

March 26, 2020

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

Dear Kelley,

Thank you for participating in the WP0220 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 WP0220 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 Institute (TNI) criteria (ref: TNI FOT tables, TNI PT Committee) and other documents distributed by accrediting agencies as applicable.

***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 Institute (TNI) criteria (ref: TNI FOT tables, TNI 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 TNI 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. Various aspects of Phenova's proficiency testing schemes can from time to time be subcontracted. If subcontracting occurs, it is placed with a competent and qualified subcontractor and Phenova is responsible for all work performed. 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.



6390 Joyce Drive  
# 100  
Golden, CO 80403

Phone 303-940-0033  
Fax 866-283-0269  
www.phenova.com

State Regulatory Agency Request(s):

Phenova has been authorized to send a copy of your WP0220 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 WP0220 final results to an agency.

Third Party Request(s):

No requests were made to send a copy of your WP0220 final results to a third party.

6390 Joyce Drive Phone 303-940-0033  
# 100 Fax 866-283-0269  
Golden, CO 80403 www.phenova.com

## Final Report - Water Pollution Proficiency Testing

### Study: WP0220

Opening Date: February 3, 2020 - Closing Date: March 19, 2020

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 #: 8208-07

NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1530	BOD	2/19/2020	KEK	20135200	SM 5210 B-2011	mg/L	138	98	71.1 - 231	Acceptable
1555	CBOD	2/19/2020	KEK	20135200	SM 5210 B-2011	mg/L	138	80	55.9 - 231	Acceptable
1565	COD	2/19/2020	KEK	60003001	HACH 8000	mg/L	214	210	174 - 248	Acceptable
2040	TOC					mg/L	84.7		71.2 - 97.3	NR

### Minerals 1 (PT-MIN1-WP) Lot #: 8208-08

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> )	2/28/2020	KEK	20045607	SM 2320 B-2011	mg/L	163	160	138 - 187	Acceptable
1540	Bromide					mg/L	2.77		2.14 - 3.35	NR
1575	Chloride	2/14/2020	KEK	20079203	SM 4500-Cl <sup>-</sup> C-2011	mg/L	187	182	165 - 210	Acceptable
1730	Fluoride					mg/L	3.53		2.85 - 4.05	NR
2000	Sulfate	2/21/2020	KEK	20132836	SM 4500-SO <sub>4</sub> <sup>-</sup> E-2011	mg/L	8.77	7.58	6.22 - 10.7	Acceptable

#### Additional State Specific Analytes

1813	Total Inorganic Carbon					mg/L	38.9		31.1 - 46.7	NR
------	------------------------	--	--	--	--	------	------	--	-------------	----

### Minerals 2 - Hardness (PT-MIN2-WP) Lot #: 8208-102

NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1035	Calcium					mg/L	18.7		15.9 - 21.6	NR
1550	Calcium Hardness (as CaCO <sub>3</sub> )					mg/L	46.8		39.8 - 53.8	NR
1755	Total Hardness (as CaCO <sub>3</sub> )	2/14/2020	KEK	20047603	SM 2340 C-2011	mg/L	127	125	108 - 146	Acceptable
1085	Magnesium					mg/L	19.5		16.5 - 22.4	NR
1125	Potassium					mg/L	31.4		25.1 - 37.6	NR
1155	Sodium					mg/L	47.1		37.7 - 56.5	NR

### Specific Conductance (PT-COND-WP) Lot #: 8208-72

NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1610	Specific Conductance (25°C)	2/28/2020	KEK	20048606	SM 2510 B-2011	µmhos/cm	420	426	378 - 462	Acceptable

6390 Joyce Drive Phone 303-940-0033  
# 100 Fax 866-283-0269  
Golden, CO 80403 www.phenova.com

## Final Report - Water Pollution Proficiency Testing

### Study: WP0220

Opening Date: February 3, 2020 - Closing Date: March 19, 2020

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

Contact: Ms. Kelley Keenan  
828-350-9364

EPA Lab ID: NC01230

### Solids (PT-SOL-WP) Lot #: 8208-09B

NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1955	Total Dissolved Solids at 180° (TFR)	2/6/2020	KEK	20050424	SM 2540 C-2011	mg/L	567	548	510 - 624	Acceptable
1960	Non-Filterable Residue (TSS)	2/19/2020	KEK	20051201	SM 2540 D-2011	mg/L	84.7	80	69.4 - 94.1	Acceptable
1950	Total Solids					mg/L	652		587 - 717	NR

### Nutrients 1 - Simple (PT-NUT1-WP) Lot #: 8208-10

NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1515	Ammonia as N	2/27/2020	KEK	20109404	SM 4500-NH3 D-2011	mg/L	3.48	3.54	2.63 - 4.40	Acceptable
1810	Nitrate as N					mg/L	19.8		16.6 - 23.0	NR
1820	Nitrate and Nitrite as N					mg/L	19.8		16.6 - 22.9	NR
1870	Orthophosphate as P					mg/L	3.08		2.61 - 3.54	NR

#### Additional State Specific Analytes

1712	Total Dissolved Phosphorus					mg/L	3.08		2.61 - 3.54	NR
1647	Dissolved Nitrogen					mg/L	23.3		19.5 - 27.0	NR
1827	Total Nitrogen					mg/L	23.3		19.5 - 27.0	NR

### pH (PT-PH-WP) Lot #: 8208-15

NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1900	pH	2/14/2020	KEK	20105208	SM 4500-H+ B-2011	S.U.	9.14	9.0	8.94 - 9.34	Acceptable
1900	pH	2/14/2020	KEK		SW-846 9040 C (Aqueous)	S.U.	9.14	9.0	8.94 - 9.34	Acceptable
1900	pH	2/14/2020	KEK		SW-846 9045 D (Non-Aqueous)	S.U.	9.14	9.0	8.94 - 9.34	Acceptable

### Residual Chlorine Low Level (PT-CLLL-WP) Lot #: 8208-94

NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1940	Total Residual Chlorine	2/18/2020	KEK	60006522	Orion Electrode, 1977 (ORION 77-CL)	µg/L	55.3	54	5.53 - 115	Acceptable

6390 Joyce Drive Phone 303-940-0033  
# 100 Fax 866-283-0269  
Golden, CO 80403 www.phenova.com

## Final Report - Water Pollution Proficiency Testing

### Study: WP0220

**Opening Date: February 3, 2020 - Closing Date: March 19, 2020**

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

Contact: Ms. Kelley Keenan  
828-350-9364

EPA Lab ID: NC01230

Settleable Solids (PT-SSOL-WP)										Lot #: 8208-17
NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
1965	Settleable Solids	2/14/2020	KEK	20052204	SM 2540 F-2011	mL/L	31.9	33	26.2 - 40.3	Acceptable

  

Turbidity (PT-TURB-WP)										Lot #: 8208-20
NELAC Code	Analyte	Analysis Date	Analyst	Method Code	Method Description	Units	Assigned Value	Result	Acceptance Limits	Evaluation
2055	Turbidity	2/19/2020	KEK	20042802	SM 2130 B-2011	NTU	6.26	5.7	4.88 - 7.61	Acceptable



6390 Joyce Drive  
 # 100  
 Golden, CO 80403

Phone 303-940-0033  
 Fax 866-283-0269  
 www.phenova.com

## 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
WP0220	17	17	100%

### 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".

6390 Joyce Drive  
# 100  
Golden, CO 80403

Phone 303-940-0033  
Fax 866-283-0269  
www.phenova.com

## Statistical Summary Report - Water Pollution Proficiency Testing

**Opening Date: February 3, 2020 - Closing Date: March 19, 2020**

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) <span style="float: right;">Lot #: 8208-07</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1530	BOD	mg/L	136	22.1	51.5	167
1555	CBOD	mg/L	126	26.0	40.5	167
1565	COD	mg/L	208	14.7	81.3	116
2040	TOC	mg/L	85.7	5.22	84.1	115
Minerals 1 (PT-MIN1-WP) <span style="float: right;">Lot #: 8208-08</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	160	6.06	84.7	115
1540	Bromide	mg/L	2.86	0.166	77.3	121
1575	Chloride	mg/L	188	8.17	88.2	112
1730	Fluoride	mg/L	3.49	0.224	80.7	115
2000	Sulfate	mg/L	8.78	0.485	70.9	122
Additional State Specific Analytes						
1813	Total Inorganic Carbon	mg/L	36.6	0.00	79.9	120
Minerals 2 - Hardness (PT-MIN2-WP) <span style="float: right;">Lot #: 8208-102</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1035	Calcium	mg/L	18.4	1.03	85.0	116
1550	Calcium Hardness (as CaCO <sub>3</sub> )	mg/L	45.6	2.22	85.0	115
1755	Total Hardness (as CaCO <sub>3</sub> )	mg/L	125	4.08	85.0	115
1085	Magnesium	mg/L	19.2	0.666	84.6	115
1125	Potassium	mg/L	31.0	2.15	79.9	120
1155	Sodium	mg/L	46.3	1.55	80.0	120
Specific Conductance (PT-COND-WP) <span style="float: right;">Lot #: 8208-72</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1610	Specific Conductance (25°C)	µmhos/cm	421	16.3	90.0	110
Solids (PT-SOL-WP) <span style="float: right;">Lot #: 8208-09B</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	558	16.1	89.9	110
1960	Non-Filterable Residue (TSS)	mg/L	83.3	3.05	81.9	111
1950	Total Solids	mg/L	642	30.2	90.0	110



6390 Joyce Drive  
# 100  
Golden, CO 80403

Phone 303-940-0033  
Fax 866-283-0269  
www.phenova.com

## Statistical Summary Report - Water Pollution Proficiency Testing

**Opening Date: February 3, 2020 - Closing Date: March 19, 2020**

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

Contact: Ms. Kelley Keenan  
828-350-9364

EPA Lab ID: NC01230

Nutrients 1 - Simple (PT-NUT1-WP) <span style="float: right;">Lot #: 8208-10</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1515	Ammonia as N	mg/L	3.45	0.307	75.6	126
1810	Nitrate as N	mg/L	20.0	0.978	83.8	116
1820	Nitrate and Nitrite as N	mg/L	20.0	1.03	83.8	116
1870	Orthophosphate as P	mg/L	3.14	0.198	84.7	115
Additional State Specific Analytes						
1712	Total Dissolved Phosphorus	mg/L	3.21	0.331	84.7	115
1647	Dissolved Nitrogen	mg/L	22.8	1.61	83.7	116
1827	Total Nitrogen	mg/L	22.8	1.39	83.7	116
pH (PT-PH-WP) <span style="float: right;">Lot #: 8208-15</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1900	pH	S.U.	9.11	0.0957	97.8	102
Residual Chlorine Low Level (PT-CLLL-WP) <span style="float: right;">Lot #: 8208-94</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1940	Total Residual Chlorine	µg/L	55.6	4.29	10.0	208
Settleable Solids (PT-SSOL-WP) <span style="float: right;">Lot #: 8208-17</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
1965	Settleable Solids	mL/L	31.6	2.16	82.1	126
Turbidity (PT-TURB-WP) <span style="float: right;">Lot #: 8208-20</span>						
NELAC Code	Analyte	Units	Study Mean	Study Standard Deviation	Low Acceptance Limit %	High Acceptance Limit %
2055	Turbidity	NTU	5.86	0.286	78.0	122