

Chemical Analysis Report

SE-DIST-2022-02-15-01

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

Event Description: **Micco Valkaria/Sebastian Deploy**
Request ID: **RQ-2022-02-14-38**
Customer: **SE-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
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2199 South Rock Road
Fort Pierce, FL 34945
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 09-MAR-2022 16:11

A handwritten signature in black ink, appearing to read "Liang Lin", is shown on a light-colored background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical 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: Micco Ditch @ Micco Rd.

Collection Date/Time: 02/14/2022 12:30

Field ID: G5SE0048

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2305638	DEP SOP: NU-094-1	Color (true)**	46		PCU	P409869	
	EPA 180.1 Rev. 2.0	Turbidity	3.1		NTU	P409872	
	EPA 300.0 Rev. 2.1	Chloride	170		mg Cl/L	P410229	
		Sulfate	34		mg SO4/L	P410230	
	SM 2320 B-2011	Total Alkalinity	216		mg CaCO3/L	P409941	
	SM 2540 C-2011	TDS	620		mg/L	P410161	
	SM 2540 D-2011	TSS	3	I	mg/L	P410192	
	SM 4500 F-C-2011	Fluoride	0.27		mg F/L	P409942	
2305639	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P410408	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P409882	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.047		mg N/L	P410232	
	EPA 365.1 Rev. 2.0	Total-P	0.072		mg P/L	P409902	
	SM 5310 B-2011	Organic Carbon	14		mg C/L	P410385	
2305640	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.022		mg P/L	P409865	

Ref. Method and Comment:

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

Sample Location: C-54 confluence with Sebastian near Mockingbird Lane Dock

Collection Date/Time: 02/14/2022 13:15

Field ID: G5SE0106

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2305641	EPA 180.1 Rev. 2.0	Turbidity	2.8		NTU	P409872	
	SM 2320 B-2011	Total Alkalinity	157		mg CaCO3/L	P410036	
	SM 2540 D-2011	TSS	8	I	mg/L	P410195	
	SM 4500 F-C-2011	Fluoride	0.67		mg F/L	P410039	
2305642	EPA 350.1 Rev. 2.0	Ammonia-N	0.038		mg N/L	P410313	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.77		mg N/L	P409881	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.022		mg N/L	P410113	
	EPA 365.1 Rev. 2.0	Total-P	0.064		mg P/L	P409901	
	SM 5310 B-2011	Organic Carbon	8.7		mg C/L	P410385	
2305643	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.022		mg P/L	P409867	
2305654	EPA 200.7 Rev. 4.4	Calcium	217		mg/L	P410092	
		Iron	200	I	ug/L	P410092	
		Magnesium	498		mg/L	P410092	
		Strontium	5.25E+03		ug/L	P410092	
		Tin	60	U	ug/L	P410092	
		Titanium	3.0	I	ug/L	P410092	
		Vanadium	6.0	U	ug/L	P410092	
		Zinc	15	U	ug/L	P410092	
	EPA 200.8 Rev. 5.4	Aluminum	28	I	ug/L	P410092	
		Antimony	0.20	U	ug/L	P410092	
		Arsenic	1.27		ug/L	P410092	
		Beryllium	0.040	U	ug/L	P410092	
		Cadmium	0.080	U	ug/L	P410092	
		Chromium	1.6	U	ug/L	P410092	
		Cobalt	0.16	I	ug/L	P410092	
		Copper	1.6	U	ug/L	P410092	
		Lead	0.80	U	ug/L	P410092	
		Manganese	11.1		ug/L	P410092	
		Molybdenum	6.0		ug/L	P410092	
		Nickel	2.0	U	ug/L	P410092	
		Selenium	0.80	U	ug/L	P410092	
		Silver	0.040	U	ug/L	P410092	
		Thallium	0.40	U	ug/L	P410092	

Ref. Method and Comment:

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

EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for calcium, magnesium and strontium are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P409869

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P409872

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P410092

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P410092

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
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	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: P410229

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P410230

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: P410313

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P410408

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409881

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409882

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P410113

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P410232

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409901

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409902

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409865

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409867

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

Reference Method: SM 2320 B-2011
Batch ID: P409941

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

Reference Method: SM 2320 B-2011
Batch ID: P410036

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

Reference Method: SM 2540 C-2011
Batch ID: P410161

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P410192

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-2011
Batch ID: P410195

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-2011
Batch ID: P409942

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-2011
Batch ID: P410039

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P410385

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P409869

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

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P409872

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Turbidity	97.4		P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P410092

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	107		P	85 - 115
Magnesium	102		P	85 - 115
Strontium	102		P	85 - 115
Tin	107		P	85 - 115
Titanium	104		P	85 - 115
Vanadium	96.2		P	85 - 115
Zinc	102		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P410092

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	99.8		P	85 - 115
Antimony	98.5		P	85 - 115
Arsenic	97.9		P	85 - 115
Beryllium	94.0		P	85 - 115
Cadmium	97.1		P	85 - 115
Chromium	96.2		P	85 - 115
Cobalt	96.7		P	85 - 115
Copper	94.1		P	85 - 115
Lead	94.4		P	85 - 115
Manganese	96.6		P	85 - 115
Molybdenum	97.3		P	85 - 115
Nickel	96.5		P	85 - 115
Selenium	97.4		P	85 - 115
Silver	97.7		P	85 - 115
Thallium	97.3		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P410229

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P410230

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P410313

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	96.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P410408

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	97.4		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409881

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409882

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P410113

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P410232

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: P409901

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409902

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409865

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409867

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

Reference Method: SM 2320 B-2011
Batch ID: P409941

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.3		P	94 - 106

Reference Method: SM 2320 B-2011
Batch ID: P410036

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.8		P	94 - 106

Reference Method: SM 4500 F-C-2011
Batch ID: P409942

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.8		P	93 - 104

Reference Method: SM 4500 F-C-2011
Batch ID: P410039

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	93 - 104

Reference Method: SM 5310 B-2011
Batch ID: P410385

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	96.0		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P410092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305376	Iron	107	108	P/P	80 - 120
2305376	Tin	80.0	90.8	P/P	80 - 120
2305376	Titanium	102	102	P/P	80 - 120
2305376	Vanadium	98.8	99.0	P/P	80 - 120
2305376	Zinc	99.8	100	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P410092

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305376	Aluminum	99.3	97.7	P/P	70 - 130
2305376	Antimony	103	102	P/P	70 - 130
2305376	Arsenic	108	108	P/P	70 - 130
2305376	Beryllium	99.0	99.5	P/P	70 - 130
2305376	Cadmium	98.5	97.5	P/P	70 - 130
2305376	Chromium	101	100	P/P	70 - 130
2305376	Cobalt	105	105	P/P	70 - 130
2305376	Copper	97.1	95.2	P/P	70 - 130
2305376	Lead	99.3	98.3	P/P	70 - 130
2305376	Manganese	98.7	97.7	P/P	70 - 130
2305376	Molybdenum	109	110	P/P	70 - 130
2305376	Nickel	106	103	P/P	70 - 130
2305376	Selenium	79.4	78.5	P/P	70 - 130
2305376	Silver	91.3	91.0	P/P	70 - 130
2305376	Thallium	102	103	P/P	70 - 130

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P410229

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305675	Chloride	95.6		P	90 - 110
2306572	Chloride	99.0		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P410230

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305675	Sulfate	97.8		P	90 - 110
2306572	Sulfate	98.7		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P410313

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305598	Ammonia-N	97.6	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P410408

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305600	Ammonia-N	97.0	98.4	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409881

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305623	Kjeldahl Nitrogen	103	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409882

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305521	Kjeldahl Nitrogen	102	94.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P410113

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305642	NO2NO3-N	103	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P410232

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305563	NO2NO3-N	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409901

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305622	Total-P	101	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409902

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305751	Total-P	107	110	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409865

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305604	O-Phosphate-P	93.0	95.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P409867

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305637	O-Phosphate-P	100	102	P/P	90 - 110

Reference Method: SM 4500 F-C-2011
Batch ID: P409942

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305588	Fluoride	98.8	98.1	P/P	92 - 107

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 4500 F-C-2011
Batch ID: P410039

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305619	Fluoride	97.6	98.3	P/P	92 - 107

Reference Method: SM 5310 B-2011
Batch ID: P410385

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2305518	Organic Carbon	95.7	97.5	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P409869

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305562	Color (true)	0.399	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P409872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305516	Turbidity	6.64	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P410092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305376	Calcium	0.913	Spike	P	0 - 20
2305376	Iron	0.813	Spike	P	0 - 20
2305376	Magnesium	1.85	Spike	P	0 - 20
2305376	Strontium	1.29	Spike	P	0 - 20
2305376	Tin	12.7	Spike	P	0 - 20
2305376	Titanium	0.0516	Spike	P	0 - 20
2305376	Vanadium	0.252	Spike	P	0 - 20
2305376	Zinc	0.533	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P410092

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305376	Aluminum	1.67	Spike	P	0 - 20
2305376	Antimony	1.28	Spike	P	0 - 20
2305376	Arsenic	0.768	Spike	P	0 - 20
2305376	Beryllium	0.505	Spike	P	0 - 20
2305376	Cadmium	1.10	Spike	P	0 - 20
2305376	Chromium	0.556	Spike	P	0 - 20
2305376	Cobalt	0.334	Spike	P	0 - 20
2305376	Copper	1.96	Spike	P	0 - 20
2305376	Lead	0.989	Spike	P	0 - 20
2305376	Manganese	0.982	Spike	P	0 - 20
2305376	Molybdenum	0.800	Spike	P	0 - 20
2305376	Nickel	2.47	Spike	P	0 - 20
2305376	Selenium	1.20	Spike	P	0 - 20
2305376	Silver	0.359	Spike	P	0 - 20
2305376	Thallium	0.959	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P410229

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305675	Chloride	1.29	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P410230

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305675	Sulfate	2.70	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P410313

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305598	Ammonia-N	1.94	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P410408

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305600	Ammonia-N	0.905	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409881

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305623	Kjeldahl Nitrogen	0.796	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P409882

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305521	Kjeldahl Nitrogen	6.30	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P410113

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305642	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P410232

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305563	NO2NO3-N	0.494	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P409901

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305622	Total-P	2.58	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P409902

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305751	Total-P	2.30	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P409865

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305604	O-Phosphate-P	2.10	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Batch ID: P409867

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305637	O-Phosphate-P	1.38	Spike	P	0 - 20

Reference Method: SM 2320 B-2011

Batch ID: P409941

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305588	Total Alkalinity	0.139	Sample	P	0 - 5.2

Reference Method: SM 2320 B-2011

Batch ID: P410036

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305619	Total Alkalinity	0.976	Sample	P	0 - 5.2

Reference Method: SM 2540 C-2011

Batch ID: P410161

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305329	TDS	4.41	Sample	P	0 - 10

Reference Method: SM 4500 F-C-2011

Batch ID: P409942

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305588	Fluoride	0.477	Spike	P	0 - 2.1

Reference Method: SM 4500 F-C-2011

Batch ID: P410039

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305619	Fluoride	0.476	Spike	P	0 - 2.1

Quality Assurance Report

Precision

Reference Method: SM 5310 B-2011
Batch ID: P410385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2305518	Organic Carbon	1.34	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: A110421

Included Lab Sample IDs: 2305640, 2305643

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.2	99.6	P/P	90 - 110
O-Phosphate-P	99.6	101	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1

Run ID: A110422

Included Lab Sample IDs: 2305638

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	101	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A110424

Included Lab Sample IDs: 2305638, 2305641

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

Reference Method: SM 2320 B-2011

Run ID: A110447

Included Lab Sample IDs: 2305638

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	95.0	90.3	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A110447

Included Lab Sample IDs: 2305638

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

Reference Method: SM 2320 B-2011

Run ID: A110482

Included Lab Sample IDs: 2305641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	94.4	96.9	P/P	90 - 110

Reference Method: SM 4500 F-C-2011

Run ID: A110482

Included Lab Sample IDs: 2305641

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	99.5	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A110512

Included Lab Sample IDs: 2305639, 2305642

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	96.1	99.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A110512

Included Lab Sample IDs: 2305639, 2305642

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.2	95.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A110515

Included Lab Sample IDs: 2305642

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A110527

Included Lab Sample IDs: 2305654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	101	P/P	90 - 110
Antimony	96.0	95.7	P/P	90 - 110
Arsenic	99.3	99.4	P/P	90 - 110
Beryllium	99.3	99.5	P/P	90 - 110
Cadmium	98.2	98.5	P/P	90 - 110
Chromium	97.2	97.1	P/P	90 - 110
Cobalt	99.1	98.3	P/P	90 - 110
Copper	98.7	98.5	P/P	90 - 110
Lead	94.7	94.0	P/P	90 - 110
Manganese	98.4	98.4	P/P	90 - 110
Molybdenum	98.9	98.7	P/P	90 - 110
Nickel	99.6	99.0	P/P	90 - 110
Selenium	99.1	99.3	P/P	90 - 110
Silver	92.3	91.1	P/P	90 - 110
Thallium	99.1	97.6	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A110528

Included Lab Sample IDs: 2305654

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	102	P/P	90 - 110
Iron	104	104	P/P	90 - 110
Magnesium	100	101	P/P	90 - 110
Strontium	101	101	P/P	90 - 110
Tin	104	105	P/P	90 - 110
Titanium	101	103	P/P	90 - 110
Vanadium	101	102	P/P	90 - 110
Zinc	102	103	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A110532

Included Lab Sample IDs: 2305639

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A110543

Included Lab Sample IDs: 2305638

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	99.0	98.9	P/P	90 - 110
Sulfate	100	99.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A110561

Included Lab Sample IDs: 2305642

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A110565

Included Lab Sample IDs: 2305639

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A110602

Included Lab Sample IDs: 2305642

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.2	97.7	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A110636

Included Lab Sample IDs: 2305639, 2305642

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.9	96.6	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A110644

Included Lab Sample IDs: 2305639

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.1	99.5	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	
DEP SOP: NU-094-1	Color (true)	100				0.399	
EPA 180.1 Rev. 2.0	Turbidity	97.4				6.64	
EPA 200.7 Rev. 4.4	Calcium	105					0.913
	Iron	107	107	108			0.813
	Magnesium	102					1.85
	Strontium	102					1.29
	Tin	107	90.8	80.0			12.7
	Titanium	104	102	102			0.0516
	Vanadium	96.2	98.8	99.0			0.252
	Zinc	102	99.8	100			0.533
EPA 200.8 Rev. 5.4	Aluminum	99.8	99.3	97.7			1.67
	Antimony	98.5	103	102			1.28
	Arsenic	97.9	108	108			0.768
	Beryllium	94.0	99.0	99.5			0.505
	Cadmium	97.1	98.5	97.5			1.10
	Chromium	96.2	101	100			0.556
	Cobalt	96.7	105	105			0.334
	Copper	94.1	97.1	95.2			1.96
	Lead	94.4	99.3	98.3			0.989
	Manganese	96.6	98.7	97.7			0.982
	Molybdenum	97.3	109	110			0.800
	Nickel	96.5	106	103			2.47
	Selenium	97.4	79.4	78.5			1.20
	Silver	97.7	91.3	91.0			0.359
	Thallium	97.3	102	103			0.959
EPA 300.0 Rev. 2.1	Chloride	98.1	95.6	99.0		1.29	
	Sulfate	99.4	97.8	98.7		2.70	
EPA 350.1 Rev. 2.0	Ammonia-N	96.8	97.6	100			1.94
	Ammonia-N	97.4	97.0	98.4			0.905
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	97.2	103	102			0.796
	Kjeldahl Nitrogen	102	102	94.3			6.30
EPA 353.2 Rev. 2.0	NO2NO3-N	102	103	103			0.0
	NO2NO3-N	100	102	101			0.494
EPA 365.1 Rev. 2.0	Total-P	105	101	103			2.58
	Total-P	106	107	110			2.30
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	93.0	95.2			2.10
	O-Phosphate-P	98.8	100	102			1.38
SM 2320 B-2011	Total Alkalinity	98.3				0.139	
	Total Alkalinity	98.8				0.976	
SM 2540 C-2011	TDS					4.41	
SM 4500 F-C-2011	Fluoride	98.8	98.8	98.1			0.477
	Fluoride	96.8	97.6	98.3			0.476
SM 5310 B-2011	Organic Carbon	96.0	95.7	97.5			1.34

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2305638
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2305638, 2305641
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2305654
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2305654

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2305638
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2305638
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2305639, 2305642
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2305639, 2305642
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2305639, 2305642
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2305639, 2305642
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2305640, 2305643
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2305638, 2305641
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2305638
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2305638, 2305641
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2305638, 2305641
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2305639, 2305642

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	02/15/2022			02/15/2022 15:53	Samantha L Bates	2305638
EPA 180.1 Rev. 2.0	02/15/2022			02/15/2022 15:32	Khloe J Berg	2305638
	02/15/2022			02/15/2022 15:34	Khloe J Berg	2305641
EPA 200.7 Rev. 4.4	02/15/2022	02/21/2022 09:55	Megan Whitefoot	02/21/2022 23:18	Josef B Mick	2305654
	02/15/2022	02/21/2022 09:55	Megan Whitefoot	02/21/2022 23:26	Josef B Mick	2305654
EPA 200.8 Rev. 5.4	02/15/2022	02/21/2022 09:55	Megan Whitefoot	02/22/2022 06:16	Alexander Thompson	2305654
EPA 300.0 Rev. 2.1	02/15/2022			02/22/2022 14:20	Roberta Tatti	2305638
EPA 350.1 Rev. 2.0	02/15/2022			02/24/2022 12:38	Ping Hua	2305642
	02/15/2022			02/25/2022 15:22	Ping Hua	2305639
EPA 351.2 Rev. 2.0	02/15/2022	02/17/2022 14:14	Samantha L Bates	02/18/2022 16:01	Alexandra J Mattheus	2305642
	02/15/2022	02/17/2022 14:14	Samantha L Bates	02/18/2022 16:18	Alexandra J Mattheus	2305639
EPA 353.2 Rev. 2.0	02/15/2022			02/21/2022 13:03	Beverly Y. Sanders	2305642
	02/15/2022			02/23/2022 09:07	Beverly Y. Sanders	2305639
EPA 365.1 Rev. 2.0	02/15/2022	02/17/2022 14:00	Simonne.V. Calhoun	02/18/2022 13:38	Shengyu Ding	2305639
	02/15/2022	02/17/2022 14:00	Simonne.V. Calhoun	02/22/2022 16:38	Sarah A Nixon	2305642
EPA 365.1 Rev. 2.0 dissolved	02/15/2022			02/15/2022 14:53	James L Waggeberby	2305640
	02/15/2022			02/15/2022 15:19	James L Waggeberby	2305643
SM 2320 B-2011	02/15/2022			02/16/2022 19:28	Dale L. Simmons	2305638
	02/15/2022			02/18/2022 08:08	Dale L. Simmons	2305641
SM 2540 C-2011	02/15/2022			02/16/2022 15:36	Yijie Li	2305638
SM 2540 D-2011	02/15/2022			02/16/2022 15:36	Yijie Li	2305638, 2305641
SM 4500 F-C-2011	02/15/2022			02/16/2022 19:28	Dale L. Simmons	2305638
	02/15/2022			02/18/2022 05:05	Dale L. Simmons	2305641
SM 5310 B-2011	02/15/2022			02/25/2022 13:25	Touraj Touran	2305639
	02/15/2022			02/25/2022 13:39	Touraj Touran	2305642