

Chemical Analysis Report

NW-DIST-2017-01-19-01

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

Event Description: **Perdido River WBID 1004D 462A 462C 784**
Request ID: **RQ-2017-01-09-46**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

For additional information please contact
Colin Wright, Ph.D.
Liang-Tsair Lin, Ph.D.
Thekkekalathil Chandrasekhar, PhD, QA Officer
Phone (850) 245-8085

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 14-FEB-2017 11:17



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 group are included in this report: 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 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: Perdidio River below Alligator Bayou

Collection Date/Time: 01/18/2017 11:55

Field ID: G5NW0017

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1864865	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P318441	
	SM 2320 B-97	Total Alkalinity	2.8		mg CaCO3/L	P318536	
	SM 2540 D-97	TSS	3	I	mg/L	P318759	
	SM 4500 F-C-97	Fluoride	0.040	I	mg F/L	P318538	
1864871	EPA 350.1 Rev. 2.0	Ammonia-N	0.012		mg N/L	P318475	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.41		mg N/L	P318462	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.22		mg N/L	P318879	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P318498	
	SM 5310 B-00	Organic Carbon	5.5		mg C/L	P318522	
1864877	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P318445	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Perdidio River at Mouth

Collection Date/Time: 01/18/2017 12:15

Field ID: G5NW0018

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1864866	EPA 180.1 Rev. 2.0	Turbidity	2.9		NTU	P318441	
	SM 2320 B-97	Total Alkalinity	1.0	I	mg CaCO3/L	P318536	
	SM 2540 D-97	TSS	3	I	mg/L	P318759	
	SM 4500 F-C-97	Fluoride	0.053	I	mg F/L	P318538	
1864872	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P318475	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29		mg N/L	P318462	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.24		mg N/L	P318879	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P318498	
	SM 5310 B-00	Organic Carbon	5.0		mg C/L	P318522	
1864878	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P318445	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Tee Lake Center

Collection Date/Time: 01/18/2017 12:30

Field ID: G5NW0035

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1864867	EPA 180.1 Rev. 2.0	Turbidity	6.6		NTU	P318441	
	SM 2320 B-97	Total Alkalinity	23		mg CaCO3/L	P318536	
	SM 2540 D-97	TSS	6	I	mg/L	P318759	
	SM 4500 F-C-97	Fluoride	0.094	I	mg F/L	P318538	
1864873	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P318475	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.50		mg N/L	P318462	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P318879	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P318498	
	SM 5310 B-00	Organic Carbon	8.6		mg C/L	P318522	

Field ID: G5NW0035

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1864879	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.006	I	mg P/L	P318445	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: Big Lagoon Hwy 292 ICW Bridge Esc Co

Collection Date/Time: 01/18/2017 13:55

Field ID: G5NW0121

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1864868	EPA 180.1 Rev. 2.0	Turbidity	2.6		NTU	P318441	
	SM 2320 B-97	Total Alkalinity	37	A	mg CaCO3/L	P318706	
	SM 2540 D-97	TSS	3	U	mg/L	P318760	
	SM 4500 F-C-97	Fluoride	0.34		mg F/L	P318707	
1864874	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P318477	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.43		mg N/L	P318461	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.046		mg N/L	P318768	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P318497	MS
	SM 5310 B-00	Organic Carbon	7.0		mg C/L	P318523	
1864880	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318447	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Big Lagoon State Park-Seagrass Station

Collection Date/Time: 01/18/2017 14:15

Field ID: G5NW0122

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1864869	EPA 180.1 Rev. 2.0	Turbidity	3.4		NTU	P318441	
	SM 2320 B-97	Total Alkalinity	45		mg CaCO3/L	P318706	
	SM 2540 D-97	TSS	3	U	mg/L	P318760	
	SM 4500 F-C-97	Fluoride	0.41		mg F/L	P318707	
1864875	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P318836	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P318461	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021		mg N/L	P318767	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P318497	MS
	SM 5310 B-00	Organic Carbon	6.6		mg C/L	P318523	
1864881	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318447	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: Big Lagoon State Park-Seagrass Station

Collection Date/Time: 01/18/2017 14:20

Field ID: G5NW0122DUPLICATE

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1864870	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P318441	
	SM 2320 B-97	Total Alkalinity	46		mg CaCO3/L	P318706	
	SM 2540 D-97	TSS	3	I	mg/L	P318760	
	SM 4500 F-C-97	Fluoride	0.41		mg F/L	P318707	

Field ID: G5NW0122DUPLICATE

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1864876	EPA 350.1 Rev. 2.0	Ammonia-N	0.006		mg N/L	P318477	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40	I	mg N/L	P318461	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.023		mg N/L	P318767	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P318497	MS
	SM 5310 B-00	Organic Carbon	6.4		mg C/L	P318523	
1864882	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	I	mg P/L	P318447	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Sample Location: FIELD BLANK

Collection Date/Time: 01/18/2017 14:25

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1864862	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P318441	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P318785	
		Sulfate	0.20	U	mg SO4/L	P318788	
		Color (true)	2.5	U	PCU	P318485	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P318536	
	SM 2540 C-97	TDS	15	U	mg/L	P319091	
	SM 2540 D-97	TSS	2	U	mg/L	P318757	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P318538	
1864863	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P318475	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P318462	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P318691	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P318498	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P318522	
1864864	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318445	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 350.1 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P318441

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P318785

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: P318788

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318475

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318477

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318836

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318461

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318462

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318691

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318767

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318768

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318879

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318497

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318498

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318445

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318447

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

Reference Method: SM 2120 B
Batch ID: P318485

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P318536

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

Reference Method: SM 2320 B-97
Batch ID: P318706

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

Reference Method: SM 2540 C-97
Batch ID: P319091

Component	Result	Code	Units
TDS	15	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
Batch ID: P318757

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318759

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318760

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P318538

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P318707

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P318522

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

Reference Method: SM 5310 B-00
Batch ID: P318523

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318785

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318788

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P318788

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P318475

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P318477

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P318836

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P318461

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P318462

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: P318691

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: P318767

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P318768

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318879

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: P318497

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	96.4		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318498

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	90.7		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318445

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: P318447

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

Reference Method: SM 2320 B-97
Batch ID: P318536

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 2320 B-97
Batch ID: P318706

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	104		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P318538

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.7		P	92 - 103

Reference Method: SM 4500 F-C-97
Batch ID: P318707

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.9		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P318522

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.0		P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P318523

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318785

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864627	Chloride	99.2		P	90 - 110
1864883	Chloride	98.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318788

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864627	Sulfate	93.8		P	90 - 110
1864883	Sulfate	94.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318477

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864874	Ammonia-N	94.0	93.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318836

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1866010	Ammonia-N	110	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318461

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864876	Kjeldahl Nitrogen	95.4	94.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318462

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864886	Kjeldahl Nitrogen	102	97.7	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318691

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865321	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318767

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864849	NO2NO3-N	105	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318768

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864874	NO2NO3-N	104	103	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318879

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864873	NO2NO3-N	98.5	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318497

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864850	Total-P	90.2	88.4	P/F	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318498

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864782	Total-P	94.2	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318445

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864878	O-Phosphate-P	98.3	99.7	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318447

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864880	O-Phosphate-P	105	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P318538

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864719	Fluoride	96.8	98.1	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P318707

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864868	Fluoride	95.9	96.5	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P318522

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864629	Organic Carbon	93.5	91.2	P/P	85 - 115

Reference Method: SM 5310 B-00
Batch ID: P318523

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1864849	Organic Carbon	96.9	94.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P318441

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864823	Turbidity	0.451	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318785

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864627	Chloride	0.0234	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318788

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864627	Sulfate	0.124	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318475

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864886	Ammonia-N	0.623	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318477

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864874	Ammonia-N	0.175	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318836

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1866010	Ammonia-N	4.89	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318461

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864876	Kjeldahl Nitrogen	0.747	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318462

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864886	Kjeldahl Nitrogen	2.74	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318691

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865321	NO2NO3-N	1.32	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318767

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864849	NO2NO3-N	0.957	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318768

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864874	NO2NO3-N	0.790	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318879

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864873	NO2NO3-N	1.48	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318497

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864850	Total-P	1.94	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318498

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864782	Total-P	2.29	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318445

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864878	O-Phosphate-P	1.36	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318447

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864880	O-Phosphate-P	1.83	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P318485

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864884	Color (true)	1.41	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P318536

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864719	Total Alkalinity	0.238	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P318706

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864868	Total Alkalinity	0.217	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P319091

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864883	TDS	2.11	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P318538

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864719	Fluoride	0.981	Spike	P	0 - 3.0

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-97
Batch ID: P318707

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864868	Fluoride	0.490	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P318522

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864629	Organic Carbon	1.49	Spike	P	0 - 20

Reference Method: SM 5310 B-00
Batch ID: P318523

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1864849	Organic Carbon	1.81	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A74008
Included Lab Sample IDs: 1864862, 1864865, 1864866, 1864867, 1864868, 1864869, 1864870

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A74009
Included Lab Sample IDs: 1864864, 1864877, 1864878, 1864879, 1864880, 1864881, 1864882

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	101	P/P	90 - 110
O-Phosphate-P	101	101	P/P	90 - 110
O-Phosphate-P	101	100	P/P	90 - 110
O-Phosphate-P	99.4	101	P/P	90 - 110
O-Phosphate-P	99.5	99.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A74012
Included Lab Sample IDs: 1864863, 1864871, 1864872, 1864873, 1864874, 1864876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	96.6	97.8	P/P	90 - 110
Ammonia-N	97.8	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B
Run ID: A74021
Included Lab Sample IDs: 1864862

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	99.3	98.9	P/P	85 - 115

Reference Method: SM 5310 B-00
Run ID: A74033
Included Lab Sample IDs: 1864863, 1864871, 1864872, 1864873, 1864874, 1864875, 1864876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.6	98.8	P/P	90 - 110
Organic Carbon	98.8	98.2	P/P	90 - 110

Reference Method: SM 2320 B-97
Run ID: A74037
Included Lab Sample IDs: 1864862, 1864865, 1864866, 1864867

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

Reference Method: SM 4500 F-C-97
Run ID: A74037
Included Lab Sample IDs: 1864862, 1864865, 1864866, 1864867

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

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A74045
Included Lab Sample IDs: 1864874, 1864875, 1864876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	101	105	P/P	90 - 110
Kjeldahl Nitrogen	102	106	P/P	90 - 110
Kjeldahl Nitrogen	103	101	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A74048
Included Lab Sample IDs: 1864863, 1864871, 1864872, 1864873

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.5	96.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A74087
Included Lab Sample IDs: 1864863, 1864871, 1864872, 1864873, 1864874, 1864875, 1864876

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	95.8	96.8	P/P	90 - 110
Total-P	96.8	95.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A74088

Included Lab Sample IDs: 1864862

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	101	P/P	90 - 110
Sulfate	98.4	96.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A74095

Included Lab Sample IDs: 1864863

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	97.5	96.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A74096

Included Lab Sample IDs: 1864868, 1864869, 1864870

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	104	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A74096

Included Lab Sample IDs: 1864868, 1864869, 1864870

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A74121

Included Lab Sample IDs: 1864874, 1864875, 1864876

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74141

Included Lab Sample IDs: 1864875

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A74147

Included Lab Sample IDs: 1864871, 1864872, 1864873

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	97.5	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		Precision	
					LCS	MS
EPA 180.1 Rev. 2.0	Turbidity				0.451	
EPA 300.0 Rev. 2.1	Chloride	101	99.2	98.5	0.0234	
	Sulfate	96.0	93.8	94.9	0.124	
EPA 350.1 Rev. 2.0	Ammonia-N	99.1				0.623
	Ammonia-N	101	94.0	93.8		0.175
	Ammonia-N	99.8	110	101		4.89
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	100	95.4	94.6		0.747
	Kjeldahl Nitrogen	102	102	97.7		2.74
EPA 353.2 Rev. 2.0	NO2NO3-N	102	103	102		1.32
	NO2NO3-N	104	105	104		0.957
	NO2NO3-N	103	104	103		0.790
	NO2NO3-N	102	98.5	101		1.48
EPA 365.1 Rev. 2.0	Total-P	96.4	90.2	88.4		1.94
	Total-P	90.7	94.2	96.6		2.29
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	98.3	99.7		1.36
	O-Phosphate-P	104	105	103		1.83
SM 2120 B	Color (true)				1.41	
SM 2320 B-97	Total Alkalinity	103			0.238	
	Total Alkalinity	104			0.217	
SM 2540 C-97	TDS				2.11	
SM 4500 F-C-97	Fluoride	96.7	96.8	98.1		0.981
	Fluoride	96.9	95.9	96.5		0.490
SM 5310 B-00	Organic Carbon	99.0	93.5	91.2		1.49
	Organic Carbon	98.8	96.9	94.6		1.81

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1864862, 1864865, 1864866, 1864867, 1864868, 1864869, 1864870
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1864862
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1864862
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1864863, 1864871, 1864872, 1864873, 1864874, 1864875, 1864876
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1864863, 1864871, 1864872, 1864873, 1864874, 1864875, 1864876
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1864863, 1864871, 1864872, 1864873, 1864874, 1864875, 1864876
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1864863, 1864871, 1864872, 1864873, 1864874, 1864875, 1864876
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1864864, 1864877, 1864878, 1864879, 1864880, 1864881, 1864882
SM 2120 B / E31780	True Color measured at 450 nm	1864862
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1864862, 1864865, 1864866, 1864867, 1864868, 1864869, 1864870
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1864862
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1864862, 1864865, 1864866, 1864867, 1864868, 1864869, 1864870
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1864862, 1864865, 1864866, 1864867, 1864868, 1864869, 1864870
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1864863, 1864871, 1864872, 1864873, 1864874, 1864875, 1864876

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	01/19/2017			01/19/2017 15:40	Sima Feizi	1864862, 1864865, 1864866, 1864867, 1864868, 1864869, 1864870
EPA 300.0 Rev. 2.1	01/19/2017			01/26/2017	Ping Hua	1864862
EPA 350.1 Rev. 2.0	01/19/2017			01/19/2017	Sofia Elnemr	1864863, 1864871, 1864872, 1864873, 1864874, 1864876
	01/19/2017			01/26/2017	Sofia Elnemr	1864875
EPA 351.2 Rev. 2.0	01/19/2017	01/20/2017	Adrian Shelby	01/23/2017	Joseph Suarez	1864863, 1864871, 1864872, 1864873, 1864874, 1864875, 1864876
EPA 353.2 Rev. 2.0	01/19/2017			01/25/2017	Beverly Y. Sanders	1864863
	01/19/2017			01/26/2017	Beverly Y. Sanders	1864874, 1864875, 1864876
	01/19/2017			01/27/2017	Beverly Y. Sanders	1864871, 1864872, 1864873
EPA 365.1 Rev. 2.0	01/19/2017	01/20/2017	Vijayalakshmi Reddy	01/24/2017	Lipi Saha	1864863, 1864871, 1864872, 1864873, 1864874, 1864875, 1864876
EPA 365.1 Rev. 2.0 dissolved	01/19/2017			01/19/2017 15:34	Julie Michelle Frank	1864878
	01/19/2017			01/19/2017 15:47	Julie Michelle Frank	1864880
	01/19/2017			01/19/2017 15:54	Julie Michelle Frank	1864864
	01/19/2017			01/19/2017 16:02	Julie Michelle Frank	1864877
	01/19/2017			01/19/2017 16:07	Julie Michelle Frank	1864879
	01/19/2017			01/19/2017 16:21	Julie Michelle Frank	1864881
	01/19/2017			01/19/2017 16:22	Julie Michelle Frank	1864882
SM 2120 B	01/19/2017			01/19/2017 15:40	Jared I. Manley	1864862
SM 2320 B-97	01/19/2017			01/20/2017	Dale L. Simmons	1864862, 1864865, 1864866, 1864867
	01/19/2017			01/25/2017	Dale L. Simmons	1864868, 1864869, 1864870
SM 2540 C-97	01/19/2017			01/23/2017	Sima Feizi	1864862
SM 2540 D-97	01/19/2017			01/23/2017	Sima Feizi	1864862, 1864865, 1864866, 1864867, 1864868, 1864869, 1864870
SM 4500 F-C-97	01/19/2017			01/20/2017	Dale L. Simmons	1864862, 1864865, 1864866, 1864867
	01/19/2017			01/25/2017	Dale L. Simmons	1864868, 1864869, 1864870
SM 5310 B-00	01/19/2017			01/20/2017	Julie Michelle Frank	1864863, 1864871, 1864872, 1864873, 1864874, 1864875, 1864876