

Chemical Analysis Report

NW-DIST-2018-05-22-02

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

Event Description: **Project Greenshores**

Request ID: **RQ-2018-05-21-15**

Customer: **NW-DIST**

Project ID: **DISTRICT**

Send Reports to:
FL Dept. of Environmental Protection
160 Government Center
Suite 308
Pensacola, FL 32502-5794
Attn: Cheryl Bunch

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Certified by: Liang Lin, Environmental Administrator

Date Certified: 08-JUN-2018 14:14

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

Case Narrative

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

Results for the following analytical 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: Range Marker E. of Texar

Collection Date/Time: 05/21/2018 10:04

Field ID: 1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994463	EPA 180.1 Rev. 2.0	Turbidity	6.2	A	NTU	P345748	
	SM 2120 B	Color (true)	6.3		PCU	P345754	
	SM 2540 D-97	TSS	9	I	mg/L	P346369	
1994477	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P346251	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P346271	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P345798	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P345816	

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: 1/2 Bridge and Muscogee

Collection Date/Time: 05/21/2018 10:16

Field ID: 2

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994464	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P345748	
	SM 2120 B	Color (true)	4.4	I	PCU	P345754	
	SM 2540 D-97	TSS	3	U	mg/L	P346369	
1994478	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P346251	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.37	I	mg N/L	P346271	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P345798	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P345816	

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: East of Primary Stormdrain PGS1

Collection Date/Time: 05/21/2018 10:25

Field ID: 3

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994465	EPA 180.1 Rev. 2.0	Turbidity	2.2		NTU	P345748	
	SM 2120 B	Color (true)	4.3	I	PCU	P345754	
	SM 2540 D-97	TSS	3	U	mg/L	P346369	
1994479	EPA 350.1 Rev. 2.0	Ammonia-N	0.013		mg N/L	P346251	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30	I	mg N/L	P346271	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.013		mg N/L	P345798	
	EPA 365.1 Rev. 2.0	Total-P	0.013		mg P/L	P345816	

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: 100 ft S. of Stormdrain

Collection Date/Time: 05/21/2018 10:35

Field ID: 4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994466	EPA 180.1 Rev. 2.0	Turbidity	2.7		NTU	P345748	
	SM 2120 B	Color (true)	4.7	I	PCU	P345754	
	SM 2540 D-97	TSS	4	I	mg/L	P346369	
1994480	EPA 350.1 Rev. 2.0	Ammonia-N	0.014		mg N/L	P346251	

Field ID: 4

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994480	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.30	I	mg N/L	P346271	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P345798	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P345816	

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: End of Chase St.**Collection Date/Time: 05/21/2018 10:49****Field ID: 5**

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994467	EPA 180.1 Rev. 2.0	Turbidity	2.0		NTU	P345748	
	SM 2120 B	Color (true)	4.5	I	PCU	P345754	
	SM 2540 D-97	TSS	3	U	mg/L	P346370	
1994481	EPA 350.1 Rev. 2.0	Ammonia-N	0.035		mg N/L	P346249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.53		mg N/L	P346271	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.027		mg N/L	P345799	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P345816	

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: 1/2 Muscogee and Hawkshaw 400 ft from Shore**Collection Date/Time: 05/21/2018 10:55****Field ID: 6**

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994468	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P345748	
	SM 2120 B	Color (true)	5.2	I	PCU	P345754	
	SM 2540 D-97	TSS	3	U	mg/L	P346370	
1994482	EPA 350.1 Rev. 2.0	Ammonia-N	0.010		mg N/L	P346249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P346271	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.009	I	mg N/L	P345799	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P345817	

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: 1/2 Bridge and Port**Collection Date/Time: 05/21/2018 11:02****Field ID: 7**

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994469	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P345748	
	SM 2120 B	Color (true)	5.6	I	PCU	P345754	
	SM 2540 D-97	TSS	3	U	mg/L	P346370	
1994483	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P346249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.32	I	mg N/L	P346271	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P345799	
	EPA 365.1 Rev. 2.0	Total-P	0.011		mg P/L	P345817	

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: West of Stormdrain Inside Rocks**Collection Date/Time: 05/21/2018 10:43**

Field ID: 8

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994470	EPA 180.1 Rev. 2.0	Turbidity	1.6		NTU	P345748	
	SM 2120 B	Color (true)	4.5	I	PCU	P345754	
	SM 2540 D-97	TSS	3	I	mg/L	P346370	
1994484	EPA 350.1 Rev. 2.0	Ammonia-N	0.051		mg N/L	P346249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P346271	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.034		mg N/L	P345799	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P345817	

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: West End of Hawkshaw 100ft S. of Outfall

Collection Date/Time: 05/21/2018 11:23

Field ID: 9

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994471	EPA 180.1 Rev. 2.0	Turbidity	1.8	A	NTU	P345749	
	SM 2120 B	Color (true)	4.5	I	PCU	P345754	
	SM 2540 D-97	TSS	3	U	mg/L	P346370	
1994485	EPA 350.1 Rev. 2.0	Ammonia-N	0.033		mg N/L	P346249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.44		mg N/L	P346271	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P345799	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P345817	

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: Between Marina and Outfall

Collection Date/Time: 05/21/2018 11:19

Field ID: 10

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994472	EPA 180.1 Rev. 2.0	Turbidity	1.7		NTU	P345749	
	SM 2120 B	Color (true)	5.8	I	PCU	P345755	
	SM 2540 D-97	TSS	4	I	mg/L	P346370	
1994486	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P346249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.29	I	mg N/L	P345985	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P345799	
	EPA 365.1 Rev. 2.0	Total-P	0.015		mg P/L	P345817	

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: Entrance of Marina

Collection Date/Time: 05/21/2018 11:13

Field ID: 11

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994473	EPA 180.1 Rev. 2.0	Turbidity	1.8		NTU	P345749	
	SM 2120 B	Color (true)	5.4	I	PCU	P345755	
	SM 2540 D-97	TSS	3	U	mg/L	P346368	
1994487	EPA 350.1 Rev. 2.0	Ammonia-N	0.043		mg N/L	P346249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39	I	mg N/L	P345985	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.062		mg N/L	P345799	

Field ID: 11

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994487	EPA 365.1 Rev. 2.0	Total-P	0.018		mg P/L	P345817	

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: 1/4 Between Bridge and Port 400ft from Shore **Collection Date/Time: 05/21/2018 11:07**

Field ID: 12

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994474	EPA 180.1 Rev. 2.0	Turbidity	1.4		NTU	P345749	
	SM 2120 B	Color (true)	4.6	I	PCU	P345755	
	SM 2540 D-97	TSS	3	U	mg/L	P346368	
1994488	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P346249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.28	I	mg N/L	P345985	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P345799	
	EPA 365.1 Rev. 2.0	Total-P	0.012		mg P/L	P345817	

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: Inside Hawkshaw Lagoon **Collection Date/Time: 05/21/2018 11:40**

Field ID: 13

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994475	EPA 180.1 Rev. 2.0	Turbidity	4.6		NTU	P345749	
	SM 2120 B	Color (true)	17		PCU	P345755	
	SM 2540 D-97	TSS	5	I	mg/L	P346369	
1994489	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P346249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P345985	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.006	I	mg N/L	P345799	
	EPA 365.1 Rev. 2.0	Total-P	0.041		mg P/L	P345817	

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: East of Stormdrain Inside PGSII **Collection Date/Time: 05/21/2018 11:45**

Field ID: 14

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1994476	EPA 180.1 Rev. 2.0	Turbidity	2.4		NTU	P345749	
	SM 2120 B	Color (true)	5.0	I	PCU	P345755	
	SM 2540 D-97	TSS	4	IA	mg/L	P346370	
1994490	EPA 350.1 Rev. 2.0	Ammonia-N	0.027		mg N/L	P346249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.33	I	mg N/L	P345985	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.015		mg N/L	P345799	
	EPA 365.1 Rev. 2.0	Total-P	0.016		mg P/L	P346037	

Quality Assurance Report

Method Blank Results

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345748

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345749

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346249

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346251

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345985

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346271

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345798

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345799

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345816

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345817

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346037

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

Reference Method: SM 2120 B
Batch ID: P345754

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P345755

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2540 D-97
Batch ID: P346368

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P346369

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P346370

Component	Result	Code	Units
TSS	3	U	mg/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346249

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: P346251

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

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P346251

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.0		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P345985

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P346271

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P345798

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

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P345799

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: P345816

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P345817

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P346037

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P346249

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994481	Ammonia-N	99.7	101	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346251

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994401	Ammonia-N	98.9	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345985

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994489	Kjeldahl Nitrogen	98.1	93.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346271

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994484	Kjeldahl Nitrogen	92.9	91.3	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345798

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994401	NO2NO3-N	99.4	99.4	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345799

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994481	NO2NO3-N	101	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345816

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994405	Total-P	95.2	95.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P345817

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994482	Total-P	97.3	98.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P346037

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1994853	Total-P	100	97.1	P/P	90 - 110

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345748

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994463	Turbidity	2.44	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P345749

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994471	Turbidity	5.62	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346249

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994481	Ammonia-N	0.880	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P346251

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994401	Ammonia-N	0.860	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P345985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994489	Kjeldahl Nitrogen	4.01	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P346271

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994484	Kjeldahl Nitrogen	1.46	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345798

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994401	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P345799

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994481	NO2NO3-N	0.438	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P345816

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994405	Total-P	0.465	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P345817

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994482	Total-P	1.08	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P346037

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994853	Total-P	3.25	Spike	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P345754

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994615	Color (true)	0.586	Sample	P	0 - 20

Reference Method: SM 2120 B
 Batch ID: P345755

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1994616	Color (true)	0.468	Sample	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: A84083

Included Lab Sample IDs: 1994463, 1994464, 1994465, 1994466, 1994467, 1994468, 1994469, 1994470, 1994471, 1994472, 1994473, 1994474, 1994475, 1994476

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105
Turbidity	101	100	P/P	95 - 105

Reference Method: SM 2120 B
 Run ID: A84086

Included Lab Sample IDs: 1994463, 1994464, 1994465, 1994466, 1994467, 1994468, 1994469, 1994470, 1994471, 1994472, 1994473, 1994474, 1994475, 1994476

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

Reference Method: SM 2120 B

Run ID: A84086

Included Lab Sample IDs: 1994463, 1994464, 1994465, 1994466, 1994467, 1994468, 1994469, 1994470, 1994471, 1994472, 1994473, 1994474, 1994475, 1994476

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	97.2	97.5	P/P	85 - 115
Color (true)	98.2	97.2	P/P	85 - 115

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A84105

Included Lab Sample IDs: 1994477, 1994478, 1994479, 1994480, 1994481, 1994482, 1994483, 1994484, 1994485, 1994486, 1994487, 1994488, 1994489, 1994490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	99.5	P/P	90 - 110
NO2NO3-N	99.0	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A84185

Included Lab Sample IDs: 1994477, 1994478, 1994479, 1994480, 1994481, 1994482, 1994483, 1994484, 1994485, 1994486, 1994487, 1994488, 1994489

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.2	98.5	P/P	90 - 110
Total-P	99.2	99.2	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A84261

Included Lab Sample IDs: 1994486, 1994487, 1994488, 1994489, 1994490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.1	97.5	P/P	90 - 110
Kjeldahl Nitrogen	98.1	98.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A84294

Included Lab Sample IDs: 1994490

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

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A84298

Included Lab Sample IDs: 1994477, 1994478, 1994479, 1994480, 1994481, 1994482, 1994483, 1994484, 1994485, 1994486, 1994487, 1994488, 1994489, 1994490

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	100	99.6	P/P	90 - 110
Ammonia-N	99.4	100	P/P	90 - 110
Ammonia-N	99.9	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A84348

Included Lab Sample IDs: 1994477, 1994478, 1994479, 1994480, 1994481, 1994482, 1994483, 1994484, 1994485

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A84348

Included Lab Sample IDs: 1994477, 1994478, 1994479, 1994480, 1994481, 1994482, 1994483, 1994484, 1994485

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	94.1	96.8	P/P	90 - 110
Kjeldahl Nitrogen	96.8	97.9	P/P	90 - 110

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

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

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
EPA 180.1 Rev. 2.0	Turbidity					2.44	
	Turbidity					5.62	
EPA 350.1 Rev. 2.0	Ammonia-N	101	99.7	101			0.880
	Ammonia-N	98.0	98.9	100			0.860
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	98.1	93.2			4.01
	Kjeldahl Nitrogen	95.9	92.9	91.3			1.46
EPA 353.2 Rev. 2.0	NO2NO3-N	100	99.4	99.4			0.0
	NO2NO3-N	100	101	101			0.438
EPA 365.1 Rev. 2.0	Total-P	101	95.2	95.6			0.465
	Total-P	99.0	97.3	98.4			1.08
	Total-P	102	100	97.1			3.25
SM 2120 B	Color (true)					0.586	
	Color (true)					0.468	

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1994463, 1994464, 1994465, 1994466, 1994467, 1994468, 1994469, 1994470, 1994471, 1994472, 1994473, 1994474, 1994475, 1994476
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1994477, 1994478, 1994479, 1994480, 1994481, 1994482, 1994483, 1994484, 1994485, 1994486, 1994487, 1994488, 1994489, 1994490
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1994477, 1994478, 1994479, 1994480, 1994481, 1994482, 1994483, 1994484, 1994485, 1994486, 1994487, 1994488, 1994489, 1994490
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1994477, 1994478, 1994479, 1994480, 1994481, 1994482, 1994483, 1994484, 1994485, 1994486, 1994487, 1994488, 1994489, 1994490
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1994477, 1994478, 1994479, 1994480, 1994481, 1994482, 1994483, 1994484, 1994485, 1994486, 1994487, 1994488, 1994489, 1994490

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
SM 2120 B / E31780	True Color measured at 450 nm	1994463, 1994464, 1994465, 1994466, 1994467, 1994468, 1994469, 1994470, 1994471, 1994472, 1994473, 1994474, 1994475, 1994476
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	1994463, 1994464, 1994465, 1994466, 1994467, 1994468, 1994469, 1994470, 1994471, 1994472, 1994473, 1994474, 1994475, 1994476

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	05/22/2018			05/22/2018 17:24	William L. Brown IV	1994463, 1994464, 1994465, 1994466, 1994467, 1994468, 1994469, 1994470, 1994471, 1994472, 1994473, 1994474, 1994475, 1994476
EPA 350.1 Rev. 2.0	05/22/2018			05/31/2018 12:13	Ping Hua	1994481
	05/22/2018			05/31/2018 12:17	Ping Hua	1994482
	05/22/2018			05/31/2018 12:19	Ping Hua	1994483
	05/22/2018			05/31/2018 12:26	Ping Hua	1994484
	05/22/2018			05/31/2018 12:28	Ping Hua	1994485
	05/22/2018			05/31/2018 12:29	Ping Hua	1994486
	05/22/2018			05/31/2018 12:31	Ping Hua	1994487
	05/22/2018			05/31/2018 12:32	Ping Hua	1994488
	05/22/2018			05/31/2018 12:34	Ping Hua	1994489
	05/22/2018			05/31/2018 12:35	Ping Hua	1994490
	05/22/2018			05/31/2018 13:31	Ping Hua	1994477
	05/22/2018			05/31/2018 13:32	Ping Hua	1994478
	05/22/2018			05/31/2018 13:34	Ping Hua	1994479
	05/22/2018			05/31/2018 13:35	Ping Hua	1994480
EPA 351.2 Rev. 2.0	05/22/2018	05/25/2018 16:00	Adrian Shelby	05/31/2018 09:15	Joseph Suarez	1994486
	05/22/2018	05/25/2018 16:00	Adrian Shelby	05/31/2018 09:17	Joseph Suarez	1994487
	05/22/2018	05/25/2018 16:00	Adrian Shelby	05/31/2018 09:18	Joseph Suarez	1994488
	05/22/2018	05/25/2018 16:00	Adrian Shelby	05/31/2018 09:23	Joseph Suarez	1994489
	05/22/2018	05/25/2018 16:00	Adrian Shelby	05/31/2018 09:28	Joseph Suarez	1994490
	05/22/2018	06/01/2018 14:15	Adrian Shelby	06/05/2018 09:09	Joseph Suarez	1994477
	05/22/2018	06/01/2018 14:15	Adrian Shelby	06/05/2018 09:10	Joseph Suarez	1994478
	05/22/2018	06/01/2018 14:15	Adrian Shelby	06/05/2018 09:12	Joseph Suarez	1994479
	05/22/2018	06/01/2018 14:15	Adrian Shelby	06/05/2018 09:16	Joseph Suarez	1994480
	05/22/2018	06/01/2018 14:15	Adrian Shelby	06/05/2018 09:18	Joseph Suarez	1994481
	05/22/2018	06/01/2018 14:15	Adrian Shelby	06/05/2018 09:20	Joseph Suarez	1994482
	05/22/2018	06/01/2018 14:15	Adrian Shelby	06/05/2018 09:21	Joseph Suarez	1994483
	05/22/2018	06/01/2018 14:15	Adrian Shelby	06/05/2018 09:23	Joseph Suarez	1994484
	05/22/2018	06/01/2018 14:15	Adrian Shelby	06/05/2018 09:27	Joseph Suarez	1994485
EPA 353.2 Rev. 2.0	05/22/2018			05/23/2018 11:37	Lauren Bottorf	1994477
	05/22/2018			05/23/2018 11:38	Lauren Bottorf	1994478
	05/22/2018			05/23/2018 11:39	Lauren Bottorf	1994479
	05/22/2018			05/23/2018 11:41	Lauren Bottorf	1994480
	05/22/2018			05/23/2018 11:48	Lauren Bottorf	1994481
	05/22/2018			05/23/2018 11:54	Lauren Bottorf	1994482
	05/22/2018			05/23/2018 11:55	Lauren Bottorf	1994483
	05/22/2018			05/23/2018 11:56	Lauren Bottorf	1994484

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 353.2 Rev. 2.0	05/22/2018			05/23/2018 11:57	Lauren Bottorf	1994485
	05/22/2018			05/23/2018 11:58	Lauren Bottorf	1994486
	05/22/2018			05/23/2018 11:59	Lauren Bottorf	1994487
	05/22/2018			05/23/2018 12:01	Lauren Bottorf	1994488
	05/22/2018			05/23/2018 12:02	Lauren Bottorf	1994489
	05/22/2018			05/23/2018 12:03	Lauren Bottorf	1994490
EPA 365.1 Rev. 2.0	05/22/2018	05/23/2018 13:05	Sima Feizi	05/29/2018 10:14	Lipi Saha	1994477
	05/22/2018	05/23/2018 13:05	Sima Feizi	05/29/2018 10:15	Lipi Saha	1994478
	05/22/2018	05/23/2018 13:05	Sima Feizi	05/29/2018 10:16	Lipi Saha	1994479
	05/22/2018	05/23/2018 13:05	Sima Feizi	05/29/2018 10:17	Lipi Saha	1994480
	05/22/2018	05/23/2018 13:05	Sima Feizi	05/29/2018 10:24	Lipi Saha	1994481
	05/22/2018	05/23/2018 13:05	Sima Feizi	05/29/2018 10:26	Lipi Saha	1994482
	05/22/2018	05/23/2018 13:05	Sima Feizi	05/29/2018 10:27	Lipi Saha	1994483
	05/22/2018	05/23/2018 13:05	Sima Feizi	05/29/2018 10:28	Lipi Saha	1994484
	05/22/2018	05/23/2018 13:05	Sima Feizi	05/29/2018 10:29	Lipi Saha	1994485
	05/22/2018	05/23/2018 13:05	Sima Feizi	05/29/2018 10:30	Lipi Saha	1994486
	05/22/2018	05/23/2018 13:05	Sima Feizi	05/29/2018 10:31	Lipi Saha	1994487
	05/22/2018	05/23/2018 13:05	Sima Feizi	05/29/2018 10:32	Lipi Saha	1994488
	05/22/2018	05/23/2018 13:05	Sima Feizi	05/29/2018 10:33	Lipi Saha	1994489
	05/22/2018	05/29/2018 09:34	Sima Feizi	06/01/2018 12:50	Beverly Y. Sanders	1994490
SM 2120 B	05/22/2018			05/23/2018 06:30	Tanya Welborn	1994463
	05/22/2018			05/23/2018 06:31	Tanya Welborn	1994464
	05/22/2018			05/23/2018 06:32	Tanya Welborn	1994465, 1994466
	05/22/2018			05/23/2018 06:33	Tanya Welborn	1994467
	05/22/2018			05/23/2018 06:34	Tanya Welborn	1994468
	05/22/2018			05/23/2018 06:35	Tanya Welborn	1994469
	05/22/2018			05/23/2018 06:36	Tanya Welborn	1994470, 1994471
	05/22/2018			05/23/2018 06:42	Tanya Welborn	1994472
	05/22/2018			05/23/2018 06:43	Tanya Welborn	1994473
	05/22/2018			05/23/2018 06:44	Tanya Welborn	1994474
SM 2540 D-97	05/22/2018			05/23/2018 06:45	Tanya Welborn	1994475, 1994476
	05/22/2018			05/25/2018 16:24	Yijie Li	1994463, 1994464, 1994465, 1994466, 1994467, 1994468, 1994469, 1994470, 1994471, 1994472, 1994473, 1994474, 1994475, 1994476