

Chemical Analysis Report

WQAP-2017-05-16-02

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

Event Description: **SMP: Upper Lemon Bay**

Request ID: **RQ-2017-05-15-06**

Customer: **WQAP**

Project ID: **SMP**

Send Reports to:
DEP SROC
2295 Victoria Ave.
Suite 364
Fort Myers, FL 33901
Attn: Ben Paswater

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

Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 12-JUN-2017 14:09



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: Nutrients and Pesticides.

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: WHIDDEN CREEK - BETWEEN TWO MANGROVES

Collection Date/Time: 05/15/2017 10:50

Field ID: G2SD051517-2

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1899451	EPA 180.1 Rev. 2.0	Turbidity	1.0		NTU	P325378	
	SM 2320 B-97	Total Alkalinity	129		mg CaCO3/L	P325700	
	SM 2540 D-97	TSS	4	I	mg/L	P325681	
	SM 4500 F-C-97	Fluoride	0.92		mg F/L	P325703	RPD
1899453	EPA 350.1 Rev. 2.0	Ammonia-N	0.007		mg N/L	P325659	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.74		mg N/L	P325537	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.008	U	mg N/L	P325490	
	EPA 365.1 Rev. 2.0	Total-P	0.025		mg P/L	P325436	
	SM 5310 B-00	Organic Carbon	8.0		mg C/L	P326008	
1899455	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325387	

Ref. Method and Comment:

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

EPA 353.2 Rev. 2.0: NO2NO3-N: The MDL was elevated due to sample matrix interference.

Sample Location: LEMON BAY NEAR INDIAN MOUND PARK

Collection Date/Time: 05/15/2017 12:15

Field ID: G2SD051517-1

Matrix: W-SURF-SLT

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1899491	EPA 8321B	Sucralose**	0.024	I	ug/L	P325291	
	USGS O-2060-01	2,4-D	8.0E-04	U	ug/L	P325285	
		Diuron	8.0E-04	U	ug/L	P325285	
		Fenuron	0.0046	I	ug/L	P325285	
		Imidacloprid	8.0E-04	U	ug/L	P325285	MS
		Bentazon	8.0E-04	U	ug/L	P325285	
		Linuron	0.0040	U	ug/L	P325285	
		Acetaminophen**	0.0080	U	ug/L	P325285	
		MCP	8.0E-04	U	ug/L	P325285	
		Carbamazepine**	4.0E-04	U	ug/L	P325285	
		Triclopyr**	0.0040	U	ug/L	P325285	
		Primidone**	0.0040	U	ug/L	P325285	
		Fluridone**	4.8E-04	I	ug/L	P325285	

Sample Location: FIELD BLANK

Collection Date/Time: 05/15/2017 12:25

Field ID: G2SDBLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1899452	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P325378	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P325701	
	SM 2540 D-97	TSS	2	U	mg/L	P325679	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P325704	
1899454	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P325657	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P325538	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P325427	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P325434	

Field ID: G2SDBLANK

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1899454	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P325583	
1899456	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P325387	

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: P325378

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P325657

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

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P325659

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P325537

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P325538

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P325427

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

Reference Method: EPA 353.2 Rev. 2.0

Batch ID: P325490

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

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P325434

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325434

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325436

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325387

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

Reference Method: EPA 8321B
Batch ID: P325291

Component	Result	Code	Units
Sucralose	0.010	U	ug/L

Reference Method: SM 2320 B-97
Batch ID: P325700

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

Reference Method: SM 2320 B-97
Batch ID: P325701

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

Reference Method: SM 2540 D-97
Batch ID: P325679

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P325681

Component	Result	Code	Units
TSS	3	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P325703

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Quality Assurance Report Method Blank Results

Reference Method: SM 4500 F-C-97
 Batch ID: P325704

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
 Batch ID: P325583

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

Reference Method: SM 5310 B-00
 Batch ID: P326008

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

Reference Method: USGS O-2060-01
 Batch ID: P325285

Component	Result	Code	Units
2,4-D	8.0E-04	U	ug/L
Acetaminophen	0.0080	U	ug/L
Bentazon	8.0E-04	U	ug/L
Carbamazepine	4.0E-04	U	ug/L
Diuron	8.0E-04	U	ug/L
Fenuron	0.0040	U	ug/L
Fluridone	4.0E-04	U	ug/L
Imidacloprid	8.0E-04	U	ug/L
Linuron	0.0040	U	ug/L
MCP	8.0E-04	U	ug/L
Primidone	0.0040	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P325657

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P325659

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.7		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P325537

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 351.2 Rev. 2.0
Batch ID: P325538

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325427

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: P325490

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	94.0		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325434

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325436

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325387

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

Reference Method: EPA 8321B
Batch ID: P325291

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sucralose	78.3		P	40 - 140

Reference Method: SM 2320 B-97
Batch ID: P325700

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

Reference Method: SM 2320 B-97
Batch ID: P325701

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

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
 Batch ID: P325703

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.1		P	92 - 103

Reference Method: SM 4500 F-C-97
 Batch ID: P325704

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.1		P	92 - 103

Reference Method: SM 5310 B-00
 Batch ID: P325583

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.0		P	85 - 115

Reference Method: SM 5310 B-00
 Batch ID: P326008

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	95.0		P	85 - 115

Reference Method: USGS O-2060-01
 Batch ID: P325285

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	88.4		P	40 - 140
Acetaminophen	86.2		P	40 - 140
Bentazon	70.6		P	40 - 140
Carbamazepine	107		P	40 - 140
Diuron	108		P	40 - 140
Fenuron	93.2		P	40 - 140
Fluridone	103		P	40 - 140
Imidacloprid	92.0		P	40 - 160
Linuron	100		P	40 - 140
MCPP	91.4		P	40 - 140
Primidone	98.0		P	40 - 140
Triclopyr	94.8		P	40 - 140

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P325657

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899449	Ammonia-N	102	105	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P325659

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899416	Ammonia-N	101	102	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325537

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899409	Kjeldahl Nitrogen	94.4	93.1	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325538

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899502	Kjeldahl Nitrogen	97.9	95.9	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325427

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899501	NO2NO3-N	102	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325490

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898672	NO2NO3-N	100	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325434

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899439	Total-P	108	110	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325436

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899350	Total-P	97.2	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325387

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899455	O-Phosphate-P	102	102	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P325291

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898904	Sucralose	59.7	55.5	P/P	40 - 140

Reference Method: SM 4500 F-C-97
Batch ID: P325703

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899011	Fluoride	96.5	102	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P325583

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1899365	Organic Carbon	92.8	93.6	P/P	85 - 115

Reference Method: SM 5310 B-00
 Batch ID: P326008

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898609	Organic Carbon	92.6	92.1	P/P	85 - 115

Reference Method: USGS O-2060-01
 Batch ID: P325285

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1898769	2,4-D	81.2	80.8	P/P	40 - 140
1898769	Acetaminophen	97.0	95.4	P/P	40 - 140
1898769	Bentazon	45.6	45.4	P/P	40 - 140
1898769	Carbamazepine	110	122	P/P	40 - 140
1898769	Diuron	111	97.2	P/P	40 - 140
1898769	Fenuron	85.0	88.2	P/P	40 - 140
1898769	Fluridone	46.0	45.0	P/P	40 - 140
1898769	Imidacloprid	156	161	P/F	40 - 160
1898769	Linuron	97.6	102	P/P	40 - 140
1898769	MCP	82.0	75.4	P/P	40 - 140
1898769	Primidone	102	112	P/P	40 - 140
1898769	Triclopyr	83.2	82.4	P/P	40 - 140

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
 Batch ID: P325378

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899448	Turbidity	2.70	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P325657

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899449	Ammonia-N	2.27	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P325659

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899416	Ammonia-N	0.884	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325537

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899409	Kjeldahl Nitrogen	1.18	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P325538

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899502	Kjeldahl Nitrogen	1.53	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325427

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899501	NO2NO3-N	0.286	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P325490

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898672	NO2NO3-N	0.990	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325434

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899439	Total-P	1.79	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P325436

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899350	Total-P	0.156	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P325387

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899455	O-Phosphate-P	0.0976	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P325291

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898904	Sucralose	6.94	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: SM 2320 B-97
 Batch ID: P325700

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899011	Total Alkalinity	0.127	Sample	P	0 - 4.8

Reference Method: SM 2320 B-97
 Batch ID: P325701

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899343	Total Alkalinity	0.355	Sample	P	0 - 4.8

Reference Method: SM 4500 F-C-97
 Batch ID: P325703

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899011	Fluoride	3.92	Spike	F	0 - 3.0

Reference Method: SM 4500 F-C-97
 Batch ID: P325704

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899343	Fluoride	1.48	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
 Batch ID: P325583

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1899365	Organic Carbon	0.616	Spike	P	0 - 20

Reference Method: SM 5310 B-00
 Batch ID: P326008

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898609	Organic Carbon	0.394	Spike	P	0 - 20

Reference Method: USGS O-2060-01
 Batch ID: P325285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898769	2,4-D	0.480	Spike	P	0 - 30
1898769	Acetaminophen	1.66	Spike	P	0 - 30
1898769	Bentazon	0.440	Spike	P	0 - 30
1898769	Carbamazepine	10.4	Spike	P	0 - 30
1898769	Diuron	12.9	Spike	P	0 - 30
1898769	Fenuron	3.70	Spike	P	0 - 30
1898769	Fluridone	2.20	Spike	P	0 - 30
1898769	Imidacloprid	2.81	Spike	P	0 - 30
1898769	Linuron	4.21	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: USGS O-2060-01
Batch ID: P325285

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1898769	MCP	8.39	Spike	P	0 - 30
1898769	Primidone	9.74	Spike	P	0 - 30
1898769	Triclopyr	0.966	Spike	P	0 - 30

* 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 Surrogates

Lab Sample ID: 1899491
Field Sample ID: G2SD051517-1

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Sucralose-d6	134	P	40 - 150
USGS O-2060-01	2,4-D-d3	77.8	P	30 - 150
USGS O-2060-01	Acetaminophen-d4	77.9	P	30 - 150
USGS O-2060-01	Carbamazepine-d10	116	P	30 - 160
USGS O-2060-01	Diuron-d6	109	P	30 - 150
USGS O-2060-01	Primidone-d5	117	P	30 - 150

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A76462
Included Lab Sample IDs: 1899451, 1899452

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A76466
Included Lab Sample IDs: 1899455, 1899456

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	101	98.8	P/P	90 - 110
O-Phosphate-P	99.5	101	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A76480
Included Lab Sample IDs: 1899454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	99.0	98.5	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A76509

Included Lab Sample IDs: 1899453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	98.5	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A76516

Included Lab Sample IDs: 1899453, 1899454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.8	98.5	P/P	90 - 110
Total-P	99.2	98.8	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A76560

Included Lab Sample IDs: 1899454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.8	95.4	P/P	90 - 110

Reference Method: USGS O-2060-01

Run ID: A76569

Included Lab Sample IDs: 1899491

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	88.0	91.6	P/P	50 - 150
Acetaminophen	74.0	101	P/P	60 - 150
Bentazon	90.8	98.0	P/P	50 - 150
Carbamazepine	80.4	92.8	P/P	60 - 150
Diuron	80.0	94.0	P/P	60 - 150
Fenuron	78.0	100	P/P	60 - 150
Fluridone	81.6	95.2	P/P	60 - 150
Imidacloprid	71.2	88.0	P/P	60 - 150
Linuron	78.8	76.0	P/P	60 - 150
MCPP	86.0	84.4	P/P	50 - 150
Primidone	82.0	89.6	P/P	60 - 150
Triclopyr	88.0	92.8	P/P	50 - 150

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A76600

Included Lab Sample IDs: 1899453, 1899454

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

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A76606

Included Lab Sample IDs: 1899453, 1899454

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	97.7	99.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 2320 B-97

Run ID: A76617

Included Lab Sample IDs: 1899451, 1899452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	101	104	P/P	90 - 110
Total Alkalinity	104	102	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A76617

Included Lab Sample IDs: 1899451, 1899452

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.0	99.5	P/P	90 - 110
Fluoride	99.0	98.0	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A76745

Included Lab Sample IDs: 1899491

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	114	106	P/P	60 - 150

Reference Method: SM 5310 B-00

Run ID: A76758

Included Lab Sample IDs: 1899453

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	94.8	92.3	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				2.70	
EPA 350.1 Rev. 2.0	Ammonia-N	98.2	102 105			2.27
	Ammonia-N	98.7	101 102			0.884
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	101	94.4 93.1			1.18
	Kjeldahl Nitrogen	99.5	97.9 95.9			1.53
EPA 353.2 Rev. 2.0	NO2NO3-N	100	102 102			0.286
	NO2NO3-N	94.0	100 102			0.990
EPA 365.1 Rev. 2.0	Total-P	102	108 110			1.79
	Total-P	103	97.2 97.4			0.156
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	104	102 102			0.0976
EPA 8321B	Sucralose	78.3	59.7 55.5			6.94
SM 2320 B-97	Total Alkalinity	103			0.127	
	Total Alkalinity	104			0.355	
SM 4500 F-C-97	Fluoride	97.1	96.5 102			3.92
	Fluoride	99.1				1.48
SM 5310 B-00	Organic Carbon	94.0	92.8 93.6			0.616

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision LCS	SMP	MS
SM 5310 B-00	Organic Carbon	95.0	92.6	92.1			0.394
USGS O-2060-01	2,4-D	88.4	81.2	80.8			0.480
	Acetaminophen	86.2	97.0	95.4			1.66
	Bentazon	70.6	45.6	45.4			0.440
	Carbamazepine	107	110	122			10.4
	Diuron	108	111	97.2			12.9
	Fenuron	93.2	85.0	88.2			3.70
	Fluridone	103	46.0	45.0			2.20
	Imidacloprid	92.0	156	161			2.81
	Linuron	100	97.6	102			4.21
	MCP	91.4	82.0	75.4			8.39
	Primidone	98.0	102	112			9.74
	Triclopyr	94.8	83.2	82.4			0.966

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1899451, 1899452
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1899453, 1899454
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1899453, 1899454
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1899453, 1899454
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1899453, 1899454
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1899455, 1899456
EPA 8321B / E31780	Water soluble organic compounds by HPLC/MS/MS	1899491
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1899451, 1899452
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1899451, 1899452
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1899451, 1899452
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1899453, 1899454
USGS O-2060-01 / E31780	Chlorinated (phenoxy acid) herbicides in water matrices by HPLC/MS/MS	1899491
USGS O-2060-01 / E31780	Urea herbicides and other chemicals in water matrices by HPLC/MS/MS	1899491

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	05/16/2017			05/16/2017 15:00	Sima Feizi	1899451, 1899452
EPA 350.1 Rev. 2.0	05/16/2017			05/22/2017	Julia Storbeck	1899453, 1899454
EPA 351.2 Rev. 2.0	05/16/2017	05/19/2017	Adrian Shelby	05/23/2017	Joseph Suarez	1899453, 1899454
EPA 353.2 Rev. 2.0	05/16/2017			05/17/2017	Beverly Y. Sanders	1899454
	05/16/2017			05/18/2017	Beverly Y. Sanders	1899453
EPA 365.1 Rev. 2.0	05/16/2017	05/17/2017	Vijayalakshmi Reddy	05/18/2017	Lipi Saha	1899453, 1899454
EPA 365.1 Rev. 2.0 dissolved	05/16/2017			05/16/2017 15:31	Anthony C. Onicha	1899455
	05/16/2017			05/16/2017 15:46	Anthony C. Onicha	1899456
EPA 8321B	05/16/2017	05/18/2017	Mohammad Ghaffari	05/27/2017	Mohammad Ghaffari	1899491
SM 2320 B-97	05/16/2017			05/23/2017	Dale L. Simmons	1899451, 1899452
SM 2540 D-97	05/16/2017			05/17/2017	Yijie Li	1899451, 1899452
SM 4500 F-C-97	05/16/2017			05/23/2017	Dale L. Simmons	1899451, 1899452
SM 5310 B-00	05/16/2017			05/20/2017	Christopher Armour	1899454
	05/16/2017			05/30/2017	Julie Michelle Frank	1899453
USGS O-2060-01	05/16/2017	05/17/2017	Hoor Shaik	05/21/2017	Juyoung Kim	1899491