

Chemical Analysis Report

NW-DIST-2016-12-14-01

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

Event Description: **Freeport run WBID 567 646 557 570**

Request ID: **RQ-2016-11-14-21**

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: 06-JAN-2017 13:37



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: Seven Runs HWY 81

Collection Date/Time: 12/13/2016 11:40

Field ID: G3NW0116

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857496	EPA 180.1 Rev. 2.0	Turbidity	1.1		NTU	P316807	
	EPA 300.0 Rev. 2.1	Chloride	2.2		mg Cl/L	P317355	
		Sulfate	3.7		mg SO4/L	P317364	
	SM 2120 B	Color (true)	37	A	PCU	P316801	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P317055	
	SM 2540 C-97	TDS	21	I	mg/L	P317406	
	SM 2540 D-97	TSS	3	I	mg/L	P317284	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317058	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P317310	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.16	I	mg N/L	P316914	
1857503	EPA 353.2 Rev. 2.0	NO2NO3-N	0.062		mg N/L	P317065	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P317000	
	SM 5310 B-00	Organic Carbon	4.6		mg C/L	P316965	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316790	

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: Seven Runs End of Dead River Rd.

Collection Date/Time: 12/13/2016 12:00

Field ID: G3NW0115

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857497	EPA 180.1 Rev. 2.0	Turbidity	6.2		NTU	P316807	
	EPA 300.0 Rev. 2.1	Chloride	3.5		mg Cl/L	P317355	
		Sulfate	6.3		mg SO4/L	P317364	
	SM 2120 B	Color (true)	78		PCU	P316801	
	SM 2320 B-97	Total Alkalinity	4.5		mg CaCO3/L	P317138	
	SM 2540 C-97	TDS	39		mg/L	P317406	
	SM 2540 D-97	TSS	2	I	mg/L	P317284	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317329	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P317310	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.42		mg N/L	P316914	
1857504	EPA 353.2 Rev. 2.0	NO2NO3-N	0.11		mg N/L	P317065	
	EPA 365.1 Rev. 2.0	Total-P	0.026		mg P/L	P317000	
	SM 5310 B-00	Organic Carbon	9.1		mg C/L	P316965	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316790	

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: Lafayette Creek Hwy 20

Collection Date/Time: 12/13/2016 12:35

Field ID: G3NW0118

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857498	EPA 180.1 Rev. 2.0	Turbidity	1.5		NTU	P316807	
	EPA 300.0 Rev. 2.1	Chloride	3.2		mg Cl/L	P317355	
		Sulfate	3.3		mg SO4/L	P317364	

Field ID: G3NW0118

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857498	SM 2120 B	Color (true)	37		PCU	P316801	
	SM 2320 B-97	Total Alkalinity	2.1	I	mg CaCO3/L	P317138	
	SM 2540 C-97	TDS	16	I	mg/L	P317407	
	SM 2540 D-97	TSS	4	I	mg/L	P317285	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317329	
1857505	EPA 350.1 Rev. 2.0	Ammonia-N	0.003	I	mg N/L	P317310	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.14	I	mg N/L	P316914	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.14		mg N/L	P317066	
	EPA 365.1 Rev. 2.0	Total-P	0.005		mg P/L	P317000	
	SM 5310 B-00	Organic Carbon	3.7		mg C/L	P316965	
1857512	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316790	

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: Fourmile Creek SR-20

Collection Date/Time: 12/13/2016 12:45

Field ID: G3NW0112

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857499	EPA 180.1 Rev. 2.0	Turbidity	0.65		NTU	P316807	
	EPA 300.0 Rev. 2.1	Chloride	2.6		mg Cl/L	P317355	
		Sulfate	3.0		mg SO4/L	P317364	
	SM 2120 B	Color (true)	44		PCU	P316801	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P317138	
	SM 2540 C-97	TDS	15	U	mg/L	P317407	
	SM 2540 D-97	TSS	3	I	mg/L	P317285	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317329	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P317310	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.14	I	mg N/L	P316914	
1857506	EPA 353.2 Rev. 2.0	NO2NO3-N	0.042		mg N/L	P317066	
	EPA 365.1 Rev. 2.0	Total-P	0.003	I	mg P/L	P317000	
	SM 5310 B-00	Organic Carbon	4.8		mg C/L	P316965	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316790	

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: Magnolia Creek Owls Head Rd.

Collection Date/Time: 12/13/2016 13:20

Field ID: G3NW0099

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857500	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P316807	
	EPA 300.0 Rev. 2.1	Chloride	2.0		mg Cl/L	P317355	
		Sulfate	2.9		mg SO4/L	P317364	
	SM 2120 B	Color (true)	35		PCU	P316801	
	SM 2320 B-97	Total Alkalinity	0.92	I	mg CaCO3/L	P317138	
	SM 2540 C-97	TDS	20	I	mg/L	P317407	
	SM 2540 D-97	TSS	2	I	mg/L	P317285	

Field ID: G3NW0099

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857500	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317329	
1857507	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P317310	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.14	I	mg N/L	P316914	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.055		mg N/L	P317066	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P317000	
	SM 5310 B-00	Organic Carbon	3.7		mg C/L	P316965	
1857514	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316790	

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: Magnolia Creek Owls Head Rd. Duplicate

Collection Date/Time: 12/13/2016 13:30

Field ID: G3NW0099 Duplicate

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857501	EPA 180.1 Rev. 2.0	Turbidity	0.95		NTU	P316807	
	EPA 300.0 Rev. 2.1	Chloride	2.0		mg Cl/L	P317355	
		Sulfate	2.8		mg SO4/L	P317364	
	SM 2120 B	Color (true)	37		PCU	P316801	
	SM 2320 B-97	Total Alkalinity	0.73	I	mg CaCO3/L	P317138	
	SM 2540 C-97	TDS	20	I	mg/L	P317407	
	SM 2540 D-97	TSS	3	I	mg/L	P317285	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317329	
1857508	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P317310	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.14	I	mg N/L	P316914	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.046		mg N/L	P317066	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P317000	
	SM 5310 B-00	Organic Carbon	3.9		mg C/L	P316965	
1857515	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316790	

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: 12/13/2016 13:25

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857502	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P316807	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P317355	
		Sulfate	0.20	U	mg SO4/L	P317364	
	SM 2120 B	Color (true)	2.5	U	PCU	P316801	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P317138	
	SM 2540 C-97	TDS	15	U	mg/L	P317405	
	SM 2540 D-97	TSS	2	U	mg/L	P317283	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P317329	
1857509	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P317310	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P316914	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P317066	

Field ID: FIELD BLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1857509	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P317000	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P316965	
1857516	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P316790	

Ref. Method and Comment:

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P316807

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P317355

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P317364

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P317310

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P316914

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P317065

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P317066

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

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P317000

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317000

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316790

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

Reference Method: SM 2120 B
Batch ID: P316801

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P317055

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

Reference Method: SM 2320 B-97
Batch ID: P317138

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

Reference Method: SM 2540 C-97
Batch ID: P317405

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P317406

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 C-97
Batch ID: P317407

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P317283

Component	Result	Code	Units
TSS	2	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2540 D-97
 Batch ID: P317284

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
 Batch ID: P317285

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
 Batch ID: P317058

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
 Batch ID: P317329

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P316965

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: P317355

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

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P317364

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	94.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P317310

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

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P316914

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316914

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	95.7		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317065

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317066

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: P317000

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316790

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

Reference Method: SM 2320 B-97
Batch ID: P317055

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

Reference Method: SM 2320 B-97
Batch ID: P317138

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.6		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P317058

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P317329

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	98.5		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
Batch ID: P316965

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

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317355

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857490	Chloride	99.4		P	90 - 110
1857497	Chloride	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317364

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857490	Sulfate	94.3		P	90 - 110
1857497	Sulfate	93.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317310

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857479	Ammonia-N	104	103	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316914

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857491	Kjeldahl Nitrogen	95.8	92.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317065

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857342	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317066

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857505	NO2NO3-N	102	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317000

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857491	Total-P	96.3	94.0	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316790

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857510	O-Phosphate-P	99.4	100	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P317058

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857125	Fluoride	101	102	P/P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P317329

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857834	Fluoride	103	103	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P316965

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1857478	Organic Carbon	95.1	99.6	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P316807

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857476	Turbidity	0.0	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317355

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857490	Chloride	0.175	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P317364

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857490	Sulfate	0.106	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P317310

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857479	Ammonia-N	0.927	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P316914

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857491	Kjeldahl Nitrogen	3.16	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317065

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857342	NO2NO3-N	0.637	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P317066

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857505	NO2NO3-N	0.590	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P317000

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857491	Total-P	2.32	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P316790

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857510	O-Phosphate-P	0.602	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P316801

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857496	Color (true)	5.89	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P317055

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857125	Total Alkalinity	0.337	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
Batch ID: P317138

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857881	Total Alkalinity	0.776	Sample	P	0 - 4.8

Quality Assurance Report Precision

Reference Method: SM 2540 C-97
 Batch ID: P317405

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857006	TDS	4.03	Sample	P	0 - 10

Reference Method: SM 2540 C-97
 Batch ID: P317406

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857088	TDS	6.00	Sample	P	0 - 10

Reference Method: SM 2540 C-97
 Batch ID: P317407

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857531	TDS	4.37	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
 Batch ID: P317058

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857125	Fluoride	0.470	Spike	P	0 - 3.0

Reference Method: SM 4500 F-C-97
 Batch ID: P317329

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857834	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P316965

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1857478	Organic Carbon	2.49	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 365.1 Rev. 2.0 dissolved
 Run ID: A73374
 Included Lab Sample IDs: 1857510, 1857511, 1857512, 1857513, 1857514, 1857515, 1857516

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.8	99.0	P/P	90 - 110
O-Phosphate-P	99.0	97.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A73374

Included Lab Sample IDs: 1857510, 1857511, 1857512, 1857513, 1857514, 1857515, 1857516

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	100	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A73378

Included Lab Sample IDs: 1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	102	P/P	85 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A73379

Included Lab Sample IDs: 1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	97.5	97.5	P/P	95 - 105

Reference Method: SM 5310 B-00

Run ID: A73440

Included Lab Sample IDs: 1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	100	99.9	P/P	90 - 110
Organic Carbon	99.9	100	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A73481

Included Lab Sample IDs: 1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	98.8	103	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A73482

Included Lab Sample IDs: 1857496

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.7	99.1	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A73482

Included Lab Sample IDs: 1857496

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

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73485

Included Lab Sample IDs: 1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.0	97.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A73485

Included Lab Sample IDs: 1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	98.0	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A73503

Included Lab Sample IDs: 1857497, 1857498, 1857499, 1857500, 1857501, 1857502

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	98.0	P/P	90 - 110
Total Alkalinity	102	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A73507

Included Lab Sample IDs: 1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	97.2	98.8	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A73559

Included Lab Sample IDs: 1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	101	102	P/P	90 - 110
Ammonia-N	102	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A73565

Included Lab Sample IDs: 1857497, 1857498, 1857499, 1857500, 1857501, 1857502

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A73576

Included Lab Sample IDs: 1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	101	103	P/P	90 - 110
Chloride	103	101	P/P	90 - 110
Sulfate	92.9	95.3	P/P	90 - 110
Sulfate	95.3	92.8	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				0.0	
EPA 300.0 Rev. 2.1	Chloride	101	99.4	99.6	0.175	
	Sulfate	94.4	94.3	93.6	0.106	
EPA 350.1 Rev. 2.0	Ammonia-N	101	104	103		0.927
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	95.7	95.8	92.8		3.16
EPA 353.2 Rev. 2.0	NO2NO3-N	103	102	102		0.637
	NO2NO3-N	102	102	100		0.590
EPA 365.1 Rev. 2.0	Total-P	96.1	96.3	94.0		2.32
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	99.4	99.4	100		0.602
SM 2120 B	Color (true)				5.89	
SM 2320 B-97	Total Alkalinity	99.2			0.337	
	Total Alkalinity	99.6			0.776	
SM 2540 C-97	TDS				4.03	
	TDS				6.00	
	TDS				4.37	
SM 4500 F-C-97	Fluoride	100	101	102		0.470
	Fluoride	98.5	103	103		0.0
SM 5310 B-00	Organic Carbon	101	95.1	99.6		2.49

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1857510, 1857511, 1857512, 1857513, 1857514, 1857515, 1857516
SM 2120 B / E31780	True Color measured at 450 nm	1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO3/L	1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509

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	12/14/2016			12/14/2016 16:19	Julie Michelle Frank	1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502
EPA 300.0 Rev. 2.1	12/14/2016			12/22/2016	Ping Hua	1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502
	12/14/2016			12/23/2016	Ping Hua	1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502
EPA 350.1 Rev. 2.0	12/14/2016			12/22/2016	Sofia Elnemr	1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509
EPA 351.2 Rev. 2.0	12/14/2016	12/16/2016	Adrian Shelby	12/20/2016	Joseph Suarez	1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509
EPA 353.2 Rev. 2.0	12/14/2016			12/20/2016	Beverly Y. Sanders	1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509
EPA 365.1 Rev. 2.0	12/14/2016	12/19/2016	Vijayalakshmi Reddy	12/20/2016	Lipi Saha	1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509
EPA 365.1 Rev. 2.0 dissolved	12/14/2016			12/14/2016 14:32	Julia Storbeck	1857510
	12/14/2016			12/14/2016 14:56	Julia Storbeck	1857516
	12/14/2016			12/14/2016 15:00	Julia Storbeck	1857514, 1857515
	12/14/2016			12/14/2016 15:11	Julia Storbeck	1857511
	12/14/2016			12/14/2016 15:12	Julia Storbeck	1857512, 1857513
SM 2120 B	12/14/2016			12/14/2016 15:58	Jared I. Manley	1857496
	12/14/2016			12/14/2016 16:01	Jared I. Manley	1857497
	12/14/2016			12/14/2016 16:02	Jared I. Manley	1857498, 1857499
	12/14/2016			12/14/2016 16:03	Jared I. Manley	1857500
	12/14/2016			12/14/2016 16:04	Jared I. Manley	1857501
	12/14/2016			12/14/2016 16:05	Jared I. Manley	1857502
SM 2320 B-97	12/14/2016			12/16/2016	Dale L. Simmons	1857496
	12/14/2016			12/17/2016	Dale L. Simmons	1857497, 1857498, 1857499, 1857500, 1857501, 1857502
SM 2540 C-97	12/14/2016			12/15/2016	Yijie Li	1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502
SM 2540 D-97	12/14/2016			12/15/2016	Yijie Li	1857496, 1857497, 1857498, 1857499, 1857500, 1857501, 1857502
SM 4500 F-C-97	12/14/2016			12/16/2016	Dale L. Simmons	1857496
	12/14/2016			12/23/2016	Dale L. Simmons	1857497, 1857498, 1857499, 1857500, 1857501, 1857502
SM 5310 B-00	12/14/2016			12/16/2016	Julie Michelle Frank	1857503, 1857504, 1857505, 1857506, 1857507, 1857508, 1857509