

6390 Joyce Drive  
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March 29, 2018

Ms. Kelley Keenan  
Environmental Testing Solutions, Inc.  
351 Depot Street  
Asheville, NC 28801  
USA

Dear Kelley,

Thank you for participating in the WP0218 Water Pollution Proficiency Testing Study. Enclosed is your final report, which has been carefully reviewed by the PT specialists at Phenova. This report presents some additional sections and features which will give you more information on the study data for the standards that were reported by your laboratory and more information regarding the overall performance of your laboratory in relation to other study participants.

The enclosed report is in two sections, the "Evaluation Report" and the "Statistical Report". The "Evaluation Report" contains the evaluation of your reported data as well the reported method, analysis date and analyst. The "Evaluation Report" is an updated and enhanced version of the reports you previously received at the conclusion of our PT studies. The "Statistical Report" contains your passing percentage as well as statistics from the study for the analytes reported by your laboratory.

For any analyte falling outside the established acceptance limits, our PT management staff would like to assist you in determining the most appropriate course of corrective action for your facility. Please contact us at any time if we may be of service to you.

Thank you again for participating in the WP0218 Water Pollution Proficiency Testing Study. We appreciate working with you and look forward to our next study. If you have any questions, please call us at 866-942-2978.

## **Report Definitions:**

### ***Assigned Value***

The Assigned Value is determined from the study mean, gravimetric and volumetric true concentration of an analyte to be analyzed, calculation and/or an appropriate reference value as stipulated in the EPA National Standards for Water Proficiency Testing Studies Criteria Document (current version), the National Environmental Laboratory Accreditation Conference (NELAC) criteria (ref: NELAC FOT tables, NELAC PT Committee) and other documents distributed by accrediting

### ***Evaluation Limits***

Acceptance Limits are derived from fixed limits, coefficients, constants and calculations stipulated in the EPA National Standards for Water Proficiency Testing Studies Criteria Documents (current version), the National Environmental Laboratory Accreditation Conference (NELAC) criteria (ref: NELAC PT FOT tables, NELAC PT Committee) and other documents distributed by accrediting agencies as applicable.

### ***Evaluation***

#### *Acceptable*

The reported value falls within the Acceptance Limits.

#### *Not Acceptable*

The reported value falls outside the Acceptance Limits.

#### *No Evaluation*

The reported value is non-numeric and can not be evaluated.

#### *NR*

As required by the NELAC standards and requested by state authorities, any analyte purchased but not reported by your facility is listed as NR (Not Reported).

### ***Study Mean and Standard Deviation***

The mean and standard deviation are calculated from the study data using robust statistical calculations when possible. Other statistical calculations may be used if robust statistical calculations are not possible. The displayed values are independent of any statistical calculations required for the calculation of the analyte evaluation limits.

This report must not be reproduced except in full, without the written approval of Phenova.

This report must not be used to claim product certification, approval, or endorsement by the American Association for Laboratory Accreditation (A2LA) or any agency of the federal government.



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State Regulatory Agency Request(s):

Phenova has been authorized to send a copy of your WP0218 final results to the following state agencies:

AL, GA, KY, NC, SC and TN

Other Regulatory Agency Request(s):

No requests were made to send a copy of your WP0218 final results to an agency.

Third Party Request(s):

No requests were made to send a copy of your WP0218 final results to a third party.

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## Final Report - Water Pollution Proficiency Testing

### Study: WP0218

Opening Date: February 5, 2018 - Closing Date: March 22, 2018

Laboratory: Environmental Testing Solutions, Inc.  
351 Depot Street  
Asheville, NC 28801  
USA

Contact: Ms. Kelley Keenan  
828-350-9364

EPA Lab ID: NC01230

### Demand (PT-DEM-WP) Lot #: 8186-07

NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1530	BOD	2/21/2018	KEK	20135200	SM 5210 B-2011	mg/L	129	120	66.2 - 215	Acceptable
1555	CBOD	2/21/2018	KEK	20135200	SM 5210 B-2011	mg/L	129	80	52.0 - 215	Acceptable
1565	COD	2/21/2018	KEK	60003001	HACH 8000	mg/L	200	195	162 - 232	Acceptable
2040	TOC					mg/L	79.0		66.3 - 90.9	NR

### Minerals 1 (PT-MIN1-WP) Lot #: 8186-08

NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1505	Total Alkalinity(as CaCO <sub>3</sub> )	2/16/2018	KEK	20045607	SM 2320 B-2011	mg/L	73.1	82	62.1 - 84.1	Acceptable
1540	Bromide					mg/L	1.96		1.42 - 2.44	NR
1575	Chloride	2/16/2018	KEK	20079203	SM 4500-Cl <sup>-</sup> C-2011	mg/L	176	42	155 - 197	Not Acceptable
1730	Fluoride					mg/L	1.14		0.880 - 1.38	NR
2000	Sulfate	2/16/2018	KEK	20132836	SM 4500-SO <sub>4</sub> <sup>-</sup> E-2011	mg/L	82.2	86	68.4 - 93.7	Acceptable

#### Additional State Specific Analytes

1813	Total Inorganic Carbon					mg/L	17.5		14.0 - 21.0	NR
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### Minerals 2 - Hardness (PT-MIN2-WP) Lot #: 8186-102

NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1035	Calcium					mg/L	37.5		31.9 - 43.2	NR
1550	Calcium Hardness (as CaCO <sub>3</sub> )					mg/L	93.8		79.7 - 108	NR
1755	Total Hardness (as CaCO <sub>3</sub> )	2/16/2018	KEK	20047603	SM 2340 C-2011	mg/L	136	134	116 - 156	Acceptable
1085	Magnesium					mg/L	10.2		8.70 - 11.8	NR
1125	Potassium					mg/L	33.5		26.8 - 40.2	NR
1155	Sodium					mg/L	39.5		31.6 - 47.5	NR

### Specific Conductance (PT-COND-WP) Lot #: 8186-72

NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1610	Specific Conductance (25°C)	2/9/2018	KEK	20048606	SM 2510 B-2011	µmhos/cm	245	245	221 - 270	Acceptable

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EPA Lab ID: NC01230

Solids (PT-SOL-WP)										Lot #: 8186-09
NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1955	Total Dissolved Solids at 180° (TFR)	2/7/2018	KEK	20050424	SM 2540 C-2011	mg/L	202	189	157 - 247	Acceptable
1960	Non-Filterable Residue (TSS)	2/15/2018	KEK	20051201	SM 2540 D-2011	mg/L	97.9	99	81.1 - 108	Acceptable
1950	Total Solids					mg/L	300		255 - 345	NR
Nutrients 1 - Simple (PT-NUT1-WP)										Lot #: 8186-10
NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1515	Ammonia as N	2/15/2018	KEK	20109404	SM 4500-NH3 D-2011	mg/L	4.73	4.6	3.65 - 5.85	Acceptable
1810	Nitrate as N					mg/L	8.71		7.17 - 10.2	NR
1820	Nitrate and Nitrite as N					mg/L	8.71		7.22 - 10.1	NR
1870	Orthophosphate as P					mg/L	4.02		3.41 - 4.62	NR
Additional State Specific Analytes										
1712	Total Dissolved Phosphorus					mg/L	4.02		3.41 - 4.62	NR
1647	Dissolved Nitrogen					mg/L	13.4		11.2 - 15.6	NR
1827	Total Nitrogen					mg/L	13.4		11.2 - 15.6	NR
pH (PT-PH-WP)										Lot #: 8186-15
NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1900	pH	2/9/2018	KEK	20105208	SM 4500-H+ B-2011	S.U.	6.01	6.0	5.81 - 6.21	Acceptable
1900	pH	2/9/2018	KEK		SW-846 9040 C (Aqueous)	S.U.	6.01	6.0	5.81 - 6.21	Acceptable
1900	pH	2/9/2018	KEK		SW-846 9045 D (Non-Aqueous)	S.U.	6.01	6.0	5.81 - 6.21	Acceptable
Residual Chlorine Low Level (PT-CLLL-WP)										Lot #: 8186-94
NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1940	Total Residual Chlorine	2/20/2018	KEK	60006522	Orion Electrode, 1977 (ORION 77-CL)	µg/L	216	224	156 - 276	Acceptable

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**Opening Date: February 5, 2018 - Closing Date: March 22, 2018**

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Contact: Ms. Kelley Keenan  
828-350-9364

EPA Lab ID: NC01230

Settleable Solids (PT-SSOL-WP)										Lot #: 8186-17
NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1965	Settleable Solids	2/14/2018	KEK	20052204	SM 2540 F-2011	mL/L	23.9	29	19.3 - 30.6	Acceptable
Turbidity (PT-TURB-WP)										Lot #: 8186-20
NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
2055	Turbidity	2/14/2018	KEK	20042802	SM 2130 B-2011	NTU	25.4	24	21.4 - 29.6	Acceptable



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## PT Study Score Report

EPA ID: NC01230  
 Laboratory: Environmental Testing Solutions, Inc.  
 351 Depot Street  
 Asheville, NC 28801  
 USA

Study Number	Number of Reported Results	Number of Passing Results	Percent Passing
WP0218	17	16	94.1%

### **Report Definitions:**

- Number of Reported Results***      The number of results reported which could be evaluated. Results receiving an evaluation of "NR" or "No Evaluation" are not included.
- Number of Passing Results***      The number of results reported receiving an evaluation of "Acceptable" or "Check for Error".
- Percent Passing***                      The percentage of results reported receiving an evaluation of "Acceptable" or "Check for Error".

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## Statistical Summary Report - Water Pollution Proficiency Testing

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Contact: Ms. Kelley Keenan  
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EPA Lab ID: NC01230

Demand (PT-DEM-WP) <span style="float: right;">Lot #: 8186-07</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1530	BOD	mg/L	126	18.0	51.3	167
1555	CBOD	mg/L	112	21.3	40.3	167
1565	COD	mg/L	191	13.4	81.0	116
2040	TOC	mg/L	78.2	3.17	83.9	115
Minerals 1 (PT-MIN1-WP) <span style="float: right;">Lot #: 8186-08</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1505	Total Alkalinity(as CaCO <sub>3</sub> )	mg/L	72.9	3.79	85.0	115
1540	Bromide	mg/L	2.03	0.161	72.4	124
1575	Chloride	mg/L	174	8.23	88.1	112
1730	Fluoride	mg/L	1.14	0.110	77.2	121
2000	Sulfate	mg/L	83.5	5.02	83.2	114
Additional State Specific Analytes						
1813	Total Inorganic Carbon	mg/L	N/A	0.00	80.0	120
Minerals 2 - Hardness (PT-MIN2-WP) <span style="float: right;">Lot #: 8186-102</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1035	Calcium	mg/L	36.9	2.09	85.1	115
1550	Calcium Hardness (as CaCO <sub>3</sub> )	mg/L	91.8	4.66	85.0	115
1755	Total Hardness (as CaCO <sub>3</sub> )	mg/L	133	7.47	85.3	115
1085	Magnesium	mg/L	10.1	0.632	85.3	116
1125	Potassium	mg/L	32.8	2.02	80.0	120
1155	Sodium	mg/L	38.1	1.77	80.0	120
Specific Conductance (PT-COND-WP) <span style="float: right;">Lot #: 8186-72</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1610	Specific Conductance (25°C)	µmhos/cm	244	7.83	90.2	110
Solids (PT-SOL-WP) <span style="float: right;">Lot #: 8186-09</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1955	Total Dissolved Solids at 180° (TFR)	mg/L	201	7.99	77.7	122
1960	Non-Filterable Residue (TSS)	mg/L	93.5	3.71	82.8	110
1950	Total Solids	mg/L	292	18.2	85.0	115



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Nutrients 1 - Simple (PT-NUT1-WP) <span style="float: right;">Lot #: 8186-10</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1515	Ammonia as N	mg/L	4.75	0.392	77.2	124
1810	Nitrate as N	mg/L	8.72	0.353	82.3	117
1820	Nitrate and Nitrite as N	mg/L	8.73	0.422	82.9	116
1870	Orthophosphate as P	mg/L	4.15	0.0930	84.8	115
Additional State Specific Analytes						
1712	Total Dissolved Phosphorus	mg/L	4.22	0.00	84.8	115
1647	Dissolved Nitrogen	mg/L	13.3	0.179	83.6	116
1827	Total Nitrogen	mg/L	13.4	0.725	83.6	116
pH (PT-PH-WP) <span style="float: right;">Lot #: 8186-15</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1900	pH	S.U.	6.00	0.0334	96.7	103
Residual Chlorine Low Level (PT-CLLL-WP) <span style="float: right;">Lot #: 8186-94</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1940	Total Residual Chlorine	µg/L	215	13.9	72.2	128
Settleable Solids (PT-SSOL-WP) <span style="float: right;">Lot #: 8186-17</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1965	Settleable Solids	mL/L	23.5	2.78	80.8	128
Turbidity (PT-TURB-WP) <span style="float: right;">Lot #: 8186-20</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
2055	Turbidity	NTU	25.0	1.91	84.3	117