

Chemical Analysis Report

CEN-DIST-2017-01-20-01

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

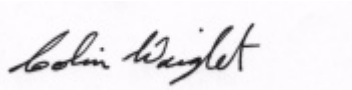
Event Description: **Lk Dora x4/Holiday Springs + D&B**
Request ID: **RQ-2017-01-16-30**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

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Certified by: Colin Wright, Program Administrator

Date Certified: 16-FEB-2017 09:19

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light gray rectangular 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 groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited 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: HOLIDAY SPRINGS ABOVE PUMP HOUSE

Collection Date/Time: 01/19/2017 10:50

Field ID: G1CE0029

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1865312	EPA 180.1 Rev. 2.0	Turbidity	0.15		NTU	P318515	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P318867	
		Sulfate	12		mg SO4/L	P318871	
	SM 2120 B	Color (true)	2.5	U	PCU	P318620	
	SM 2320 B-97	Total Alkalinity	113		mg CaCO3/L	P318703	
	SM 2540 C-97	TDS	165		mg/L	P318832	
	SM 2540 D-97	TSS	2	I	mg/L	P318711	
	SM 4500 F-C-97	Fluoride	0.096	I	mg F/L	P318705	
1865317	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P318838	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P318576	
	EPA 353.2 Rev. 2.0	NO2NO3-N	2.8		mg N/L	P318690	
	EPA 365.1 Rev. 2.0	Total-P	0.037		mg P/L	P318612	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P318553	
1865322	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.037		mg P/L	P318510	
1865332	EPA 200.7 Rev. 4.4	Calcium	43.1		mg/L	P318563	
		Iron	30	U	ug/L	P318563	
		Magnesium	7.37		mg/L	P318563	
		Potassium	0.93	I	mg/L	P318563	
		Sodium	6.2		mg/L	P318563	
	EPA 200.8 Rev. 5.4	Zinc	5.0	U	ug/L	P318563	
		Arsenic	1.02		ug/L	P318563	
		Cadmium	0.020	U	ug/L	P318563	
		Chromium	0.47	I	ug/L	P318563	
		Copper	0.20	U	ug/L	P318563	
		Lead	0.050	U	ug/L	P318563	
		Nickel	0.25	I	ug/L	P318563	
		Silver	0.010	U	ug/L	P318563	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: L DORA E END MID E BAY

Collection Date/Time: 01/19/2017 12:25

Field ID: G1CE0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1865313	EPA 180.1 Rev. 2.0	Turbidity	8.2	A	NTU	P318515	
	EPA 300.0 Rev. 2.1	Chloride	43		mg Cl/L	P318867	
		Sulfate	44		mg SO4/L	P318871	
	SM 2120 B	Color (true)	15		PCU	P318620	
	SM 2320 B-97	Total Alkalinity	104		mg CaCO3/L	P318703	
	SM 2540 C-97	TDS	286		mg/L	P318832	
	SM 2540 D-97	TSS	11		mg/L	P318711	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P318705	
1865318	EPA 350.1 Rev. 2.0	Ammonia-N	0.088		mg N/L	P318838	

Field ID: G1CE0043

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1865318	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.0		mg N/L	P318576	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.026		mg N/L	P318690	
	EPA 365.1 Rev. 2.0	Total-P	0.051		mg P/L	P318612	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P318553	
1865323	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318511	
1865333	EPA 200.7 Rev. 4.4	Calcium	39.8		mg/L	P318563	
		Iron	30	U	ug/L	P318563	
		Magnesium	15.4		mg/L	P318563	
		Potassium	11.1		mg/L	P318563	
		Sodium	21.9		mg/L	P318563	
		Zinc	5.0	U	ug/L	P318563	
	EPA 200.8 Rev. 5.4	Arsenic	2.51		ug/L	P318563	
		Cadmium	0.020	U	ug/L	P318563	
		Chromium	0.40	U	ug/L	P318563	
		Copper	0.20	U	ug/L	P318563	
		Lead	0.18	I	ug/L	P318563	
		Nickel	0.20	U	ug/L	P318563	
		Silver	0.010	U	ug/L	P318563	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: NE LOBE OF LAKE DORA @ 500M N OF LAKE BEAUCLAIR CANAL **Collection Date/Time: 01/19/2017 12:10**

Field ID: G1CE0044

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1865314	EPA 180.1 Rev. 2.0	Turbidity	8.3		NTU	P318515	
	EPA 300.0 Rev. 2.1	Chloride	44		mg Cl/L	P318867	
		Sulfate	44		mg SO4/L	P318871	
	SM 2120 B	Color (true)	16		PCU	P318620	
	SM 2320 B-97	Total Alkalinity	104		mg CaCO3/L	P318703	
	SM 2540 C-97	TDS	275		mg/L	P318832	
	SM 2540 D-97	TSS	12		mg/L	P318711	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P318705	
1865319	EPA 350.1 Rev. 2.0	Ammonia-N	0.096		mg N/L	P318838	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	2.1		mg N/L	P318576	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.027		mg N/L	P318690	
	EPA 365.1 Rev. 2.0	Total-P	0.057		mg P/L	P318672	
	SM 5310 B-00	Organic Carbon	16		mg C/L	P318553	
1865324	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318511	
1865334	EPA 200.7 Rev. 4.4	Calcium	38.4		mg/L	P318563	
		Iron	30	U	ug/L	P318563	
		Magnesium	14.6		mg/L	P318563	
		Potassium	10.8		mg/L	P318563	

Field ID: G1CE0044

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1865334	EPA 200.7 Rev. 4.4	Sodium	21.4		mg/L	P318563	
		Zinc	5.0	U	ug/L	P318563	
	EPA 200.8 Rev. 5.4	Arsenic	2.54		ug/L	P318563	
		Cadmium	0.020	U	ug/L	P318563	
		Chromium	0.40	U	ug/L	P318563	
		Copper	0.20	U	ug/L	P318563	
		Lead	0.18	I	ug/L	P318563	
		Nickel	0.20	U	ug/L	P318563	
		Silver	0.010	U	ug/L	P318563	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: L DORA MIDDLE

Collection Date/Time: 01/19/2017 13:00

Field ID: G1CE0045

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1865315	EPA 180.1 Rev. 2.0	Turbidity	6.1		NTU	P318515	
	EPA 300.0 Rev. 2.1	Chloride	43		mg Cl/L	P318867	
		Sulfate	44		mg SO4/L	P318871	
	SM 2120 B	Color (true)	12		PCU	P318620	
	SM 2320 B-97	Total Alkalinity	106		mg CaCO3/L	P318703	
	SM 2540 C-97	TDS	292		mg/L	P318832	
	SM 2540 D-97	TSS	10		mg/L	P318711	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P318705	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.008		mg N/L	P318838	
		Kjeldahl Nitrogen	1.6		mg N/L	P318576	
1865320	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P318690	
	EPA 365.1 Rev. 2.0	Total-P	0.043		mg P/L	P318672	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P318553	
	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318511	
	EPA 200.7 Rev. 4.4	Calcium	39.5		mg/L	P318563	
		Iron	30	U	ug/L	P318563	
		Magnesium	15.0		mg/L	P318563	
		Potassium	10.7		mg/L	P318563	
		Sodium	21.6		mg/L	P318563	
		Zinc	5.0	U	ug/L	P318563	
	EPA 200.8 Rev. 5.4	Arsenic	2.67		ug/L	P318563	
		Cadmium	0.020	U	ug/L	P318563	
		Chromium	0.40	U	ug/L	P318563	
		Copper	0.20	U	ug/L	P318563	
		Lead	0.16	I	ug/L	P318563	
		Nickel	0.20	U	ug/L	P318563	
		Silver	0.010	U	ug/L	P318563	

Ref. Method and Comment:

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

SM 4500 F-C-97: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: NE LOBE OF LAKE DORA @ 250M NE OF CENTER LOBE

Collection Date/Time: 01/19/2017 12:40

Field ID: G1CE0046

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1865316	EPA 180.1 Rev. 2.0	Turbidity	7.0		NTU	P318515	
	EPA 300.0 Rev. 2.1	Chloride	44		mg Cl/L	P318867	
		Sulfate	44		mg SO4/L	P318871	
	SM 2120 B	Color (true)	13		PCU	P318620	
	SM 2320 B-97	Total Alkalinity	105		mg CaCO3/L	P318703	
	SM 2540 C-97	TDS	304	A	mg/L	P318832	
	SM 2540 D-97	TSS	15		mg/L	P318711	
	SM 4500 F-C-97	Fluoride	0.22		mg F/L	P318705	
1865321	EPA 350.1 Rev. 2.0	Ammonia-N	0.069		mg N/L	P318838	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.9		mg N/L	P318576	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.021		mg N/L	P318691	
	EPA 365.1 Rev. 2.0	Total-P	0.052		mg P/L	P318672	
	SM 5310 B-00	Organic Carbon	15		mg C/L	P318553	
1865326	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P318511	
1865336	EPA 200.7 Rev. 4.4	Calcium	39.8		mg/L	P318563	
		Iron	30	U	ug/L	P318563	
		Magnesium	15.1		mg/L	P318563	
		Potassium	10.8		mg/L	P318563	
		Sodium	21.8		mg/L	P318563	
		Zinc	5.0	U	ug/L	P318563	
	EPA 200.8 Rev. 5.4	Arsenic	2.71		ug/L	P318563	
		Cadmium	0.020	U	ug/L	P318563	
		Chromium	0.40	U	ug/L	P318563	
		Copper	0.20	U	ug/L	P318563	
		Lead	0.19	I	ug/L	P318563	
		Nickel	0.20	U	ug/L	P318563	
		Silver	0.010	U	ug/L	P318563	

Ref. Method and Comment:

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

SM 4500 F-C-97: 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: P318515

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P318563

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318563

Component	Result	Code	Units
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318563

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.20	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.20	U	ug/L
Silver	0.010	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318867

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318871

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318838

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318576

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318690

Component	Result	Code	Units
NO2NO3-N	0.004	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

Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318612

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318672

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318510

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318511

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

Reference Method: SM 2120 B
Batch ID: P318620

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P318703

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P318832

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P318711

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P318705

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-00
Batch ID: P318553

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318563

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	99.3		P	85 - 115
Iron	106		P	85 - 115
Magnesium	103		P	85 - 115
Potassium	98.7		P	85 - 115
Sodium	102		P	85 - 115
Zinc	101		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318563

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	94.2		P	85 - 115
Cadmium	92.3		P	85 - 115
Chromium	93.2		P	85 - 115
Copper	90.5		P	85 - 115
Lead	93.3		P	85 - 115
Nickel	91.3		P	85 - 115
Silver	91.9		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318867

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318871

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318838

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318576

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318690

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: P318691

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: P318612

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318672

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.6		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318510

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: P318511

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

Reference Method: SM 2320 B-97
Batch ID: P318703

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

Reference Method: SM 4500 F-C-97
Batch ID: P318705

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

Reference Method: SM 5310 B-00
Batch ID: P318553

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.8		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P318563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865112	Calcium	99.0		P	80 - 120
1865112	Iron	104		P	80 - 120
1865112	Magnesium	98.4		P	80 - 120
1865112	Potassium	100		P	80 - 120
1865112	Sodium	106		P	80 - 120
1865112	Zinc	102		P	80 - 120
1865353	Calcium	101		P	80 - 120
1865353	Iron	102	104	P/P	80 - 120
1865353	Magnesium	101		P	80 - 120
1865353	Potassium	97.6	100	P/P	80 - 120
1865353	Sodium	103		P	80 - 120
1865353	Zinc	96.8	96.5	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P318563

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865112	Arsenic	92.4		P	80 - 120
1865112	Cadmium	92.4		P	80 - 120
1865112	Chromium	91.1		P	80 - 120
1865112	Copper	88.7		P	80 - 120
1865112	Lead	91.5		P	80 - 120
1865112	Nickel	87.8		P	80 - 120
1865112	Silver	89.1		P	80 - 120
1865353	Arsenic	93.6	92.8	P/P	80 - 120
1865353	Cadmium	94.2	91.9	P/P	80 - 120
1865353	Chromium	88.9	88.0	P/P	80 - 120
1865353	Copper	88.3	87.3	P/P	80 - 120
1865353	Lead	91.8	91.8	P/P	80 - 120
1865353	Nickel	89.4	90.0	P/P	80 - 120
1865353	Silver	90.9	90.4	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P318867

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865240	Chloride	100		P	90 - 110
1865241	Chloride	100		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P318871

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865240	Sulfate	96.7		P	90 - 110
1865241	Sulfate	97.0		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P318838

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865317	Ammonia-N	102	101	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318576

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865345	Kjeldahl Nitrogen	98.3	97.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318690

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865244	NO2NO3-N	104	104	P/P	90 - 110

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 365.1 Rev. 2.0
Batch ID: P318612

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865242	Total-P	96.0	92.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318672

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865319	Total-P	94.2	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318510

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865246	O-Phosphate-P	103	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318511

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865323	O-Phosphate-P	95.5	95.6	P/P	90 - 110

Reference Method: SM 5310 B-00
Batch ID: P318553

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1865107	Organic Carbon	99.0	97.9	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P318515

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865313	Turbidity	2.57	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P318563

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865353	Calcium	0.638	Spike	P	0 - 20
1865353	Iron	2.05	Spike	P	0 - 20
1865353	Magnesium	3.61	Spike	P	0 - 20
1865353	Potassium	2.38	Spike	P	0 - 20
1865353	Sodium	0.778	Spike	P	0 - 20
1865353	Zinc	0.278	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P318563

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865353	Arsenic	0.807	Spike	P	0 - 20
1865353	Cadmium	2.49	Spike	P	0 - 20
1865353	Chromium	0.966	Spike	P	0 - 20
1865353	Copper	1.13	Spike	P	0 - 20
1865353	Lead	0.0172	Spike	P	0 - 20
1865353	Nickel	0.752	Spike	P	0 - 20
1865353	Silver	0.494	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318867

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865241	Chloride	0.346	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P318871

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865241	Sulfate	1.47	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P318838

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865317	Ammonia-N	1.04	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P318576

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865345	Kjeldahl Nitrogen	0.742	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P318690

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865244	NO2NO3-N	0.482	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 365.1 Rev. 2.0
Batch ID: P318612

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865242	Total-P	4.16	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P318672

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865319	Total-P	5.40	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318510

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865246	O-Phosphate-P	0.867	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P318511

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865323	O-Phosphate-P	0.105	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P318620

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865363	Color (true)	1.57	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
Batch ID: P318703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865344	Total Alkalinity	0.518	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P318832

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865316	TDS	5.60	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P318705

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865344	Fluoride	0.980	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P318553

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1865107	Organic Carbon	1.09	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: A74030
Included Lab Sample IDs: 1865322, 1865323, 1865324, 1865325, 1865326

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	98.0	98.6	P/P	90 - 110
O-Phosphate-P	98.6	98.8	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A74031
Included Lab Sample IDs: 1865312, 1865313, 1865314, 1865315, 1865316

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

Reference Method: SM 5310 B-00
Run ID: A74044
Included Lab Sample IDs: 1865317, 1865318, 1865319, 1865320, 1865321

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	99.0	97.8	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2120 B

Run ID: A74073

Included Lab Sample IDs: 1865312, 1865313, 1865314, 1865315, 1865316

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	98.6	101	P/P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A74088

Included Lab Sample IDs: 1865312, 1865313, 1865314, 1865315, 1865316

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Sulfate	95.1	97.2	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74090

Included Lab Sample IDs: 1865318

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.6	99.3	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A74092

Included Lab Sample IDs: 1865317, 1865318, 1865319, 1865320, 1865321

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.6	97.7	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A74095

Included Lab Sample IDs: 1865317, 1865318, 1865319, 1865320, 1865321

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	96.0	96.0	P/P	90 - 110
NO2NO3-N	97.5	96.5	P/P	90 - 110
NO2NO3-N	98.0	97.5	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A74096

Included Lab Sample IDs: 1865312, 1865313, 1865314, 1865315, 1865316

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

Reference Method: SM 4500 F-C-97

Run ID: A74096

Included Lab Sample IDs: 1865312, 1865313, 1865314, 1865315, 1865316

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74101

Included Lab Sample IDs: 1865317

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

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A74112

Included Lab Sample IDs: 1865332, 1865333, 1865334, 1865335, 1865336

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	97.3	97.5	P/P	90 - 110
Calcium	97.5	97.5	P/P	90 - 110
Iron	100	100	P/P	90 - 110
Iron	100	100	P/P	90 - 110
Magnesium	99.6	99.8	P/P	90 - 110
Magnesium	99.8	99.9	P/P	90 - 110
Potassium	98.3	98.2	P/P	90 - 110
Potassium	98.6	98.3	P/P	90 - 110
Sodium	99.3	99.4	P/P	90 - 110
Sodium	99.4	99.5	P/P	90 - 110
Zinc	99.9	99.9	P/P	90 - 110
Zinc	99.9	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74127

Included Lab Sample IDs: 1865319, 1865321

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	99.4	P/P	90 - 110
Total-P	99.4	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A74130

Included Lab Sample IDs: 1865320

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	98.2	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A74136

Included Lab Sample IDs: 1865332, 1865333, 1865334, 1865335, 1865336

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	93.5	93.4	P/P	90 - 110
Cadmium	92.6	92.4	P/P	90 - 110
Chromium	90.5	90.2	P/P	90 - 110
Copper	90.6	91.3	P/P	90 - 110
Lead	91.4	90.8	P/P	90 - 110
Nickel	91.7	92.5	P/P	90 - 110
Silver	94.6	94.2	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A74141

Included Lab Sample IDs: 1865317, 1865318, 1865319, 1865320, 1865321

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	98.4	99.5	P/P	90 - 110
Ammonia-N	99.0	98.4	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 SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				2.57	
EPA 200.7 Rev. 4.4	Calcium	99.3	99.0 101			0.638
	Iron	106	104 102 104			2.05
	Magnesium	103	98.4 101			3.61
	Potassium	98.7	100 97.6 100			2.38
	Sodium	102	106 103			0.778
	Zinc	101	102 96.8 96.5			0.278
EPA 200.8 Rev. 5.4	Arsenic	94.2	92.4 93.6 92.8			0.807
	Cadmium	92.3	92.4 94.2 91.9			2.49
	Chromium	93.2	91.1 88.9 88.0			0.966
	Copper	90.5	88.7 88.3 87.3			1.13
	Lead	93.3	91.5 91.8 91.8			0.0172
	Nickel	91.3	87.8 89.4 90.0			0.752
	Silver	91.9	89.1 90.9 90.4			0.494
EPA 300.0 Rev. 2.1	Chloride	101	100 100		0.346	
	Sulfate	97.8	97.0 96.7		1.47	
EPA 350.1 Rev. 2.0	Ammonia-N	98.9	102 101			1.04
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	98.3 97.5			0.742
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	102	104 104			0.482
	NO ₂ NO ₃ -N	102	103 102			1.32
EPA 365.1 Rev. 2.0	Total-P	96.3	96.0 92.0			4.16
	Total-P	98.6	94.2 100			5.40
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	102	103 104			0.867
	O-Phosphate-P	105	95.5 95.6			0.105
SM 2120 B	Color (true)				1.57	
SM 2320 B-97	Total Alkalinity	103			0.518	
SM 2540 C-97	TDS				5.60	
SM 4500 F-C-97	Fluoride	96.9				0.980
SM 5310 B-00	Organic Carbon	99.8	99.0 97.9			1.09

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1865312, 1865313, 1865314, 1865315, 1865316
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1865332, 1865333, 1865334, 1865335, 1865336

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1865332, 1865333, 1865334, 1865335, 1865336
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1865312, 1865313, 1865314, 1865315, 1865316
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1865312, 1865313, 1865314, 1865315, 1865316
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1865317, 1865318, 1865319, 1865320, 1865321
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1865317, 1865318, 1865319, 1865320, 1865321
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1865317, 1865318, 1865319, 1865320, 1865321
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1865317, 1865318, 1865319, 1865320, 1865321
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1865322, 1865323, 1865324, 1865325, 1865326
SM 2120 B / E31780	True Color measured at 450 nm	1865312, 1865313, 1865314, 1865315, 1865316
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1865312, 1865313, 1865314, 1865315, 1865316
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1865312, 1865313, 1865314, 1865315, 1865316
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1865312, 1865313, 1865314, 1865315, 1865316
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1865312, 1865313, 1865314, 1865315, 1865316
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1865317, 1865318, 1865319, 1865320, 1865321

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	01/20/2017			01/20/2017 14:29	Sima Feizi	1865312, 1865313, 1865314, 1865315, 1865316
EPA 200.7 Rev. 4.4	01/20/2017	01/23/2017	Elliott D. Healy	01/25/2017	Joshua Ayres	1865332, 1865333, 1865334, 1865335, 1865336
EPA 200.8 Rev. 5.4	01/20/2017	01/23/2017	Elliott D. Healy	01/26/2017	Betina Topolski	1865332, 1865333, 1865334, 1865335, 1865336
EPA 300.0 Rev. 2.1	01/20/2017			01/27/2017	Ping Hua	1865312, 1865313, 1865314, 1865315, 1865316
EPA 350.1 Rev. 2.0	01/20/2017			01/26/2017	Sofia Elnemr	1865317, 1865318, 1865319, 1865320, 1865321
EPA 351.2 Rev. 2.0	01/20/2017	01/24/2017	Adrian Shelby	01/25/2017	Joseph Suarez	1865317, 1865318, 1865319, 1865320, 1865321
EPA 353.2 Rev. 2.0	01/20/2017			01/25/2017	Beverly Y. Sanders	1865317, 1865318, 1865319, 1865320, 1865321
EPA 365.1 Rev. 2.0	01/20/2017	01/24/2017	Vijayalakshmi Reddy	01/25/2017	Lipi Saha	1865317, 1865318
	01/20/2017	01/25/2017	Vijayalakshmi Reddy	01/26/2017	Lipi Saha	1865319, 1865320, 1865321
EPA 365.1 Rev. 2.0 dissolved	01/20/2017			01/20/2017 14:29	Julia Storbeck	1865323
	01/20/2017			01/20/2017 14:40	Julia Storbeck	1865322
	01/20/2017			01/20/2017 14:41	Julia Storbeck	1865324, 1865325
	01/20/2017			01/20/2017 14:42	Julia Storbeck	1865326
SM 2120 B	01/20/2017			01/20/2017 15:39	Jared I. Manley	1865312
	01/20/2017			01/20/2017 15:40	Jared I. Manley	1865313
	01/20/2017			01/20/2017 15:41	Jared I. Manley	1865314, 1865315
	01/20/2017			01/20/2017 15:42	Jared I. Manley	1865316
SM 2320 B-97	01/20/2017			01/25/2017	Dale L. Simmons	1865312, 1865313, 1865314, 1865315, 1865316
SM 2540 C-97	01/20/2017			01/24/2017	Yijie Li	1865312, 1865313, 1865314, 1865315, 1865316
SM 2540 D-97	01/20/2017			01/24/2017	Yijie Li	1865312, 1865313, 1865314, 1865315, 1865316
SM 4500 F-C-97	01/20/2017			01/25/2017	Dale L. Simmons	1865312, 1865313, 1865314, 1865315, 1865316
SM 5310 B-00	01/20/2017			01/21/2017	Julie Michelle Frank	1865317, 1865318, 1865319, 1865320, 1865321