021	12/16/2021 10:35	Vijayalakshmi Reddy	12/21/2021 14:59	Josef B Mick	2294852
	12/14/2021	12/27/2021 11:00	Vijayalakshmi Reddy	01/03/2022 16:12	Josef B Mick	2294853
	12/14/2021	12/27/2021 11:00	Vijayalakshmi Reddy	01/03/2022 17:00	Josef B Mick	2294852
EPA 200.8 Rev. 5.4	12/14/2021	12/16/2021 10:35	Vijayalakshmi Reddy	12/21/2021 18:55	Alexander Thompson	2294853
	12/14/2021	12/16/2021 10:35	Vijayalakshmi Reddy	12/21/2021 20:50	Alexander Thompson	2294852
	12/14/2021	12/16/2021 10:35	Vijayalakshmi Reddy	12/27/2021 14:35	Alexander Thompson	2294853
	12/14/2021	12/16/2021 10:35	Vijayalakshmi Reddy	12/27/2021 15:09	Alexander Thompson	2294852
EPA 300.0 Rev. 2.1	12/14/2021			12/15/2021 19:36	Roberta Tatti	2294827
	12/14/2021			12/15/2021 20:49	Roberta Tatti	2294830
EPA 350.1 Rev. 2.0	12/14/2021			01/03/2022 12:28	Ping Hua	2294831
	12/14/2021			12/22/2021 13:58	Roberta Tatti	2294828
EPA 351.2 Rev. 2.0	12/14/2021	12/27/2021 11:02	Samantha L Bates	12/28/2021 16:48	Virginia P. Brown	2294828
	12/14/2021	12/27/2021 11:02	Samantha L Bates	12/28/2021 16:50	Virginia P. Brown	2294831
EPA 353.2 Rev. 2.0	12/14/2021			12/16/2021 08:49	Beverly Y. Sanders	2294828
	12/14/2021			12/16/2021 09:11	Beverly Y. Sanders	2294831
EPA 365.1 Rev. 2.0	12/14/2021	12/21/2021 17:45	Simonne.V. Calhoun	12/22/2021 11:39	Shengyu Ding	2294828
	12/14/2021	12/21/2021 17:45	Simonne.V. Calhoun	12/22/2021 14:42	Shengyu Ding	2294831
EPA 365.1 Rev. 2.0 dissolved	12/14/2021			12/14/2021 17:20	James L Waggeberby	2294829
	12/14/2021			12/14/2021 17:21	James L Waggeberby	2294832
EPA 8321B	12/14/2021	12/14/2021 12:00	Juyoung Kim	12/14/2021 17:39	Manjita Shrestha	2294851
SM 2120 B-2011	12/14/2021			12/14/2021 16:55	Samantha L Bates	2294827, 2294830
SM 2320 B-2011	12/14/2021			12/15/2021 19:19	Dale L. Simmons	2294827
	12/14/2021			12/15/2021 19:27	Dale L. Simmons	2294830
SM 2540 C-2011	12/14/2021			12/17/2021 15:25	Yijie Li	2294827, 2294830
SM 2540 D-2011	12/14/2021			12/17/2021 15:35	Yijie Li	2294827, 2294830
SM 4500 F-C-2011	12/14/2021			12/15/2021 19:19	Dale L. Simmons	2294827
	12/14/2021			12/15/2021 19:27	Dale L. Simmons	2294830
SM 5310 B-2011	12/14/2021			12/25/2021 22:15	Touraj Touran	2294828
	12/14/2021			12/29/2021 19:41	Khloe J Berg	2294831