

3136



# BOROUGH OF CARLISLE

*"Committed To Excellence In Community Service"*

2016 APR 22 AM 11:46

RECEIVED  
IRRC

April 18, 2016

Environmental Quality Board  
P.O. Box 8477  
Harrisburg PA 17105-8477  
Via email – RegComments@pa.gov

RE: Disinfection Requirements Rule Comments

The Borough of Carlisle Municipal Authority (Carlisle), PWS # 7210002, offers the following comments concerning the proposed Disinfection Requirements Rule published in the PA Bulletin on February 20, 2016. Carlisle is a PWS that serves an estimated population of approximately 26,000 to 31,000 according to our recently updated sample siting plan. We utilize chlorine for disinfection and monitor free chlorine residual in the distribution system. In the past we utilized 7 routine distribution system sample locations on a more or less weekly basis to monitor distribution system chlorine residual and total coliform bacteria. One of these 7 routine sample locations is a higher risk dead end location known as either Belvedere Professional Center presently or Belvedere Medical Center in the past.

Carlisle supports the PADEP in evaluating and finding the suitable minimum detectable total chlorine residual for water utilities in Pennsylvania. The current antiquated standard of 0.02 mg/L of free or total residual chlorine is not an appropriate minimum standard because it is not measureable. However, a residual chlorine level of 0.10 mg/L is detectable under routine field sampling conditions. Carlisle puts forth that a standard of 0.10 mg/L is the minimum detectable chlorine residual that should be allowed under the proposed revised disinfectant residual rule for the distribution system.

However, the minimum disinfectant residual of 0.2 mg/L for all sample locations in the distribution system as proposed by the Department will require additional costs that are not adequately addressed in the proposed regulation. Use of the monthly average disinfectant residual values used for compliance at present grossly over estimates potential public water supply system compliance with the proposed 0.2 mg/L standard.

For example, see the attached 2014 chlorine data for Carlisle. Comparing our high risk dead end sample location noted above with our reported monthly average chlorine residuals of all 7 routine sample locations results in a free chlorine residual for the individual location of only about 31% of the overall monthly average reported for the entire distribution system during 2014. This "underreporting" increases during the warm weather months of May through October when the high risk dead end location detectable chlorine residual is only about 21%

of the overall monthly average reported for all sample locations. In fact, during August 2014 the high risk dead end location only averaged 0.08 mg/L of free chlorine when the reported overall monthly average free chlorine for all locations was reported as 0.98 mg/L. Carlisle has since installed an automatic flusher and a new hydrant nearest this location during the summer of 2015. This example shows why it is not prudent to calculate potential compliance and costs based on monthly averages.

The proposed rule also includes estimated costs for automatic flushers of approximately \$2000. The cost for the autoflusher and required accessories purchased by Carlisle in 2015 was \$2547 or about 27% higher than the estimate. The autoflusher cannot be operated during freezing weather so it must be installed and uninstalled over an 8 month period. Therefore this is not a year round solution but does account for the higher risk warm weather months. In addition the other associated auto flusher cost estimates include:

Annual installation	2 manhours
Annual removal	2 manhours
Weekly checks	0.5 manhours

$(2 \text{ hours} + 0.5 \text{ hrs/week} \times 32 \text{ weeks} + 2 \text{ hours}) = 20 \text{ manhours/year} \times 37.50 \text{ loaded rate/hour} = \$750/\text{year/automatic flusher}$

The existing autoflusher that we installed also required a new hydrant. But assuming we will generally install additional autoflushers on existing hydrants this cost is not factored in at this point. If the high risk dead ends require modifications to the surrounding area for positive drainage and erosion and sedimentation control that would be a site specific cost but this could easily exceed several thousand dollars. Finally we are factoring in a lifespan of 5 years for each auto flusher.

Although we only have one autoflusher currently installed and another spare in reserve Carlisle estimates that complying with the proposed regulation could easily require the addition of at least 10 additional autoflushers over the next few years to maintain adequate disinfection residual at terminal ends of the distribution system. A conservative initial outlay of at least \$40,000 to \$50,000 is certainly within the realm of possibility with continued annual operating costs of \$10,000 per year.

In addition only one of our three elevated storage tanks includes mixing equipment (currently used for DBP reduction). If a distribution system study that Carlisle is currently undertaking in 2016 recommends the installation of additional mixing capability for stored water facilities those costs are estimated to cost at least \$75,000 per tank.

Therefore, the Department total capital cost estimate of \$780,000 provided in the proposed rule for the entire regulated community in PA to comply with the rule seems to be woefully under estimated. Just utilizing the estimates noted above Carlisle estimates capital costs

ranging from \$115,000 to \$190,000 to potentially comply with a 0.2 mg/L free chlorine residual distribution system final regulation.

Carlisle would also request a deferred effective date of at least 6 months after final promulgation to provide additional time to make any necessary operational changes to consistently meet a 0.2 mg/L minimum disinfectant residual in the entire distribution system. In addition, if the level of capital improvement is required as described above a system specific compliance schedule exceeding 18 months should be granted to allow for proper budgeting, bidding, planning, engineering, training and implementation for this final regulation .

Carlisle has also submitted distribution system free chlorine residual data for all 7 of our routine Total Coliform / chlorine residual sample locations from 2011 through 2015 for general DEP knowledge. DEP requested any such data during the disinfection stakeholder meeting. Only the 2014 data is discussed in detail in the comments above. Note that the "BPC" or "BMC" sample site designation is the higher risk dead end sample location among the routine locations.

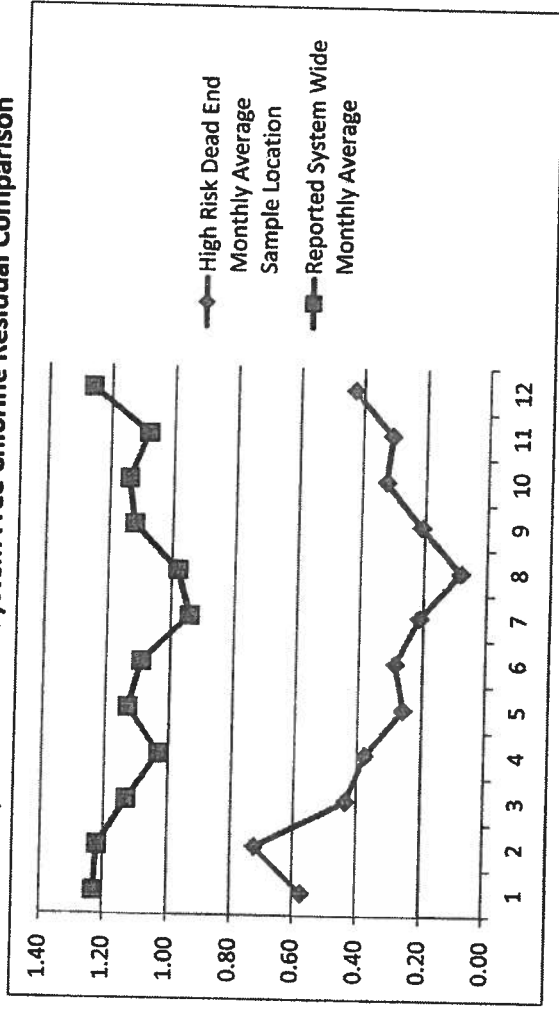
Thank you for the opportunity to submit comments on the proposed Disinfection Requirements Rule.

Respectfully submitted,  
*David K. Runkle*  
David K. Runkle  
Laboratory Supervisor  
Borough of Carlisle

**2014 Carlisle Distribution System Free Chlorine Residual (mg/L) Comparison  
(Routine Weekly Dead End Sample Location versus Reported Monthly Average of all 7 Routine Sample Locations)**

Month/Yr.	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
1st week	0.95	0.74	0.39	0.31	0.44	0.23	0.18	0.06	0.32	0.46	0.32	0.61
2nd week	0.41	0.90	0.64	0.40	0.15	0.35	0.20	0.11	0.21	0.48	0.41	0.40
3rd week	0.45	0.61	0.39	0.42	0.21	0.32	0.26	0.07	0.08	0.26	0.23	0.21
4th week	0.48	0.65	0.32	0.38	0.23	0.24	0.21	0.09	0.23	0.10	0.27	0.50
High Risk Dead End Monthly Average Sample Location	0.57	0.73	0.44	0.38	0.26	0.29	0.21	0.08	0.21	0.33	0.31	0.43
Reported System Wide Monthly Average Dead End/System Wide	1.23	1.22	1.13	1.03	1.13	1.09	0.94	0.98	1.12	1.14	1.08	1.26
	46%	60%	39%	37%	23%	27%	22%	8.2%	19%	29%	29%	34%

**2014 Monthly Distribution System Free Chlorine Residual Comparison**



2015 Carlisle Distribution System Free Chlorine (mg/L)

Date	Pump House	Boro Hall	High School	BPC	Cracker Barrel	Wenger Beef	Cumb Co Serv Cent	Notes	Month Avg.
1/6/15	1.72	1.20	1.71	0.36	1.43	1.51	1.52		
1/14/15	1.84	1.63	1.76	0.28	1.56	1.49	1.04		
1/20/15	1.73	1.55	0.92	0.94	1.46	1.47	1.18		
1/28/15	1.61	1.36	1.39	0.53	1.44	1.19	1.04		1.32
2/4/15	1.60	1.47	1.49	0.55	1.78	1.24	1.39		
2/11/15	1.29	1.02	1.15	0.25	1.13	1.27	0.90		
2/18/15	1.34	1.43	1.09	0.52	1.11	1.25	0.95		
2/25/15	1.33	1.14	1.16	0.26	0.98	1.43	0.88		1.12
2/26/15	checked hardness at Belvedere Prof Center to assure a water softener was not installed								
3/3/15	1.30	1.22	1.15	0.22	1.15	1.24	0.81		
3/10/15	1.39	1.14	1.73	0.46	1.18	1.14	1.78		
3/17/15	1.34	1.20	1.48	0.36	0.83	1.24	1.00		
3/25/15	1.16	1.18	0.89	0.20	0.90	1.16	0.89		1.06
4/1/15	1.37	1.12	0.78	0.46	0.89	1.19	0.80		
4/7/15	1.32	1.17	1.10	0.28	0.97	1.21	0.69		
4/15/15	1.30	1.15	0.97	0.45	0.87	1.24	0.63		
4/22/15	1.53	1.02	0.92	0.27	0.76	1.10	0.68		
5/6/15	1.44	1.03	1.06	0.51	0.76	0.73	0.76		0.94
5/12/15	1.48	1.16	0.94	0.33	0.98	1.04	0.83		
5/20/15	1.49	0.65	1.31	0.33	1.06	0.91	0.54		
5/26/15	1.52	1.23	1.25	0.44	0.78	0.82	0.59		
6/3/15	1.46	0.95	0.98	0.29	0.59	0.55	0.50		0.93
6/10/15	1.40	1.20	1.18	0.21	0.96	1.33	1.03		
6/17/15	1.50	1.19	1.29	0.23	1.07	1.30	0.82		
6/23/15	1.73	0.95	0.58	0.17	0.70	0.86	0.63		0.92
7/1/15	1.68	1.52	0.72	0.22	0.94	1.38	0.31		

7/7/15	1.64	1.29	0.37	0.67	1.11	1.18	0.47	
7/13/15	1.73	1.33	0.32	0.37	1.09	1.25	1.05	
7/21/15	1.43	1.31	1.00	0.53	0.94	1.18	0.90	
8/4/15	1.84	1.50	0.81	0.15	1.36	1.47	1.11	
8/12/15	1.65	1.47	0.37	0.27	1.07	1.43	0.45	
8/18/15	1.47	1.45	0.69	0.50	1.15	1.45	0.59	
8/26/15	1.57	1.65	1.05	0.27	1.13	1.28	1.85	
9/1/15	1.47	1.28	0.98	0.23	1.02	1.08	0.47	
9/9/15	1.45	1.17	1.09	0.40	0.68	1.10	0.92	
9/15/15	1.49	1.29	1.11	0.23	0.93	1.24	1.06	
9/22/15	1.53	1.27	1.42	0.66	1.07	1.19	1.06	
9/23/15	Met with PWFO; auto flusher at BPC hydrant will be increased to 2 hours/day 0400-0600 at 50 gpm = 6000 gpd 5 days/week beginning 9/24 until the onset of freezing weather. Fall hydrant flushing 10/4-10/10. Will coordinate weekly sampling at Belvedere with James Keller beginning 10/6 to compare CL2 at street versus internally.							
10/6/15	1.51	1.17	1.31	0.48	0.89	1.19	0.72	
10/6/15	Called James Keller 10 times between 0850 & 0945 to coordinate BPC sampling; "unable to take call" message with no voice mail option provided. Internal BMC chlorine 0.48 mg/L; hydrant 0.06-0.08 mg/L- provided correct Phone # 10/7							
10/4-10/9								
10/13/15	1.50	0.79	1.41	0.80	1.17	1.25	0.68	
10/20/15	1.49	1.44	1.34	0.53	0.98	1.23	0.70	
10/27/15	1.45	0.67	1.32	0.71	1.13	1.35	0.97	
11/4/15	1.39	1.10	0.86	0.63	1.01	0.90	0.46	
11/5/15						1.30		
11/12/15	1.35	1.02	0.96	0.31	0.49	1.17	0.46	
11/18/15	1.72	1.37	1.36	0.58	1.33	1.41	1.12	
11/24/15	1.43	1.36	0.62	0.33	1.05	1.21	0.79	
12/2/15	1.50	0.99	1.20	0.59	0.90	1.13	0.69	
12/8/15	1.48	1.35	1.34	0.52	1.10	1.25	0.69	
12/15/15	1.47	1.13	1.37	0.86	0.92	1.26	1.10	

1.00

1.11

1.03

1.06

1.08

1.00

12/21/15	1.41	1.29	1.34	---	1.08	1.23	0.93	
12/22/15				0.20				
avg	1.50	1.22	1.10	0.42	1.04	1.20	0.86	
<b>2015 System Wide Annual Avg</b>								

1.08

1.05