

Chemical Analysis Report

NE-DIST-2021-09-10-01

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

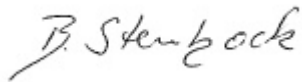
Event Description: **Nassau North West**
Request ID: **RQ-2021-09-06-24**
Customer: **NE-DIST**
Project ID: **SMP**

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Certified by: Dr. rer. nat. Bettina Steinbock, Environmental Administrator

Date Certified: 05-OCT-2021 12:54



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: Daughtery BR @ Crews Rd

Collection Date/Time: 09/09/2021 10:20

Field ID: 19010136

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2275323	EPA 180.1 Rev. 2.0	Turbidity	4.0		NTU	P403609	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P403724	
		Sulfate	0.90		mg SO4/L	P403725	
		Color (true)	210		PCU	P403605	
	SM 2320 B-2011	Total Alkalinity	15		mg CaCO3/L	P403655	
	SM 2540 C-2011	TDS	112		mg/L	P403988	
	SM 2540 D-2011	TSS	4	I	mg/L	P403979	
	SM 4500 F-C-2011	Fluoride	0.080	I	mg F/L	P403659	
2275324	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P403833	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.71		mg N/L	P403663	
	EPA 353.2 Rev. 2.0	NO2NO3-N	3.8		mg N/L	P403754	
	EPA 365.1 Rev. 2.0	Total-P	0.042		mg P/L	P403771	
	SM 5310 B-2011	Organic Carbon	15		mg C/L	P404047	
2275325	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.024		mg P/L	P403602	
2275344	EPA 200.7 Rev. 4.4	Barium	68.9		ug/L	P403625	
		Calcium	7.06		mg/L	P403625	
		Iron	1.0E+03		ug/L	P403625	
		Magnesium	4.61		mg/L	P403625	
		Manganese	20.7		ug/L	P403625	
		Potassium	0.92	I	mg/L	P403625	
		Sodium	8.3		mg/L	P403625	
	EPA 200.8 Rev. 5.4	Zinc	6.2	I	ug/L	P403625	
		Aluminum	312		ug/L	P403625	
		Antimony	0.050	U	ug/L	P403625	
		Arsenic	0.47		ug/L	P403625	
		Beryllium	0.132		ug/L	P403625	
		Boron**	15.2		ug/L	P403625	
		Cadmium	0.054	I	ug/L	P403625	
		Chromium	0.73	I	ug/L	P403625	
		Copper	0.40	U	ug/L	P403625	
		Lead	0.53		ug/L	P403625	
		Nickel	1.3	I	ug/L	P403625	
		Selenium	0.38	I	ug/L	P403625	
		Silver	0.010	U	ug/L	P403625	
		Thallium	0.10	U	ug/L	P403625	
		Hardness	36.6		mg/L	P403625	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: 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.

EPA 200.8 Rev. 5.4: The beryllium result was confirmed in the undigested sample on 09/17/2021.

Sample Location: Unnamed Branch @ CR125

Collection Date/Time: 09/09/2021 09:10

Field ID: 19010123

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2275345	EPA 200.7 Rev. 4.4	Barium	23.9		ug/L	P403625	
		Calcium	6.79		mg/L	P403625	
		Iron	1.40E+03		ug/L	P403625	
		Magnesium	3.04		mg/L	P403625	
		Manganese	42.3		ug/L	P403625	
		Potassium	1.2	I	mg/L	P403625	
		Sodium	4.6		mg/L	P403625	
	EPA 200.8 Rev. 5.4	Zinc	6.5	I	ug/L	P403625	
		Aluminum	271		ug/L	P403625	
		Antimony	0.062	I	ug/L	P403625	
		Arsenic	0.90		ug/L	P403625	
		Beryllium	0.021	I	ug/L	P403625	
		Boron**	16.8		ug/L	P403625	
		Cadmium	0.020	U	ug/L	P403625	
		Chromium	0.57	I	ug/L	P403625	
		Copper	0.40	U	ug/L	P403625	
		Lead	0.62		ug/L	P403625	
		Nickel	0.57	I	ug/L	P403625	
		Selenium	0.20	U	ug/L	P403625	
		Silver	0.010	U	ug/L	P403625	
		Thallium	0.10	U	ug/L	P403625	
	SM 2340B	Hardness	29.5		mg/L	P403625	

Sample Location: Moccasin Creek @ Moccasin Creek Cir E

Collection Date/Time: 09/09/2021 11:11

Field ID: 19010121

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2275317	EPA 180.1 Rev. 2.0	Turbidity	3.2		NTU	P403607	
	EPA 300.0 Rev. 2.1	Chloride	4.3		mg Cl/L	P403724	
		Sulfate	0.20	U	mg SO4/L	P403725	
	SM 2120 B-2011	Color (true)	600		PCU	P403605	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P403655	
	SM 2540 C-2011	TDS	95		mg/L	P403988	
	SM 2540 D-2011	TSS	3	I	mg/L	P403979	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P403659	
2275319	EPA 350.1 Rev. 2.0	Ammonia-N	0.047		mg N/L	P403832	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P403929	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	U	mg N/L	P403754	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P403771	
	SM 5310 B-2011	Organic Carbon	53		mg C/L	P404047	
2275321	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P403602	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: 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.

EPA 353.2 Rev. 2.0: The MDL was elevated because of sample matrix interference.

Sample Location: Calkins CR @ CR 127

Collection Date/Time: 09/09/2021 09:40

Field ID: 19010105

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2275318	EPA 180.1 Rev. 2.0	Turbidity	5.3	A	NTU	P403609	
	EPA 300.0 Rev. 2.1	Chloride	4.6		mg Cl/L	P403724	
		Sulfate	0.20	U	mg SO4/L	P403725	
	SM 2120 B-2011	Color (true)	690		PCU	P403605	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P403655	
	SM 2540 C-2011	TDS	92		mg/L	P403988	
	SM 2540 D-2011	TSS	4	I	mg/L	P403979	
	SM 4500 F-C-2011	Fluoride	0.035	U	mg F/L	P403659	
2275320	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P403832	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.2		mg N/L	P403929	MS
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	U	mg N/L	P403754	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P403771	
	SM 5310 B-2011	Organic Carbon	52		mg C/L	P404047	
2275322	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P403602	

Ref. Method and Comment:

EPA 300.0 Rev. 2.1: Sulfate: 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.

EPA 353.2 Rev. 2.0: The MDL was elevated because of sample matrix interference.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P403607

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P403609

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P403625

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
Manganese	1.0	U	ug/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: P403625

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Beryllium	0.010	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: P403724

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403725

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403832

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403833

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403663

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403929

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403754

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403771

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403602

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

Reference Method: SM 2120 B-2011
Batch ID: P403605

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-2011
Batch ID: P403655

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: P403988

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P403979

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P403659

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P404047

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: P403625

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	105		P	85 - 115
Calcium	101		P	85 - 115
Iron	111		P	85 - 115
Magnesium	111		P	85 - 115
Manganese	105		P	85 - 115
Potassium	103		P	85 - 115
Sodium	102		P	85 - 115
Zinc	103		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P403625

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	101		P	85 - 115
Beryllium	99.5		P	85 - 115
Boron	104		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	98.3		P	85 - 115
Copper	100		P	85 - 115
Lead	100		P	85 - 115
Nickel	99.5		P	85 - 115
Selenium	99.6		P	85 - 115
Silver	101		P	85 - 115
Thallium	103		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403724

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	97.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403725

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	96.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403832

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403833

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403663

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403929

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	97.1		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403754

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	103		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403771

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403602

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

Reference Method: SM 2120 B-2011
Batch ID: P403605

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	98.5		P	85 - 115

Reference Method: SM 2320 B-2011
Batch ID: P403655

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P403659

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P404047

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P403625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2275345	Barium	101	99.9	P/P	80 - 120
2275345	Calcium	101		P	80 - 120
2275345	Iron	108	105	P/P	80 - 120
2275345	Magnesium	108	103	P/P	80 - 120
2275345	Manganese	99.2	98.7	P/P	80 - 120
2275345	Potassium	100	96.0	P/P	80 - 120
2275345	Sodium	101		P	80 - 120
2275345	Zinc	100	99.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P403625

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2275345	Aluminum	102	102	P/P	80 - 120
2275345	Antimony	100	100	P/P	80 - 120
2275345	Arsenic	98.6	98.5	P/P	80 - 120
2275345	Beryllium	97.8	97.4	P/P	80 - 120
2275345	Boron	106	106	P/P	80 - 120
2275345	Cadmium	99.7	101	P/P	80 - 120
2275345	Chromium	98.6	97.8	P/P	80 - 120
2275345	Copper	99.6	101	P/P	80 - 120
2275345	Lead	100	99.1	P/P	80 - 120
2275345	Nickel	97.7	97.9	P/P	80 - 120
2275345	Selenium	97.6	98.4	P/P	80 - 120
2275345	Silver	101	101	P/P	80 - 120
2275345	Thallium	107	106	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P403724

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2274621	Chloride	95.8		P	90 - 110
2275318	Chloride	97.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P403725

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2274621	Sulfate	96.6		P	90 - 110
2275318	Sulfate	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P403832

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2275266	Ammonia-N	98.6	97.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P403833

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2275510	Ammonia-N	98.8	99.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403663

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2275301	Kjeldahl Nitrogen	106	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403929

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2275678	Kjeldahl Nitrogen	92.1	89.0	P/F	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403754

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2275319	NO2NO3-N	98.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403771

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2275324	Total-P	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403602

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2275268	O-Phosphate-P	103	103	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P403659

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2274983	Fluoride	99.6	99.1	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P404047

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2275548	Organic Carbon	103		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P403607

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275244	Turbidity	3.90	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P403609

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275318	Turbidity	10.7	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P403625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275345	Barium	0.613	Spike	P	0 - 20
2275345	Calcium	0.566	Spike	P	0 - 20
2275345	Iron	2.28	Spike	P	0 - 20
2275345	Magnesium	2.39	Spike	P	0 - 20
2275345	Manganese	0.378	Spike	P	0 - 20
2275345	Potassium	3.09	Spike	P	0 - 20
2275345	Sodium	1.14	Spike	P	0 - 20
2275345	Zinc	0.345	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P403625

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275345	Aluminum	0.400	Spike	P	0 - 20
2275345	Antimony	0.196	Spike	P	0 - 20
2275345	Arsenic	0.0438	Spike	P	0 - 20
2275345	Beryllium	0.429	Spike	P	0 - 20
2275345	Boron	0.513	Spike	P	0 - 20
2275345	Cadmium	0.814	Spike	P	0 - 20
2275345	Chromium	0.801	Spike	P	0 - 20
2275345	Copper	1.06	Spike	P	0 - 20
2275345	Lead	1.03	Spike	P	0 - 20
2275345	Nickel	0.248	Spike	P	0 - 20
2275345	Selenium	0.737	Spike	P	0 - 20
2275345	Silver	0.450	Spike	P	0 - 20
2275345	Thallium	0.975	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P403724

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274621	Chloride	0.245	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403832

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275266	Ammonia-N	0.717	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P403833

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275510	Ammonia-N	0.634	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403663

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275301	Kjeldahl Nitrogen	1.64	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P403929

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275678	Kjeldahl Nitrogen	1.82	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P403754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275319	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P403771

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275324	Total-P	1.08	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P403602

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275268	O-Phosphate-P	0.582	Spike	P	0 - 20

Reference Method: SM 2120 B-2011
Batch ID: P403605

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275263	Color (true)	0.133	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-2011
Batch ID: P403655

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274983	Total Alkalinity	0.789	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011
Batch ID: P403988

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275264	TDS	3.55	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011
Batch ID: P403659

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2274983	Fluoride	0.479	Spike	P	0 - 2.1

Reference Method: SM 5310 B-2011
Batch ID: P404047

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2275548	Organic Carbon	0.264	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A107738

Included Lab Sample IDs: 2275321, 2275322, 2275325

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

Reference Method: SM 2120 B-2011

Run ID: A107741

Included Lab Sample IDs: 2275317, 2275318, 2275323

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	100	P/P	90 - 115
Color (true)	100	100	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A107742

Included Lab Sample IDs: 2275317, 2275318, 2275323

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

Reference Method: SM 2320 B-2011

Run ID: A107760

Included Lab Sample IDs: 2275317, 2275318, 2275323

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

Reference Method: SM 4500 F-C-2011

Run ID: A107760

Included Lab Sample IDs: 2275317, 2275318, 2275323

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A107786

Included Lab Sample IDs: 2275344, 2275345

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	97.5	97.5	P/P	90 - 110
Calcium	99.7	98.1	P/P	90 - 110
Iron	102	100	P/P	90 - 110
Magnesium	101	99.1	P/P	90 - 110
Manganese	102	102	P/P	90 - 110
Potassium	98.0	96.3	P/P	90 - 110
Sodium	99.9	98.3	P/P	90 - 110
Zinc	98.5	99.4	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A107789

Included Lab Sample IDs: 2275317, 2275318, 2275323

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: A107789

Included Lab Sample IDs: 2275317, 2275318, 2275323

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.7	99.9	P/P	90 - 110
Chloride	99.9	101	P/P	90 - 110
Sulfate	100	99.8	P/P	90 - 110
Sulfate	99.8	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A107796

Included Lab Sample IDs: 2275324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	107	109	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A107801

Included Lab Sample IDs: 2275319, 2275320, 2275324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A107830

Included Lab Sample IDs: 2275319, 2275320, 2275324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.5	P/P	90 - 110
Ammonia-N	99.5	98.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A107836

Included Lab Sample IDs: 2275319, 2275320, 2275324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	100	99.8	P/P	90 - 110
Total-P	102	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A107838

Included Lab Sample IDs: 2275344, 2275345

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	100	P/P	90 - 110
Aluminum	99.9	101	P/P	90 - 110
Antimony	97.9	98.0	P/P	90 - 110
Antimony	98.0	98.6	P/P	90 - 110
Arsenic	97.2	97.1	P/P	90 - 110
Arsenic	97.6	97.2	P/P	90 - 110
Beryllium	102	97.7	P/P	90 - 110
Beryllium	97.7	96.1	P/P	90 - 110
Boron	101	101	P/P	90 - 110
Boron	101	102	P/P	90 - 110
Cadmium	98.8	98.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A107838

Included Lab Sample IDs: 2275344, 2275345

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Cadmium	98.8	99.2	P/P	90 - 110
Chromium	96.0	96.6	P/P	90 - 110
Chromium	96.6	96.7	P/P	90 - 110
Copper	97.1	96.3	P/P	90 - 110
Copper	97.6	97.1	P/P	90 - 110
Lead	97.3	96.3	P/P	90 - 110
Lead	97.5	97.3	P/P	90 - 110
Nickel	97.8	96.5	P/P	90 - 110
Nickel	98.2	97.8	P/P	90 - 110
Selenium	97.2	97.6	P/P	90 - 110
Selenium	97.6	97.2	P/P	90 - 110
Silver	95.7	94.9	P/P	90 - 110
Silver	97.0	95.7	P/P	90 - 110
Thallium	101	99.6	P/P	90 - 110
Thallium	101	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A107906

Included Lab Sample IDs: 2275319, 2275320

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.7	100	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A107931

Included Lab Sample IDs: 2275319, 2275320, 2275324

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	99.5	P/P	90 - 110
Organic Carbon	99.5	99.3	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		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					3.90	
	Turbidity					10.7	
EPA 200.7 Rev. 4.4	Barium	105	101	99.9			0.613
	Calcium	101	101				0.566
	Iron	111	108	105			2.28
	Magnesium	111	108	103			2.39
	Manganese	105	99.2	98.7			0.378
	Potassium	103	100	96.0			3.09
	Sodium	102	101				1.14
	Zinc	103	100	99.9			0.345
EPA 200.8 Rev. 5.4	Aluminum	102	102	102			0.400
	Antimony	101	100	100			0.196
	Arsenic	101	98.6	98.5			0.0438
	Beryllium	99.5	97.8	97.4			0.429
	Boron	104	106	106			0.513
	Cadmium	100	99.7	101			0.814
	Chromium	98.3	98.6	97.8			0.801
	Copper	100	99.6	101			1.06
	Lead	100	100	99.1			1.03
	Nickel	99.5	97.7	97.9			0.248
	Selenium	99.6	97.6	98.4			0.737
	Silver	101	101	101			0.450
	Thallium	103	106	107			0.975
EPA 300.0 Rev. 2.1	Chloride	97.8	95.8	97.5		0.245	
	Sulfate	96.9	96.6	99.4			
EPA 350.1 Rev. 2.0	Ammonia-N	101	98.6	97.8			0.717
	Ammonia-N	99.4	98.8	99.8			0.634
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	102	106	103			1.64
	Kjeldahl Nitrogen	97.1	92.1	89.0			1.82
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	103	98.0	98.0			0.0
EPA 365.1 Rev. 2.0	Total-P	105	102	104			1.08
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.9	103	103			0.582
SM 2120 B-2011	Color (true)	98.5				0.133	
SM 2320 B-2011	Total Alkalinity	104				0.789	
SM 2540 C-2011	TDS					3.55	
SM 4500 F-C-2011	Fluoride	100	99.6	99.1			0.479
SM 5310 B-2011	Organic Carbon	96.6	103				0.264

Reference Method Descriptions

Method	Description	Associated Samples
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2275317, 2275318, 2275323
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2275344, 2275345
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2275344, 2275345
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2275317, 2275318, 2275323
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2275317, 2275318, 2275323
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2275319, 2275320, 2275324
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2275319, 2275320, 2275324
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2275319, 2275320, 2275324
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2275319, 2275320, 2275324

Reference Method Descriptions

Method	Description	Associated Samples
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2275321, 2275322, 2275325
SM 2120 B-2011	True Color measured at 450 nm (not valid for NPDES monitoring)	2275317, 2275318, 2275323
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2275317, 2275318, 2275323
SM 2340B	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2275344, 2275345
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2275317, 2275318, 2275323
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2275317, 2275318, 2275323
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2275317, 2275318, 2275323
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2275319, 2275320, 2275324

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	09/10/2021			09/10/2021 16:15	Sarah A Nixon	2275317, 2275318, 2275323
EPA 200.7 Rev. 4.4	09/10/2021	09/13/2021 12:00	Elliott D. Healy	09/14/2021 16:43	Josef B Mick	2275344
	09/10/2021	09/13/2021 12:00	Elliott D. Healy	09/14/2021 16:51	Josef B Mick	2275345
EPA 200.8 Rev. 5.4	09/10/2021	09/13/2021 12:00	Elliott D. Healy	09/16/2021 14:04	Alexander Thompson	2275345
	09/10/2021	09/13/2021 12:00	Elliott D. Healy	09/16/2021 15:21	Alexander Thompson	2275344
EPA 300.0 Rev. 2.1	09/10/2021			09/14/2021 12:14	Roberta Tatti	2275318
	09/10/2021			09/14/2021 14:40	Roberta Tatti	2275317
	09/10/2021			09/14/2021 14:52	Roberta Tatti	2275323
EPA 350.1 Rev. 2.0	09/10/2021			09/16/2021 13:22	Ping Hua	2275319
	09/10/2021			09/16/2021 13:23	Ping Hua	2275320
	09/10/2021			09/16/2021 13:39	Ping Hua	2275324
EPA 351.2 Rev. 2.0	09/10/2021	09/14/2021 08:30	Benjamin T. Nordmann	09/15/2021 10:33	Alexandra J Mattheus	2275324
	09/10/2021	09/20/2021 13:20	Benjamin T. Nordmann	09/21/2021 10:58	Alexandra J Mattheus	2275319
	09/10/2021	09/20/2021 13:20	Benjamin T. Nordmann	09/21/2021 11:00	Alexandra J Mattheus	2275320
EPA 353.2 Rev. 2.0	09/10/2021			09/15/2021 09:25	Beverly Y. Sanders	2275319
	09/10/2021			09/15/2021 09:30	Beverly Y. Sanders	2275320
	09/10/2021			09/15/2021 09:31	Beverly Y. Sanders	2275324
EPA 365.1 Rev. 2.0	09/10/2021	09/15/2021 10:36	Simonne.V. Calhoun	09/16/2021 16:10	Virginia P. Brown	2275324
	09/10/2021	09/15/2021 10:36	Simonne.V. Calhoun	09/16/2021 16:20	Virginia P. Brown	2275319
	09/10/2021	09/15/2021 10:36	Simonne.V. Calhoun	09/16/2021 16:21	Virginia P. Brown	2275320
EPA 365.1 Rev. 2.0 dissolved	09/10/2021			09/10/2021 14:59	James L Waggeberby	2275321
	09/10/2021			09/10/2021 15:00	James L Waggeberby	2275322
	09/10/2021			09/10/2021 15:01	James L Waggeberby	2275325
SM 2120 B-2011	09/10/2021			09/10/2021 16:55	Sarah A Nixon	2275317
	09/10/2021			09/10/2021 16:57	Sarah A Nixon	2275318
	09/10/2021			09/10/2021 16:58	Sarah A Nixon	2275323
SM 2320 B-2011	09/10/2021			09/14/2021 01:28	Dale L. Simmons	2275317
	09/10/2021			09/14/2021 01:35	Dale L. Simmons	2275318
	09/10/2021			09/14/2021 01:47	Dale L. Simmons	2275323
SM 2340B	09/10/2021			09/14/2021 16:43	Josef B Mick	2275344
	09/10/2021			09/14/2021 16:51	Josef B Mick	2275345
SM 2540 C-2011	09/10/2021			09/13/2021 14:36	Yijie Li	2275317, 2275318, 2275323
SM 2540 D-2011	09/10/2021			09/13/2021 14:36	Yijie Li	2275317, 2275318, 2275323
SM 4500 F-C-2011	09/10/2021			09/14/2021 01:28	Dale L. Simmons	2275317
	09/10/2021			09/14/2021 01:35	Dale L. Simmons	2275318
	09/10/2021			09/14/2021 01:47	Dale L. Simmons	2275323
SM 5310 B-2011	09/10/2021			09/17/2021 22:08	Touraj Touran	2275319
	09/10/2021			09/17/2021 22:47	Touraj Touran	2275320
	09/10/2021			09/17/2021 23:01	Touraj Touran	2275324