

Chemical Analysis Report

CEN-DIST-2022-10-25-01

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Lakes Condell and Downey**
Request ID: **RQ-2022-10-24-21**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
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Date Certified: 16-NOV-2022 09:48



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 Condel @ Center

Collection Date/Time: 10/24/2022 11:10

Field ID: G4CE0177

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2364756	DEP SOP: NU-094-1	Color (true)	18		PCU	P421385	
	EPA 180.1 Rev. 2.0	Turbidity	5.7		NTU	P421381	
	EPA 300.0 Rev. 2.1	Chloride	21		mg Cl/L	P422013	
		Sulfate	19		mg SO4/L	P422017	
	SM 2320 B-2011	Total Alkalinity	60		mg CaCO3/L	P421549	
	SM 2540 C-2015	TDS	136	A	mg/L	P421908	
	SM 2540 D-2015	TSS	9	IA	mg/L	P421851	
2364757	SM 4500-F- C-2011	Fluoride	0.043	I	mg F/L	P421550	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P421955	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.1		mg N/L	P421638	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P421676	
	EPA 365.1 Rev. 2.0	Total-P	0.086		mg P/L	P421508	
2364760	SM 5310 B-2011	Organic Carbon	6.7		mg C/L	P421635	
	EPA 200.7 Rev. 4.4	Calcium	24.0		mg/L	P421431	
		Iron	36	I	ug/L	P421431	
		Magnesium	3.10		mg/L	P421431	
		Potassium	2.6		mg/L	P421431	
		Sodium	13.2		mg/L	P421431	
		Strontium	58.4		ug/L	P421431	
		Tin	3.0	U	ug/L	P421431	
		Titanium	0.86	I	ug/L	P421431	
		Vanadium	2.0	U	ug/L	P421431	
		Zinc	5.0	U	ug/L	P421431	
		Aluminum	49		ug/L	P421431	
		Antimony	0.10	I	ug/L	P421431	
		Arsenic	1.08		ug/L	P421431	
		Barium	11.6		ug/L	P421431	
		Beryllium	0.010	U	ug/L	P421431	
		Boron	66.5		ug/L	P421431	
	EPA 200.8 Rev. 5.4	Cadmium	0.020	U	ug/L	P421431	
		Chromium	0.40	U	ug/L	P421431	MS
		Cobalt	0.051	I	ug/L	P421431	
		Copper	0.45	I	ug/L	P421431	
		Lead	0.34	I	ug/L	P421431	
		Manganese	16.0		ug/L	P421431	
		Molybdenum	0.26	I	ug/L	P421431	
		Nickel	0.50	U	ug/L	P421431	
		Selenium	0.20	U	ug/L	P421431	
		Silver	0.010	U	ug/L	P421431	
		Thallium	0.10	U	ug/L	P421431	
	SM 2340 B-2011	Hardness	72.6		mg/L	P421431	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P421385

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P421381

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P421431

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: P421431

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422013

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422017

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421955

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421638

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421676

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421508

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

Reference Method: SM 2320 B-2011
Batch ID: P421549

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

Reference Method: SM 2540 C-2015
Batch ID: P421908

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P421851

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P421550

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report

Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P421635

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: P421385

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	91.9		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P421381

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P421431

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	90.8		P	85 - 115
Iron	103		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	97.9		P	85 - 115
Sodium	88.9		P	85 - 115
Strontium	102		P	85 - 115
Tin	97.9		P	85 - 115
Titanium	97.2		P	85 - 115
Vanadium	97.1		P	85 - 115
Zinc	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P421431

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	100		P	85 - 115
Antimony	103		P	85 - 115
Arsenic	104		P	85 - 115
Barium	104		P	85 - 115
Beryllium	94.6		P	85 - 115
Boron	107		P	85 - 115
Cadmium	98.4		P	85 - 115
Chromium	98.9		P	85 - 115
Cobalt	100		P	85 - 115
Copper	99.2		P	85 - 115
Lead	95.4		P	85 - 115
Manganese	99.6		P	85 - 115
Molybdenum	98.4		P	85 - 115
Nickel	99.5		P	85 - 115
Selenium	99.2		P	85 - 115
Silver	101		P	85 - 115
Thallium	100		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422013

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422017

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421955

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421638

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421676

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421508

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

Reference Method: SM 2320 B-2011
Batch ID: P421549

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	96.9		P	94 - 106

Reference Method: SM 2540 C-2015
Batch ID: P421908

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

Reference Method: SM 2540 D-2015
Batch ID: P421851

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	91.9		P	85 - 106

Reference Method: SM 4500-F- C-2011
Batch ID: P421550

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	96 - 104

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P421635

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	97.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P421431

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364053	Calcium	99.2		P	80 - 120
2364053	Iron	104	115	P/P	80 - 120
2364053	Magnesium	104	104	P/P	80 - 120
2364053	Potassium	97.0	95.8	P/P	80 - 120
2364053	Sodium	96.0		P	80 - 120
2364053	Strontium	99.9	101	P/P	80 - 120
2364053	Tin	99.8	96.4	P/P	80 - 120
2364053	Titanium	100	96.6	P/P	80 - 120
2364053	Vanadium	101	96.2	P/P	80 - 120
2364053	Zinc	100	95.9	P/P	80 - 120
2364475	Calcium	99.4		P	80 - 120
2364475	Iron	97.6		P	80 - 120
2364475	Magnesium	97.1		P	80 - 120
2364475	Potassium	96.5		P	80 - 120
2364475	Sodium	95.5		P	80 - 120
2364475	Strontium	101		P	80 - 120
2364475	Tin	96.6		P	80 - 120
2364475	Titanium	92.9		P	80 - 120
2364475	Vanadium	97.4		P	80 - 120
2364475	Zinc	94.7		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P421431

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364053	Aluminum	102	99.5	P/P	80 - 120
2364053	Antimony	105	104	P/P	80 - 120
2364053	Arsenic	105	104	P/P	80 - 120
2364053	Barium	106	105	P/P	80 - 120
2364053	Beryllium	95.1	94.7	P/P	80 - 120
2364053	Boron	108	106	P/P	80 - 120
2364053	Cadmium	103	100	P/P	80 - 120
2364053	Chromium	81.2	80.0	P/F	80 - 120
2364053	Cobalt	101	99.7	P/P	80 - 120
2364053	Copper	103	103	P/P	80 - 120
2364053	Lead	96.7	94.6	P/P	80 - 120
2364053	Manganese	101	98.4	P/P	80 - 120
2364053	Molybdenum	95.6	93.5	P/P	80 - 120
2364053	Nickel	86.2	86.3	P/P	80 - 120
2364053	Selenium	101	98.5	P/P	80 - 120
2364053	Silver	101	99.7	P/P	80 - 120
2364053	Thallium	101	100	P/P	80 - 120
2364475	Aluminum	100		P	80 - 120
2364475	Antimony	106		P	80 - 120
2364475	Arsenic	104		P	80 - 120
2364475	Barium	105		P	80 - 120
2364475	Beryllium	97.9		P	80 - 120
2364475	Boron	107		P	80 - 120
2364475	Cadmium	105		P	80 - 120
2364475	Chromium	101		P	80 - 120
2364475	Cobalt	101		P	80 - 120
2364475	Copper	103		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P421431

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364475	Lead	97.3		P	80 - 120
2364475	Manganese	100		P	80 - 120
2364475	Molybdenum	101		P	80 - 120
2364475	Nickel	101		P	80 - 120
2364475	Selenium	99.3		P	80 - 120
2364475	Silver	103		P	80 - 120
2364475	Thallium	103		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422013

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364857	Chloride	105		P	90 - 110
2365272	Chloride	107		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422017

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364857	Sulfate	107		P	90 - 110
2365272	Sulfate	109		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421955

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364757	Ammonia-N	100	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421638

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364726	Kjeldahl Nitrogen	99.3	107	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421676

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364757	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421508

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364858	Total-P	109	108	P/P	90 - 110

Reference Method: SM 4500-F- C-2011
Batch ID: P421550

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364738	Fluoride	98.1	97.3	P/P	94 - 104

Quality Assurance Report

Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P421635

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2364648	Organic Carbon	96.8	95.1	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P421385

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364700	Color (true)	0.685	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P421381

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364430	Turbidity	3.49	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P421431

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364053	Calcium	0.830	Spike	P	0 - 20
2364053	Iron	9.94	Spike	P	0 - 20
2364053	Magnesium	0.623	Spike	P	0 - 20
2364053	Potassium	0.873	Spike	P	0 - 20
2364053	Sodium	0.0307	Spike	P	0 - 20
2364053	Strontium	1.28	Spike	P	0 - 20
2364053	Tin	3.41	Spike	P	0 - 20
2364053	Titanium	3.94	Spike	P	0 - 20
2364053	Vanadium	4.36	Spike	P	0 - 20
2364053	Zinc	4.60	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P421431

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364053	Aluminum	1.95	Spike	P	0 - 20
2364053	Antimony	0.781	Spike	P	0 - 20
2364053	Arsenic	0.878	Spike	P	0 - 20
2364053	Barium	0.499	Spike	P	0 - 20
2364053	Beryllium	0.337	Spike	P	0 - 20
2364053	Boron	2.15	Spike	P	0 - 20
2364053	Cadmium	2.61	Spike	P	0 - 20
2364053	Chromium	1.18	Spike	P	0 - 20
2364053	Cobalt	1.65	Spike	P	0 - 20
2364053	Copper	0.0517	Spike	P	0 - 20
2364053	Lead	2.05	Spike	P	0 - 20
2364053	Manganese	1.81	Spike	P	0 - 20
2364053	Molybdenum	2.04	Spike	P	0 - 20
2364053	Nickel	0.0258	Spike	P	0 - 20
2364053	Selenium	2.81	Spike	P	0 - 20
2364053	Silver	1.34	Spike	P	0 - 20
2364053	Thallium	0.861	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422013

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364857	Chloride	3.78	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P422017

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364857	Sulfate	3.95	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P421955

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364757	Ammonia-N	1.28	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P421638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364726	Kjeldahl Nitrogen	3.75	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P421676

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364757	NO2NO3-N	0.489	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P421508

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364858	Total-P	1.01	Spike	P	0 - 20

Reference Method: SM 2320 B-2011
Batch ID: P421549

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364738	Total Alkalinity	2.82	Sample	P	0 - 3.8

Reference Method: SM 2540 C-2015
Batch ID: P421908

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364756	TDS	5.88	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500-F- C-2011
Batch ID: P421550

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364738	Fluoride	0.490	Spike	P	0 - 1.6

Reference Method: SM 5310 B-2011
Batch ID: P421635

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2364648	Organic Carbon	1.06	Spike	P	0 - 20

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A115505

Included Lab Sample IDs: 2364756

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	98.0	98.0	P/P	95 - 105

Reference Method: DEP SOP: NU-094-1

Run ID: A115506

Included Lab Sample IDs: 2364756

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	94.8	94.5	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A115574

Included Lab Sample IDs: 2364756

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	96.1	103	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A115574

Included Lab Sample IDs: 2364756

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

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A115584

Included Lab Sample IDs: 2364760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	102	103	P/P	90 - 110
Antimony	103	104	P/P	90 - 110
Arsenic	104	104	P/P	90 - 110
Barium	101	102	P/P	90 - 110
Beryllium	100	99.0	P/P	90 - 110
Boron	106	105	P/P	90 - 110
Cadmium	104	105	P/P	90 - 110
Chromium	98.5	98.8	P/P	90 - 110
Cobalt	101	99.4	P/P	90 - 110
Copper	100	99.9	P/P	90 - 110
Lead	95.3	95.5	P/P	90 - 110
Manganese	97.9	99.3	P/P	90 - 110
Molybdenum	101	101	P/P	90 - 110
Nickel	100	99.0	P/P	90 - 110
Selenium	102	101	P/P	90 - 110
Silver	101	102	P/P	90 - 110
Thallium	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115600

Included Lab Sample IDs: 2364757

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

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A115600

Included Lab Sample IDs: 2364757

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.6	98.1	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A115617

Included Lab Sample IDs: 2364757

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A115630

Included Lab Sample IDs: 2364757

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A115675

Included Lab Sample IDs: 2364756

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	105	P/P	90 - 110
Sulfate	102	108	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A115698

Included Lab Sample IDs: 2364757

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	107	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A115748

Included Lab Sample IDs: 2364757

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.1	99.2	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115816

Included Lab Sample IDs: 2364760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	104	102	P/P	90 - 110
Iron	102	103	P/P	90 - 110
Magnesium	101	102	P/P	90 - 110
Potassium	99.0	99.9	P/P	90 - 110
Sodium	100	99.4	P/P	90 - 110
Strontium	105	102	P/P	90 - 110
Tin	103	104	P/P	90 - 110
Titanium	101	105	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A115816

Included Lab Sample IDs: 2364760

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Vanadium	103	100	P/P	90 - 110
Zinc	104	110	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
DEP SOP: NU-094-1	Color (true)	91.9				0.685	
EPA 180.1 Rev. 2.0	Turbidity	99.5				3.49	
EPA 200.7 Rev. 4.4	Calcium	90.8	99.2	99.4			0.830
	Iron	103	104	115	97.6		9.94
	Magnesium	103	104	104	97.1		0.623
	Potassium	97.9	97.0	95.8	96.5		0.873
	Sodium	88.9	96.0	95.5			0.0307
	Strontium	102	101	99.9	101		1.28
	Tin	97.9	99.8	96.4	96.6		3.41
	Titanium	97.2	100	96.6	92.9		3.94
	Vanadium	97.1	101	96.2	97.4		4.36
	Zinc	100	100	95.9	94.7		4.60
EPA 200.8 Rev. 5.4	Aluminum	100	102	99.5	100		1.95
	Antimony	103	105	104	106		0.781
	Arsenic	104	105	104	104		0.878
	Barium	104	106	105	105		0.499
	Beryllium	94.6	95.1	94.7	97.9		0.337
	Boron	107	108	106	107		2.15
	Cadmium	98.4	103	100	105		2.61
	Chromium	98.9	81.2	80.0	101		1.18
	Cobalt	100	101	99.7	101		1.65
	Copper	99.2	103	103	103		0.0517
	Lead	95.4	96.7	94.6	97.3		2.05
	Manganese	99.6	101	98.4	100		1.81
	Molybdenum	98.4	95.6	93.5	101		2.04
	Nickel	99.5	86.2	86.3	101		0.0258
	Selenium	99.2	101	98.5	99.3		2.81
	Silver	101	101	99.7	103		1.34
	Thallium	100	101	100	103		0.861
EPA 300.0 Rev. 2.1	Chloride	105	105	107		3.78	
	Sulfate	108	107	109		3.95	
EPA 350.1 Rev. 2.0	Ammonia-N	99.2	100	102			1.28
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	99.3	107			3.75
EPA 353.2 Rev. 2.0	NO2NO3-N	102	102	102			0.489
EPA 365.1 Rev. 2.0	Total-P	106	109	108			1.01
SM 2320 B-2011	Total Alkalinity	96.9				2.82	
SM 2540 C-2015	TDS	97.2				5.88	
SM 2540 D-2015	TSS	91.9					
SM 4500-F- C-2011	Fluoride	97.1	98.1	97.3			0.490
SM 5310 B-2011	Organic Carbon	97.4	96.8	95.1			1.06

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2364756
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2364756
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2364760
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2364760
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2364756
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2364756
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2364757

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2364757
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2364757
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2364757
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2364756
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2364760
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2364756
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2364756
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2364756
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2364757

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	10/25/2022			10/25/2022 14:58	Chandler E Cox	2364756
EPA 180.1 Rev. 2.0	10/25/2022			10/25/2022 14:21	Anna M. Plaviak	2364756
EPA 200.7 Rev. 4.4	10/25/2022	10/26/2022 11:30	George D Taylor	11/09/2022 00:55	McKinley C Carter	2364760
EPA 200.8 Rev. 5.4	10/25/2022	10/26/2022 11:30	George D Taylor	10/28/2022 02:14	Megan Whitefoot	2364760
EPA 300.0 Rev. 2.1	10/25/2022			11/05/2022 11:16	Anna M. Plaviak	2364756
EPA 350.1 Rev. 2.0	10/25/2022			11/04/2022 13:58	Ping Hua	2364757
EPA 351.2 Rev. 2.0	10/25/2022	10/31/2022 14:05	Samantha L Bates	11/02/2022 20:04	Samantha L Bates	2364757
EPA 353.2 Rev. 2.0	10/25/2022			10/31/2022 09:37	Beverly Y. Sanders	2364757
EPA 365.1 Rev. 2.0	10/25/2022	10/26/2022 13:59	Adam P Silver	10/28/2022 11:20	James L Waggerby	2364757
SM 2320 B-2011	10/25/2022			10/26/2022 22:30	Dale L. Simmons	2364756
SM 2340 B-2011	10/25/2022			11/09/2022 00:55	McKinley C Carter	2364760
SM 2540 C-2015	10/25/2022			10/26/2022 15:26	Yijie Li	2364756
SM 2540 D-2015	10/25/2022			10/26/2022 15:26	Yijie Li	2364756
SM 4500-F- C-2011	10/25/2022			10/26/2022 22:30	Dale L. Simmons	2364756
SM 5310 B-2011	10/25/2022			10/27/2022 19:46	Khloe J Berg	2364757