

Chemical Analysis Report

NW-DIST-2023-11-08-02

Florida DEP Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Pace Run**
Request ID: **RQ-2023-11-06-44**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government Street
Suite 208
Pensacola, FL 32502-5794
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Certified by: Colin Wright, Program Administrator

Date Certified: 14-DEC-2023 11:46

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, 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: Bear Creek 40M Blw Lake Dam Outfall

Collection Date/Time: 11/07/2023 10:50

Field ID: G4NW0001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2450131	DEP SOP: NU-094-1	Color (true)	2.5	U	PCU	P437596	
	EPA 180.1 Rev. 2.0	Turbidity	24		NTU	P437589	
	EPA 300.0 Rev. 2.1	Chloride	3.0		mg Cl/L	P438146	
		Sulfate	0.20	U	mg SO4/L	P438150	
	SM 2320 B-2011	Total Alkalinity	14		mg CaCO3/L	P438022	
	SM 2540 C-2015	TDS	24	I	mg/L	P438106	
	SM 2540 D-2015	TSS	8	I	mg/L	P437819	
2450132	SM 4500-F- C-2011	Fluoride	0.044	I	mg F/L	P438027	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.26		mg N/L	P437985	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.39		mg N/L	P437673	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P437974	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P437793	
2450142	SM 5310 B-2011	Organic Carbon	2.8		mg C/L	P437885	
	EPA 200.7 Rev. 4.4	Calcium	4.32		mg/L	P437629	
		Iron	3.66E+03		ug/L	P437629	
		Magnesium	1.51		mg/L	P437629	
		Potassium	0.30	U	mg/L	P437629	
		Sodium	1.7	I	mg/L	P437629	
		Strontium	8.8		ug/L	P437629	
		Tin	3.0	U	ug/L	P437629	
		Titanium	0.75	U	ug/L	P437629	
		Vanadium	2.0	U	ug/L	P437629	
		Zinc	5.0	U	ug/L	P437629	
	EPA 200.8 Rev. 5.4	Aluminum	16	I	ug/L	P437629	
		Antimony	0.050	U	ug/L	P437629	
		Arsenic	0.87		ug/L	P437629	
		Barium	12.9		ug/L	P437629	
		Beryllium	0.010	U	ug/L	P437629	
		Boron	9.2		ug/L	P437629	
		Cadmium	0.020	U	ug/L	P437629	
		Chromium	0.40	U	ug/L	P437629	
		Cobalt	0.398		ug/L	P437629	
		Copper	0.40	U	ug/L	P437629	
		Lead	0.20	U	ug/L	P437629	
		Manganese	195		ug/L	P437629	
		Molybdenum	0.15	U	ug/L	P437629	
		Nickel	0.50	U	ug/L	P437629	
		Selenium	0.20	U	ug/L	P437629	
		Silver	0.010	U	ug/L	P437629	
		Thallium	0.10	U	ug/L	P437629	
	SM 2340 B-2011	Hardness	17.0		mg/L	P437629	

Field ID: G4NW0001

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
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Ref. Method and Comment:
DEP SOP: NU-094-1: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.
EPA 200.7 Rev. 4.4: Batch matrix spike recoveries for titanium are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.
EPA 200.8 Rev. 5.4: Batch matrix spike recoveries for aluminum are unavailable for one of two spiked samples because of high analyte concentration in the QC sample.

Sample Location: Coldwater Creek West Fork on CR 178

Collection Date/Time: 11/07/2023 12:04

Field ID: G4NW0016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2450133	DEP SOP: NU-094-1	Color (true)	8.7		PCU	P437594	
	EPA 180.1 Rev. 2.0	Turbidity	1.9		NTU	P437589	
	EPA 300.0 Rev. 2.1	Chloride	7.7		mg Cl/L	P438146	
		Sulfate	1.5		mg SO4/L	P438150	
	SM 2320 B-2011	Total Alkalinity	3.1		mg CaCO3/L	P438022	
	SM 2540 C-2015	TDS	38		mg/L	P438106	
	SM 2540 D-2015	TSS	2	I	mg/L	P437819	
2450134	SM 4500-F- C-2011	Fluoride	0.025	U	mg F/L	P438027	
	EPA 350.1 Rev. 2.0	Ammonia-N	0.004	I	mg N/L	P438131	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.094	I	mg N/L	P437673	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P437976	
	EPA 365.1 Rev. 2.0	Total-P	0.004	I	mg P/L	P437793	
2450141	SM 5310 B-2011	Organic Carbon	1.4		mg C/L	P437885	
	EPA 8270E	Aldrin	0.67	U	ng/L	P437653	
		Alpha-BHC	0.10	U	ng/L	P437653	
		Alpha-Chlordane	0.21	U	ng/L	P437653	
		PCB-1016	2.1	U	ng/L	P437653	MS
		Beta-BHC	0.10	U	ng/L	P437653	
		PCB-1221	2.1	U	ng/L	P437653	
		Beta-Cyfluthrin	1.3	U	ng/L	P437653	
		PCB-1232	2.1	U	ng/L	P437653	
		Bifenthrin	0.51	U	ng/L	P437653	
		PCB-1242	2.1	U	ng/L	P437653	
		Carbophenothion	0.93	U	ng/L	P437653	
		PCB-1248	2.1	U	ng/L	P437653	
		Chlorothalonil	3.7	U	ng/L	P437653	
		PCB-1254	2.1	U	ng/L	P437653	
		Cis-Nonachlor	0.21	U	ng/L	P437653	
		PCB-1260	2.1	U	ng/L	P437653	MS
		Cypermethrin	1.5	U	ng/L	P437653	
		Dacthal	0.15	U	ng/L	P437653	
		DDD-p,p'	0.26	U	ng/L	P437653	
		DDE-p,p'	0.21	U	ng/L	P437653	
		DDT-p,p'	1.1	IV	ng/L	P437653	
		Delta-BHC	0.41	U	ng/L	P437653	
		Deltamethrin	1.3	U	ng/L	P437653	
		Dichlobenil	0.26	U	ng/L	P437653	
		Dicofol	1.3	U	ng/L	P437653	
		Dieldrin	1.3	I	ng/L	P437653	
		Endosulfan I	0.41	U	ng/L	P437653	
		Endosulfan II	0.93	U	ng/L	P437653	
		Endosulfan Sulfate	0.31	U	ng/L	P437653	
		Endrin	0.93	U	ng/L	P437653	
		Endrin Aldehyde	0.77	UJ	ng/L	P437653	LCS

Field ID: G4NW0016

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2450141	EPA 8270E	Endrin Ketone	0.41	U	ng/L	P437653	MS
		Esfenvalerate	0.77	U	ng/L	P437653	
		Ethalfuralin	0.15	U	ng/L	P437653	
		Fenpropathrin	0.26	U	ng/L	P437653	
		Gamma-BHC	0.13	U	ng/L	P437653	
		Gamma-Chlordane	0.21	U	ng/L	P437653	
		Heptachlor	0.21	U	ng/L	P437653	
		Heptachlor Epoxide	0.26	U	ng/L	P437653	
		Hexachlorobenzene**	1.0	U	ng/L	P437653	
		Kepone	14	U	ng/L	P437653	
		Lambda-Cyhalothrin	0.77	U	ng/L	P437653	
		Methoprene	0.77	U	ng/L	P437653	
		Methoxychlor	0.31	U	ng/L	P437653	
		MGK-264	0.21	U	ng/L	P437653	
		Mirex	0.36	U	ng/L	P437653	
		Oxychlordane	0.31	U	ng/L	P437653	
		Permethrin	1.6	U	ng/L	P437653	
		Phenothrin	0.93	U	ng/L	P437653	
		Piperonyl Butoxide	0.17	I	ng/L	P437653	
		Prallethrin	2.1	U	ng/L	P437653	
		Tau-Fluvalinate	0.26	U	ng/L	P437653	
		Tetramethrin	0.77	U	ng/L	P437653	
		Trans-Nonachlor	0.21	U	ng/L	P437653	
		Triclosan Methyl	0.15	U	ng/L	P437653	
		Trifluralin	0.21	U	ng/L	P437653	
	EPA 8276	Chlordane	2.1	U	ng/L	P437653	
		Toxaphene	37	I	ng/L	P437653	

Ref. Method and Comment:

SM 2540 D-2015: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 8270E: V - Due to the presence of DDT in both the Method Blank and the sample. Refer to the Lab Analysis Report for an explanation of QC Codes.

Quality Assurance Report Method Blank Results

Reference Method: DEP SOP: NU-094-1
Batch ID: P437594

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: DEP SOP: NU-094-1
Batch ID: P437596

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P437589

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P437629

Component	Result	Code	Units
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
Strontium	2.0	U	ug/L
Tin	3.0	U	ug/L
Titanium	0.75	U	ug/L
Vanadium	2.0	U	ug/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437629

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Barium	0.20	U	ug/L
Beryllium	0.010	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Cobalt	0.020	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Manganese	0.10	U	ug/L
Molybdenum	0.15	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

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438146

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438150

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437985

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

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438131

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

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P437673

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437974

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437976

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P437793

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

Reference Method: EPA 8270E
Batch ID: P437653

Component	Result	Code	Units
Aldrin	0.65	U	ng/L
Alpha-BHC	0.10	U	ng/L
Alpha-Chlordane	0.20	U	ng/L
Beta-BHC	0.10	U	ng/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8270E

Batch ID: P437653

Component	Result	Code	Units
Beta-Cyfluthrin	1.2	U	ng/L
Bifenthrin	0.50	U	ng/L
Carbophenothion	0.90	U	ng/L
Chlorothalonil	3.6	U	ng/L
Cis-Nonachlor	0.20	U	ng/L
Cypermethrin	1.5	U	ng/L
Dacthal	0.15	U	ng/L
DDD-p,p'	0.25	U	ng/L
DDE-p,p'	0.20	U	ng/L
DDT-p,p'	1.1	I	ng/L
Delta-BHC	0.40	U	ng/L
Deltamethrin	1.2	U	ng/L
Dichlobenil	0.25	U	ng/L
Dicofol	1.2	U	ng/L
Dieldrin	0.40	U	ng/L
Endosulfan I	0.40	U	ng/L
Endosulfan II	0.90	U	ng/L
Endosulfan Sulfate	0.30	U	ng/L
Endrin	0.90	U	ng/L
Endrin Aldehyde	0.75	U	ng/L
Endrin Ketone	0.40	U	ng/L
Esfenvalerate	0.75	U	ng/L
Ethalfuralin	0.15	U	ng/L
Fenpropathrin	0.25	U	ng/L
Gamma-BHC	0.12	U	ng/L
Gamma-Chlordane	0.20	U	ng/L
Heptachlor	0.20	U	ng/L
Heptachlor Epoxide	0.25	U	ng/L
Hexachlorobenzene	1.0	U	ng/L
Kepone	14	U	ng/L
Lambda-Cyhalothrin	0.75	U	ng/L
Methoprene	0.75	U	ng/L
Methoxychlor	0.30	U	ng/L
MGK-264	0.20	U	ng/L
Mirex	0.35	U	ng/L
Oxychlordane	0.30	U	ng/L
PCB-1016	2.0	U	ng/L
PCB-1221	2.0	U	ng/L
PCB-1232	2.0	U	ng/L
PCB-1242	2.0	U	ng/L
PCB-1248	2.0	U	ng/L
PCB-1254	2.0	U	ng/L
PCB-1260	2.0	U	ng/L
Permethrin	1.6	U	ng/L
Phenothrin	0.90	U	ng/L
Piperonyl Butoxide	0.15	U	ng/L
Prallethrin	2.0	U	ng/L
Tau-Fluvalinate	0.25	U	ng/L
Tetramethrin	0.75	U	ng/L
Trans-Nonachlor	0.20	U	ng/L
Triclosan Methyl	0.15	U	ng/L
Trifluralin	0.20	U	ng/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 8276
Batch ID: P437653

Component	Result	Code	Units
Chlordane	2.0	U	ng/L
Toxaphene	15	U	ng/L

Reference Method: SM 2320 B-2011
Batch ID: P438022

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

Reference Method: SM 2540 C-2015
Batch ID: P438106

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-2015
Batch ID: P437819

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500-F- C-2011
Batch ID: P438027

Component	Result	Code	Units
Fluoride	0.025	U	mg F/L

Reference Method: SM 5310 B-2011
Batch ID: P437885

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

Quality Assurance Report

Laboratory Control Sample Accuracy

Reference Method: DEP SOP: NU-094-1
Batch ID: P437594

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	90 - 110

Reference Method: DEP SOP: NU-094-1
Batch ID: P437596

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	106		P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P437589

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

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P437629

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	105		P	85 - 115
Iron	111		P	85 - 115
Magnesium	105		P	85 - 115
Potassium	102		P	85 - 115
Sodium	107		P	85 - 115
Strontium	99.2		P	85 - 115
Tin	97.9		P	85 - 115
Titanium	101		P	85 - 115
Vanadium	99.4		P	85 - 115
Zinc	98.1		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437629

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	102		P	85 - 115
Antimony	99.9		P	85 - 115
Arsenic	100		P	85 - 115
Barium	104		P	85 - 115
Beryllium	97.4		P	85 - 115
Boron	102		P	85 - 115
Cadmium	100		P	85 - 115
Chromium	96.3		P	85 - 115
Cobalt	99.3		P	85 - 115
Copper	101		P	85 - 115
Lead	97.4		P	85 - 115
Manganese	106		P	85 - 115
Molybdenum	92.1		P	85 - 115
Nickel	99.5		P	85 - 115
Selenium	101		P	85 - 115
Silver	101		P	85 - 115
Thallium	99.6		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438146

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438150

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.1		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437985

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	99.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438131

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	92.2		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P437673

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437974

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

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437976

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: P437793

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	107		P	90 - 110

Reference Method: EPA 8270E
Batch ID: P437653

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aldrin	60.3		P	24 - 81.0
Alpha-BHC	93.3		P	65 - 110
Alpha-Chlordane	85.2		P	43 - 119
Beta-BHC	104		P	54 - 165

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 8270E
Batch ID: P437653

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Beta-Cyfluthrin	70.2		P	27 - 165
Bifenthrin	50.9		P	17 - 117
Carbophenothion	74.6		P	21 - 108
Chlorothalonil	84.3		P	10 - 255
Cis-Nonachlor	79.4		P	34 - 98.0
Cypermethrin	75.5		P	25 - 143
Dacthal	81.8		P	55 - 139
DDD-p,p'	87.8		P	30 - 109
DDE-p,p'	97.9		P	35 - 106
DDT-p,p'	81.0		P	41 - 101
Delta-BHC	105		P	58 - 165
Deltamethrin	92.6		P	10 - 194
Dichlobenil	82.2		P	22 - 114
Dicofol	96.5		P	17 - 133
Dieldrin	89.9		P	45 - 129
Endosulfan I	100		P	49 - 104
Endosulfan II	100		P	37 - 117
Endosulfan Sulfate	127		P	38 - 128
Endrin	102		P	35 - 116
Endrin Aldehyde	121		F	19 - 108
Endrin Ketone	120		P	44 - 134
Esfenvalerate	73.2		P	27 - 176
Ethalfuralin	94.4		P	49 - 100
Fenpropathrin	75.0		P	34 - 117
Gamma-BHC	110		P	59 - 129
Gamma-Chlordane	84.8		P	33 - 107
Heptachlor	81.8		P	37 - 94.0
Heptachlor Epoxide	102		P	38 - 118
Hexachlorobenzene	81.4		P	35 - 97.0
Kepone	129		P	10 - 221
Lambda-Cyhalothrin	56.3		P	23 - 190
Methoprene	44.2		P	21 - 109
Methoxychlor	101		P	46 - 118
MGK-264	106		P	39 - 122
Mirex	73.1		P	25 - 90.0
Oxychlordane	84.8		P	42 - 100
PCB-1016	95.9		P	45 - 107
PCB-1260	110		P	40 - 112
Permethrin	66.9		P	33 - 181
Phenothrin	50.8		P	12 - 125
Piperonyl Butoxide	119		P	10 - 178
Prallethrin	104		P	24 - 122
Tau-Fluvalinate	68.7		P	13 - 151
Tetramethrin	105		P	16 - 172
Trans-Nonachlor	80.0		P	39 - 100
Triclosan Methyl	89.9		P	43 - 110
Trifluralin	74.7		P	45 - 94.0

Reference Method: EPA 8276
Batch ID: P437653

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

Laboratory Control Sample Accuracy

Reference Method: EPA 8276

Batch ID: P437653

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chlordane	65.3		P	52 - 117
Toxaphene	75.3		P	44 - 125

Reference Method: SM 2320 B-2011

Batch ID: P438022

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.8		P	92 - 105

Reference Method: SM 2540 C-2015

Batch ID: P438106

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

Reference Method: SM 2540 D-2015

Batch ID: P437819

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
TSS	102		P	85 - 115

Reference Method: SM 4500-F- C-2011

Batch ID: P438027

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	101		P	94 - 106

Reference Method: SM 5310 B-2011

Batch ID: P437885

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	94.5		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P437629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2449630	Calcium	101		P	80 - 120
2449630	Iron	107	106	P/P	80 - 120
2449630	Magnesium	100		P	80 - 120
2449630	Potassium	106	105	P/P	80 - 120
2449630	Sodium	106	103	P/P	80 - 120
2449630	Strontium	96.5	95.5	P/P	80 - 120
2449630	Tin	93.3	92.5	P/P	80 - 120
2449630	Vanadium	96.9	96.5	P/P	80 - 120
2449630	Zinc	94.5	95.0	P/P	80 - 120
2449954	Calcium	102		P	80 - 120
2449954	Iron	109		P	80 - 120
2449954	Magnesium	108		P	80 - 120
2449954	Potassium	100		P	80 - 120
2449954	Sodium	101		P	80 - 120
2449954	Strontium	97.0		P	80 - 120
2449954	Tin	93.3		P	80 - 120
2449954	Titanium	99.1		P	80 - 120
2449954	Vanadium	98.7		P	80 - 120
2449954	Zinc	97.8		P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4

Batch ID: P437629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2449630	Antimony	95.5	94.9	P/P	80 - 120
2449630	Arsenic	100	101	P/P	80 - 120
2449630	Barium	104	103	P/P	80 - 120
2449630	Beryllium	97.6	96.1	P/P	80 - 120
2449630	Boron	102	105	P/P	80 - 120
2449630	Cadmium	99.8	102	P/P	80 - 120
2449630	Chromium	99.7	94.7	P/P	80 - 120
2449630	Cobalt	97.6	98.7	P/P	80 - 120
2449630	Copper	98.6	99.1	P/P	80 - 120
2449630	Lead	100	100	P/P	80 - 120
2449630	Manganese	109	110	P/P	80 - 120
2449630	Molybdenum	93.0	93.6	P/P	80 - 120
2449630	Nickel	96.5	96.8	P/P	80 - 120
2449630	Selenium	98.2	101	P/P	80 - 120
2449630	Silver	102	103	P/P	80 - 120
2449630	Thallium	103	103	P/P	80 - 120
2449954	Aluminum	101		P	80 - 120
2449954	Antimony	102		P	80 - 120
2449954	Arsenic	101		P	80 - 120
2449954	Barium	103		P	80 - 120
2449954	Beryllium	99.4		P	80 - 120
2449954	Boron	102		P	80 - 120
2449954	Cadmium	103		P	80 - 120
2449954	Chromium	95.1		P	80 - 120
2449954	Cobalt	96.9		P	80 - 120
2449954	Copper	98.9		P	80 - 120
2449954	Lead	99.5		P	80 - 120
2449954	Manganese	108		P	80 - 120

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437629

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2449954	Molybdenum	96.0		P	80 - 120
2449954	Nickel	96.9		P	80 - 120
2449954	Selenium	96.6		P	80 - 120
2449954	Silver	99.7		P	80 - 120
2449954	Thallium	102		P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438146

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2450037	Chloride	95.2		P	90 - 110
2450149	Chloride	96.7		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438150

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2450037	Sulfate	96.5		P	90 - 110
2450149	Sulfate	99.2		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437985

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2450406	Ammonia-N	102	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438131

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2450134	Ammonia-N	95.0	95.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P437673

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2450054	Kjeldahl Nitrogen	105	100	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437974

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2449272	NO2NO3-N	99.0	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437976

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2450150	NO2NO3-N	102	104	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 365.1 Rev. 2.0

Batch ID: P437793

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2450132	Total-P	109	108	P/P	90 - 110

Reference Method: EPA 8270E

Batch ID: P437653

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2450153	Aldrin	63.8	65.4	P/P	24 - 81.0
2450153	Alpha-BHC	84.9	86.7	P/P	65 - 110
2450153	Alpha-Chlordane	79.5	87.0	P/P	43 - 119
2450153	Beta-BHC	90.5	98.7	P/P	54 - 165
2450153	Beta-Cyfluthrin	96.0	91.7	P/P	27 - 165
2450153	Bifenthrin	69.2	74.1	P/P	17 - 117
2450153	Carbophenothion	77.9	74.3	P/P	21 - 108
2450153	Chlorothalonil	107	102	P/P	10 - 255
2450153	Cis-Nonachlor	80.5	70.0	P/P	34 - 98.0
2450153	Cypermethrin	107	99.6	P/P	25 - 143
2450153	Dacthal	76.3	92.5	P/P	55 - 139
2450153	DDD-p,p'	73.4	75.8	P/P	30 - 109
2450153	DDE-p,p'	85.5	96.4	P/P	35 - 106
2450153	DDT-p,p'	62.8	68.3	P/P	41 - 101
2450153	Delta-BHC	94.1	92.3	P/P	58 - 165
2450153	Deltamethrin	122	112	P/P	10 - 194
2450153	Dichlobenil	68.8	71.8	P/P	22 - 114
2450153	Dicofol	88.1	92.0	P/P	17 - 133
2450153	Dieldrin	77.3	79.4	P/P	45 - 129
2450153	Endosulfan I	93.0	92.1	P/P	49 - 104
2450153	Endosulfan II	75.8	80.2	P/P	37 - 117
2450153	Endosulfan Sulfate	59.9	67.0	P/P	38 - 128
2450153	Endrin	86.8	84.0	P/P	35 - 116
2450153	Endrin Aldehyde	70.7	68.6	P/P	19 - 108
2450153	Endrin Ketone	94.7	101	P/P	44 - 134
2450153	Esfenvalerate	116	95.7	P/P	27 - 176
2450153	Ethalfuralin	105	93.0	F/P	49 - 100
2450153	Fenpropathrin	83.1	79.2	P/P	34 - 117
2450153	Gamma-BHC	82.1	81.1	P/P	59 - 129
2450153	Gamma-Chlordane	82.0	84.2	P/P	33 - 107
2450153	Heptachlor	77.2	65.5	P/P	37 - 94.0
2450153	Heptachlor Epoxide	80.6	98.3	P/P	38 - 118
2450153	Hexachlorobenzene	81.2	71.3	P/P	35 - 97.0
2450153	Kepone	49.5	68.4	P/P	10 - 221
2450153	Lambda-Cyhalothrin	88.0	80.3	P/P	23 - 190
2450153	Methoprene	75.6	77.2	P/P	21 - 109
2450153	Methoxychlor	86.7	96.6	P/P	46 - 118
2450153	MGK-264	96.9	113	P/P	39 - 122
2450153	Mirex	79.7	66.6	P/P	25 - 90.0
2450153	Oxychlordane	74.0	74.1	P/P	42 - 100
2450153	Permethrin	102	93.9	P/P	33 - 181
2450153	Phenothrin	87.3	92.1	P/P	12 - 125
2450153	Piperonyl Butoxide	96.3	69.2	P/P	10 - 178
2450153	Prallethrin	75.2	75.8	P/P	24 - 122
2450153	Tau-Fluvalinate	109	90.6	P/P	13 - 151
2450153	Tetramethrin	98.8	97.1	P/P	16 - 172

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 8270E

Batch ID: P437653

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2450153	Trans-Nonachlor	84.3	83.5	P/P	39 - 100
2450153	Triclosan Methyl	94.2	87.8	P/P	43 - 110
2450153	Trifluralin	75.3	69.8	P/P	45 - 94.0
2450370	PCB-1016	113	102	F/P	45 - 107
2450370	PCB-1260	119	95.8	F/P	40 - 112

Reference Method: EPA 8276

Batch ID: P437653

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2450370	Chlordane	68.0	70.1	P/P	43 - 123
2450370	Toxaphene	78.1	91.0	P/P	27 - 156

Reference Method: SM 4500-F- C-2011

Batch ID: P438027

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2450379	Fluoride	103	102	P/P	94 - 106

Reference Method: SM 5310 B-2011

Batch ID: P437885

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2449972	Organic Carbon	93.9	95.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: DEP SOP: NU-094-1
Batch ID: P437594

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450149	Color (true)	7.85	Sample	P	0 - 20

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P437589

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2449971	Turbidity	6.00	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P437629

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2449630	Calcium	2.60	Spike	P	0 - 20
2449630	Iron	0.489	Spike	P	0 - 20
2449630	Magnesium	1.89	Spike	P	0 - 20
2449630	Potassium	0.905	Spike	P	0 - 20
2449630	Sodium	2.11	Spike	P	0 - 20
2449630	Strontium	1.03	Spike	P	0 - 20
2449630	Tin	0.816	Spike	P	0 - 20
2449630	Titanium	4.50	Spike	P	0 - 20
2449630	Vanadium	0.415	Spike	P	0 - 20
2449630	Zinc	0.466	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P437629

Replicated

Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2449630	Aluminum	4.67	Spike	P	0 - 20
2449630	Antimony	0.648	Spike	P	0 - 20
2449630	Arsenic	1.02	Spike	P	0 - 20
2449630	Barium	0.800	Spike	P	0 - 20
2449630	Beryllium	1.23	Spike	P	0 - 20
2449630	Boron	1.89	Spike	P	0 - 20
2449630	Cadmium	1.99	Spike	P	0 - 20
2449630	Chromium	3.76	Spike	P	0 - 20
2449630	Cobalt	1.03	Spike	P	0 - 20
2449630	Copper	0.426	Spike	P	0 - 20
2449630	Lead	0.180	Spike	P	0 - 20
2449630	Manganese	0.766	Spike	P	0 - 20
2449630	Molybdenum	0.528	Spike	P	0 - 20
2449630	Nickel	0.243	Spike	P	0 - 20
2449630	Selenium	3.19	Spike	P	0 - 20
2449630	Silver	0.760	Spike	P	0 - 20
2449630	Thallium	0.00546	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438146

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450037	Chloride	0.396	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P438150

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450037	Sulfate	0.690	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P437985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450406	Ammonia-N	2.24	Spike	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P438131

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450134	Ammonia-N	0.582	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P437673

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450054	Kjeldahl Nitrogen	2.36	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437974

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2449272	NO2NO3-N	0.669	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P437976

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450150	NO2NO3-N	1.46	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P437793

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450132	Total-P	0.845	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 8270E
Batch ID: P437653

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450153	Aldrin	2.50	Spike	P	0 - 41
2450153	Alpha-BHC	2.13	Spike	P	0 - 25
2450153	Alpha-Chlordane	9.02	Spike	P	0 - 32
2450153	Beta-BHC	8.75	Spike	P	0 - 33
2450153	Beta-Cyfluthrin	4.51	Spike	P	0 - 43
2450153	Bifenthrin	6.84	Spike	P	0 - 52
2450153	Carbophenothion	4.71	Spike	P	0 - 30
2450153	Chlorothalonil	4.02	Spike	P	0 - 82
2450153	Cis-Nonachlor	13.9	Spike	P	0 - 33
2450153	Cypermethrin	7.16	Spike	P	0 - 51
2450153	Dacthal	19.2	Spike	P	0 - 27
2450153	DDD-p,p'	2.68	Spike	P	0 - 39
2450153	DDE-p,p'	12.0	Spike	P	0 - 31
2450153	DDT-p,p'	5.43	Spike	P	0 - 29
2450153	Delta-BHC	1.98	Spike	P	0 - 35
2450153	Deltamethrin	8.97	Spike	P	0 - 100
2450153	Dichlobenil	4.19	Spike	P	0 - 40
2450153	Dicofol	4.41	Spike	P	0 - 37
2450153	Dieldrin	2.42	Spike	P	0 - 27
2450153	Endosulfan I	1.04	Spike	P	0 - 23
2450153	Endosulfan II	5.62	Spike	P	0 - 34
2450153	Endosulfan Sulfate	8.82	Spike	P	0 - 36
2450153	Endrin	3.24	Spike	P	0 - 45
2450153	Endrin Aldehyde	2.94	Spike	P	0 - 76
2450153	Endrin Ketone	6.21	Spike	P	0 - 43
2450153	Esfenvalerate	19.1	Spike	P	0 - 51
2450153	Ethalfuralin	12.6	Spike	P	0 - 22
2450153	Fenpropathrin	4.85	Spike	P	0 - 49
2450153	Gamma-BHC	1.12	Spike	P	0 - 28
2450153	Gamma-Chlordane	2.62	Spike	P	0 - 40
2450153	Heptachlor	16.4	Spike	P	0 - 29
2450153	Heptachlor Epoxide	19.8	Spike	P	0 - 33
2450153	Hexachlorobenzene	13.0	Spike	P	0 - 36
2450153	Kepone	10.3	Spike	P	0 - 85
2450153	Lambda-Cyhalothrin	9.17	Spike	P	0 - 55
2450153	Methoprene	2.12	Spike	P	0 - 53
2450153	Methoxychlor	10.9	Spike	P	0 - 50
2450153	MGK-264	15.5	Spike	P	0 - 43
2450153	Mirex	17.9	Spike	P	0 - 40
2450153	Oxychlordane	0.158	Spike	P	0 - 31
2450153	Permethrin	8.72	Spike	P	0 - 50
2450153	Phenothrin	5.34	Spike	P	0 - 58
2450153	Piperonyl Butoxide	30.2	Spike	P	0 - 100
2450153	Prallethrin	0.774	Spike	P	0 - 39
2450153	Tau-Fluvalinate	18.6	Spike	P	0 - 54
2450153	Tetramethrin	1.76	Spike	P	0 - 51
2450153	Trans-Nonachlor	1.01	Spike	P	0 - 39
2450153	Triclosan Methyl	7.01	Spike	P	0 - 31
2450153	Trifluralin	7.51	Spike	P	0 - 22
2450370	PCB-1016	10.9	Spike	P	0 - 25
2450370	PCB-1260	21.5	Spike	P	0 - 30

Quality Assurance Report Precision

Reference Method: EPA 8276
Batch ID: P437653

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450370	Chlordane	3.13	Spike	P	0 - 28
2450370	Toxaphene	15.3	Spike	P	0 - 27

Reference Method: SM 2320 B-2011
Batch ID: P438022

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450379	Total Alkalinity	0.242	Sample	P	0 - 3.9

Reference Method: SM 2540 C-2015
Batch ID: P438106

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2449420	TDS	6.99	Sample	P	0 - 10

Reference Method: SM 4500-F- C-2011
Batch ID: P438027

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2450379	Fluoride	0.467	Spike	P	0 - 1.9

Reference Method: SM 5310 B-2011
Batch ID: P437885

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2449972	Organic Carbon	1.01	Spike	P	0 - 20

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

Quality Assurance Report Surrogates

Lab Sample ID: 2450141
Field Sample ID: G4NW0016

Reference Method	Surrogate	% Rec.	Pass/Fail	Control Limits
EPA 8270E	Decachlorobiphenyl	49.8	P	37 - 129
EPA 8270E	Decachlorobiphenyl	48.0	P	26 - 115
EPA 8270E	Tetrachloro-m-xylene	50.3	P	30 - 101
EPA 8270E	Tetrachloro-m-xylene	56.1	P	29 - 95.0
EPA 8276	Decachlorobiphenyl	46.2	P	28 - 102
EPA 8276	PCNB	81.9	P	49 - 115

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A122634

Included Lab Sample IDs: 2450131, 2450133

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

Reference Method: DEP SOP: NU-094-1

Run ID: A122635

Included Lab Sample IDs: 2450131, 2450133

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	98.6	P/P	90 - 110
Color (true)	98.3	101	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A122698

Included Lab Sample IDs: 2450142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	102	99.6	P/P	90 - 110
Iron	101	99.0	P/P	90 - 110
Magnesium	101	99.3	P/P	90 - 110
Potassium	100	98.5	P/P	90 - 110
Sodium	100	98.5	P/P	90 - 110
Strontium	97.9	96.8	P/P	90 - 110
Tin	98.7	98.8	P/P	90 - 110
Titanium	100	100	P/P	90 - 110
Vanadium	98.8	99.0	P/P	90 - 110
Zinc	99.8	99.9	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122699

Included Lab Sample IDs: 2450142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	100	102	P/P	90 - 110
Arsenic	98.6	100	P/P	90 - 110
Barium	100	101	P/P	90 - 110
Beryllium	103	101	P/P	90 - 110
Boron	103	102	P/P	90 - 110
Cadmium	101	101	P/P	90 - 110
Chromium	98.1	97.8	P/P	90 - 110
Cobalt	95.3	94.2	P/P	90 - 110
Copper	96.8	96.3	P/P	90 - 110
Lead	98.7	100	P/P	90 - 110
Manganese	107	105	P/P	90 - 110
Molybdenum	94.0	93.4	P/P	90 - 110
Nickel	99.1	101	P/P	90 - 110
Selenium	101	102	P/P	90 - 110
Silver	95.9	95.9	P/P	90 - 110
Thallium	96.9	97.7	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A122713

Included Lab Sample IDs: 2450132, 2450134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	99.6	102	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A122718

Included Lab Sample IDs: 2450142

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Antimony	98.1	98.8	P/P	90 - 110

Reference Method: SM 5310 B-2011

Run ID: A122760

Included Lab Sample IDs: 2450132, 2450134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	95.4	96.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A122770

Included Lab Sample IDs: 2450132, 2450134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.2	98.0	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A122800

Included Lab Sample IDs: 2450132, 2450134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	101	102	P/P	90 - 110
NO2NO3-N	102	104	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A122806

Included Lab Sample IDs: 2450132

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.9	98.5	P/P	90 - 110

Reference Method: SM 2320 B-2011

Run ID: A122818

Included Lab Sample IDs: 2450131, 2450133

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	102	97.3	P/P	90 - 110

Reference Method: SM 4500-F- C-2011

Run ID: A122818

Included Lab Sample IDs: 2450131, 2450133

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

Quality Assurance Report Calibration Verification

Reference Method: EPA 8270E
Run ID: A122850
Included Lab Sample IDs: 2450141

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
PCB-1016	100		P	80 - 120
PCB-1260	120		P	80 - 120

Reference Method: EPA 350.1 Rev. 2.0
Run ID: A122869
Included Lab Sample IDs: 2450134

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	97.0	96.3	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A122874
Included Lab Sample IDs: 2450131, 2450133

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	105	P/P	90 - 110
Sulfate	100	103	P/P	90 - 110

Reference Method: EPA 8270E
Run ID: A122890
Included Lab Sample IDs: 2450141

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aldrin	97.9		P	80 - 120
Alpha-BHC	100		P	80 - 120
Alpha-Chlordane	95.3		P	80 - 120
Beta-BHC	87.0		P	80 - 120
Beta-Cyfluthrin	87.3		P	80 - 120
Bifenthrin	95.4		P	80 - 120
Carbophenothion	110		P	80 - 120
Chlorothalonil	94.7		P	80 - 120
Cis-Nonachlor	107		P	80 - 120
Cypermethrin	98.4		P	80 - 120
Dacthal	99.5		P	80 - 120
DDD-p,p'	102		P	80 - 120
DDE-p,p'	102		P	80 - 120
DDT-p,p'	98.3		P	80 - 120
Delta-BHC	88.0		P	80 - 120
Deltamethrin	87.1		P	80 - 120
Dichlobenil	100		P	80 - 120
Dicofol	103		P	80 - 120
Dieldrin	109		P	80 - 120
Endosulfan I	100		P	80 - 120
Endosulfan II	97.5		P	80 - 120
Endosulfan Sulfate	95.2		P	80 - 120
Endrin	110		P	80 - 120
Endrin Aldehyde	107		P	80 - 120
Endrin Ketone	109		P	80 - 120
Esfenvalerate	87.7		P	80 - 120
Ethalfuralin	97.8		P	80 - 120
Fenpropathrin	101		P	80 - 120

Quality Assurance Report Calibration Verification

Reference Method: EPA 8270E
Run ID: A122890
Included Lab Sample IDs: 2450141

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Gamma-BHC	95.7		P	80 - 120
Gamma-Chlordane	107		P	80 - 120
Heptachlor	105		P	80 - 120
Heptachlor Epoxide	100		P	80 - 120
Hexachlorobenzene	98.5		P	80 - 120
Kepone	92.0		P	80 - 120
Lambda-Cyhalothrin	88.0		P	80 - 120
Methoprene	114		P	80 - 120
Methoxychlor	97.2		P	80 - 120
MGK-264	96.5		P	80 - 120
Mirex	100		P	80 - 120
Oxychlordane	110		P	80 - 120
Permethrin	91.5		P	80 - 120
Phenothrin	101		P	80 - 120
Piperonyl Butoxide	89.5		P	80 - 120
Prallethrin	107		P	80 - 120
Tau-Fluvalinate	87.7		P	80 - 120
Tetramethrin	86.4		P	80 - 120
Trans-Nonachlor	94.3		P	80 - 120
Triclosan Methyl	106		P	80 - 120
Trifluralin	97.9		P	80 - 120

Reference Method: EPA 8276
Run ID: A123161
Included Lab Sample IDs: 2450141

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chlordane	89.5		P	80 - 120
Toxaphene	91.9		P	80 - 120

* 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				
DEP SOP: NU-094-1	Color (true)	101				7.85	
	Color (true)	106					
EPA 180.1 Rev. 2.0	Turbidity	104				6.00	
EPA 200.7 Rev. 4.4	Calcium	105	101	102			2.60
	Iron	111	107	106	109		0.489
	Magnesium	105	100	108			1.89
	Potassium	102	106	105	100		0.905
	Sodium	107	106	103	101		2.11
	Strontium	99.2	96.5	95.5	97.0		1.03
	Tin	97.9	93.3	92.5	93.3		0.816
	Titanium	101	99.1				4.50
	Vanadium	99.4	96.9	96.5	98.7		0.415
	Zinc	98.1	94.5	95.0	97.8		0.466
EPA 200.8 Rev. 5.4	Aluminum	102	101				4.67
	Antimony	99.9	95.5	94.9	102		0.648
	Arsenic	100	100	101	101		1.02
	Barium	104	104	103	103		0.800
	Beryllium	97.4	97.6	96.1	99.4		1.23
	Boron	102	102	105	102		1.89
	Cadmium	100	99.8	102	103		1.99
	Chromium	96.3	99.7	94.7	95.1		3.76
	Cobalt	99.3	97.6	98.7	96.9		1.03
	Copper	101	98.9	98.6	99.1		0.426
	Lead	97.4	100	100	99.5		0.180
	Manganese	106	109	110	108		0.766
	Molybdenum	92.1	93.0	93.6	96.0		0.528
	Nickel	99.5	96.5	96.8	96.9		0.243
	Selenium	101	98.2	101	96.6		3.19
	Silver	101	102	103	99.7		0.760
	Thallium	99.6	103	103	102		0.0054
EPA 300.0 Rev. 2.1	Chloride	99.8	95.2	96.7		0.396	
	Sulfate	98.1	96.5	99.2		0.690	
EPA 350.1 Rev. 2.0	Ammonia-N	99.8	102	104			2.24
	Ammonia-N	92.2	95.0	95.6			0.582
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	104	105	100			2.36
EPA 353.2 Rev. 2.0	NO2NO3-N	99.5	99.0	98.0			0.669
	NO2NO3-N	102	102	104			1.46
EPA 365.1 Rev. 2.0	Total-P	107	109	108			0.845
EPA 8270E	Aldrin	60.3	63.8	65.4			2.50
	Alpha-BHC	93.3	84.9	86.7			2.13
	Alpha-Chlordane	85.2	79.5	87.0			9.02
	Beta-BHC	104	90.5	98.7			8.75
	Beta-Cyfluthrin	70.2	96.0	91.7			4.51
	Bifenthrin	50.9	69.2	74.1			6.84
	Carbophenothion	74.6	77.9	74.3			4.71
	Chlorothalonil	84.3	107	102			4.02
	Cis-Nonachlor	79.4	80.5	70.0			13.9
	Cypermethrin	75.5	107	99.6			7.16
	Dacthal	81.8	76.3	92.5			19.2
	DDD-p,p'	87.8	73.4	75.8			2.68
	DDE-p,p'	97.9	85.5	96.4			12.0
	DDT-p,p'	81.0	62.8	68.3			5.43
	Delta-BHC	105	94.1	92.3			1.98
	Deltamethrin	92.6	122	112			8.97

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery		Precision	
					LCS	SMP
EPA 8270E	Dichlobenil	82.2	68.8	71.8		
	Dicofol	96.5	88.1	92.0		
	Dieldrin	89.9	77.3	79.4		
	Endosulfan I	100	93.0	92.1		
	Endosulfan II	100	75.8	80.2		
	Endosulfan Sulfate	127	59.9	67.0		
	Endrin	102	86.8	84.0		
	Endrin Aldehyde	121	70.7	68.6		
	Endrin Ketone	120	94.7	101		
	Esfenvalerate	73.2	116	95.7		
	Ethalfuralin	94.4	105	93.0		
	Fenpropathrin	75.0	83.1	79.2		
	Gamma-BHC	110	82.1	81.1		
	Gamma-Chlordane	84.8	82.0	84.2		
	Heptachlor	81.8	77.2	65.5		
	Heptachlor Epoxide	102	80.6	98.3		
	Hexachlorobenzene	81.4	81.2	71.3		
	Kepone	129	49.5	68.4		
	Lambda-Cyhalothrin	56.3	88.0	80.3		
	Methoprene	44.2	75.6	77.2		
	Methoxychlor	101	86.7	96.6		
	MGK-264	106	96.9	113		
	Mirex	73.1	79.7	66.6		
	Oxychlordane	84.8	74.0	74.1		
	PCB-1016	95.9	113	102		
	PCB-1260	110	119	95.8		
	Permethrin	66.9	102	93.9		
	Phenothrin	50.8	87.3	92.1		
	Piperonyl Butoxide	119	96.3	69.2		
	Prallethrin	104	75.2	75.8		
	Tau-Fluvalinate	68.7	109	90.6		
	Tetramethrin	105	98.8	97.1		
	Trans-Nonachlor	80.0	84.3	83.5		
	Triclosan Methyl	89.9	94.2	87.8		
	Trifluralin	74.7	75.3	69.8		
EPA 8276	Chlordane	65.3	68.0	70.1		
	Toxaphene	75.3	78.1	91.0		
SM 2320 B-2011	Total Alkalinity	99.8				0.242
SM 2540 C-2015	TDS	94.0				6.99
SM 2540 D-2015	TSS	102				
SM 4500-F- C-2011	Fluoride	101	103	102		
SM 5310 B-2011	Organic Carbon	94.5	93.9	95.2		

Reference Method Descriptions

Method	Description	Associated Samples
DEP SOP: NU-094-1	True Color measured at 450 nm (not valid for NPDES monitoring)	2450131, 2450133
EPA 180.1 Rev. 2.0	Turbidity in aqueous matrices	2450131, 2450133
EPA 200.7 Rev. 4.4	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2450142
EPA 200.8 Rev. 5.4	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2450142
EPA 300.0 Rev. 2.1	Chloride in aqueous matrices	2450131, 2450133

Reference Method Descriptions

Method	Description	Associated Samples
EPA 300.0 Rev. 2.1	Sulfate in aqueous matrices	2450131, 2450133
EPA 350.1 Rev. 2.0	Ammonia in aqueous matrices as mg N/L	2450132, 2450134
EPA 351.2 Rev. 2.0	Total Kjeldahl Nitrogen in aqueous matrices	2450132, 2450134
EPA 353.2 Rev. 2.0	Nitrite/Nitrate in aqueous matrices as mg N/L	2450132, 2450134
EPA 365.1 Rev. 2.0	Total Phosphorus in aqueous matrices as mg P/L	2450132, 2450134
EPA 8270E	Organochlorine pesticides, pyrethroids and tracers in water matrices by GC/MS/MS	2450141
EPA 8270E	PCBs in water matrices by GC/MS/MS	2450141
EPA 8276	Chlordane and Toxaphene in water matrices by GC/MS with Negative Chemical Ionization	2450141
SM 2320 B-2011	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2450131, 2450133
SM 2340 B-2011	Hardness by calculation, in aqueous matrices, reported as mg/L CaCO ₃	2450142
SM 2540 C-2015	Total Dissolved Solids in aqueous matrices	2450131, 2450133
SM 2540 D-2015	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2450131, 2450133
SM 4500-F- C-2011	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2450131, 2450133
SM 5310 B-2011	Nonpurgeable Organic Carbon in aqueous matrices	2450132, 2450134

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
DEP SOP: NU-094-1	11/08/2023			11/08/2023 15:53	Anna M. Plaviak	2450133
	11/08/2023			11/08/2023 16:07	Anna M. Plaviak	2450131
EPA 180.1 Rev. 2.0	11/08/2023			11/08/2023 14:57	Samantha L Bates	2450131
	11/08/2023			11/08/2023 14:59	Samantha L Bates	2450133
EPA 200.7 Rev. 4.4	11/08/2023	11/09/2023 13:40	George D Taylor	11/13/2023 21:09	Chase Roberts	2450142
EPA 200.8 Rev. 5.4	11/08/2023	11/09/2023 13:40	George D Taylor	11/13/2023 22:28	Emily M Philpot	2450142
	11/08/2023	11/09/2023 13:40	George D Taylor	11/14/2023 17:47	Emily M Philpot	2450142
EPA 300.0 Rev. 2.1	11/08/2023			11/21/2023 20:48	James L Waggeberby	2450131
	11/08/2023			11/21/2023 21:04	James L Waggeberby	2450133
EPA 350.1 Rev. 2.0	11/08/2023			11/17/2023 16:42	Khloe J Berg	2450132
	11/08/2023			11/21/2023 12:29	Khloe J Berg	2450134
EPA 351.2 Rev. 2.0	11/08/2023	11/13/2023 14:50	Simonne.V. Calhoun	11/14/2023 17:15	Samantha L Bates	2450132
	11/08/2023	11/13/2023 14:50	Simonne.V. Calhoun	11/14/2023 17:16	Samantha L Bates	2450134
EPA 353.2 Rev. 2.0	11/08/2023			11/17/2023 11:46	Fadila Guebre	2450132
	11/08/2023			11/17/2023 12:56	Fadila Guebre	2450134
EPA 365.1 Rev. 2.0	11/08/2023	11/15/2023 11:07	Adam P Silver	11/16/2023 12:25	James L Waggeberby	2450132
	11/08/2023	11/15/2023 11:07	Adam P Silver	11/16/2023 12:26	James L Waggeberby	2450134
EPA 8270E	11/08/2023	11/13/2023 08:30	Rasheda Ghaffari	11/19/2023 05:24	Julie Wi	2450141
	11/08/2023	11/13/2023 08:30	Rasheda Ghaffari	11/20/2023 20:25	Lipi Saha	2450141
EPA 8276	11/08/2023	11/13/2023 08:30	Rasheda Ghaffari	12/08/2023 13:55	Arthur Maknenko	2450141
SM 2320 B-2011	11/08/2023			11/16/2023 20:37	Dale L. Simmons	2450131
	11/08/2023			11/16/2023 20:47	Dale L. Simmons	2450133
SM 2340 B-2011	11/08/2023			11/13/2023 21:09	Chase Roberts	2450142
SM 2540 C-2015	11/08/2023			11/09/2023 13:42	Yijie Li	2450131, 2450133
SM 2540 D-2015	11/08/2023			11/09/2023 13:42	Yijie Li	2450131, 2450133
SM 4500-F- C-2011	11/08/2023			11/16/2023 20:37	Dale L. Simmons	2450131
	11/08/2023			11/16/2023 20:47	Dale L. Simmons	2450133
SM 5310 B-2011	11/08/2023			11/15/2023 19:21	Khloe J Berg	2450132
	11/08/2023			11/15/2023 19:39	Khloe J Berg	2450134