



TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
DIVISION OF WATER RESOURCES, WATER SUPPLY SECTION

DEC 08 2023

Total Organic Carbon (TOC) and Enhanced Coagulation Report

PWSID #  
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ENTRY POINT  
A

PUBLIC WATER SYSTEM NAME AND ADDRESS

Kingston Water Department

REPORTING PERIOD  
START DATE END DATE

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900 Waterford Place

Kingston, TN 37763

TOC and Enhanced Coagulation Calculations

Sample Date	A Treated Water		B Source Water			C	D	E	Alternative Compliance Criteria Used	F
	TOC	Magnesium Hardness (as CaCO <sub>3</sub> )	TOC	Alkalinity	Magnesium Hardness (as CaCO <sub>3</sub> )	Reduction of TOC as a Percent	Required TOC Removal (%)	Column C Divided by Column D		
01/04/23	0.929		1.460	65		36.4%	25%	1.456		Sum of Column E Divided by the Number of Paired Samples Or Alternative Compliance Value
04/06/23	0.957		1.370	63		30.1%	25%	1.204		
07/05/23	0.988		1.320	65		25.2%	25%	1.008		
Average										
Paired Samples						(1-A/B) x 100	(See TOC Removal table on back of form)			Compliance achieved if value >= 1.0

I certify that U.S.E.P.A. approved methods were used to conduct TOC analysis performed by: Pace Analytical / ESC Labs, and that this document and all attachments were prepared by me, or under my direction or supervision. The submitted information is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury.

PREPARED BY: John M. Poole DATE: 12/06/23 PHONE: (865) 376-7187 APPROVED BY: John M. Poole DATE: 12/06/23 PHONE: (865) 376-7187

**TOC and Enhanced Coagulation  
Monthly Calculations**

Month *	Compliance Value from Column F
Current	
Previous	
3 <sup>rd</sup>	
4 <sup>th</sup>	
5 <sup>th</sup>	
6 <sup>th</sup>	
7 <sup>th</sup>	
8 <sup>th</sup>	
9 <sup>th</sup>	
10 <sup>th</sup>	
11 <sup>th</sup>	
12 <sup>th</sup>	
Total	
Total divided by 12	

\* Current month compliance value, previous month value, and continuing back for previous 12 months.

Has system maintained compliance for the last 12 months? (Total divided by 12 must be greater than or equal to 1.0) Y or N



**Required Percentage of TOC Removal**

Source Water TOC (mg/L)	Source Water Alkalinity, mg/L as CaCO3		
	0-60 mg/L	>60-120 mg/L	>120 mg/L *
>2.0 - 4.0	35.0%	25.0%	15.0%
>4.0 - 8.0	45.0%	35.0%	25.0%
>8.0	50.0%	40.0%	30.0%

\* Systems practicing softening must meet the TOC removal requirements in this column.

**Monthly Alternative Compliance Criteria \*\***

Subrule	Criteria
.36(9)(c)(2)(i)	Treated or Source water TOC < 2.0 mg/L.
.36(9)(c)(2)(ii)	Softening System removing at least 10 mg/L of magnesium hardness.
.36(9)(c)(2)(iii)	Source water SUVA prior to treatment <= 2.0 L/mg-m.
.36(9)(c)(2)(iv)	Finished water SUVA prior to treatment <= 2.0 L/mg-m.
.36(9)(c)(2)(v)	Enhanced Softening which lowers alkalinity below 60 mg/L.

\*\* Systems meeting at least one of the conditions in paragraph (9)(c)2(i)-(v) may assign a monthly value of 1.0 in lieu of the value calculated in paragraph (9)(c)1.

**Annual Alternative Compliance Criteria (1)(2)**

Subrule	Criteria
.36(9)(a)(2)(i)	Running annual average of source water TOC < 2.0 mg/L.
.36(9)(a)(2)(ii)	Running annual average of treated water TOC < 2.0 mg/L calculated quarterly.
.36(9)(a)(2)(iii)	Running annual average of source water TOC < 4.0 mg/L calculated quarterly, and; Running annual average of source water alkalinity > 60 mg/L, calculated quarterly, and; Running annual average of Total Trihalomethanes <= 0.040 mg/L, or, Running annual average of Total Haloacetic Acids <= 0.030 mg/L.
.36(9)(a)(2)(iv)	Running annual average of Total Trihalomethanes <= 0.040 mg/L, and, Running annual average of Total Haloacetic Acids <= 0.030 mg/L, and, Only chlorine used as a primary disinfectant.
.36(9)(a)(2)(v)	Running annual average of source water SUVA <= 2.0 L/mg-m measured monthly and calculated quarterly.
.36(9)(a)(2)(vi)	Running annual average of treated water SUVA < 2.0 L/mg-m measured monthly and calculated quarterly.
.36(9)(a)(3)(i)	Softening treatment that result in a running annual average of treated water alkalinity < 60 mg/L (as CaCO3) measured monthly, and calculated quarterly as an annual running average.
.36(9)(a)(3)(ii)	Softening treatment that results in removing at least 10 mg/L of magnesium hardness (as CaCO3) measured monthly and calculated quarterly as an annual running average.

**Notes**

- (1) Systems meeting at least one of the conditions in paragraph (9)(a)2(i)-(iv) are not required to operate with enhanced coagulation.
- (2) Softening systems meeting one of the alternative compliance criteria in paragraph (9)(a)3 are not required to operate with enhanced coagulation.

**TOC and Enhanced Coagulation  
Quarterly Calculations**

Quarter *	Compliance Value from Column F
Current	
Previous	
3 <sup>rd</sup>	
4 <sup>th</sup>	
Total	
Total divided by 4	

\* Current quarter compliance value, previous quarter value, and continuing back for previous 4 quarters.

Has system maintained compliance for the last four quarters? (Total divided by 4 must be greater than or equal to 1.0) Y or N

