

Chemical Analysis Report

NE-DIST-2020-03-26-02

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

Event Description: **Biosolids application site- Crescent**
Request ID: **RQ-2020-03-23-07**
Customer: **NE-DIST**
Project ID: **DISTRICT**

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator

Date Certified: 15-APR-2020 09:28



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, 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 by the Florida Department of Health Environmental Laboratory Certification Program 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: Silverlake outlet 75m above old US 17

Collection Date/Time: 03/25/2020 11:35

Field ID: Silverlake outlet 75m above ol

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2168139	EPA 300.0 Rev. 2.1	Chloride	5.4		mg Cl/L	P381945	
		Sulfate	2.0		mg SO4/L	P381949	
	SM 2320 B-2011	Total Alkalinity	2.6		mg CaCO3/L	P381658	
	SM 2540 C-2011	TDS	55		mg/L	P381718	
	SM 2540 D-2011	TSS	2	I	mg/L	P381711	
	SM 4500 F-C-2011	Fluoride	0.043	I	mg F/L	P381822	RPD
2168140	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P381443	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.91		mg N/L	P381566	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	I	mg N/L	P381692	
	EPA 365.1 Rev. 2.0	Total-P	0.073		mg P/L	P381619	
	SM 5310 B-2011	Organic Carbon	18		mg C/L	P381641	
	EPA 8321B	2,4-D	0.0020	U	ug/L	P381314	
2168142		Acesulfame K**	0.10	U	ug/L	P381172	
		AMPA**	0.10	U	ug/L	P381172	
		Sucralose**	0.010	U	ug/L	P381172	
		Acetaminophen**	0.0080	U	ug/L	P381314	
		Acetamiprid**	0.0020	U	ug/L	P381314	
		Endothall**	0.25	U	ug/L	P381172	
		Glufosinate**	0.10	U	ug/L	P381172	
		Glyphosate**	0.10	U	ug/L	P381172	
		Afidopyropen**	0.0020	UJ	ug/L	P381314	
		Bentazon	8.0E-04	U	ug/L	P381314	
		Benzovindiflupyr**	0.0020	UJ	ug/L	P381314	
		Carbamazepine**	8.0E-04	U	ug/L	P381314	
		Clothianidin**	0.0020	U	ug/L	P381314	
		Dinotefuran**	0.0020	U	ug/L	P381314	
		Diuron	0.0020	U	ug/L	P381314	
		Fenuron	0.016	U	ug/L	P381314	
		Fluridone**	8.0E-04	U	ug/L	P381314	
		Imazapyr**	0.0040	U	ug/L	P381314	
		Hydrocodone**	0.0020	U	ug/L	P381314	
		Ibuprofen**	0.020	U	ug/L	P381314	
		Imidacloprid	0.0020	U	ug/L	P381314	
		Linuron	0.0040	U	ug/L	P381314	
		Mandestrobin**	0.0020	UJ	ug/L	P381314	
		MCPD	0.0020	U	ug/L	P381314	
		Naproxen**	0.0080	U	ug/L	P381314	
		Primidone**	0.0040	U	ug/L	P381314	
		Pyraclostrobin**	0.0020	U	ug/L	P381314	
		Thiamethoxam**	0.0020	U	ug/L	P381314	
		Tolfenpyrad**	0.0020	U	ug/L	P381314	
		Triclopyr**	0.0040	U	ug/L	P381314	
		Perfluorooctanoic acid (PFOA)**	1.5	I	ng/L	P381373	
		Perfluorooctanesulfonic acid (PFOS)**	2.1	U	ng/L	P381373	

Field ID: Silverlake outlet 75m above ol

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2168143	EPA 8321B	Perfluorobutanesulfonic acid (PFBS)**	0.42	U	ng/L	P381373	
		Perfluorodecanoic acid (PFDA)**	1.0	U	ng/L	P381373	
		Perfluorododecanoic acid (PFDoA)**	1.0	U	ng/L	P381373	
		Perfluoroheptanoic acid (PFHpA)**	2.1	U	ng/L	P381373	
		Perfluorohexanesulfonic acid (PFHxS)**	0.42	U	ng/L	P381373	
		Perfluorohexanoic acid (PFHxA)**	2.1	U	ng/L	P381373	RPD
		Perfluorononanoic acid (PFNA)**	1.0	U	ng/L	P381373	
		Perfluorotetradecanoic acid (PFTeA)**	0.42	U	ng/L	P381373	
		Perfluorotridecanoic acid (PFTriA)**	0.42	U	ng/L	P381373	
		Perfluoroundecanoic acid (PFUnA)**	1.0	U	ng/L	P381373	
		N-Me perfluorooctanesulfonamidoAc acid**	0.42	U	ng/L	P381373	
		N-Et perfluorooctanesulfonamidoAc acid**	0.42	U	ng/L	P381373	
		Perfluoropentanoic acid (PFPeA)**	4.2	U	ng/L	P381373	
		4:2 Fluorotelomer sulfonate (4:2 FTS)**	2.1	U	ng/L	P381373	
		Perfluoropentanesulfonic acid (PFPeS)**	0.42	U	ng/L	P381373	
		6:2 Fluorotelomer sulfonate (6:2 FTS)**	4.2	U	ng/L	P381373	
		8:2 Fluorotelomer sulfonate (8:2 FTS)**	2.1	U	ng/L	P381373	
		Perfluoroheptanesulfonic acid (PFHpS)**	0.42	U	ng/L	P381373	
		Perfluorononanesulfonic acid (PFNS)**	0.42	U	ng/L	P381373	
		Perfluorodecanesulfonic acid (PFDS)**	0.42	U	ng/L	P381373	
		Hexafluoropropylene oxide dimer acid**	1.0	U	ng/L	P381373	
2168144	EPA 200.7 Rev. 4.4	Barium	4.5		ug/L	P381775	
		Calcium	3.49		mg/L	P381775	
		Iron	630		ug/L	P381775	
		Magnesium	1.07		mg/L	P381775	
		Potassium	0.57	I	mg/L	P381775	
		Sodium	3.1		mg/L	P381775	
		Zinc	5.0	U	ug/L	P381775	
	EPA 200.8 Rev. 5.4	Aluminum	201		ug/L	P381775	
		Antimony	0.050	U	ug/L	P381775	
		Arsenic	0.54		ug/L	P381775	
		Boron**	11.6		ug/L	P381775	
		Cadmium	0.020	U	ug/L	P381775	
		Chromium	1.0	I	ug/L	P381775	
		Copper	0.40	U	ug/L	P381775	
		Lead	0.20	U	ug/L	P381775	
		Nickel	0.50	U	ug/L	P381775	
		Selenium	0.20	U	ug/L	P381775	
		Silver	0.010	U	ug/L	P381775	
		Thallium	0.10	U	ug/L	P381775	

Ref. Method and Comment:

SM 2540 D-2011: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 8321B: J - second source check standards for some analytes were not available for analysis.

EPA 8321B: MS accuracy for PFHxS could not be assessed due to a high concentration of parameters in the spiked sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P381775

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
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: P381775

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381945

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381949

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381443

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381566

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

Quality Assurance Report Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381692

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P381619

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

Reference Method: EPA 8321B
Batch ID: P381172

Component	Result	Code	Units
Acesulfame K	0.10	U	ug/L
AMPA	0.10	U	ug/L
Endothall	0.25	U	ug/L
Glufosinate	0.10	U	ug/L
Glyphosate	0.10	U	ug/L
Sucralose	0.010	U	ug/L

Reference Method: EPA 8321B
Batch ID: P381314

Component	Result	Code	Units
2,4-D	0.0020	U	ug/L
Acetaminophen	0.0080	U	ug/L
Acetamiprid	0.0020	U	ug/L
Afidopyropen	0.0020	U	ug/L
Bentazon	8.0E-04	U	ug/L
Benzovindiflupyr	0.0020	U	ug/L
Carbamazepine	8.0E-04	U	ug/L
Clothianidin	0.0020	U	ug/L
Dinotefuran	0.0020	U	ug/L
Diuron	0.0020	U	ug/L
Fenuron	0.016	U	ug/L
Fluridone	8.0E-04	U	ug/L
Hydrocodone	0.0020	U	ug/L
Ibuprofen	0.020	U	ug/L
Imazapyr	0.0040	U	ug/L
Imidacloprid	0.0020	U	ug/L
Linuron	0.0040	U	ug/L
Mandestrobin	0.0020	U	ug/L
MCPP	0.0020	U	ug/L
Naproxen	0.0080	U	ug/L
Primidone	0.0040	U	ug/L
Pyraclostrobin	0.0020	U	ug/L
Thiamethoxam	0.0020	U	ug/L
Tolfenpyrad	0.0020	U	ug/L
Triclopyr	0.0040	U	ug/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 8321B

Batch ID: P381373

Component	Result	Code	Units
4:2 Fluorotelomer sulfonate (4:2 FTS)	2.0	U	ng/L
6:2 Fluorotelomer sulfonate (6:2 FTS)	4.0	U	ng/L
8:2 Fluorotelomer sulfonate (8:2 FTS)	2.0	U	ng/L
Hexafluoropropylene oxide dimer acid	1.0	U	ng/L
N-Et perfluorooctanesulfonamidoAc acid	0.40	U	ng/L
N-Me perfluorooctanesulfonamidoAc acid	0.40	U	ng/L
Perfluorobutanesulfonic acid (PFBS)	0.40	U	ng/L
Perfluorodecanesulfonic acid (PFDS)	0.40	U	ng/L
Perfluorodecanoic acid (PFDA)	1.0	U	ng/L
Perfluorododecanoic acid (PFDoA)	1.0	U	ng/L
Perfluoroheptanesulfonic acid (PFHpS)	0.40	U	ng/L
Perfluoroheptanoic acid (PFHpA)	2.0	U	ng/L
Perfluorohexanesulfonic acid (PFHxS)	0.40	U	ng/L
Perfluorohexanoic acid (PFHxA)	2.0	U	ng/L
Perfluorononanesulfonic acid (PFNS)	0.40	U	ng/L
Perfluorononanoic acid (PFNA)	1.0	U	ng/L
Perfluorooctanesulfonic acid (PFOS)	2.0	U	ng/L
Perfluorooctanoic acid (PFOA)	1.0	U	ng/L
Perfluoropentanesulfonic acid (PFPeS)	0.40	U	ng/L
Perfluoropentanoic acid (PFPeA)	4.0	U	ng/L
Perfluorotetradecanoic acid (PFTeA)	0.40	U	ng/L
Perfluorotridecanoic acid (PFTriA)	0.40	U	ng/L
Perfluoroundecanoic acid (PFUnA)	1.0	U	ng/L

Reference Method: SM 2320 B-2011

Batch ID: P381658

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

Reference Method: SM 2540 C-2011

Batch ID: P381718

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2011

Batch ID: P381711

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-2011

Batch ID: P381822

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-2011

Batch ID: P381641

Component	Result	Code	Units
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Quality Assurance Report Method Blank Results

Reference Method: SM 5310 B-2011
Batch ID: P381641

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: P381775

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	100		P	85 - 115
Calcium	103		P	85 - 115
Iron	102		P	85 - 115
Magnesium	101		P	85 - 115
Potassium	97.8		P	85 - 115
Sodium	101		P	85 - 115
Zinc	100		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P381775

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	95.4		P	85 - 115
Antimony	97.8		P	85 - 115
Arsenic	97.3		P	85 - 115
Boron	100		P	85 - 115
Cadmium	97.7		P	85 - 115
Chromium	100		P	85 - 115
Copper	97.4		P	85 - 115
Lead	93.8		P	85 - 115
Nickel	96.4		P	85 - 115
Selenium	96.0		P	85 - 115
Silver	97.2		P	85 - 115
Thallium	94.4		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381945

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

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381949

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381443

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: P381566

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	106		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P381692

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

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P381619

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

Reference Method: EPA 8321B
 Batch ID: P381172

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Acesulfame K	112		P	40 - 150
AMPA	109		P	40 - 150
Endothall	78.3		P	40 - 150
Glufosinate	112		P	40 - 150
Glyphosate	123		P	40 - 140
Sucralose	92.3		P	40 - 150

Reference Method: EPA 8321B
 Batch ID: P381314

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2,4-D	111		P	30 - 160
Acetaminophen	75.1		P	30 - 160
Acetamiprid	98.8		P	30 - 160
Afidopyropen	98.3		P	30 - 160
Bentazon	59.2		P	30 - 160
Benzovindiflupyr	80.5		P	30 - 160
Carbamazepine	117		P	30 - 160
Clothianidin	94.6		P	30 - 160
Dinotefuran	87.2		P	30 - 160
Diuron	105		P	30 - 160
Fenuron	102		P	30 - 160
Fluridone	84.6		P	30 - 160
Hydrocodone	87.4		P	30 - 160
Ibuprofen	73.2		P	30 - 160
Imazapyr	91.8		P	30 - 160
Imidacloprid	121		P	30 - 160
Linuron	69.9		P	30 - 160
Mandestrobin	86.7		P	30 - 160
MCPP	119		P	30 - 160
Naproxen	68.8		P	30 - 160
Primidone	102		P	30 - 160
Pyraclostrobin	78.8		P	30 - 160
Thiamethoxam	101		P	30 - 160
Tolfenpyrad	51.4		P	30 - 160
Triclopyr	93.9		P	30 - 160

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8321B

Batch ID: P381373

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
4:2 Fluorotelomer sulfonate (4:2 FTS)	79.4		P	30 - 160
6:2 Fluorotelomer sulfonate (6:2 FTS)	148		P	30 - 160
8:2 Fluorotelomer sulfonate (8:2 FTS)	139		P	30 - 160
Hexafluoropropylene oxide dimer acid	99.5		P	30 - 160
N-Et perfluorooctanesulfonamidoAc acid	84.2		P	30 - 160
N-Me perfluorooctanesulfonamidoAc acid	109		P	30 - 160
Perfluorobutanesulfonic acid (PFBS)	101		P	30 - 160
Perfluorodecanesulfonic acid (PFDS)	93.7		P	30 - 160
Perfluorodecanoic acid (PFDA)	94.3		P	30 - 160
Perfluorododecanoic acid (PFDoA)	96.0		P	30 - 160
Perfluoroheptanesulfonic acid (PFHpS)	98.7		P	30 - 160
Perfluoroheptanoic acid (PFHpA)	84.1		P	30 - 160
Perfluorohexanesulfonic acid (PFHxS)	127		P	30 - 160
Perfluorohexanoic acid (PFHxA)	91.4		P	30 - 160
Perfluorononanesulfonic acid (PFNS)	88.2		P	30 - 160
Perfluorononanoic acid (PFNA)	86.6		P	30 - 160
Perfluorooctanesulfonic acid (PFOS)	97.5		P	30 - 160
Perfluorooctanoic acid (PFOA)	131		P	30 - 160
Perfluoropentanesulfonic acid (PFPeS)	110		P	30 - 160
Perfluoropentanoic acid (PFPeA)	85.0		P	30 - 160
Perfluorotetradecanoic acid (PFTeA)	45.4		P	30 - 160
Perfluorotridecanoic acid (PFTriA)	46.7		P	30 - 160
Perfluoroundecanoic acid (PFUnA)	85.4		P	30 - 160

Reference Method: SM 2320 B-2011

Batch ID: P381658

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.9		P	98 - 107

Reference Method: SM 4500 F-C-2011

Batch ID: P381822

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	97.5		P	92 - 104

Reference Method: SM 5310 B-2011

Batch ID: P381641

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.3		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P381775

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2168741	Barium	98.3	97.6	P/P	80 - 120
2168741	Calcium	105		P	80 - 120
2168741	Iron	98.7	100	P/P	80 - 120
2168741	Magnesium	102		P	80 - 120
2168741	Potassium	94.9	95.4	P/P	80 - 120
2168741	Sodium	93.7	93.7	P/P	80 - 120
2168741	Zinc	98.9	98.0	P/P	80 - 120
2168742	Barium	97.9		P	80 - 120
2168742	Calcium	99.3		P	80 - 120
2168742	Iron	99.8		P	80 - 120
2168742	Magnesium	98.2		P	80 - 120
2168742	Potassium	91.3		P	80 - 120
2168742	Sodium	100		P	80 - 120
2168742	Zinc	97.6		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P381775

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2168741	Aluminum	95.7	95.4	P/P	80 - 120
2168741	Antimony	99.9	99.6	P/P	80 - 120
2168741	Arsenic	98.8	99.0	P/P	80 - 120
2168741	Boron	101	99.3	P/P	80 - 120
2168741	Cadmium	102	99.9	P/P	80 - 120
2168741	Chromium	105	105	P/P	80 - 120
2168741	Copper	97.8	97.4	P/P	80 - 120
2168741	Lead	95.0	94.4	P/P	80 - 120
2168741	Nickel	96.2	96.7	P/P	80 - 120
2168741	Selenium	97.6	97.8	P/P	80 - 120
2168741	Silver	98.7	98.7	P/P	80 - 120
2168741	Thallium	97.1	98.0	P/P	80 - 120
2168742	Aluminum	94.7		P	80 - 120
2168742	Antimony	100		P	80 - 120
2168742	Arsenic	98.9		P	80 - 120
2168742	Boron	97.2		P	80 - 120
2168742	Cadmium	101		P	80 - 120
2168742	Chromium	102		P	80 - 120
2168742	Copper	96.1		P	80 - 120
2168742	Lead	95.2		P	80 - 120
2168742	Nickel	94.0		P	80 - 120
2168742	Selenium	96.8		P	80 - 120
2168742	Silver	98.9		P	80 - 120
2168742	Thallium	98.4		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381945

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2168057	Chloride	99.3		P	90 - 110
2168135	Chloride	100		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P381949

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2168057	Sulfate	98.8		P	90 - 110
2168135	Sulfate	99.5		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P381443

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2168176	Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381566

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2168149	Kjeldahl Nitrogen	101	104	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381692

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2168147	NO2NO3-N	94.2	94.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P381619

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2168140	Total-P	105	106	P/P	90 - 110

Reference Method: EPA 8321B
Batch ID: P381172

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2167436	Acesulfame K	87.6	86.0	P/P	40 - 150
2167436	AMPA	122	116	P/P	40 - 150
2167436	Endothall	98.8	93.5	P/P	40 - 150
2167436	Glufosinate	113	114	P/P	40 - 150
2167436	Glyphosate	118	116	P/P	40 - 140
2167436	Sucralose	88.9	82.6	P/P	40 - 150

Reference Method: EPA 8321B
Batch ID: P381314

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2167754	2,4-D	115	114	P/P	30 - 160
2167754	Acetaminophen	102	101	P/P	30 - 160
2167754	Acetamiprid	98.0	89.3	P/P	30 - 160
2167754	Afidopyropen	84.5	90.8	P/P	30 - 160
2167754	Bentazon	39.9	42.2	P/P	30 - 160
2167754	Benzovindiflupyr	82.9	74.8	P/P	30 - 160
2167754	Carbamazepine	89.3	89.0	P/P	30 - 160
2167754	Clothianidin	91.0	87.7	P/P	30 - 160
2167754	Dinotefuran	117	114	P/P	30 - 160
2167754	Diuron	89.0	85.9	P/P	30 - 160

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8321B
Batch ID: P381314

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2167754	Fenuron	67.0	65.3	P/P	30 - 160
2167754	Fluridone	82.2	81.6	P/P	30 - 160
2167754	Hydrocodone	89.8	87.2	P/P	30 - 160
2167754	Ibuprofen	74.2	67.1	P/P	30 - 160
2167754	Imazapyr	112	113	P/P	30 - 160
2167754	Imidacloprid	140	138	P/P	30 - 160
2167754	Linuron	60.8	62.5	P/P	30 - 160
2167754	Mandestrobin	87.2	80.8	P/P	30 - 160
2167754	MCCP	115	112	P/P	30 - 160
2167754	Naproxen	85.0	86.8	P/P	30 - 160
2167754	Primidone	85.6	78.5	P/P	30 - 160
2167754	Pyraclostrobin	85.2	81.2	P/P	30 - 160
2167754	Thiamethoxam	126	120	P/P	30 - 160
2167754	Tolfenpyrad	59.3	53.7	P/P	30 - 160
2167754	Triclopyr	103	104	P/P	30 - 160

Reference Method: EPA 8321B
Batch ID: P381373

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2167470	4:2 Fluorotelomer sulfonate (4:2 FTS)	115	138	P/P	30 - 160
2167470	6:2 Fluorotelomer sulfonate (6:2 FTS)	153	151	P/P	30 - 160
2167470	8:2 Fluorotelomer sulfonate (8:2 FTS)	138	126	P/P	30 - 160
2167470	Hexafluoropropylene oxide dimer acid	62.9	59.5	P/P	30 - 160
2167470	N-Et perfluorooctanesulfonamidoAc acid	82.6	85.2	P/P	30 - 160
2167470	N-Me perfluorooctanesulfonamidoAc acid	122	150	P/P	30 - 160
2167470	Perfluorobutanesulfonic acid (PFBS)	99.1	88.8	P/P	30 - 160
2167470	Perfluorodecanesulfonic acid (PFDS)	92.1	94.6	P/P	30 - 160
2167470	Perfluorodecanoic acid (PFDA)	90.2	91.1	P/P	30 - 160
2167470	Perfluorododecanoic acid (PFDoA)	69.6	71.2	P/P	30 - 160
2167470	Perfluoroheptanesulfonic acid (PFHpS)	84.0	93.4	P/P	30 - 160
2167470	Perfluoroheptanoic acid (PFHpA)	81.6	60.2	P/P	30 - 160
2167470	Perfluorohexanoic acid (PFHxA)	90.6	59.9	P/P	30 - 160
2167470	Perfluorononanesulfonic acid (PFNS)	106	125	P/P	30 - 160
2167470	Perfluorononanoic acid (PFNA)	90.0	79.2	P/P	30 - 160
2167470	Perfluorooctanesulfonic acid (PFOS)	102	146	P/P	30 - 160
2167470	Perfluorooctanoic acid (PFOA)	110	105	P/P	30 - 160
2167470	Perfluoropentanesulfonic acid (PFPeS)	97.2	103	P/P	30 - 160
2167470	Perfluoropentanoic acid (PFPeA)	123	126	P/P	30 - 160
2167470	Perfluorotetradecanoic acid (PFTeA)	47.0	53.0	P/P	30 - 160
2167470	Perfluorotridecanoic acid (PFTriA)	53.7	46.0	P/P	30 - 160
2167470	Perfluoroundecanoic acid (PFUnA)	57.4	56.6	P/P	30 - 160

Reference Method: SM 4500 F-C-2011
Batch ID: P381822

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2168117	Fluoride	98.6	95.2	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 5310 B-2011
Batch ID: P381641

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2168149	Organic Carbon	97.1	97.0	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 200.7 Rev. 4.4
 Batch ID: P381775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2168741	Barium	0.701	Spike	P	0 - 20
2168741	Calcium	0.0339	Spike	P	0 - 20
2168741	Iron	1.53	Spike	P	0 - 20
2168741	Magnesium	1.36	Spike	P	0 - 20
2168741	Potassium	0.454	Spike	P	0 - 20
2168741	Sodium	0.0149	Spike	P	0 - 20
2168741	Zinc	0.878	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
 Batch ID: P381775

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2168741	Aluminum	0.267	Spike	P	0 - 20
2168741	Antimony	0.272	Spike	P	0 - 20
2168741	Arsenic	0.178	Spike	P	0 - 20
2168741	Boron	1.73	Spike	P	0 - 20
2168741	Cadmium	1.98	Spike	P	0 - 20
2168741	Chromium	0.215	Spike	P	0 - 20
2168741	Copper	0.406	Spike	P	0 - 20
2168741	Lead	0.673	Spike	P	0 - 20
2168741	Nickel	0.459	Spike	P	0 - 20
2168741	Selenium	0.105	Spike	P	0 - 20
2168741	Silver	0.0412	Spike	P	0 - 20
2168741	Thallium	0.837	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P381945

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2168057	Chloride	1.61	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P381949

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2168057	Sulfate	0.454	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P381443

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2168176	Ammonia-N	0.202	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P381566

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2168149	Kjeldahl Nitrogen	2.70	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P381692

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2168147	NO2NO3-N	0.371	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P381619

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2168140	Total-P	0.969	Spike	P	0 - 20

Reference Method: EPA 8321B
Batch ID: P381172

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2167436	Acesulfame K	1.72	Spike	P	0 - 30
2167436	AMPA	4.65	Spike	P	0 - 30
2167436	Endothall	5.49	Spike	P	0 - 30
2167436	Glufosinate	0.680	Spike	P	0 - 30
2167436	Glyphosate	1.41	Spike	P	0 - 30
2167436	Sucralose	2.64	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P381314

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2167754	2,4-D	0.926	Spike	P	0 - 30
2167754	Acetaminophen	1.01	Spike	P	0 - 30
2167754	Acetamiprid	9.26	Spike	P	0 - 30
2167754	Afidopyropen	7.14	Spike	P	0 - 30
2167754	Bentazon	5.67	Spike	P	0 - 30
2167754	Benzovindiflupyr	10.2	Spike	P	0 - 30
2167754	Carbamazepine	0.342	Spike	P	0 - 30
2167754	Clothianidin	3.73	Spike	P	0 - 30
2167754	Dinotefuran	2.79	Spike	P	0 - 30
2167754	Diuron	3.57	Spike	P	0 - 30
2167754	Fenuron	2.66	Spike	P	0 - 30
2167754	Fluridone	0.734	Spike	P	0 - 30
2167754	Hydrocodone	2.95	Spike	P	0 - 30
2167754	Ibuprofen	10.1	Spike	P	0 - 30
2167754	Imazapyr	0.307	Spike	P	0 - 30
2167754	Imidacloprid	1.01	Spike	P	0 - 30
2167754	Linuron	2.75	Spike	P	0 - 30
2167754	Mandestrobin	7.65	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8321B
Batch ID: P381314

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2167754	MCP	2.67	Spike	P	0 - 30
2167754	Naproxen	2.10	Spike	P	0 - 30
2167754	Primidone	8.67	Spike	P	0 - 30
2167754	Pyraclostrobin	4.81	Spike	P	0 - 30
2167754	Thiamethoxam	4.76	Spike	P	0 - 30
2167754	Tolfenpyrad	9.91	Spike	P	0 - 30
2167754	Triclopyr	0.577	Spike	P	0 - 30

Reference Method: EPA 8321B
Batch ID: P381373

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2167470	4:2 Fluorotelomer sulfonate (4:2 FTS)	18.8	Spike	P	0 - 30
2167470	6:2 Fluorotelomer sulfonate (6:2 FTS)	1.79	Spike	P	0 - 30
2167470	8:2 Fluorotelomer sulfonate (8:2 FTS)	9.03	Spike	P	0 - 30
2167470	Hexafluoropropylene oxide dimer acid	5.57	Spike	P	0 - 30
2167470	N-Et perfluorooctanesulfonamidoAc acid	3.02	Spike	P	0 - 30
2167470	N-Me perfluorooctanesulfonamidoAc acid	20.8	Spike	P	0 - 30
2167470	Perfluorobutanesulfonic acid (PFBS)	9.32	Spike	P	0 - 30
2167470	Perfluorodecanesulfonic acid (PFDS)	2.64	Spike	P	0 - 30
2167470	Perfluorodecanoic acid (PFDA)	0.977	Spike	P	0 - 30
2167470	Perfluorododecanoic acid (PFDoA)	2.26	Spike	P	0 - 30
2167470	Perfluoroheptanesulfonic acid (PFHpS)	9.70	Spike	P	0 - 30
2167470	Perfluoroheptanoic acid (PFHpA)	23.3	Spike	P	0 - 30
2167470	Perfluorohexanesulfonic acid (PFHxS)	10.5	Spike	P	0 - 30
2167470	Perfluorohexanoic acid (PFHxA)	31.2	Spike	F	0 - 30
2167470	Perfluorononanesulfonic acid (PFNS)	16.4	Spike	P	0 - 30
2167470	Perfluorononanoic acid (PFNA)	12.8	Spike	P	0 - 30
2167470	Perfluorooctanesulfonic acid (PFOS)	18.2	Spike	P	0 - 30
2167470	Perfluorooctanoic acid (PFOA)	3.32	Spike	P	0 - 30
2167470	Perfluoropentanesulfonic acid (PFPeS)	4.62	Spike	P	0 - 30
2167470	Perfluoropentanoic acid (PFPeA)	1.82	Spike	P	0 - 30
2167470	Perfluorotetradecanoic acid (PFTeA)	11.8	Spike	P	0 - 30
2167470	Perfluorotridecanoic acid (PFTriA)	15.5	Spike	P	0 - 30
2167470	Perfluoroundecanoic acid (PFUnA)	1.43	Spike	P	0 - 30

Reference Method: SM 2320 B-2011
Batch ID: P381658

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2168101	Total Alkalinity	0.0219	Sample	P	0 - 3.3

Reference Method: SM 2540 C-2011
Batch ID: P381718

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2168058	TDS	1.87	Sample	P	0 - 10

Quality Assurance Report Precision

Reference Method: SM 4500 F-C-2011
Batch ID: P381822

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2168117	Fluoride	2.98	Spike	F	0 - 2.0

Reference Method: SM 5310 B-2011
Batch ID: P381641

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2168149	Organic Carbon	0.110	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.

Quality Assurance Report Surrogates

Lab Sample ID: 2168142

Field Sample ID: Silverlake outlet 75m above ol

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	2,4-D-d3	103	P	30 - 160
EPA 8321B	Acetaminophen-d4	92.0	P	30 - 160
EPA 8321B	Carbamazepine-d10	89.4	P	30 - 160
EPA 8321B	Diuron-d6	102	P	30 - 160
EPA 8321B	Endothall-d6	78.9	P	30 - 200
EPA 8321B	Endothall-d6	78.9	P	30 - 200
EPA 8321B	Glyphosate 13C 15N	132	P	30 - 200
EPA 8321B	Glyphosate 13C 15N	132	P	30 - 200
EPA 8321B	Ibuprofen-d3	91.1	P	30 - 160
EPA 8321B	Primidone-d5	78.6	P	30 - 160
EPA 8321B	Sucralose-d6	108	P	30 - 160
EPA 8321B	Sucralose-d6	108	P	30 - 160

Lab Sample ID: 2168143

Field Sample ID: Silverlake outlet 75m above ol

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8321B	Perfluorobutanesulfonate-13C	94.2	P	30 - 160
EPA 8321B	Perfluorodecanoic acid-13C	123	P	30 - 160
EPA 8321B	Perfluorohexanesulfonate-13C	103	P	30 - 160
EPA 8321B	Perfluorohexanoic acid-13C	70.2	P	30 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
 Run ID: A98465
 Included Lab Sample IDs: 2168142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Acesulfame K	87.5	92.9	P/P	40 - 200
Endothall	70.9	65.1	P/P	40 - 200

Reference Method: EPA 8321B
 Run ID: A98468
 Included Lab Sample IDs: 2168142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
AMPA	99.6	101	P/P	40 - 200
Glufosinate	119	130	P/P	40 - 200
Glyphosate	128	130	P/P	40 - 200

Reference Method: EPA 8321B
 Run ID: A98487
 Included Lab Sample IDs: 2168142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Sucralose	107	105	P/P	60 - 160

Reference Method: EPA 350.1 Rev. 2.0
 Run ID: A98492
 Included Lab Sample IDs: 2168140

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

Reference Method: EPA 8321B
 Run ID: A98541
 Included Lab Sample IDs: 2168143

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
4:2 Fluorotelomer sulfonate (4:2 FTS)	63.9	81.8	P/P	60 - 160
6:2 Fluorotelomer sulfonate (6:2 FTS)	93.3	88.5	P/P	60 - 160
8:2 Fluorotelomer sulfonate (8:2 FTS)	101	115	P/P	60 - 160
Hexafluoropropylene oxide dimer acid	79.1	80.8	P/P	60 - 160
N-Et perfluorooctanesulfonamidoAc acid	90.5	95.7	P/P	60 - 160
N-Me perfluorooctanesulfonamidoAc acid	129	133	P/P	60 - 160
Perfluorobutanesulfonic acid (PFBS)	90.7	97.5	P/P	60 - 160
Perfluorodecanesulfonic acid (PFDS)	124	126	P/P	60 - 160
Perfluorodecanoic acid (PFDA)	97.0	113	P/P	60 - 160
Perfluorododecanoic acid (PFDoA)	114	105	P/P	60 - 160
Perfluoroheptanesulfonic acid (PFHpS)	91.9	90.3	P/P	60 - 160
Perfluoroheptanoic acid (PFHpA)	85.8	107	P/P	60 - 160
Perfluorohexanesulfonic acid (PFHxS)	152	158	P/P	60 - 160
Perfluorohexanoic acid (PFHxA)	86.1	96.8	P/P	60 - 160
Perfluorononanesulfonic acid (PFNS)	119	138	P/P	60 - 160
Perfluorononanoic acid (PFNA)	74.9	113	P/P	60 - 160
Perfluorooctanesulfonic acid (PFOS)	119	130	P/P	60 - 160
Perfluorooctanoic acid (PFOA)	91.3	127	P/P	60 - 160
Perfluoropentanesulfonic acid (PFPeS)	101	94.9	P/P	60 - 160
Perfluoropentanoic acid (PFPeA)	111	112	P/P	60 - 160

Quality Assurance Report Calibration Verification

Reference Method: EPA 8321B
Run ID: A98541
Included Lab Sample IDs: 2168143

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Perfluorotetradecanoic acid (PFTeA)	84.4	99.5	P/P	60 - 160
Perfluorotridecanoic acid (PFTriA)	63.4	105	P/P	60 - 160
Perfluoroundecanoic acid (PFUnA)	66.1	75.6	P/P	60 - 160

Reference Method: EPA 351.2 Rev. 2.0
Run ID: A98569
Included Lab Sample IDs: 2168140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	95.0	100	P/P	90 - 110

Reference Method: SM 5310 B-2011
Run ID: A98573
Included Lab Sample IDs: 2168140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.9	94.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A98577
Included Lab Sample IDs: 2168140

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	105	104	P/P	90 - 110

Reference Method: SM 2320 B-2011
Run ID: A98581
Included Lab Sample IDs: 2168139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	98.6	99.8	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A98590
Included Lab Sample IDs: 2168140

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

Reference Method: SM 4500 F-C-2011
Run ID: A98655
Included Lab Sample IDs: 2168139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.1	96.6	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A98686
Included Lab Sample IDs: 2168139

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

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A98686

Included Lab Sample IDs: 2168139

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	98.6	99.5	P/P	90 - 110
Sulfate	99.6	100	P/P	90 - 110

Reference Method: EPA 8321B

Run ID: A98689

Included Lab Sample IDs: 2168142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
2,4-D	93.5	100	P/P	50 - 150
Acetaminophen	93.2	90.3	P/P	60 - 160
Acetamiprid	98.7	97.1	P/P	50 - 150
Afidopyropen	98.6	115	P/P	50 - 150
Bentazon	81.1	90.9	P/P	50 - 160
Benzovindiflupyr	105	106	P/P	50 - 150
Carbamazepine	103	96.0	P/P	60 - 150
Clothianidin	98.1	85.6	P/P	60 - 150
Dinotefuran	97.9	80.0	P/P	50 - 150
Diuron	102	100	P/P	60 - 160
Fenuron	91.4	89.9	P/P	60 - 150
Fluridone	102	105	P/P	60 - 160
Hydrocodone	102	99.6	P/P	60 - 150
Ibuprofen	96.4	110	P/P	50 - 160
Imazapyr	91.6	105	P/P	50 - 150
Imidacloprid	95.0	94.9	P/P	60 - 150
Linuron	94.4	91.0	P/P	60 - 150
Mandestrobin	106	105	P/P	50 - 150
MCPP	93.9	93.4	P/P	50 - 150
Naproxen	84.9	130	P/P	50 - 160
Primidone	96.9	95.9	P/P	60 - 150
Pyraclostrobin	104	109	P/P	60 - 150
Thiamethoxam	94.9	101	P/P	50 - 150
Tolfenpyrad	102	112	P/P	60 - 150
Triclopyr	90.9	94.5	P/P	50 - 150

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A98700

Included Lab Sample IDs: 2168144

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	99.3	98.6	P/P	90 - 110
Antimony	99.9	99.5	P/P	90 - 110
Arsenic	102	101	P/P	90 - 110
Boron	102	106	P/P	90 - 110
Cadmium	101	100	P/P	90 - 110
Chromium	103	104	P/P	90 - 110
Copper	100	99.7	P/P	90 - 110
Lead	98.1	97.8	P/P	90 - 110
Nickel	102	101	P/P	90 - 110
Selenium	101	100	P/P	90 - 110
Silver	101	102	P/P	90 - 110
Thallium	94.2	92.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A98711

Included Lab Sample IDs: 2168144

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	101	100	P/P	90 - 110
Calcium	101	103	P/P	90 - 110
Iron	102	103	P/P	90 - 110
Magnesium	100	101	P/P	90 - 110
Potassium	98.7	99.1	P/P	90 - 110
Sodium	101	101	P/P	90 - 110
Zinc	99.2	99.2	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 SMP	MS
			LCS				
EPA 200.7 Rev. 4.4	Barium	100	98.3	97.6	97.9		0.701
	Calcium	103	105	99.3			0.0339
	Iron	102	98.7	100	99.8		1.53
	Magnesium	101	102	98.2			1.36
	Potassium	97.8	94.9	95.4	91.3		0.454
	Sodium	101	93.7	93.7	100		0.0149
	Zinc	100	98.9	98.0	97.6		0.878
EPA 200.8 Rev. 5.4	Aluminum	95.4	95.7	95.4	94.7		0.267
	Antimony	97.8	99.9	99.6	100		0.272
	Arsenic	97.3	99.0	98.9	98.8		0.178
	Boron	100	101	99.3	97.2		1.73
	Cadmium	97.7	102	99.9	101		1.98
	Chromium	100	105	105	102		0.215
	Copper	97.4	97.8	97.4	96.1		0.406
	Lead	93.8	95.0	94.4	95.2		0.673
	Nickel	96.4	96.2	96.7	94.0		0.459
	Selenium	96.0	97.6	97.8	96.8		0.105
	Silver	97.2	98.7	98.7	98.9		0.0412
	Thallium	94.4	97.1	98.0	98.4		0.837
EPA 300.0 Rev. 2.1	Chloride	99.5	99.3	100		1.61	
	Sulfate	100	98.8	99.5		0.454	
EPA 350.1 Rev. 2.0	Ammonia-N	101	102	102			0.202
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	106	101	104			2.70
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	98.5	94.2	94.6			0.371
EPA 365.1 Rev. 2.0	Total-P	105	105	106			0.969
EPA 8321B	2,4-D	111	115	114			0.926
	4:2 Fluorotelomer sulfonate (4:2 FTS)	79.4	115	138			18.8
	6:2 Fluorotelomer sulfonate (6:2 FTS)	148	153	151			1.79
	8:2 Fluorotelomer sulfonate (8:2 FTS)	139	138	126			9.03
	Acesulfame K	112	87.6	86.0			1.72
	Acetaminophen	75.1	102	101			1.01
	Acetamiprid	98.8	98.0	89.3			9.26
	Afidopyropen	98.3	84.5	90.8			7.14
	AMPA	109	122	116			4.65
	Bentazon	59.2	39.9	42.2			5.67
	Benzovindiflupyr	80.5	82.9	74.8			10.2
	Carbamazepine	117	89.3	89.0			0.342
	Clothianidin	94.6	91.0	87.7			3.73
	Dinotefuran	87.2	117	114			2.79
	Diuron	105	89.0	85.9			3.57
	Endothall	78.3	98.8	93.5			5.49
	Fenuron	102	67.0	65.3			2.66
	Fluridone	84.6	82.2	81.6			0.734
	Glufosinate	112	113	114			0.680
	Glyphosate	123	118	116			1.41
	Hexafluoropropylene oxide dimer acid	99.5	62.9	59.5			5.57
	Hydrocodone	87.4	89.8	87.2			2.95
	Ibuprofen	73.2	74.2	67.1			10.1
	Imazapyr	91.8	112	113			0.307
	Imidacloprid	121	140	138			1.01
	Linuron	69.9	60.8	62.5			2.75

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		LCS	Precision	MS
						SMP	
EPA 8321B	Mandestrobin	86.7	87.2	80.8			7.65
	MCCP	119	115	112			2.67
	N-Et perfluorooctanesulfonamidoAc acid	84.2	82.6	85.2			3.02
	N-Me perfluorooctanesulfonamidoAc acid	109	122	150			20.8
	Naproxen	68.8	85.0	86.8			2.10
	Perfluorobutanesulfonic acid (PFBS)	101	99.1	88.8			9.32
	Perfluorodecanesulfonic acid (PFDS)	93.7	92.1	94.6			2.64
	Perfluorodecanoic acid (PFDA)	94.3	90.2	91.1			0.977
	Perfluorododecanoic acid (PFDoA)	96.0	69.6	71.2			2.26
	Perfluoroheptanesulfonic acid (PFHpS)	98.7	84.0	93.4			9.70
	Perfluoroheptanoic acid (PFHpA)	84.1	81.6	60.2			23.3
	Perfluorohexanesulfonic acid (PFHxS)	127					10.5
	Perfluorohexanoic acid (PFHxA)	91.4	90.6	59.9			31.2
	Perfluorononanesulfonic acid (PFNS)	88.2	106	125			16.4
	Perfluorononanoic acid (PFNA)	86.6	79.2	90.0			12.8
	Perfluorooctanesulfonic acid (PFOS)	97.5	102	146			18.2
	Perfluorooctanoic acid (PFOA)	131	110	105			3.32
	Perfluoropentanesulfonic acid (PFPeS)	110	97.2	103			4.62
	Perfluoropentanoic acid (PFPeA)	85.0	123	126			1.82
	Perfluorotetradecanoic acid (PFTeA)	45.4	47.0	53.0			11.8
	Perfluorotridecanoic acid (PFTriA)	46.7	53.7	46.0			15.5
	Perfluoroundecanoic acid (PFUnA)	85.4	57.4	56.6			1.43
	Primidone	102	85.6	78.5			8.67
	Pyraclostrobin	78.8	85.2	81.2			4.81
	Sucralose	92.3	88.9	82.6			2.64
	Thiamethoxam	101	126	120			4.76
	Tolfenpyrad	51.4	59.3	53.7			9.91
	Triclopyr	93.9	103	104			0.577
SM 2320 B-2011	Total Alkalinity	99.9				0.0219	
SM 2540 C-2011	TDS					1.87	
SM 4500 F-C-2011	Fluoride	97.5	98.6	95.2			2.98
SM 5310 B-2011	Organic Carbon	99.3	97.1	97.0			0.110

Reference Method Descriptions

Method	Description	Associated Samples
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2168144
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2168144
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2168139
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2168139
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2168140
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2168140
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2168140

Reference Method Descriptions

Method	Description	<u>Associated Samples</u>
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2168140
EPA 8321B	Perfluorinated alkyl substances in water matrices by HPLC/MS/MS	2168143
EPA 8321B	Pesticides, herbicides, and other chemicals in water matrices by HPLC/MS/MS	2168142
EPA 8321B	Water soluble organic compounds by HPLC/MS/MS	2168142
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2168139
SM 2540 C-2011	Total Dissolved Solids in aqueous matrices	2168139
SM 2540 D-2011	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2168139
SM 4500 F-C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2168139
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2168140

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 200.7 Rev. 4.4	03/26/2020	04/03/2020 13:56	Alexander Thompson	04/08/2020 13:57	Betina Topolski	2168144
EPA 200.8 Rev. 5.4	03/26/2020	04/03/2020 13:56	Alexander Thompson	04/07/2020 16:08	Justin Cutchin	2168144
EPA 300.0 Rev. 2.1	03/26/2020			04/07/2020 22:48	Jhamieka S. Greenwood	2168139
EPA 350.1 Rev. 2.0	03/26/2020			03/29/2020 12:33	Ping Hua	2168140
EPA 351.2 Rev. 2.0	03/26/2020	03/31/2020 10:05	Sima Feizi	04/01/2020 09:21	Jhamieka S. Greenwood	2168140
EPA 353.2 Rev. 2.0	03/26/2020			04/02/2020 08:56	Beverly Y. Sanders	2168140
EPA 365.1 Rev. 2.0	03/26/2020	03/31/2020 16:23	Yen Ta	04/01/2020 11:45	Julia Storbeck	2168140
EPA 8321B	03/26/2020	03/26/2020 12:00	Mohammad Ghaffari	03/26/2020 15:08	Mohammad Ghaffari	2168142
	03/26/2020	03/26/2020 12:00	Mohammad Ghaffari	03/26/2020 21:41	Mohammad Ghaffari	2168142
	03/26/2020	03/26/2020 12:00	Mohammad Ghaffari	03/27/2020 15:42	Mohammad Ghaffari	2168142
	03/26/2020	03/27/2020 09:00	Hoor Shaik	03/30/2020 01:22	Mohammad Ghaffari	2168143
	03/26/2020	03/30/2020 10:00	Hoor Shaik	04/07/2020 09:23	Juyoung Kim	2168142
SM 2320 B-2011	03/26/2020			04/01/2020 08:53	Dale L. Simmons	2168139
SM 2540 C-2011	03/26/2020			03/27/2020 15:36	Yijie Li	2168139
SM 2540 D-2011	03/26/2020			03/27/2020 15:32	Yijie Li	2168139
SM 4500 F-C-2011	03/26/2020			04/03/2020 19:14	Samantha Davila	2168139
SM 5310 B-2011	03/26/2020			03/30/2020 09:44	Madeline Gruver	2168140