

Chemical Analysis Report

CEN-DIST-2022-10-14-01

Florida DEP Laboratory
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DOH Accreditation E31780

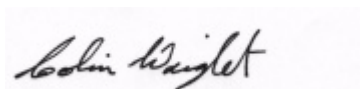
Event Description: **Lakes: Florida, Ellen, Alma + Blank**
Request ID: **RQ-2022-10-10-17**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Certified by: Colin Wright, Program Administrator

Date Certified: 04-NOV-2022 12:53



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: Lake Florida @ Center of Lake

Collection Date/Time: 10/13/2022 12:24

Field ID: G2CE0150

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2362621	DEP SOP: NU-094-1	Color (true)	91		PCU	P420944	
	EPA 180.1 Rev. 2.0	Turbidity	2.4	A	NTU	P420949	
	EPA 300.0 Rev. 2.1	Chloride	8.9	A	mg Cl/L	P421516	
		Sulfate	4.8	A	mg SO4/L	P421521	
	SM 2320 B-2011	Total Alkalinity	47		mg CaCO3/L	P421169	
	SM 2540 C-2015	TDS	87		mg/L	P421545	
	SM 2540 D-2015	TSS	5	I	mg/L	P421494	
	SM 4500-F- C-2011	Fluoride	0.056	I	mg F/L	P421551	
2362622	EPA 350.1 Rev. 2.0	Ammonia-N	0.005	I	mg N/L	P421338	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.91		mg N/L	P421285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P420971	
	EPA 365.1 Rev. 2.0	Total-P	0.12		mg P/L	P421058	
	SM 5310 B-2011	Organic Carbon	11		mg C/L	P421130	
2362623	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.046		mg P/L	P420942	

Sample Location: FB

Collection Date/Time: 10/13/2022 12:40

Field ID: FB_10132022

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2362626	DEP SOP: NU-094-1	Color (true)	2.5	U	PCU	P420945	
	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P420949	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P421516	
		Sulfate	0.20	U	mg SO4/L	P421521	
	SM 2320 B-2011	Total Alkalinity	0.65	U	mg CaCO3/L	P421169	
	SM 2540 C-2015	TDS	15	U	mg/L	P421545	
	SM 2540 D-2015	TSS	2	U	mg/L	P421494	
	SM 4500-F- C-2011	Fluoride	0.035	U	mg F/L	P421551	
2362627	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P421338	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P421285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P420971	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P421058	
	SM 5310 B-2011	Organic Carbon	0.50	U	mg C/L	P421130	
2362628	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P420941	

Sample Location: Lake Ellen @ Center

Collection Date/Time: 10/13/2022 10:56

Field ID: G2CE0060

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2362624	DEP SOP: NU-094-1	Color (true)	28	A	PCU	P420945	
	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P420949	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P421516	
		Sulfate	11		mg SO4/L	P421521	
	SM 2320 B-2011	Total Alkalinity	6.8		mg CaCO3/L	P421169	
	SM 2540 C-2015	TDS	52		mg/L	P421545	
	SM 2540 D-2015	TSS	7	I	mg/L	P421494	
2362625	SM 4500-F- C-2011	Fluoride	0.053	I	mg F/L	P421551	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P421338	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.75		mg N/L	P421285	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P420971	
	EPA 365.1 Rev. 2.0	Total-P	0.034		mg P/L	P421058	
2362631	SM 5310 B-2011	Organic Carbon	8.0		mg C/L	P421130	
	EPA 200.7 Rev. 4.4	Calcium	4.35		mg/L	P420973	
		Iron	35	I	ug/L	P420973	
		Magnesium	2.09		mg/L	P420973	
		Potassium	2.8		mg/L	P420973	
		Sodium	8.4		mg/L	P420973	
		Strontium	20.7		ug/L	P420973	
		Tin	3.0	U	ug/L	P420973	
		Titanium	1.1	I	ug/L	P420973	
		Vanadium	2.0	U	ug/L	P420973	
		Zinc	5.6	I	ug/L	P420973	
		Aluminum	52		ug/L	P420973	
		Antimony	0.11	I	ug/L	P420973	
		Arsenic	1.89		ug/L	P420973	
		Barium	2.20		ug/L	P420973	
		Beryllium	0.010	U	ug/L	P420973	
		Boron	37.6		ug/L	P420973	
		Cadmium	0.020	U	ug/L	P420973	
		Chromium	0.40	U	ug/L	P420973	
		Cobalt	0.033	I	ug/L	P420973	
		Copper	1.25		ug/L	P420973	
		Lead	0.21	I	ug/L	P420973	
		Manganese	6.57		ug/L	P420973	
		Molybdenum	0.15	U	ug/L	P420973	
		Nickel	0.50	U	ug/L	P420973	
		Selenium	0.20	U	ug/L	P420973	
		Silver	0.010	U	ug/L	P420973	
		Thallium	0.10	U	ug/L	P420973	
	SM 2340 B-2011	Hardness	19.5		mg/L	P420973	

Quality Assurance Report

Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P420944

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P420945

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420949

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420973

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
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: P420973

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	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
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

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421516

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421521

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421338

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421285

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420971

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421058

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420941

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420942

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

Reference Method: SM 2320 B-2011
Batch ID: P421169

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

Quality Assurance Report

Method Blank Results

Reference Method: SM 2540 C-2015
Batch ID: P421545

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P421494

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P421551

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P421130

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: P420944

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.9		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P420945

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	97.6		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420949

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420973

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	106		P	85 - 115
Iron	107		P	85 - 115
Magnesium	102		P	85 - 115
Potassium	106		P	85 - 115
Sodium	105		P	85 - 115
Strontium	105		P	85 - 115
Tin	104		P	85 - 115
Titanium	102		P	85 - 115
Vanadium	101		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420973

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.4		P	85 - 115
Antimony	101		P	85 - 115
Arsenic	101		P	85 - 115
Barium	104		P	85 - 115
Beryllium	92.5		P	85 - 115
Boron	100		P	85 - 115
Cadmium	98.4		P	85 - 115
Chromium	99.6		P	85 - 115
Cobalt	99.1		P	85 - 115
Copper	99.0		P	85 - 115
Lead	95.1		P	85 - 115
Manganese	101		P	85 - 115
Molybdenum	98.7		P	85 - 115
Nickel	98.4		P	85 - 115
Selenium	97.2		P	85 - 115
Silver	101		P	85 - 115
Thallium	94.7		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421516

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421521

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421338

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421285

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420971

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: P421058

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: P420941

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420942

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

Reference Method: SM 2320 B-2011
Batch ID: P421169

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	94 - 106

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 2540 C-2015
Batch ID: P421545

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

Reference Method: SM 2540 D-2015
Batch ID: P421494

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	91.1		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P421551

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.6		P	96 - 104

Reference Method: SM 5310 B-2011
Batch ID: P421130

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P420973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362298	Calcium	101		P	80 - 120
2362298	Iron	108	108	P/P	80 - 120
2362298	Magnesium	104	115	P/P	80 - 120
2362298	Potassium	103	103	P/P	80 - 120
2362298	Sodium	103		P	80 - 120
2362298	Strontium	104	103	P/P	80 - 120
2362298	Tin	104	105	P/P	80 - 120
2362298	Titanium	104	103	P/P	80 - 120
2362298	Vanadium	105	104	P/P	80 - 120
2362298	Zinc	102	101	P/P	80 - 120
2362688	Calcium	104		P	80 - 120
2362688	Iron	104		P	80 - 120
2362688	Magnesium	105		P	80 - 120
2362688	Potassium	102		P	80 - 120
2362688	Sodium	106		P	80 - 120
2362688	Strontium	103		P	80 - 120
2362688	Tin	104		P	80 - 120
2362688	Titanium	101		P	80 - 120
2362688	Vanadium	101		P	80 - 120
2362688	Zinc	101		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P420973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362298	Aluminum	97.1	98.0	P/P	80 - 120
2362298	Antimony	102	103	P/P	80 - 120
2362298	Arsenic	100	102	P/P	80 - 120
2362298	Barium	103	104	P/P	80 - 120
2362298	Beryllium	88.9	86.7	P/P	80 - 120
2362298	Boron	104	107	P/P	80 - 120
2362298	Cadmium	96.4	99.4	P/P	80 - 120
2362298	Chromium	101	102	P/P	80 - 120
2362298	Cobalt	96.6	97.4	P/P	80 - 120
2362298	Copper	90.8	93.0	P/P	80 - 120
2362298	Lead	94.5	95.4	P/P	80 - 120
2362298	Manganese	99.7	100	P/P	80 - 120
2362298	Molybdenum	89.9	109	P/P	80 - 120
2362298	Nickel	94.4	96.3	P/P	80 - 120
2362298	Selenium	93.7	95.2	P/P	80 - 120
2362298	Silver	99.7	100	P/P	80 - 120
2362298	Thallium	95.4	98.9	P/P	80 - 120
2362688	Aluminum	99.5		P	80 - 120
2362688	Antimony	103		P	80 - 120
2362688	Arsenic	102		P	80 - 120
2362688	Barium	105		P	80 - 120
2362688	Beryllium	88.2		P	80 - 120
2362688	Boron	105		P	80 - 120
2362688	Cadmium	102		P	80 - 120
2362688	Chromium	100		P	80 - 120
2362688	Cobalt	98.4		P	80 - 120
2362688	Copper	98.5		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362688	Lead	96.7		P	80 - 120
2362688	Manganese	101		P	80 - 120
2362688	Molybdenum	98.9		P	80 - 120
2362688	Nickel	97.9		P	80 - 120
2362688	Selenium	95.6		P	80 - 120
2362688	Silver	102		P	80 - 120
2362688	Thallium	94.1		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421516

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362621	Chloride	101		P	90 - 110
2362794	Chloride	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421521

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362621	Sulfate	102		P	90 - 110
2362794	Sulfate	102		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421338

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362749	Ammonia-N	106	110	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421285

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362625	Kjeldahl Nitrogen	97.4	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420971

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362622	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421058

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362625	Total-P	107	108	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420941

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362410	O-Phosphate-P	100	98.3	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420942

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362544	O-Phosphate-P	99.3	99.1	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P421551

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362782	Fluoride	96.9	97.5	P/P	94 - 104

Reference Method: SM 5310 B-2011
Batch ID: P421130

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2362862	Organic Carbon	102	101	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P420944

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362549	Color (true)	2.62	Sample	P	0 - 20

Reference Method: DEP SOP: NU-094-1
Batch ID: P420945

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362624	Color (true)	0.537	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P420949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362621	Turbidity	0.823	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P420973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362298	Calcium	0.844	Spike	P	0 - 20
2362298	Iron	0.442	Spike	P	0 - 20
2362298	Magnesium	1.43	Spike	P	0 - 20
2362298	Potassium	0.217	Spike	P	0 - 20
2362298	Sodium	0.475	Spike	P	0 - 20
2362298	Strontium	0.188	Spike	P	0 - 20
2362298	Tin	1.37	Spike	P	0 - 20
2362298	Titanium	0.951	Spike	P	0 - 20
2362298	Vanadium	0.962	Spike	P	0 - 20
2362298	Zinc	0.559	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362298	Aluminum	0.910	Spike	P	0 - 20
2362298	Antimony	1.48	Spike	P	0 - 20
2362298	Arsenic	1.09	Spike	P	0 - 20
2362298	Barium	0.932	Spike	P	0 - 20
2362298	Beryllium	2.50	Spike	P	0 - 20
2362298	Boron	1.97	Spike	P	0 - 20
2362298	Cadmium	0.845	Spike	P	0 - 20
2362298	Chromium	0.979	Spike	P	0 - 20
2362298	Cobalt	0.817	Spike	P	0 - 20
2362298	Copper	1.83	Spike	P	0 - 20
2362298	Lead	0.894	Spike	P	0 - 20
2362298	Manganese	0.396	Spike	P	0 - 20
2362298	Molybdenum	1.45	Spike	P	0 - 20
2362298	Nickel	1.71	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P420973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362298	Selenium	1.57	Spike	P	0 - 20
2362298	Silver	0.299	Spike	P	0 - 20
2362298	Thallium	3.45	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421516

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362621	Chloride	0.0586	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P421521

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362621	Sulfate	0.320	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421338

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362749	Ammonia-N	3.37	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362625	Kjeldahl Nitrogen	5.61	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P420971

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362622	NO2NO3-N	0.990	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362625	Total-P	1.37	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420941

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420941

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362410	O-Phosphate-P	1.68	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P420942

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362544	O-Phosphate-P	0.202	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P421169

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362782	Total Alkalinity	0.791	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P421545

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362934	TDS	3.92	Sample	P	0 - 10

Reference Method: SM 2540 D-2015
Batch ID: P421494

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362934	TSS	6.45	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P421551

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362782	Fluoride	0.477	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P421130

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2362862	Organic Carbon	0.606	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: A115323

Included Lab Sample IDs: 2362623, 2362628

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	98.4	P/P	90 - 110
O-Phosphate-P	99.2	100	P/P	90 - 110

Reference Method: DEP SOP: NU-094-1

Run ID: A115325

Included Lab Sample IDs: 2362621, 2362624, 2362626

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	98.7	P/P	90 - 110
Color (true)	98.7	96.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A115326

Included Lab Sample IDs: 2362621, 2362624, 2362626

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A115338

Included Lab Sample IDs: 2362622, 2362625, 2362627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	100	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A115376

Included Lab Sample IDs: 2362631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	98.7	99.3	P/P	90 - 110
Antimony	100	100	P/P	90 - 110
Arsenic	101	101	P/P	90 - 110
Barium	100	101	P/P	90 - 110
Beryllium	95.1	94.7	P/P	90 - 110
Boron	100	101	P/P	90 - 110
Cadmium	101	102	P/P	90 - 110
Chromium	98.2	99.3	P/P	90 - 110
Cobalt	97.4	98.2	P/P	90 - 110
Copper	96.6	97.5	P/P	90 - 110
Lead	94.6	94.5	P/P	90 - 110
Manganese	97.5	99.0	P/P	90 - 110
Molybdenum	99.6	99.7	P/P	90 - 110
Nickel	97.3	97.9	P/P	90 - 110
Selenium	100	102	P/P	90 - 110
Silver	99.2	99.9	P/P	90 - 110
Thallium	100	97.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115377

Included Lab Sample IDs: 2362631

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115404

Included Lab Sample IDs: 2362631

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	96.6	99.7	P/P	95 - 105

Reference Method: SM 5310 B-2011

Run ID: A115411

Included Lab Sample IDs: 2362622, 2362625, 2362627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.2	100	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A115421

Included Lab Sample IDs: 2362621, 2362624, 2362626

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	94.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115428

Included Lab Sample IDs: 2362622

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115435

Included Lab Sample IDs: 2362625, 2362627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	100	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A115485

Included Lab Sample IDs: 2362622, 2362625, 2362627

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 351.2 Rev. 2.0

Run ID: A115503

Included Lab Sample IDs: 2362622, 2362625, 2362627

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.9	103	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A115558

Included Lab Sample IDs: 2362621, 2362624, 2362626

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	98.6	P/P	90 - 110
Sulfate	102	99.5	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A115574

Included Lab Sample IDs: 2362621, 2362624, 2362626

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	104	103	P/P	90 - 110
Fluoride	104	104	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)	97.9					2.62	
	Color (true)	97.6					0.537	
EPA 180.1 Rev. 2.0	Turbidity	101					0.823	
EPA 200.7 Rev. 4.4	Calcium	106	101	104				0.844
	Iron	107	108	108	104			0.442
	Magnesium	102	104	115	105			1.43
	Potassium	106	103	103	102			0.217
	Sodium	105	103	106				0.475
	Strontium	105	104	103	103			0.188
	Tin	104	104	105	104			1.37
	Titanium	102	104	103	101			0.951
	Vanadium	101	105	104	101			0.962
	Zinc	101	102	101	101			0.559
EPA 200.8 Rev. 5.4	Aluminum	97.4	97.1	98.0	99.5			0.910
	Antimony	101	102	103	103			1.48
	Arsenic	101	100	102	102			1.09
	Barium	104	103	104	105			0.932
	Beryllium	92.5	88.9	86.7	88.2			2.50
	Boron	100	104	107	105			1.97
	Cadmium	98.4	96.4	99.4	102			0.845
	Chromium	99.6	101	102	100			0.979
	Cobalt	99.1	96.6	97.4	98.4			0.817
	Copper	99.0	90.8	93.0	98.5			1.83
	Lead	95.1	94.5	95.4	96.7			0.894
	Manganese	101	99.7	100	101			0.396
	Molybdenum	98.7	89.9	109	98.9			1.45
	Nickel	98.4	94.4	96.3	97.9			1.71
	Selenium	97.2	93.7	95.2	95.6			1.57
	Silver	101	99.7	100	102			0.299
	Thallium	94.7	95.4	98.9	94.1			3.45
EPA 300.0 Rev. 2.1	Chloride	103	101	101			0.0586	
	Sulfate	104	102	102			0.320	
EPA 350.1 Rev. 2.0	Ammonia-N	96.8	106	110				3.37
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	97.4	105				5.61
EPA 353.2 Rev. 2.0	NO2NO3-N	100	100	102				0.990
EPA 365.1 Rev. 2.0	Total-P	108	107	108				1.37
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	100	98.3				1.68
	O-Phosphate-P	102	99.3	99.1				0.202
SM 2320 B-2011	Total Alkalinity	101					0.791	
SM 2540 C-2015	TDS	102					3.92	
SM 2540 D-2015	TSS	91.1					6.45	
SM 4500-F- C-2011	Fluoride	98.6	96.9	97.5				0.477
SM 5310 B-2011	Organic Carbon	101	102	101				0.606

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2362621, 2362624, 2362626
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2362621, 2362624, 2362626
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2362631
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2362631

Reference Method Descriptions

Method	Description	Associated Samples
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2362621, 2362624, 2362626
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2362621, 2362624, 2362626
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2362622, 2362625, 2362627
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2362622, 2362625, 2362627
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2362622, 2362625, 2362627
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2362622, 2362625, 2362627
EPA 365.1 Rev. 2.0 dissolved	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2362623, 2362628
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2362621, 2362624, 2362626
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2362631
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2362621, 2362624, 2362626
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2362621, 2362624, 2362626
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2362621, 2362624, 2362626
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2362622, 2362625, 2362627

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	10/14/2022			10/14/2022 15:14	Blanca Fach	2362621
	10/14/2022			10/14/2022 15:17	Blanca Fach	2362624
	10/14/2022			10/14/2022 15:18	Blanca Fach	2362626
EPA 180.1 Rev. 2.0	10/14/2022			10/14/2022 13:03	Chandler E Cox	2362621
	10/14/2022			10/14/2022 13:06	Chandler E Cox	2362624
	10/14/2022			10/14/2022 13:08	Chandler E Cox	2362626
EPA 200.7 Rev. 4.4	10/14/2022	10/17/2022 11:55	George D Taylor	10/18/2022 17:20	McKinley C Carter	2362631
	10/14/2022	10/17/2022 11:55	George D Taylor	10/19/2022 13:27	McKinley C Carter	2362631
EPA 200.8 Rev. 5.4	10/14/2022	10/17/2022 11:55	George D Taylor	10/18/2022 21:35	Megan Whitefoot	2362631
EPA 300.0 Rev. 2.1	10/14/2022			10/26/2022 06:22	Anna M. Plaviak	2362621
	10/14/2022			10/26/2022 07:23	Anna M. Plaviak	2362624
	10/14/2022			10/26/2022 07:38	Anna M. Plaviak	2362626
EPA 350.1 Rev. 2.0	10/14/2022			10/24/2022 16:42	Judith K. Clark	2362622
	10/14/2022			10/24/2022 16:43	Judith K. Clark	2362625
	10/14/2022			10/24/2022 16:44	Judith K. Clark	2362627
EPA 351.2 Rev. 2.0	10/14/2022	10/24/2022 14:48	Samantha L Bates	10/25/2022 10:44	Samantha L Bates	2362622
	10/14/2022	10/24/2022 14:48	Samantha L Bates	10/25/2022 10:45	Samantha L Bates	2362625
	10/14/2022	10/24/2022 14:48	Samantha L Bates	10/25/2022 10:50	Samantha L Bates	2362627
EPA 353.2 Rev. 2.0	10/14/2022			10/17/2022 10:10	Beverly Y. Sanders	2362622
	10/14/2022			10/17/2022 10:20	Beverly Y. Sanders	2362625
	10/14/2022			10/17/2022 10:21	Beverly Y. Sanders	2362627
EPA 365.1 Rev. 2.0	10/14/2022	10/19/2022 14:47	Adam P Silver	10/20/2022 12:25	Simonne.V. Calhoun	2362622
	10/14/2022	10/19/2022 14:47	Adam P Silver	10/20/2022 15:32	Simonne.V. Calhoun	2362627
	10/14/2022	10/19/2022 14:47	Adam P Silver	10/20/2022 15:33	Simonne.V. Calhoun	2362625
EPA 365.1 Rev. 2.0 dissolved	10/14/2022			10/14/2022 14:54	Elise M. Gillis	2362628
	10/14/2022			10/14/2022 15:13	Elise M. Gillis	2362623
SM 2320 B-2011	10/14/2022			10/20/2022 04:13	Dale L. Simmons	2362621
	10/14/2022			10/20/2022 04:25	Dale L. Simmons	2362624
	10/14/2022			10/20/2022 04:34	Dale L. Simmons	2362626
SM 2340 B-2011	10/14/2022			10/18/2022 17:20	McKinley C Carter	2362631
SM 2540 C-2015	10/14/2022			10/19/2022 16:26	Yijie Li	2362621, 2362624, 2362626
SM 2540 D-2015	10/14/2022			10/19/2022 16:26	Yijie Li	2362621, 2362624, 2362626
SM 4500-F- C-2011	10/14/2022			10/26/2022 23:43	Dale L. Simmons	2362621
	10/14/2022			10/27/2022 00:19	Dale L. Simmons	2362624
	10/14/2022			10/27/2022 00:24	Dale L. Simmons	2362626
SM 5310 B-2011	10/14/2022			10/20/2022 02:16	Khloe J Berg	2362622
	10/14/2022			10/20/2022 02:30	Khloe J Berg	2362625
	10/14/2022			10/20/2022 02:43	Khloe J Berg	2362627