HOUSATONIC WATER WORKS COMPANY
SINCE 1897

VIA EMAIL AND U.S. MAIL

Jonathan Goldberg, Chief Legal Counsel
Department of Public Utilities
One South Station
Boston, MA 02110

December 15, 2020

RE: Letter of November 24, 2020,

Dear Attorney Goldberg:

Below are the set of questions with responses to your letter of November 24, 2020:

1. All correspondence between the Company and the Town of Great Barrington ("Town") sent or received between January 1, 2020 and the present related to water quality issues on the Company's system.

Attached electronically and hard copy (Attachment A)

2. The Company's engagement letter with Cornwell Engineering Group as referenced on Slide 21 of the attached PowerPoint presentation, Housatonic Water Works Company, Informational Meeting, August 13, 2020 ("Attachment A").

Attached electronically and hard copy. (Attachment B)

3. All correspondence between the Company and Cornwell Engineering Group related to water quality issues on the Company's system.

Attached electronically and hard copy. (Attachment C)

80 Maple Avenue, Suite 1, Great Barrington, MA 01230

Tel: 413.528.1780
Fax: 413.528.3024
E-mail: housatonicwater@gmail.com
www.housatonicwater.com

VIA EMAIL AND U.S. MAIL

Jonathan Goldberg, Chief Legal Counsel
Department of Public Utilities
One South Station
Boston, MA 02110

December 15, 2020

RE: Letter of November 24, 2020,

Dear Attorney Goldberg:

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Attached electronically and hard copy. (Attachment B)

3. All correspondence between the Company and Cornwell Engineering Group related to water quality issues on the Company's system.

Attached electronically and hard copy. (Attachment C)

4. A copy of the Company's two most recent sanitary surveys.

Attached electronically and hard copy. (Attachment D)

5. A copy of the Company's most recent Master Plan.

Hard copy only. (Attachment E)

6. A copy of the Company's emergency response plan that was in effect as of January 1, 2020, along with any updates or revisions made to the plan thereafter.

Attached electronically and hard copy. (Attachment F)

7. A list of the specific dates on which any flushing-related activities occurred (e.g., scheduled hydrant flushing, hydrant use from firefighting to training/testing activities, and other main breaks) on the Company's system between January 2015 and the present. See Slide 15 of Attachment A.

Water Leaks:

4/22/2015 Water leak/ South Street

4/22/2015 Water leak repair/ Linda Lane

5/5/2015 Water leak repair/ 189 Division Street

6/22/2016 Water leak repair/ VanDeusenville Road

8/8/2016 Water leak repair / Route 183 north of village

8/10/2016 Water leak repair/ second water leak on Route 183

8/22/2016 Water leak repair/ Kirk and Main Street

8/22/2016 Water leak repair/ North Street

12/1/2016 Water leak repair/ Main Street

12/15/2017 Water leak/ Wyantenuck Street

1/12/2018 Water leak repair/ 85 Division Street

4/2/2018 Water leak repair/ South Street/Front Street

4/2/2018 Water leak South Street/ Highland Street

7/13/2020 Water leak Ramsdell Road

8/27/2020 Rubin Mill Standpipe Test

Flushing Dates : April 10, 2017 – April 24, 2017

May 21, 2018 - May 31, 2018

August 1, 2018 – August 7, 2018

May 13-17, 2019 and May 20-24, 2019

May 11, 2020 - May 22, 2020

July 7, 2020 – July 17, 2020

8. Please confirm whether the Company flushed all water quality problem areas in its distribution system twice per year. If not, please explain why.

The Company utilizes all hydrants and blow-offs whether company owned or privately owned. There are several private streets that do not have blow-offs and therefore cannot be flushed. In 2018 and 2020 when we had discolored water complaints we flushed the entire system twice.

9. A step-by-step explanation of the Company's flushing process.

Response:

The company follows a hydrant flushing sequence for 79 hydrants and blow-offs throughout its system. This protocol has been followed for many years. The flushing is broken into three sections to effectively flush those sections of the system and minimize disruption to other parts of the system. The main trunk line from the source intersecting North Plain Road, Van Deusenville Road to Park Street on the southern part of the distribution system bring water from the source which is then drawn sequentially through areas that are divided into sections as described below. Flushing in each of the three sections is conducted to minimize disturbances; however, flushing in general can cause occasional disturbances in other sections of the distribution system.

Section I consists of the transmission main running from the reservoir to the Division Street/North Plain Road, extending to the West Stockbridge Williamsville area. Section II consists of the Van Deusenville Road/downtown core, and extends to the Stockbridge Furnace area, whereas Section III consists primarily of Park Street from Ramsdell Road on the south to the Park Street bridge in the north. When Section I is being flushed, the transmission line to Section II at the intersection of North Plain Road and Main Street is shut off to provide unidirectional flushing. Likewise, when Section II is flushed, the North Plain Road and Main Street valve is closed, and the valve line at the Park Street Bridge is closed. Similarly, Section III is isolated from Sections I and II. Blow offs on secondary streets in each section are conducted upon completion of the primary lines in each section.

Flushing is conducted until the water is clear in appearance. During July 2020 the flushing times typically ranged from a low of 15 minutes to a maximum of 2 hours on the hydrants with two blow offs which were bled at slow rate for 8-9 hours, while two problematic areas were flushed for up to 72 hours. Chlorine residuals were also monitored at each location. (Attachment G)

10. Please confirm whether the Company notifies residents at least 24 hours in advance of all flushing activity, including the method of notification the Company uses. If not, please explain why.

The Company utilizes several methods to provide advance notice (24 hours +) when scheduling flushing. In addition to printing a notice on customers' bills, the Company also posts its flushing schedule on its website, Facebook and the Community Board, issues press releases to the local media. During emergency situations we use the town's CODE RED system to inform water customers. Attached are sample water bills / notices (Attachment H)

11. The Company's capital budget for the years 2015 through 2020, as well as the actual capital expenditures incurred in each of those years.

Attached electronically and hard copy. (Attachment I)

12. Please explain the presence of privately owned and privately maintained mains on the Company's system. See Slide 14 of Attachment A.

There are several privately owned streets and residents are responsible for the maintenance of those mains. Some do not have blow-offs which prohibits flushing, occasioning water quality issues in those sections.

Private ways:

1. Brookside Court
2. Crimson Lane
3. Grant Lane
4. Wright Lane
5. Rachael's Way
6. Nolan Drive
7. Walnut Street
8. Spruce Street
9. Ramsdell Road

Please contact us if you should require further information.

Sincerely,

James J. Mercer
Treasurer

Cc: Via Website at https://www.townofgb.org/user/76/contact
Mr. Stephen Bannon
Chair, Great Barrington Selectboard (email only)

William E. Martin, Esq.
wem@martinoliveira.com (email only)

enclosures

ATTACHMENT A

Gmail

James J. Mercer <housatonicwater@gmail.com>

CODE RED

1 message

James J. Mercer <housatonicwater@gmail.com> Mon, Jul 6, 2020 at 12:10 PM
To: Amy Pulver <apulver@townofgb.org>
Cc: Mark Pruhenski <MPruhenski@townofgb.org>, William Walsh <WWalsh@townofgb.org>, Charles Burger <cburger@townofgb.org>, Rebecca Jurczyk <rjurczyk@townofgb.org>

Hi Amy,
Could you please run the following notice for us?
Thanks,
Jim

Hydrant Flushing

During this warm weather we have experienced increased flows and reports of roily water in some sections of our service area. In an effort to alleviate this situation we will be flushing hydrants weekdays between July 7-17 during the hours of 9:00-11:00AM and 1:00-4:00PM.

There may be reductions in pressure and/or discolored water. While not aesthetically pleasing, the water is completely disinfected and safe to use; however, please take precautions regarding your laundry routine. Our flushing schedule is available at housatonicwater.com.

Housatonic Water Works Company

80 Maple Avenue, Suite1
Great Barrington, Massachusetts 01230
(413) 528-1780 phone
(413) 528-3024 fax
www.housatonicwater.com

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Gmail

James J. Mercer <housatonicwater@gmail.com>

Zoom meeting invitation - GB/Housatonic Water

1 message

Mark Pruhenski <MPruhenski@townofgb.org> Wed, Jul 15, 2020 at 1:29 PM
To: "Smitty.Pignatelli@mahouse.gov" <Smitty.Pignatelli@mahouse.gov>, Adam Hinds <Adam.Hinds@masenate.gov>, Jim Mercer <housatonicwater@gmail.com>, Buddy Atwood III <walteratwood@hotmail.com>

Mark Pruhenski is inviting you to a scheduled Zoom meeting.

Topic: GB/Housatonic Water
Time: Jul 20, 2020 11:00 AM Eastern Time (US and Canada)

Join Zoom Meeting
https://us02web.zoom.us/j/2359342512

Meeting ID: 235 934 2512
One tap mobile
+13017158592,,2359342512# US (Germantown)
+13126266799,,2359342512# US (Chicago)

Dial by your location
+1 301 715 8592 US (Germantown)
+1 312 626 6799 US (Chicago)
+1 929 205 6099 US (New York)
+1 253 215 8782 US (Tacoma)
+1 346 248 7799 US (Houston)
+1 669 900 6833 US (San Jose)
Meeting ID: 235 934 2512
Find your local number: https://us02web.zoom.us/u/kbaYX5Cmz7

2 attachments

Zoom-Meeting.ics
2K

ATT00001.c
1K

Gmail

James J. Mercer <housatonicwater@gmail.com>

May 11 2020 DEP Letter

1 message

James J. Mercer <housatonicwater@gmail.com>
To: Mark Pruhenski <Mpruhenski@townofgb.org>

Mon, Jul 20, 2020 at 8:01 AM

Mark,
This letter to DEP summarizes the water quality from 2018 . I have a hard copy the data (all provided to DEP)to back it up if you want .
Please let me know if you have any questions.
Thanks,
Jim

Housatonic Water Works Company

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HWWCO May 11 2020 (1).pdf
625K

HOUSATONIC WATER WORKS COMPANY
SINCE 1897

BY EMAIL AND CERTIFIED MAIL

Ms. Deidre Doherty
Massachusetts Department of Environmental Protection
Western Regional Office
436 Dwight Street
Springfield, MA 01103

May 11, 2020

RE: request to discontinue required special sampling program from August 3, 2018 Unilateral Order #00004151 (August 10, 2018)

Dear Ms. Doherty:

Over a year and a half ago, in late July and early August of 2018, our water system experienced a short-term water quality issue in the distribution system that resulted in some customer complaints. We communicated closely with MassDEP during this period, and the water quality issues were quickly resolved at that time. We are pleased to note that all of our related key water quality parameters continue to indicate a consistently excellent water quality.

As part of MassDEP's investigation regarding that water quality incident, on August 3, 2018 you directed our system to conduct water quality sampling in the area of disruption by no later than August 6, 2018, and to continue that sampling every two weeks indefinitely until further direction was provided by MassDEP. That sampling has continued through the present time.

We are respectfully requesting that this special sampling requirement now be discontinued. Please note that this request has no bearing on the regular required monitoring in the distribution system, including RTCR, D/DBPR, and LCR monitoring requirements, all of which of course would continue as required.

The August 3, 2018 directive required sampling every two weeks at four different locations (done at two sites one week, two different sites the following week, etc.), with analyses for eight different water quality parameters (field measurements for pH, turbidity, and chlorine residual, and lab measurements of color, iron, manganese, alkalinity, and total dissolved solids). According to the August 10, 2018 Unilateral Order which repeated that directive, the "results are expected to assist MassDEP in further understanding the system and any potential water quality issues."

80 Maple Avenue, Ste 1
Great Barrington, MA 01230

Tel: 413.528.1780
Fax: 413.528.3024
E-mail: housatonicwater@gmail.com
www.housatonicwater.com

Our request to discontinue the special sampling program that started in August 2018 is based on the following factors:

1. **The original issue was resolved in 2018:**
   - The original water quality issue was a transient short-term event that was resolved in August 2018. Further, the water looked clear when MassDEP staff met with customers and inspected the system on August 9, 2018. We flushed the distribution system shortly after then and have received no customer complaints related to this issue since the flushing.

2. **The data collected show excellent distribution system water quality:**
   - Over 150 distribution samples have been collected since August 2018 as part of this special sampling program and were analyzed for the required eight parameters. The resulting data have shown each of the monitored water quality parameters to be quite consistent, and to be well under their respective Secondary Maximum Contaminant Levels (see table below), with few exceptions. For example, none of the iron or manganese samples were above those respective SMCLs.

Distribution System Water Quality Data for 8/22/18 to 3/16/20*

Parameter	Secondary Maximum Contaminant Level (SMCL)	# samples over SMCL	Total # of samples analyzed
Color	15 color units	3 (none since October 2018)	152
pH	6.5 to 8.5	1 (at 8.7)	154
Iron	1.3 mg/L	0	154
Manganese	0.05 mg/L	0	152
Total dissolved solids	500 mg/L	0	154

* *Combined data from four sites:*
- Race Property (377 N. Plain Rd., Great Barrington, MA 01230)
- Berkshire Meadows (249 N. Plain Rd., Great Barrington, MA 01230)
- Pleasant and Main Café (1063 Main St., Housatonic, MA 01236)
- Park Street Housing Authority (2 Bernard Gibbons Dr., Great Barrington, MA 01230)

- Distribution system turbidity results were also outstanding, as most results were < 0.04 NTU, and all turbidity results were ≤ 0.5 NTU (total of 154 measurements).
- The chlorine residual has been maintained at the required levels (total of 150 measurements), and results have become steadier after the dedicated line from the clearwell to the 1-million gallon storage tank was installed.
- Alkalinity ranged from 68 to 92 mg/L (as $CaCO_3$), with only sample result outside that range (total of 154 samples).

3. **The water treatment plant continues to produce excellent finished water:**
    - As indicated by all of our water quality data, including that submitted to MassDEP via the Monthly Operating Reports, the treatment plant continues to consistently produce a high-quality water supply.
    - Operational control of chlorine residuals has improved with the installation of the new treatment plant piping arrangement, and both the finished water chlorine residuals and distribution system chlorine residuals are quite steady.

4. **Sampling objectives have been met:**
    - We believe that ample data have been provided for MassDEP's evaluation, and that MassDEP's original objectives for requiring this special distribution system sampling have been met. The data collected have repeatedly shown no water quality issues over the past year and a half, and in fact indicate a very consistent and excellent water quality.

5. **Sampling concerns in light of the ongoing coronavirus pandemic:**
    - Lastly, but very important, considering the potential exposure to the coronavirus, this continued special sampling requirement exposes sampling staff and customers to each other, and we do not believe that we should be entering customers' premises without strong cause to do so.

We would appreciate your response as soon as possible, so that we can discontinue this special sampling during the current period of recommended physical isolation during the coronavirus pandemic outbreak.

Thank you very much for your thoughtful consideration. We would be glad to discuss the data and our related observations with your staff if you'd like.

Sincerely,

James J. Mercer
Treasurer and Certified Operator

Cc: via e-mail
Brian Harrington, MassDEP
Robert Cox, Esq.
Richard Gullick, PhD, Water Compliance Solutions, LLC

Gmail **James J. Mercer <housatonicwater@gmail.com>**

MADEP Correspondence

1 message

James J. Mercer <housatonicwater@gmail.com> Mon, Jul 20, 2020 at 12:17 PM
To: Mark Pruhenski <MPruhenski@townofgb.org>, SMITTY PIGNATELLI <smitty.pignatelli@mahouse.gov>, Adam Hinds <adam.hinds@masenate.gov>
Bcc: Jim Ericson <ericson@lenard-eng.com>, "William E. Martin" <wem@martinoliveira.com>

Hi,

Thank you all for meeting this morning. Attached is the letter that our engineer emailed MADEP this morning.

Any support that could be provided to help expedite the process would be greatly appreciated.

Thank you,

Jim

Housatonic Water Works Company

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Great Barrington, Massachusetts 01230
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(413) 528-3024 fax
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MassDEP Letter 7-20-20.pdf
614K

Lenard Engineering, Inc.

Civil, Environmental and Hydrogeological Consultants

2210 Main Street
P.O. Box 1088
Glastonbury, CT 06033
Tel: 860 659-3100
Fax: 860 659-3103

134B Conantville Road
P.O. Box 580
Storrs, CT 06268
Tel: 860 429-5400
Fax: 860 429-1387

140 Willow Street
Suite 8
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Tel: 860 379-6669
Fax: 860 738-1272

19 Midstate Drive
Suite 200
Auburn, MA 01501
Tel: 508 721-7600
Fax: 508 721-7610

www.lenard-eng.com

July 20, 2020

Ms. Deidre Doherty
Mass DEP – Drinking Water Program
Springfield Regional Office
436 Dwight Street
Springfield, MA 01103

RE: Intent to Modify Chemical Feed Application for Blended Phosphate for Iron Pipe Corrosion Control, Long Pond Water Treatment Plant, Housatonic Water Works, Great Barrington, MA; LEI Project # 20-370

Dear Ms. Doherty:

The Housatonic Water Works Company has asked Lenard Engineering, Inc. (LEI) to re-evaluate our previous BRP WS – 34 Chemical Feed Addition Retrofit application that was previously submitted to optimize lead and copper control. Since the time of that application, even without the recommended pH adjustment and blended phosphate addition, the HWW system has obtained compliant lead and copper levels.

The Housatonic Water Company has made me aware of a recent discolored water event this summer, where rusty water occurs in areas of the distribution system, thought to be from the leaching of unlined iron water mains. A recent aggressive flushing program has helped to remedy most of these discolored water areas.

Our previous chemical addition design for lead and copper corrosion control included both pH adjustment, as well as feeding of a blended phosphate, Carus 8600, which has a 70 % orthophosphate / 30 % polyphosphate blend. As given in our Basis of Design report, in addition to the benefits of orthophosphate on lead and copper control, utilizing a blended phosphate product containing polyphosphate has the added benefit to helping to minimizing tuburculation of unlined cast iron pipe, as well as to minimize the leaching of iron mains.

To help control the periodic rusty water issues associated with unlined iron water mains in the distribution system, LEI will be modifying our previous BRP WS – 34 application, to feed only the liquid blended phosphate product. Over time, this product should help reduce iron releases and discolored water from the unlined iron water mains. The orthophosphate portion of the chemical will also contribute to forming a film on customer service lines and plumbing, and should further help to optimize lead and copper corrosion control.

An Equal Opportunity Employer

Ms. Deidre Doherty
July 20, 2020

I look forward to working with you and your staff in the near future, to get these designs approved and ready for implementation. If you or others at DEP have any questions or comments, please contact me.

Respectfully submitted,
Lenard Engineering, Inc.

James E. Ericson, PE
Vice President

Cc: Jim Mercer, Housatonic Water Works

Gmail

James J. Mercer <housatonicwater@gmail.com>

Water Information

1 message

James J. Mercer <housatonicwater@gmail.com>
To: Mark Pruhenski <MPruhenski@townofgb.org>

Fri, Jul 24, 2020 at 4:27 PM

FYI

Housatonic Water Works Company

80 Maple Avenue, Suite1
Great Barrington, Massachusetts 01230
(413) 528-1780 phone
(413) 528-3024 fax
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4 attachments

HWWCO June 2020 .pdf
2247K

HWWCO May 2020 .pdf
2344K

HWW 2019 CCR .pdf
536K

HWWCO Testing Schedule.pdf
519K

Massachusetts Department of Environmental Protection - Drinking Water Program
CHEMICAL ADDITION REPORT - 310 CMR 22.15(4) Chemical Addition Reporting Requirements

C-ADD

I. PWS Information - Refer to "MassDEP Chemical Addition Report Guidance and Instructions" for details.

PWS Name[1]:	Housatonic Water Works	Town[1]:	Great Barrington	PWSID[1]:	1113003
Treatment Plant Name[2]:	Long Pond	Treatment Plant ID#[2]:	1113003-01T	Reporting Month[3]:	June
				Reporting Year[3]:	2020

II. Chemical & Operational Information

Chemical Name[4]:	sodium hypochlorite	Purchased Strength (%)[8]:	12.5	Target Range/min[12]:	≥ 0.5 mg/L at POE
Manufacturer[5]:	Slack Chemical Company, Inc. (Carthage, NY)	Purchased Density (lbs/gal)[9]:	9.97	Target Dose (mg/L)[13]:	NA
Product Name[6]:	sodium hypochlorite (12.5% bleach)	Dilution Factor or Mix Ratio[10]:	1.00	Alarm Setting (low)[14]:	0.60
Reason for Adding Chemical[7]:	Disinfection - Segment #1 and Segment #2	NSF Approved (Y/N)[11]:	Y	Alarm Setting (high)[14]:	2.50
				Date of last anti-siphon valve inspection/replacement[15]:	NA

III. Daily Reporting — Note: Water quality data reported on C-ADD form may also be considered for compliance purposes.

Day	Treated Water Volume (gal)[16]	Measured Chemical Used: Volume (gal/day)[17]	Measured Chemical Used: Weight (lbs/day)[17]	Calculated Chemical Used (lbs)[18]	Chemical Dosage (mg/L)[19]	Parameters Measured*, Results, Units and Method - (G)rab or Continuous (A)nalyzer[20]: a. chlorine residual at end of Segment 1 (mg/L) via Kuntze analyzer	b. chlorine residual at end of Segment 2 POE (mg/L) via Kuntze analyzer	c.	O&M Notes/Comments[22]
						☐G ☑A	☐G ☑A	☐G ☐A	PWS note any equipment breakdown, off-line status, changes in purchased product or batch mixing day, measured parameters or dosages that are out of target range, etc.
1	110021	2.3		2.87	3.1	1.68	1.41		
2	107436	2.3		2.87	3.2	1.39	1.38		
3	115990	2.3		2.87	3.0	2.07	1.48		
4	136606	2.3		2.87	2.5	2.01	1.39		
5	115306	2.3		2.87	3.0	1.57	1.35		
6	115294	2.3		2.87	3.0	1.46	1.28		
7	113051	2.3		2.87	3.0	2.14	1.34		
8	121256	2.3		2.87	2.8	1.54	1.45		
9	133900	2.3		2.87	2.6	1.50	1.36		
10	127423	2.3		2.87	2.7	1.94	1.25		
11	108346	2.3		2.87	3.2	2.13	1.12		
12	116413	2.3		2.87	3.0	1.52	1.15		
13	114530	2.3		2.87	3.0	1.89	1.24		
14	124210	2.3		2.87	2.8	1.97	1.30		
15	129189	2.3		2.87	2.7	1.71	1.30		
16	126570	2.3		2.87	2.7	1.45	1.30		
17	135823	2.3		2.87	2.5	1.71	1.17		
18	122676	2.3		2.87	2.8	1.74	1.10		
19	134648	2.3		2.87	2.6	1.44	1.16		
20	151483	2.3		2.87	2.3	1.46	1.08		
21	149539	2.3		2.87	2.3	1.13	1.49		
22	156135	2.3		2.87	2.2	1.02	1.22		
23	142513	2.3		2.87	2.4	1.02	1.51		
24	113370	2.3		2.87	3.0	1.18	1.30		
25	128707	2.3		2.87	2.7	2.75	1.01		
26	125827	2.3		2.87	2.7	0.90	1.02		
27	111964	2.6		3.24	3.5	0.29	1.90		
28	108196	2.6		3.24	3.6	1.71	1.40		
29	104782	2.6		3.24	3.7	2.54	1.41		
30	101638	2.3		2.87	3.4	3.65	1.84		
Total	3702839	69.9		Indicate total # of days the residual was off-target for the month (from Section II) Monthly Target Summary[21]:					0

*Describe result (daily average, min/max, instantaneous reading, grab, etc.) sample location (entry-point, before/after filters, tanks, etc.) and instrumentation used (SCADA, chart recorder, test kit, bench, etc.)[20]

a.	Chlorine is monitored continuously via a Kuntze analyzer. Daily chlorine residual values provided are for the average value during the hour of peak hourly flow.
b.	Chlorine is monitored continuously via a Kuntze analyzer. Daily chlorine residual values provided are for the average value during the hour of peak hourly flow.
c.	

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Person - Signature & Date[24]:	James J. Mercer 7/8/2020
Print Name:	James J. Mercer
Title:	Primary Certified Operator

Submit to your MassDEP Regional Office within 10 days after the reporting month.

Massachusetts Department of Environmental Protection - Drinking Water Program

TURBIDITY DATA SHEET FOR FILTERED SYSTEMS

SWTR
F

1. PWS INFORMATION:

PWSID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Plant Name: Long Pond Reporting Period → Month: June Year: 2020

2. DAILY REPORTING:

Filtered Water Turbidity Measured: (check only one) ☑ Combined Filter Effluent ☐ Individual Filter Effluent[1] ☐ Clearwell ☐ Plant Effluent

Filtration Technology:

☐ Conventional ☐ Direct ☐ Alternative	Monthly Turbidity (95%) NTU Limit = 0.3	Max Day Turbidity NTU Limit = 1
☑ Slow Sand ☐ Diatomaceous Earth	Monthly Turbidity (95%) NTU Limit = 1	Max Day Turbidity NTU Limit = 5

Day	Max Filtered Water Turbidity Result[2] (NTU)	Number of Turbidity Measurements[3]	Number of Turbidity Measurements ≤ Monthly (95%) NTU Limit[4]	Number of Turbidity Measurements > Max Day NTU Limit[5]
1	0.043	6	6	0
2	0.043	6	6	0
3	0.049	6	6	0
4	0.047	6	6	0
5	0.040	6	6	0
6	0.055	6	6	0
7	0.050	6	6	0
8	0.043	6	6	0
9	0.041	6	6	0
10	0.047	6	6	0
11	0.048	6	6	0
12	0.049	6	6	0
13	0.043	6	6	0
14	0.042	6	6	0
15	0.041	6	6	0
16	0.041	6	6	0
17	0.041	6	6	0
18	0.044	6	6	0
19	0.039	6	6	0
20	0.048	6	6	0
21	0.054	6	6	0
22	0.042	6	6	0
23	0.043	6	6	0
24	0.040	6	6	0
25	0.054	6	6	0
26	0.041	6	6	0
27	0.041	6	6	0
28	0.040	6	6	0
29	0.045	6	6	0
30	0.041	6	6	0
Totals:		180	180	% Turbidity Meeting 95% Limit
		A	B	B/A x 100 % = X
				(Enter on SWTR – Form G)

1. May be used by systems serving less than 10,000 persons, subject to DEP approval.
2. Enter the Maximum Filtered Water Turbidity Result recorded each day, at the 4th hour or other approved interval.
3. Enter the Total # of Turbidity measurements taken for each day. Measurements must be taken at a minimum of 4-hour intervals (i.e. 6 readings per day). For continuous monitors count each 4-hour period as 1 measurement. Record the actual turbidity result at the specified interval of time. Do not average turbidity measurements. If DEP approved, 15-minute readings (i.e. 96 readings per day) may be submitted. Filtered turbidity data must be kept on file for DEP review.
4. Out of the # of turbidity measurements taken and recorded in the previous column, enter the number of turbidity measurements that were less than or equal to the Monthly (95%) NTU Limit for the filtration technology used.
5. If at any at time the filtered turbidity Max Day NTU Limit is exceeded, the DEP must be notified no later than the end of the next business day. For each exceedance, record the turbidity value(s) and date(s) on SWTR - Form G

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Mercier

Date: 7/8/2020 Title: Primary Certified Operator

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program
COMPLIANCE DETERMINATION FOR FILTERED SYSTEMS - Monthly Report

SWTR G

I. PWS INFORMATION

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Plant Name: Long Pond Reporting Period: Month: June Year: 2020

II. TURBIDITY PERFORMANCE CRITERIA

1. **Monthly Turbidity (95%) NTU Limit** - The turbidity level of a system's filtered water must be less than or equal to the Monthly Turbidity NTU Limit in at least 95% of the measurements taken each month for the filtration technology used, otherwise SWTR TT Violation (Tier 2)

180	= A	Total # of filtered water turbidity measurements for month (SWTR - Form F)
180	= B	Total # of filtered water turbidity measurements less than or equal to the specified limits for the filtration technology used. (SWTR - Form F)
100.00%	= (B/A) X 100	The percentage of turbidity measurements meeting the Monthly Turbidity 95% NTU Limit.

2. **Max Day NTU Limit** - The turbidity level of a system's filtered water must at no time exceed the Max Day NTU Limit for the filtration technology used, otherwise SWTR TT Violation (Tier 2).

Record the date and turbidity value for any measurements exceeding the Max Day NTU. ☑ Check box if "None"

Date	Value	Date Reported to DEP		Date	Value	Date Reported to DEP

For each day the Max Day NTU limit is exceeded, the DEP must be notified by the end of the next business day. SWTR TT Violation (Tier 2). If DEP is not consulted within 24 hours then it is a SWTR TT (Tier 1) violation requiring public notification within 24 hours.

III. DISINFECTION PERFORMANCE CRITERIA

1. **Point-of-Entry Minimum Disinfectant Residual Criteria** - Residual Disinfectant concentration cannot be <0.2 mg/L for more than 4 hours. SWTR TT Violation (Tier 2).

Minimum Disinfection Residual at Point-of-Entry to Distribution System

Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L
1	1.32	6	1.20	11	1.08	16	1.20	21	0.96	26	0.80	31	
2	1.30	7	1.14	12	1.09	17	1.12	22	1.07	27	1.01	Residual Measured	
3	1.29	8	1.26	13	1.21	18	1.04	23	1.20	28	0.99	☑	Free Cl_2
4	1.32	9	1.31	14	1.20	19	1.02	24	1.15	29	1.30	☐	Total Cl_2
5	1.24	10	1.16	15	1.21	20	1.05	25	0.84	30	1.51	☐	Combined Cl_2

If at any time the residual falls below 0.2 mg/L in the water entering the distribution system, the supplier of water must notify the Department as soon as possible, but no later than by the end of the next business day. The supplier of water also must notify the Department by the end of the next business day whether or not the residual was restored to at least 0.2 mg/L within four hours.

Date(s) Residual < 0.2 mg/L	Duration of Low Level (hrs.)	Date Reported to DEP		Date(s) Residual < 0.2 mg/L	Duration of Low Level (hrs.)	Date Reported to DEP

2. **Distribution System Disinfectant Residual Criteria** - Residual Disinfectant concentration (V) cannot be undetectable in greater than 5% of samples in a month, for any two consecutive months. SWTR TT Violation (Tier 2). Chlorine residuals must be measured at the same time and location as total coliform *distribution routine & repeat* samples. If no residual is detected, an HPC sample must be collected and analyzed.

Total # of HPC samples taken during month: 0 # HPC sites > 500/mL: # HPC sites ≤ 500/mL:

2	= a	# of sites where Cl_2 residual measurements were made, whether a residual was detected or not (should be the same # of sites reported on your monthly RTCR Cl_2 residual report)
0	= b	# of sites HPC samples were analyzed *instead* of Cl_2 residual measurements
0	= c	# of sites where no Cl_2 residual was detected and no HPC sample was analyzed
0	= d	# of sites where no Cl_2 residual was detected and HPC > 500 CFU/mL
0	= e	# of sites where no Cl_2 residual measurement was made and HPC > 500 CFU/mL

Water in the distribution system with a heterotrophic bacteria concentration (HPC) less than or equal to 500/mL, is deemed to have a detectable disinfectant residual for purposes of determining compliance with this requirement. When analyzed, report HPC results on your monthly DEP Bacteriological Report.

$V = \frac{(c + d + e)}{(a + b)} \times 100$

This Month % V = 0.00% Previous Month % V = Is V > 5% for 2 months? No

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Mercer Date: 7/8/2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program

CT DETERMINATION FOR FILTERED SYSTEMS

More than 1 Disinfectant / Sampling Point

SWTR H

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Facility Name: Long Pond | Reporting Period: Month: June Year: 2020

II. DAILY REPORTING:

	Disinfectant Sequence (CT calc / CT 99.9)							
Day	1st	2nd	3rd	4th	5th	6th	Inactivation Ratio SUM[1] (CT calc / CT 99.9)	Inactivation Ratio[2] < 1.0
1	10.1	42.2					52.3	
2	9.2	40.9					50.1	
3	12.6	42.2					54.8	
4	13.4	34.0					47.3	
5	10.6	44.3					54.9	
6	9.1	30.6					39.7	
7	14.6	39.1					53.6	
8	11.0	37.5					48.4	
9	10.9	33.7					44.7	
10	14.1	38.5					52.7	
11	13.5	36.0					49.5	
12	11.9	39.8					51.7	
13	12.2	40.5					52.7	
14	15.0	36.4					51.4	
15	11.6	37.9					49.4	
16	11.8	33.4					44.7	
17	13.8	27.8					41.6	
18	13.0	30.3					43.3	
19	10.9	34.2					45.1	
20	10.5	27.7					38.2	
21	10.0	36.7					46.7	
22	9.2	30.8					40.1	
23	9.5	43.5					53.0	
24	11.0	54.9					65.9	
25	21.0	35.5					56.5	
26	8.9	39.5					48.4	
27	3.2	71.6					74.8	
28	16.7	64.2					80.9	
29	20.4	66.7					87.0	
30	24.8	91.5					116.4	

1. To determine SUM (CT calc/CT 99.9), add (CT calc/CT 99.9) values from the first disinfectant sequence to the last from SWTR - Form I.
2. The inactivation ratio (CT calc / CT 99.9) is determined before or at the first customer during peak hourly flow and if the SUM (CT calc / CT 99.9)<1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved. A "Yes" response above indicates a SWTR Treatment Technique violation.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Ken Date: 7.8.2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS

SWTR
I

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Facility Name: Long Pond Reporting Period: Month: June Year: 2020

Disinfectant[1]: Segment 2 - storage tank effluent (POE) Sequence of Disinfectant Application: ☐ 1st ☑ 2nd ☐ 3rd ☐ 4th ☐ 5th ☐ 6th

II. DAILY REPORTING: All measurements taken during peak hourly flow.

Day	Peak Hourly Flow[2] (gpm)	Disinfectant Concentration[3] C (mg/L)	Disinfectant Contact Time[4] T (min.)	CT Calc (=C x T)	pH[5]	Water Temp[6] (°C)	CT[7] 99.9	Inactivation Ratio[8] (CT calc / CT 99.9)	Inactivation Ratio[9] <1.0
1	118	1.41	793	1117	7.34	18.0	26	42.2	see Form H
2	123	1.38	773	1065	7.34	18.2	26	40.9	see Form H
3	124	1.48	750	1108	7.35	18.3	26	42.2	see Form H
4	148	1.39	625	870	7.33	18.4	26	34.0	see Form H
5	117	1.35	819	1107	7.33	18.7	25	44.3	see Form H
6	161	1.28	589	755	7.33	18.8	25	30.6	see Form H
7	127	1.34	728	974	7.34	18.8	25	39.1	see Form H
8	140	1.45	640	928	7.35	19.1	25	37.5	see Form H
9	157	1.36	597	813	7.34	19.3	24	33.7	see Form H
10	127	1.25	735	920	7.34	19.3	24	38.6	see Form H
11	124	1.12	734	821	7.32	19.6	23	36.0	see Form H
12	120	1.15	791	913	7.34	19.7	23	39.8	see Form H
13	124	1.24	752	930	7.35	19.9	23	40.6	see Form H
14	140	1.30	649	830	7.36	20.1	23	36.4	see Form H
15	131	1.30	663	858	7.35	20.2	23	37.9	see Form H
16	154	1.30	583	755	7.36	20.3	23	33.4	see Form H
17	171	1.17	518	606	7.35	20.5	22	27.8	see Form H
18	149	1.10	587	646	7.35	20.8	21	30.3	see Form H
19	148	1.18	615	714	7.35	21.2	21	34.2	see Form H
20	174	1.08	530	574	7.34	21.1	21	27.7	see Form H
21	173	1.49	511	758	7.33	21.6	21	36.7	see Form H
22	182	1.22	482	592	7.32	22.1	20	30.6	see Form H
23	161	1.51	566	855	7.34	22.6	20	43.5	see Form H
24	123	1.30	788	1023	7.34	23.1	19	54.9	see Form H
25	143	1.01	612	621	7.35	23.5	18	35.5	see Form H
26	134	1.02	683	693	7.35	23.5	18	39.5	see Form H
27	127	1.90	732	1393	7.40	23.7	19	71.6	see Form H
28	114	1.40	835	1167	7.40	23.9	18	64.2	see Form H
29	109	1.41	870	1230	7.41	23.8	18	66.7	see Form H
30	94	1.84	979	1797	7.43	23.7	20	91.5	see Form H

Notes:

1. Use a separate form for each disinfectant/sampling point. Enter disinfectant and sequence position, e.g. "ozone/1st" or "ClO_2/3rd". If more than one disinfectant sampling point, you must also complete SWTR Form H and calculate the cummulative inactivation ratio SUM (CT calc/CT 99.9) to determine compliance.
2. Peak hourly flow means the highest pumpage *hour* during the day, not the absolute peak flow at any instant.
3. The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
4. The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow. The time *T* used in calculating CT, is the time it takes the water, during peak hourly flow, to move between the point of disinfection application and the point at which the residual is measured.
5. If the system uses free chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
6. The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point during peak hourly flow.
7. Use inactivation Tables at 310CMR 22.20A Tables 1.1 - 1.6, 2.1 and/or 3.1
8. The inactivation ratio is determined before or at the first customer during peak hourly flow and if the ratio is < 1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved. Note: Add log credits for watershed & filtration to the numerator of inactivation ratio
9. A "Yes" response above indicates a SWTR Treatment Technique violation (Tier 2).

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my

PWS Authorized Signature: James J Mercier Date: 7/8/2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

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Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS

SWTR
1

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: 0.0621705

Treatment Facility Name: Long Pond Reporting Period: Month: June Year: 2020

Disinfectant[1]: Segment 1 - post clearwell (tap in 200-ft long pipe) Sequence of Disinfectant Application: ☑ 1st ☐ 2nd ☐ 3rd ☐ 4th ☐ 5th ☐ 6th

II. DAILY REPORTING: All measurements taken during peak hourly flow.

Day	Peak Hourly Flow[2] (gpm)	Disinfectant Concentration[3] C (mg/L)	Disinfectant Contact Time[4] T (min.)	CT Calc (=C x T)	pH[5]	Water Temp[6] (°C)	CT[7] 99.9	Inactivation Ratio[8] (CT calc / CT 99.9)	Inactivation Ratio[9] <1.0
1	152	1.68	140	235	6.92	18.1	23	10.1	see Form H
2	152	1.39	149	206	6.92	18.0	23	8.2	see Form H
3	152	2.07	150	310	6.93	18.0	25	12.6	see Form H
4	152	2.01	160	321	6.93	18.2	24	13.4	see Form H
5	152	1.57	151	238	6.89	18.4	22	10.6	see Form H
6	152	1.46	136	199	6.89	18.6	22	9.1	see Form H
7	152	2.14	160	342	6.91	18.7	24	14.6	see Form H
8	152	1.54	151	233	6.90	19.1	21	11.0	see Form H
9	152	1.50	152	228	6.89	19.2	21	10.9	see Form H
10	152	1.94	161	312	6.90	19.2	22	14.1	see Form H
11	152	2.13	138	295	6.90	19.6	22	13.5	see Form H
12	152	1.52	158	241	6.89	19.6	20	11.9	see Form H
13	152	1.89	136	257	6.91	19.8	21	12.2	see Form H
14	152	1.97	160	316	6.91	20.0	21	15.0	see Form H
15	152	1.71	137	235	6.90	20.0	20	11.6	see Form H
16	152	1.45	151	220	6.89	20.1	19	11.3	see Form H
17	152	1.71	161	275	6.89	20.2	20	13.8	see Form H
18	152	1.74	148	257	6.89	20.4	20	13.0	see Form H
19	152	1.44	142	204	6.88	20.7	19	10.9	see Form H
20	152	1.48	132	193	6.88	20.9	18	10.8	see Form H
21	152	1.13	148	167	6.86	21.7	17	10.0	see Form H
22	152	1.02	145	149	6.89	22.2	16	9.2	see Form H
23	152	1.02	144	147	6.89	22.8	15	9.5	see Form H
24	152	1.18	145	171	6.91	23.1	16	11.0	see Form H
25	152	2.75	142	390	6.95	23.4	19	21.0	see Form H
26	152	0.90	148	132	6.94	23.4	15	8.9	see Form H
27	152	0.29	158	46	6.98	23.1	14	3.2	see Form H
28	152	1.71	159	273	6.95	23.6	16	16.7	see Form H
29	152	2.54	148	376	6.97	23.2	18	20.4	see Form H
30	152	3.65	146	532	7.01	23.2	21	24.8	see Form H

Notes:

1 Use a seperate form for each disinfectant/sampling point. Enter disinfectant and sequence position, e.g. "ozone/1st" or "ClO_2/3rd". If more than one disinfectant sampling point, you must also complete SWTR Form H and calculate the cummulative inactivation ratio SUM (CT calc/CT 99.9) to determine compliance.
2. Peak hourly flow means the highest pumpage *hour* during the day, not the absolute peak flow at any instant.
3. The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
4. The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow. The time *T* used in calculating *CT*, is the time it takes the water, during peak hourly flow, to move between the point of disinfection application and the point at which the residual is measured.
5. If the system uses free chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
6. The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point during peak hourly flow.
7. Use Inactivation Tables at 310CMR 22.20A Tables 1.1 - 1.6, 2.1 and/or 3.1
8. The inactivation ratio is determined before or at the first customer during peak hourly flow and if the ratio is < 1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved. Note: Add log credits for watershed & filtration to the numerator of inactivation ratio.
9. A "Yes" response above indicates a SWTR Treatment Technique violation (Tier 2).

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Mercer Date: 7·8·2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

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Massachusetts Department of Environmental Protection - Drinking Water Program
CHLORINE/CHLORAMINES - MONTHLY REPORT

Cl

I. PWS INFORMATION:

MONTH: June YEAR: 2020

PWS ID #: 1113003 PWS Name: Housatonic Water Works City/Town: Great Barrington Class: ☑CM ☐TNC ☐NC

II. ANALYTICAL INFORMATION: Refer to your MassDEP Coliform Sampling Plan and/or DBPR monitoring plan to help complete this section.

Type Measured: ☑ Free Chlorine ☐Total Chlorine ☐ombined Chlorine Analytical Method: SM 4500-Cl 88 ☐ D ☐ E ☐ F ☐ G ☐ H I ASTM D1253- ☐

Notes:

DEP APPROVED SAMPLE SITE INFORMATION[1]			CHLORINE RESULT[2] (mg/L)	COLLECTION AND ANALYSIS[3]:		COLLECTED AND ANALYZED BY:
DEP Sample Type[1,4]	DEP Location Code #[1]	DEP Approved SAMPLE LOCATION[1]		DATE	TIME	
RS	EP1	Point of Entry	1.10	6/17/2020	14:26	Tim Vreeland
RS	001	Pleasant and Main	0.41	6/17/2020	14:50	Tim Vreeland
RS	002	Brookside School	0.37	6/17/2020	14:40	Tim Vreeland

[1] DEP Sample Type, Location Code#, and DEP Approved Sample Site Location must correspond to the same information on your DEP Total Coliform Sampling Plan.
[2] SWTR systems: HPC must be collected at distribution sites with zero chlorine residual and results reported on the DEP Bacteriological Monthly Report form and on the appropriate SWTR Form
[3] Collection and Analysis: Chlorine residual shall be measured in the field (immediately upon collection) at the same time and location in the distribution system as total coliforms are sampled. Record ND values as 0 (zero).
[4] Sample Type: RS-Routine Distribution Sample, RO-Original Site Repeat, UR-Upstream Repeat, DR-Downstream Repeat, AR-Additional Repeat, or SS-Special Sample (as determined by DEP).
[5] All DISTRIBUTION samples taken and analyzed shall be included in determining compliance, even if that number is greater than the minimum required. If you collect repeat coliform samples within the distribution system during the month, you must also measure for a detectable chlorine residual at the repeat sites and include these samples. DO NOT include raw water (RW) or plant tap (PT) chlorine residual samples in your calculations.

III. COMPLIANCE REPORTING:

Total # of Samples Collected for Month[5]: 2 **Average Chlorine Result of All Samples For Month[5] (mg/L):** 0.39

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I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

Primary Certified Operator Signature and Date: 7.8.2020

DEP Review Status:	☐ Accepted ☐Disapproved	Review Comments:	

Massachusetts Department of Environmental Protection - Drinking Water Program
CHEMICAL ADDITION REPORT - 310 CMR 22.15(4) Chemical Addition Reporting Requirements

C-ADD

I. PWS Information - Refer to "MassDEP Chemical Addition Report Guidance and Instructions" for details.

PWS Name[1]:	Housatonic Water Works	Town[1]:	Great Barrington	PWSID[1]:	1113003
Treatment Plant Name[2]:	Long Pond	Treatment Plant ID[2]:	1113003-01T	Reporting Month[3]:	May
				Reporting Year[3]:	2020

II. Chemical & Operational Information

Chemical Name[4]:	sodium hypochlorite	Purchased Strength (%)[5]:	12.5	Target Range/min[13]:	≥ 0.5 mg/L at POE
Manufacturer[6]:	Slack Chemical Company, Inc. (Carthage, NY)	Purchased Density (lbs/gal)[7]:	9.97	Target Dose (mg/L)[13]:	NA
Product Name[8]:	sodium hypochlorite (12.5% bleach)	Dilution Factor or Mix Ratio[10]:	1.00	Alarm Setting (low)[14]:	0.60
Reason for Adding Chemical[7]:	Disinfection - Segment #1 and Segment #2	NSF Approved (Y/N)[11]:	Y	Alarm Setting (high)[14]:	2.50
				Date of last anti-siphon valve inspection/replacement[15]:	NA

III. Daily Reporting — Note: Water quality data reported on C-ADD form may also be considered for compliance purposes.

Day	Treated Water Volume (gal)[16]	Measured Chemical Used		Calculated Chemical Used (lbs)[16]	Chemical Dosage (mg/L)[16]	Parameters Measured[9]; Results, Units and Method - (G)rab or Continuous (A)nalyzer[12]			Operational Notes/Comments[22]
		Volume (gal/day)[17]	Weight (lbs/day)[17]			a. chlorine residual at end of Segment 1 (mg/L) via Kuntze analyzer	b. chlorine residual at end of Segment 3 POE (mg/L) via Kuntze analyzer	c.	
						☐G ☑A	☐G ☑A	☐G ☐A	
1	88088	1.9		2.37	3.2	1.60	1.63		
2	100043	1.9		2.37	2.8	2.13	1.53		
3	111869	1.9		2.37	2.5	2.22	1.57		
4	96973	1.9		2.37	2.9	2.07	1.95		
5	98937	1.9		2.37	2.9	1.21	1.92		
6	102225	1.9		2.37	2.8	1.02	1.80		
7	95077	1.9		2.37	3.0	1.15	1.76		
8	98413	1.9		2.37	2.9	1.26	1.60		
9	90299	1.9		2.37	3.1	3.18	1.62		
10	95793	2.3		2.87	3.6	1.35	1.87		
11	101754	2.3		2.87	3.4	2.56	1.86		
12	107990	2.3		2.87	3.2	1.87	1.72		
13	105669	2.3		2.87	3.2	1.46	1.66		
14	104669	2.3		2.87	3.3	2.16	1.87		
15	99652	2.3		2.87	3.5	1.84	1.69		
16	106262	2.3		2.87	3.3	1.75	1.72		
17	101496	2.3		2.87	3.4	2.61	1.81		
18	100882	2.3		2.87	3.4	2.04	1.79		
19	101133	2.3		2.87	3.4	2.58	1.84		
20	108368	2.3		2.87	3.2	3.07	1.89		
21	108893	2.3		2.87	3.2	1.73	1.39		
22	110771	2.3		2.87	3.1	2.58	1.55		
23	118856	2.3		2.87	2.9	1.81	1.57		
24	125142	2.3		2.87	2.8	2.06	1.63		
25	115586	2.3		2.87	3.0	1.90	1.51		
26	121330	2.3		2.87	2.8	1.83	1.47		
27	126824	2.3		2.87	2.7	2.10	1.65		
28	100530	2.3		2.87	3.4	1.84	1.56		
29	113526	2.3		2.87	3.0	2.18	1.50		
30	122366	2.3		2.87	2.8	2.22	1.36		
31	121872	2.3		2.87	2.8	1.52	1.30		
Total	3296987	67.7		Indicate total # of days the residual was off-target for the month (from Section I) Monthly Target Summary[21]:					0

*Describe result (daily average, min/max, instantaneous reading, grab, etc.) sample location (entry-point, before/after filters, tanks, etc.) and instrumentation used (SCADA, chart recorder, test kit, bench, etc.)[20]

a.	Chlorine is monitored continuously via a Kuntze analyzer. Daily chlorine residual values provided are for the average value during the hour of peak hourly flow.
b.	Chlorine is monitored continuously via a Kuntze analyzer. Daily chlorine residual values provided are for the average value during the hour of peak hourly flow.
c.	

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Person - Signature & Date[24]:	James J. Mercer 6.8.20
Print Name:	James J. Mercer
Title:	Primary Certified Operator

Submit to your MassDEP Regional Office within 10 days after the reporting month.

Massachusetts Department of Environmental Protection - Drinking Water Program

TURBIDITY DATA SHEET FOR FILTERED SYSTEMS

SWTR
F

PWSID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Plant Name: Long Pond Reporting Period → Month: May Year: 2020

Filtered Water Turbidity Measured: (check only one) ☑ Combined Filter Effluent ☐ Individual Filter Effluent[1] ☐ Clearwell ☐ Plant Effluent

Filtration Technology:

☐ Conventional ☐ Direct ☐ Alternative	Monthly Turbidity (95%) NTU Limit = 0.3	Max Day Turbidity NTU Limit = 1
☑ Slow Sand ☐ Diatomaceous Earth	Monthly Turbidity (95%) NTU Limit = 1	Max Day Turbidity NTU Limit = 5

Day	Max Filtered Water Turbidity Result[2] (NTU)	Number of Turbidity Measurements[3]	Number of Turbidity Measurements ≤ Monthly (95%) NTU Limit[4]	Number of Turbidity Measurements > Max Day NTU Limit[5]
1	0.045	6	6	0
2	0.046	6	6	0
3	0.047	6	6	0
4	0.050	6	6	0
5	0.058	6	6	0
6	0.050	6	6	0
7	0.052	6	6	0
8	0.052	6	6	0
9	0.058	6	6	0
10	0.044	6	6	0
11	0.046	6	6	0
12	0.059	6	6	0
13	0.042	6	6	0
14	0.047	6	6	0
15	0.042	6	6	0
16	0.046	6	6	0
17	0.043	6	6	0
18	0.088	6	6	0
19	0.053	6	6	0
20	0.051	6	6	0
21	0.048	6	6	0
22	0.045	6	6	0
23	0.042	6	6	0
24	0.049	6	6	0
25	0.060	6	6	0
26	0.045	6	6	0
27	0.045	6	6	0
28	0.043	6	6	0
29	0.057	6	6	0
30	0.051	6	6	0
31	0.045	6	6	0
Totals:		186	186	0
		A	B	% Turbidity Meeting 95% Limit B/A x 100 % = X (Enter on SWTR – Form G)

1. May be used by systems serving less than 10,000 persons, subject to DEP approval.
2. Enter the Maximum Filtered Water Turbidity Result recorded each day, at the 4th hour or other approved interval.
3. Enter the Total # of Turbidity measurements taken for each day. Measurements must be taken at a minimum of 4-hour intervals (i.e. 6 readings per day). For continuous monitors count each 4-hour period as 1 measurement. Record the actual turbidity result at the specified interval of time. Do not average turbidity measurements. If DEP approved, 15-minute readings (i.e. 96 readings per day) may be submitted. Filtered turbidity data must be kept on file for DEP review.
4. Out of the # of turbidity measurements taken and recorded in the previous column, enter the number of turbidity measurements that were less than or equal to the Monthly (95%) NTU Limit for the filtration technology used.
5. If at any at time the filtered turbidity Max Day NTU Limit is exceeded, the DEP must be notified no later than the end of the next business day. For each exceedance, record the turbidity value(s) and date(s) on SWTR - Form G

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Mercer

Date: 6·8·20 Title: Primary Certified Operator

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program
COMPLIANCE DETERMINATION FOR FILTERED SYSTEMS - Monthly Report

SWTR G

I. PWS INFORMATION

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Plant Name: Long Pond Reporting Period: Month: May Year: 2020

II. TURBIDITY PERFORMANCE CRITERIA

1. **Monthly Turbidity (95%) NTU Limit** - The turbidity level of a system's filtered water must be less than or equal to the Monthly Turbidity NTU Limit in at least 95% of the measurements taken each month for the filtration technology used, otherwise SWTR TT Violation (Tier 2)

186	= A	Total # of filtered water turbidity measurements for month (SWTR - Form F)
186	= B	Total # of filtered water turbidity measurements less than or equal to the specified limits for the filtration technology used. (SWTR - Form F)
100.00%	= (B/A) X 100	The percentage of turbidity measurements meeting the Monthly Turbidity 95% NTU Limit.

2. **Max Day NTU Limit** - The turbidity level of a system's filtered water must at no time exceed the Max Day NTU Limit for the filtration technology used, otherwise SWTR TT Violation (Tier 2).

Record the date and turbidity value for any measurements exceeding the Max Day NTU. ☑ Check box if "None"

Date	Value	Date Reported to DEP		Date	Value	Date Reported to DEP

For each day the Max Day NTU limit is exceeded, the DEP must be notified by the end of the next business day. SWTR TT Violation (Tier 2). If DEP is not consulted within 24 hours then it is a SWTR TT (Tier 1) violation requiring public notification within 24 hours.

III. DISINFECTION PERFORMANCE CRITERIA

1. **Point-of-Entry Minimum Disinfectant Residual Criteria** - Residual Disinfectant concentration cannot be <0.2 mg/L for more than 4 hours. SWTR TT Violation (Tier 2).

Minimum Disinfection Residual at Point-of-Entry to Distribution System

Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L
1	1.52	6	1.76	11	1.86	16	1.72	21	1.22	26	1.35	31	1.26
2	1.50	7	1.03	12	1.72	17	1.61	22	1.49	27	1.50	Residual Measured	
3	1.49	8	1.60	13	1.66	18	1.79	23	1.47	28	1.48	☑ Free Cl_2	
4	1.73	9	1.62	14	1.67	19	1.84	24	1.55	29	1.45	☐ Total Cl_2	
5	1.88	10	1.87	15	1.69	20	1.89	25	1.42	30	1.31	☐ Combined Cl_2	

If at any time the residual falls below 0.2 mg/L in the water entering the distribution system, the supplier of water must notify the Department as soon as possible, but no later than by the end of the next business day. The supplier of water also must notify the Department by the end of the next business day whether or not the residual was restored to at least 0.2 mg/L within four hours.

Date(s) Residual < 0.2 mg/L	Duration of Low Level (hrs.)	Date Reported to DEP		Date(s) Residual < 0.2 mg/L	Duration of Low Level (hrs.)	Date Reported to DEP

2. **Distribution System Disinfectant Residual Criteria** - Residual Disinfectant concentration (V) cannot be undetectable in greater than 5% of samples in a month, for any two consecutive months. SWTR TT Violation (Tier 2). Chlorine residuals must be measured at the same time and location as total coliform *distribution routine & repeat* samples. If no residual is detected, an HPC sample must be collected and analyzed.

Total # of HPC samples taken during month: 0 # HPC sites > 500/mL: # HPC sites ≤ 500/mL:

2	= a	# of sites where Cl_2 residual measurements were made, whether a residual was detected or not (should be the same # of sites reported on your monthly RTCR Cl_2 residual report)
0	= b	# of sites HPC samples were analyzed *instead* of Cl_2 residual measurements
0	= c	# of sites where no Cl_2 residual was detected and no HPC sample was analyzed
0	= d	# of sites where no Cl_2 residual was detected and HPC > 500 CFU/mL
0	= e	# of sites where no Cl_2 residual measurement was made and HPC > 500 CFU/mL

Water in the distribution system with a heterotrophic bacteria concentration (HPC) less than or equal to 500/mL, is deemed to have a detectable disinfectant residual for purposes of determining compliance with this requirement. When analyzed, report HPC results on your monthly DEP Bacteriological Report.

$V = \frac{(c + d + e)}{(a + b)} \times 100$ This Month % V = 0.00% Previous Month % V = Is V > 5% for 2 months? No

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: Date: 6-8-2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS
More than 1 Disinfectant / Sampling Point

SWTR
H

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Facility Name: Long Pond | Reporting Period: Month: May Year: 2020

II. DAILY REPORTING:

	Disinfectant Sequence (CT calc / CT 99.9)						Inactivation Ratio SUM[1] (CT calc / CT 99.9)	Inactivation Ratio[2] < 1.0
Day	1st	2nd	3rd	4th	5th	6th		
1	4.0	20.8					24.8	
2	5.0	15.7					20.7	
3	5.2	15.1					20.3	
4	5.4	21.3					26.7	
5	3.6	21.9					25.5	
6	3.4	21.3					24.8	
7	3.9	20.7					24.6	
8	4.6	27.6					32.2	
9	7.8	24.2					32.0	
10	5.0	26.7					31.7	
11	7.6	27.1					34.7	
12	6.9	20.6					27.4	
13	4.8	19.4					24.3	
14	7.4	25.4					32.8	
15	6.0	21.4					27.4	
16	5.9	25.2					31.1	
17	8.2	27.8					35.9	
18	7.0	24.3					31.3	
19	9.6	32.9					42.5	
20	10.2	32.9					43.1	
21	7.8	28.6					36.4	
22	11.3	29.3					40.6	
23	8.5	30.8					39.3	
24	9.6	28.9					38.6	
25	9.7	32.1					41.8	
26	9.7	26.2					35.9	
27	10.5	29.6					40.2	
28	10.6	48.5					59.1	
29	13.5	38.1					51.6	
30	13.7	33.5					47.2	
31	10.6	31.3					41.9	

1. To determine SUM (CT calc/CT 99.9), add (CT calc/CT 99.9) values from the first disinfectant sequence to the last from SWTR - Form I.
2. The inactivation ratio (CT calc / CT 99.9) is determined before or at the first customer during peak hourly flow and if the SUM (CT calc / CT 99.9)<1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved. A "Yes" response above indicates a SWTR Treatment Technique violation.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: [signature] Date: 6-8-20 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS

SWTR
I

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: 0 0606345

Treatment Facility Name: Long Pond Reporting Period: Month: May Year: 2020

Disinfectant[1]: Segment 1 - post clearwell (tap in 200-ft long pipe) Sequence of Disinfectant Application: ☑ 1st ☐ 2nd ☐ 3rd ☐ 4th ☐ 5th ☐ 6th

II. DAILY REPORTING: All measurements taken during peak hourly flow.

Day	Peak Hourly Flow[2] (gpm)	Disinfectant Concentration[3] C (mg/L)	Disinfectant Contact Time[4] T (min.)	CT Calc (=C x T)	pH[5]	Water Temp[6] (°C)	CT[7] 99.9	Inactivation Ratio[8] (CT calc / CT 99.9)	Inactivation Ratio[9] <1.0
1	152	1.60	138	221	7.47	8.3	54	4.0	see Form H
2	152	2.13	135	287	7.49	8.5	58	5.0	see Form H
3	152	2.22	132	293	7.48	8.8	56	5.2	see Form H
4	152	2.07	134	278	7.40	9.7	51	5.4	see Form H
5	152	1.21	134	163	7.43	10.3	45	3.6	see Form H
6	152	1.02	143	146	7.42	10.5	43	3.4	see Form H
7	152	1.15	148	170	7.44	10.6	44	3.9	see Form H
8	152	1.26	145	183	7.07	10.5	39	4.6	see Form H
9	152	3.18	120	382	7.12	10.7	49	7.8	see Form H
10	152	1.35	147	199	7.11	10.7	40	5.0	see Form H
11	152	2.56	141	360	7.16	10.4	47	7.6	see Form H
12	152	1.87	161	301	7.15	10.3	44	6.9	see Form H
13	152	1.46	137	201	7.12	10.3	42	4.8	see Form H
14	152	2.18	155	338	7.18	10.3	46	7.4	see Form H
15	152	1.84	139	255	7.11	10.5	43	6.0	see Form H
16	152	1.75	140	244	7.12	10.6	42	5.9	see Form H
17	152	2.61	136	354	7.10	11.5	43	8.2	see Form H
18	152	2.04	135	275	7.07	12.0	39	7.0	see Form H
19	152	2.59	144	373	7.04	12.6	39	9.6	see Form H
20	152	3.07	134	411	7.04	12.9	40	10.2	see Form H
21	152	1.73	151	262	7.01	13.2	34	7.8	see Form H
22	152	2.68	151	405	7.04	13.4	37	11.3	see Form H
23	152	1.81	147	267	6.97	14.1	31	8.6	see Form H
24	152	2.06	144	297	6.99	14.5	31	9.6	see Form H
25	152	1.90	152	289	6.95	14.9	30	9.7	see Form H
26	152	1.83	149	272	6.93	15.6	28	9.7	see Form H
27	152	2.10	140	293	6.93	16.1	28	10.5	see Form H
28	152	1.84	150	277	6.90	16.5	26	10.6	see Form H
29	152	2.18	160	348	6.90	17.3	26	13.5	see Form H
30	152	2.22	156	345	6.89	17.7	25	13.7	see Form H
31	152	1.52	160	244	6.89	17.9	23	10.6	see Form H

Notes:

1. Use a separate form for each disinfectant/sampling point. Enter disinfectant and sequence position, e.g. "ozone/1st" or "ClO_2/3rd". If more than one disinfectant sampling point, you must also complete SWTR Form H and calculate the cummulative inactivation ratio SUM (CT calc/CT 99.9) to determine compliance.
2. Peak hourly flow means the highest pumpage *hour* during the day, not the absolute peak flow at any instant.
3. The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
4. The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow. The time *T* used in calculating *CT*, is the time it takes the water, during peak hourly flow, to move between the point of disinfection application and the point at which the residual is measured.
5. If the system uses free chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
6. The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point during peak hourly flow.
7. Use Inactivation Tables at 310CMR 22.20A Tables 1.1 - 1.6, 2.1 and/or 3.1
8. The inactivation ratio is determined before or at the first customer during peak hourly flow and if the ratio is < 1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved.Note: Add log credits for watershed & filtration to the numerator of inactivation ratio.
9. A "Yes" response above indicates a SWTR Treatment Technique violation (Tier 2).

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Moore Date: 6.8.20 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwtpc@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are

Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS

SWTR
I

I. PWS INFORMATION:

PWS ID#: 1113005 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Facility Name: Long Pond Reporting Period: Month: May Year: 2020

Disinfectant[1]: Segment 2 - storage tank effluent (POE) Sequence of Disinfectant Application: ☐ 1st ☑ 2nc ☐ 3rc ☐ 4th ☐ 5th ☐ 6th

II. DAILY REPORTING: All measurements taken during peak hourly flow.

Day	Peak Hourly Flow[2] (gpm)	Disinfectant Concentration[3] C (mg/L)	Disinfectant Contact Time[4] T (min.)	CT Calc (=C x T)	pH[5]	Water Temp[6] (°C)	CT[7] 99.9	Inactivation Ratio[8] (CT calc / CT 99.9)	Inactivation Ratio[9] <1.0
1	94	1.63	1044	1700	8.50	7.9	82	20.8	see Form H
2	119	1.53	813	1248	8.50	8.2	80	15.7	see Form H
3	124	1.57	764	1200	8.54	8.4	80	15.1	see Form H
4	104	1.55	678	1710	8.55	9.0	80	21.3	see Form H
5	101	1.92	890	1713	8.54	9.3	78	21.9	see Form H
6	109	1.80	692	1607	8.54	9.6	75	21.3	see Form H
7	106	1.76	884	1556	8.56	9.7	75	20.7	see Form H
8	101	1.60	972	1559	7.80	9.6	56	27.8	see Form H
9	112	1.62	844	1367	7.80	9.6	56	24.2	see Form H
10	122	1.67	908	1507	7.70	9.5	56	26.7	see Form H
11	118	1.86	820	1526	7.70	9.5	56	27.1	see Form H
12	144	1.72	835	1092	7.60	9.6	53	20.6	see Form H
13	157	1.66	610	1012	7.60	9.8	52	19.4	see Form H
14	122	1.67	750	1253	7.50	10.1	49	25.4	see Form H
15	139	1.69	676	1143	7.70	10.0	53	21.4	see Form H
16	131	1.72	723	1245	7.60	10.7	49	25.3	see Form H
17	119	1.61	800	1288	7.50	10.9	46	27.8	see Form H
18	156	1.70	620	1110	7.40	10.9	46	24.3	see Form H
19	119	1.84	806	1482	7.40	11.2	45	32.9	see Form H
20	119	1.69	784	1445	7.40	11.7	44	32.9	see Form H
21	120	1.39	787	1098	7.40	12.7	38	28.6	see Form H
22	128	1.55	719	1117	7.40	13.1	38	29.5	see Form H
23	133	1.57	716	1124	7.40	13.8	38	30.8	see Form H
24	148	1.63	529	1022	7.39	14.3	35	28.9	see Form H
25	128	1.51	735	1110	7.37	14.3	35	32.1	see Form H
26	159	1.47	578	849	7.35	15.3	32	26.2	see Form H
27	160	1.65	563	930	7.35	15.9	31	29.6	see Form H
28	100	1.58	948	1473	7.34	16.2	30	48.8	see Form H
29	130	1.50	726	1087	7.34	17.0	29	38.1	see Form H
30	137	1.56	577	922	7.32	17.3	28	33.6	see Form H
31	146	1.30	649	841	7.33	17.6	27	31.3	see Form H

Notes:

1.Use a separate form for each disinfectant/sampling point. Enter disinfectant and sequence position, e.g. "ozone/1st" or "ClO$_2$/3rd". If more than one disinfectant sampling point, you must also complete SWTR Form H and calculate the cummulative inactivation ratio SUM (CT calc/CT 99.9) to determine compliance.
2. Peak hourly flow means the highest pumpage *hour* during the day, not the absolute peak flow at any instant.
3. The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
4. The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow. The time *T* used in calculating *CT*, is the time it takes the water, during peak hourly flow, to move between the point of disinfection application and the point at which the residual is measured.
5. If the system uses free chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
6. The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point during peak hourly flow.
7. Use Inactivation Tables at 310CMR 22.20A Tables 1.1 - 1.6, 2.1 and/or 3.1
8. The inactivation ratio is determined before or at the first customer during peak hourly flow and if the ratio is < 1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved Note: Add log credits for watershed & filtration to the numerator of inactivation ratio.
9. A "Yes" response above indicates a SWTR Treatment Technique violation (Tier 2).

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my

PWS Authorized Signature: [signature] Date: 6.8.20 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are

Massachusetts Department of Environmental Protection - Drinking Water Program
CHLORINE/CHLORAMINES - MONTHLY REPORT

Cl

I. PWS INFORMATION:

MONTH: May | YEAR: 2020

PWS ID #: 1113003 | PWS Name: Housatonic Water Works | City/Town: Great Barrington | Class: ☑CM ☐TNC ☐NC

II. ANALYTICAL INFORMATION: Refer to your MassDEP Coliform Sampling Plan and/or DBPR monitoring plan to help complete this section.

Type Measured: ☑ Free Chlorine ☐Total Chlorine ☐ombined Chlorine Analytical Method: SM 4500-Cl: 88 ☐ D ☐ E ☐ F ☐ G ☐ H I ASTM D1253- ☐

Notes:

DEP APPROVED SAMPLE SITE INFORMATION[1]			CHLORINE RESULT[2] (mg/L)	COLLECTION AND ANALYSIS[3]:		COLLECTED AND ANALYZED BY:
DEP Sample Type[1,4]	DEP Location Code #[1]	DEP Approved SAMPLE LOCATION[1]		DATE	TIME	
RS	EP1	Point of Entry	1.19	5/13/2020	9:20	Erick Bartlett
RS	001	Pleasant and Main	0.24	5/13/2020	8:59	Erick Bartlett
RS	002	Brookside School	0.21	5/13/2020	8:52	Erick Bartlett

[1] DEP Sample Type, Location Code#, and DEP Approved Sample Site Location must correspond to the same information on your DEP Total Coliform Sampling Plan.
[2] SWTR systems: HPC must be collected at distribution sites with zero chlorine residual and results reported on the DEP Bacteriological Monthly Report form and on the appropriate SWTR Form.
[3] Collection and Analysis: Chlorine residual shall be measured in the field (immediately upon collection) at the same time and location in the distribution system as total coliforms are sampled. Record ND values as 0 (zero).
[4] Sample Type: RS-Routine Distribution Sample, RO-Original Site Repeat, UR-Upstream Repeat, DR-Downstream Repeat, AR-Additional Repeat, or SS-Special Sample (as determined by DEP).
[5] All DISTRIBUTION samples taken and analyzed shall be included in determining compliance, even if that number is greater than the minimum required. If you collect repeat coliform samples within the distribution system during the month, you must also measure for a detectable chlorine residual at the repeat sites and include these samples. DO NOT include raw water (RW) or plant tap (PT) chlorine residual samples in your calculations.

III. COMPLIANCE REPORTING:

Total # of Samples Collected for Month[5]: 2 | Average Chlorine Result of All Samples For Month[5] (mg/L): 0.23

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

Primary Certified Operator Signature and Date: James J Mercer 6.8.2020

DEP Review Status:	☐ Accepted ☐Disapproved	Review Comments:	

HEALTH NOTES

In order to ensure that **tap water is safe to drink**, the Department of Environmental Protection (MA DEP) and U.S. Environmental Protection Agency (EPA) prescribe regulations that limit the amounts of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. **Immuno-compromised persons** such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and some infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control and Prevention (CDC) guidelines on lowering the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

If present, **elevated levels of lead** can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Housatonic Water Works is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should contact their doctor.

Cross connections are potentially hazardous situations for public or private potable water supply and a source of potable water contamination. A cross connection is any potential or actual physical connection between a potable water supply and any source through which it is possible to introduce any substance other than potable water into the water supply. Common Cross connection scenarios are a garden hose whose spout is submerged in a bucket of soapy water or connected to a spray bottle of weed killer.

Cross Connections between a potable water line and a non-potable water system or equipment have long been a concern of the Department of Environmental Protection (MA DEP). MA DEP established regulations to protect the public health of water consumers from contaminants due to back-flow events. The installation of back-flow prevention devices, such as a low-cost hose bib vacuum breaker, for all inside and outside hose connections is recommended. You can purchase this at a hardware store or plumbing supply store. This is a great way for you to help protect the water in your home as well as the drinking water system in your community. For additional information on cross connections and on the status of your water system's cross connection.

Residents can help protect our water resources by:

- *Practicing good septic system maintenance*
- *Supporting water supply protection initiatives and conservation measures*
- *Disposing of hazardous household chemicals properly by bringing them to hazardous material collection centers*
- *Limiting pesticide and fertilizer use, etc.*

Pure water is the world's first and foremost medicine.
-SLOVAKIAN PROVERB

Housatonic Water Works Company
Since 1897

James J. Mercer, Water Operator
Housatonic Water Works
Phone: (413)528-1780 | Fax: 413 528 3024
80 Maple Avenue, Suite 1
Great Barrington, MA 01230
housatonicwater@gmail.com

HOUSATONIC WATER WORKS

80 MAPLE AVENUE, SUITE 1 | GREAT BARRINGTON, MA 01230
MA DEP PUBLIC WATER SUPPLY ID# 1113003

2019 Consumer Confidence Report

Your Annual Drinking Water Quality Information

This report provides a snapshot of the drinking water quality that was achieved last year. Included are details about where your water comes from, what it contains, and how its quality compares to state and federal standards. We are committed to providing you with information because informed customers are our best allies.

PUBLIC WATER SYSTEM INFORMATION

Our water system is routinely inspected by the Massachusetts Department of Environmental Protection (MA DEP). MA DEP inspects our system for its technical, financial, and managerial capacity to provide safe drinking water to you. To ensure that we provide the highest quality of water available, your water system is operated by a Massachusetts certified operator who oversees the routine operations of our system. A treatment process that includes filtration and disinfection is also provided. Reservoir water is directed through slow sand filters and then a controlled amount of sodium hypochlorite is added and mixed in a contact time basin. This maze-like structure mixes the chlorinated water and provides treatment over time that helps ensure complete disinfection of the drinking water. The water is monitored by us and MassDEP to determine the effectiveness of existing water treatment and to check if any additional treatment is warranted. As part of our ongoing commitment to you we make regular repairs to the system and address concerns of our customers and regulators. During 2019 we conducted leak detection throughout the distribution system and identified and repaired two significant leaks. Additional improvements included repairing and the replacement of two (2) fire hydrants within the community.

YOUR DRINKING WATER SOURCE

Where Does My Water Come From?

Housatonic Water Works' water comes from the surface water source, Long Pond Reservoir and is located southwest of the Village of Housatonic. Long Pond has a surface area of 115 acres and storage capacity of 263 million gallons. The source is designated by MA DEP Source Name and ID Source Number as: Long Pond [1113003-01S]. The water system supplies approximately 824 service connections and serves a population of approximately 1300 people. Great Barrington Fire District's Water system can be used in emergencies. The last Sanitary Survey was conducted in February 2018.

How are these Sources Protected?

MA DEP prepared a Source Water Assessment Program (SWAP) Report dated January 2003 to assist in the identification of potential sources of contamination. A susceptibility ranking of "moderate" was assigned to this system. Typical agricultural, commercial and residential land use around surface water sources can contribute to contamination. The SWAP report outlines land activity concerns and commends our water system on the vigilant inspection, monitoring and communication concerning activities in and around our watershed. The complete SWAP report is available at the Housatonic Water Works Office, or by contacting the Western Regional Office of MA DEP at (413)755-2215. You may also view this report online at: www.mass.gov/eea/docs/dep/water/drinking/swap/wero/1113000.pdf.

Prepared by Housatonic Basin Sampling & Testing on behalf of your water supplier. This report is a compilation of best available data sources and represents an accurate account of your water quality to the best of our knowledge.

Housatonic Water Works

SUBSTANCES FOUND IN TAP WATER

Sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals, and in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

Microbial contaminants -such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
Inorganic contaminants -such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, and farming.
Pesticides and herbicides -which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
Organic chemical contaminants -including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
Radioactive contaminants -which can be naturally occurring or be the result of oil and gas production and mining activities.

COMPLIANCE WITH REGULATIONS

Does Drinking Water Meet Current Health Standards?
We are committed to providing you with the best water quality available. We are proud to report that last year your drinking water met all applicable health standards regulated by the state and federal government.

Drinking Water Violations
We failed to complete required sampling in a timely manner, resulting in a monitoring and reporting violation. Because we did not take the required number of samples, we did not know whether the contaminants were present in your drinking water, and we are unable to tell you whether your health was at risk during that time. The contaminants for which monitoring was not done were a sample for Sodium and Nitrate during Quarter 3, 2019. At the time, the potential health effects were unknown. However, the samples were collected in February 2020, and all water quality parameter testing confirms our water falls within the acceptable levels of the standards.

Opportunities for Public Participation
Housatonic Water Works sponsors bi-annual public information meetings and we encourage dialogue on water quality issues on an on-going basis. If you have any questions about the water you drink, please contact, Jim Mercer at Housatonic Water Works' office.

Our Water Quality Reports and other information are posted on the website: www.housatonicwater.com

UNITS OF MEASURE

ppm = parts per million, or milligrams per liter (mg/l)
ppb = parts per billion, or micrograms per liter (ug/l)
ND = Not Detected
N/A = Not Applicable
NTU =Nephelometric Turbidity Unit
pCi/L =Unit measure of radioactivity

IMPORTANT DEFINITIONS

Maximum Contaminant Level (MCL) – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
Maximum Contaminant Level Goal (MCLG) –The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
Action Level (AL) –The concentration of a contaminant, if exceeded, triggers treatment or other requirements that a water system must follow.
90th Percentile – Out of every 10 homes sampled, 9 were at or below this level.
Treatment Technique (TT) - A required process intended to reduce the level of a contaminant in drinking water.
Maximum Residual Disinfectant Level (MRDL) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
Maximum Residual Disinfectant Level Goal (MRDLG) - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
Turbidity - A measure of the cloudiness of water. Turbidity is monitored because it is a good indicator of the effectiveness of the filtration system.
Massachusetts Office of Research and Standards Guidelines (ORSG) - This is the concentration of a chemical in drinking water, at or below which, adverse health effects are unlikely to occur after chronic (lifetime) exposure.

WATER QUALITY TESTING RESULTS

The water quality tables show the most recent water quality testing results where levels were detected and compares those levels to standards set by the Environmental Protection Agency and Massachusetts Environmental Protection Agency.

MA DEP has reduced the monitoring requirements for *inorganic contaminant (IOC's), perchlorate and synthetic organic contaminants (SOC's)* because the source is not at risk of contamination. Housatonic Water Works' latest samples collected for Perchlorate was in September 2017 and was found to meet all applicable US EPA and Mass DEP standards.

Lead & Copper Testing	Date collected	90th %	Action Level	Total # of samples	# samples above action level	Possible Source of Contamination
Lead (ppb)	Q2 2019 Q4 2019	11.8 5.9	15	20	1 0	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	Q2 2019 Q4 2019	1.02 0.944	1.3	20	0 0	Corrosion of household plumbing systems; Erosion of natural deposits

Turbidity	Treatment Technique	Lowest Monthly % of Samples	Highest Detected Daily	Violations	Possible Source of Contamination
Daily compliance (NTU)	5	___	0.146 (Dec 4, 2019)	NO	Soil Runoff from Stormwater
Monthly compliance	95% Min	0.039 (June 2019)	___	NO	Soil Runoff from Stormwater

*Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of water quality. Monthly turbidity compliance is related to a specific treatment technique (TT). Our system filters the water so at least 95% of our samples each month must be below the turbidity limits specified in the regulations.

Inorganic Contaminants

Regulated Contaminant	Date(s) Collected	Highest Result or Highest Running Average Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)
Barium (ppm)	2011	0.0057	N/A	2	2	N
Fluoride (ppm)	2011	0.08	N/A	4	4	N
Nitrate (ppm)	22 Aug 2018	0.125	N/A	10	10	N

*Possible BARIUM Contamination sources include discharge of drilling wastes, metal refineries, erosion of natural deposits
*Possible FLOURIDE Contamination sources include natural deposits, discharge from fertilizer and aluminum factories
*Possible NITRATE Contamination sources include runoff from fertilizer use, leaching from septic tanks, sewage, erosion of natural deposits

Other Organic Contaminants and Unregulated VOC Contaminants

Unregulated Contaminants	Date(s) Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source
Sodium (ppm)	22 August 2018	6.33		N/A	20	contamination sources include discharge from the use and improper storage of sodium-containing de-icing compounds or in water-softening agents.
Chloroform (ppb)	15 November 2017	33.9		N/A	70	contamination sources include by-product of drinking water chlorination (In non-chlorinated sources it may be naturally occurring)
Bromodichloromethane	15 November 2017	4.8		N/A	N/A	contamination sources include Trihalomethane; by-product of drinking water chlorination

Disinfection and Disinfection By-Products

Regulated Contaminant	Quarterly in year	Highest quarterly Running Annual Average	Range	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)
Total Trihalomethanes (TTHMs) (ppb)	Q1 2019	51	31.8-51	80	N/A	N
Haloacetic Acids (HAA5) (ppb)	Q1 2019	65	7.35-65	60	N/A	N
Chlorine (ppm)	Q1 2019	1.28 average	0.67-1.96	4	4	N

Sources of possible contamination chlorination by products from disinfection and industrial process

MADEP Drinking Water Program: Water Quality Sampling Schedule

PWS ID: **1113003** PWS Name: **HOUSATONIC WATER WORKS** City/Town: **GREAT BARRINGTON**

Schedule of Required Water Quality Sampling For the Years: **2020** To **2022** Popl.: **1391** Class: **COM**

BACTERIA SAMPLING

Refer to your Coliform Monitoring Plan for approved Coliform Sample locations.

Raw Water: Additional Bacteria Sampling is Required from Each Treated and/or Disinfected Source.

Location ID #	SAMPLE LOCATION	MULT/SIN	R/F	D/S	WAIVER Y / N	2020 QTR1	2020 QTR2	2020 QTR3	2020 QTR4	2021 QTR1	2021 QTR2	2021 QTR3	2021 QTR4	2022 QTR1	2022 QTR2	2022 QTR3	2022 QTR4
	ASBESTOS																
10001	15 COMSTOCK LANE	S	F	D											X		
	BACTERIOLOGICAL ANALYSIS																
POE	POINT OF ENTRY BACTERIA TESTING	S	F	D		One or more distribution system coliform samples will be representative of the entry point of the distribution system.											
	BACTERIOLOGICAL ANALYSIS * Raw Water Bacteria Sample in addition to Distribution Samples																
RW1	LONG POND RAW WATER 1113003-01S LONG POND (01S)	S	R	S		M	M	M	M	M	M	M	M	M	M	M	M
	GROSS ALPHA PARTICLE ACTIVITY																
10531	POINT OF ENTRY POST TREATMENT 1113003-01S LONG POND (01S)	S	F	S		[Next Sampling due in 2024]											
	HALOACETIC ACIDS ~~Beginning in 2013, all Stage 2 Samples shall be taken during the second week of the month indicated.~~																
10003	10 DEPOT ROAD	S	F	D		FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV
	INORGANICS * includes Sodium																
10531	POINT OF ENTRY POST TREATMENT 1113003-01S LONG POND (01S)	S	F	S	N			X				X				X	
	IRON																
10531	POINT OF ENTRY POST TREATMENT 1113003-01S LONG POND (01S)	S	F	S			X				X				X		
RW1	LONG POND RAW WATER 1113003-01S LONG POND (01S)	S	R	S			X				X				X		
	LEAD & COPPER SCHOOL SAMPLING																

R/F = RAW OR FINISHED WATER; D/S = DISTRIBUTION OR SOURCE SAMPLE Waiver: (A)pplied, (Y)es, or (N)o M = Monthly Testing Required

**Three letter abbreviations indicate required sampling months.

This monitoring schedule is based on the system's current inventory and is subject to change. Water systems are responsible for promptly reporting schedule errors or omissions. Errors or omissions on monitoring schedules do not prohibit the MassDEP from enforcing monitoring requirements set forth by the Regulations.

PWS ID **1113003** PWS Name **HOUSATONIC WATER WORKS** City/Town: **GREAT BARRINGTON** Popl.: ***1391*** Class: **COM**

Location ID #	SAMPLE LOCATION	MULT/SIN	R/F	D/S	WAIVER Y / N	2020 QTR1	2020 QTR2	2020 QTR3	2020 QTR4	2021 QTR1	2021 QTR2	2021 QTR3	2021 QTR4	2022 QTR1	2022 QTR2	2022 QTR3	2022 QTR4
	LEAD & COPPER SCHOOL SAMPLING																
LCCA	2 TAPS@2 SCHOOLS/DAYCARES (ROTATE LIST)	S	F	D			X		X		X		X		X		X
	LEAD AND COPPER RULE																
10000	20 APPROVED TAPS	S	F	D			X		X		X		X		X		X
	MANGANESE																
10531	POINT OF ENTRY POST TREATMENT 1113003-01S LONG POND (01S)	S	F	S			X				X				X		
RW1	LONG POND RAW WATER 1113003-01S LONG POND (01S)	S	R	S			X				X				X		
	NITRATE																
10531	POINT OF ENTRY POST TREATMENT 1113003-01S LONG POND (01S)	S	F	S				X				X				X	
	NITRITE																
10531	POINT OF ENTRY POST TREATMENT 1113003-01S LONG POND (01S)	S	F	S				X									
	PERCHLORATE																
10531	POINT OF ENTRY POST TREATMENT 1113003-01S LONG POND (01S)	S	F	S	N			X				X				X	
	RADIUM 226 & RADIUM 228																
10531	POINT OF ENTRY POST TREATMENT 1113003-01S LONG POND (01S)	S	F	S		[Next Sampling due in 2024]											
	SECONDARY CONTAMINANTS																
10531	POINT OF ENTRY POST TREATMENT 1113003-01S LONG POND (01S)	S	F	S	N	[DEP recommends annual testing]											

R/F = RAW OR FINISHED WATER; D/S = DISTRIBUTION OR SOURCE SAMPLE Waiver: (A)pplied, (Y)es, or (N)o M = Monthly Testing Required

**Three letter abbreviations indicate required sampling months.

This monitoring schedule is based on the system's current inventory and is subject to change. Water systems are responsible for promptly reporting schedule errors or omissions. Errors or omissions on monitoring schedules do not prohibit the MassDEP from enforcing monitoring requirements set forth by the Regulations.

Gmail

James J. Mercer <housatonicwater@gmail.com>

SB Meeting Invite

1 message

Mark Pruhenski <MPruhenski@townofgb.org> Thu, Jul 30, 2020 at 1:40 PM
To: "James J. Mercer" <housatonicwater@gmail.com>

Hi Jim,

At the last SB meeting, I was asked to invite you to our next regular session of August 10th at 6:00. I was also asked to invite someone from the DEP Drinking Water Program. Do you have any particular person there that you work with so I can reach out to extend an invite? Any contacts you can provide would be appreciated.

Best, Mark

Mark Pruhenski

Town Manager

413-528-1619 ex 2

mpruhenski@townofgb.org

Pronouns: he/him/his

Town of Great Barrington

334 Main Street

Great Barrington MA 01230

The Secretary of State's office has determined that most e-mails to and from municipal offices and officials are public records. Consequently, confidentiality should not be expected.

Gmail James J. Mercer <housatonicwater@gmail.com>

FWD. MA DEP Correspondence

1 message

Mark Pruhenski <MPruhenski@townofgb.org> Thu, Jul 30, 2020 at 5:39 PM
To: "James J. Mercer" <housatonicwater@gmail.com>

From: Pignatelli, Smitty (HOU) <smitty.pignatelli@mahouse.gov>
Sent: Monday, July 20, 2020 12:13 PM
To: Gorski, Michael (DEP); Gorski, Michael (DEP)
Subject: Fwd: [External]: MADEP Correspondence

Can we help push this along? We continue to have good conversation with the town, the fire district and the water company about the long term plan. I'll be sure to keep you posted. Thanks

Smitty Pignatelli

State Representative

4th Berkshire District

Chairman, Joint Committee on Environment Natural Resources & Agriculture

State House Room 473F

413-637-0631

617-722-2210

Begin forwarded message:

From: "James J. Mercer" <housatonicwater@gmail.com>
Date: July 20, 2020 at 12:09:17 PM EDT
To: Mark Pruhenski <MPruhenski@townofgb.org>, "Pignatelli, Smitty - Rep. (HOU)" <Smitty.Pignatelli@mahouse.gov>, "Hinds, Adam (SEN)" <Adam.Hinds@masenate.gov>
Subject: [External]: MADEP Correspondence

Hi,

Thank you all for meeting this morning. Attached is the letter that our engineer emailed MADEP this morning.

Any support that could be provided to help expedite the process would be greatly appreciated.

Thank you,

Mark Pruhenski

Town Manager

413-528-1619 ex 2

mpruhenski@townofgb.org

Pronouns: he/him/his

Town of Great Barrington

334 Main Street

Great Barrington MA 01230

The Secretary of State's office has determined that most e-mails to and from municipal offices and officials are public records. Consequently, confidentiality should not be expected.

Gmail

James J. Mercer <housatonicwater@gmail.com>

Re: Housatonic Water Works 1113003 recent Water Quality - MassDEP Direction

1 message

James J. Mercer <housatonicwater@gmail.com> Sat, Aug 1, 2020 at 3:45 PM
To: "Doherty, Deirdre (DEP)" <deirdre.doherty@state.ma.us>
Cc: "Paine, Douglas (DEP)" <douglas.paine@state.ma.us>, "Harrington, Brian D (DEP)" <brian.d.harrington@state.ma.us>, Rebecca Jurczyk <rjurczyk@townofgb.org>, Jim Ericson <ericson@lenard-eng.com>, Rich Gullick <wcs.llc@comcast.net>, "Cox, Jr., Robert D." <RCOX@bowditch.com>

Ms.Doherty,

Please find our response letter.

Sincerely,

Jim

Housatonic Water Works Company

80 Maple Avenue, Suite1
Great Barrington, Massachusetts 01230
(413) 528-1780 phone
(413) 528-3024 fax
www.housatonicwater.com

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On Wed, Jul 29, 2020 at 4:06 PM Doherty, Deirdre (DEP) <deirdre.doherty@state.ma.us> wrote:

Mr. Mercer:

Attached is a letter providing MassDEP direction regarding operations and water quality at Housatonic Water Works in recent weeks. Please review and respond.

Respectfully,

Deirdre Doherty

Drinking Water Section Chief

MassDEP-Western Region

HWWCO Response 08012020.pdf
2694K

HOUSATONIC WATER WORKS COMPANY

SINCE 1897

August 1, 2020

VIA EMAIL: ***deirdre.doherty@state.ma.us***

Ms. Deirdre Doherty
Drinking Water/Municipal Services Chief
Bureau of Water Resources
Department of Environmental Protection (MassDEP)
436 Dwight Street
Springfield, MA 01103

RE: Housatonic Water Works Company
PWS ID # 1113003
Water Operation
Water Quality

Dear Ms. Doherty:

Below are responses to your letter of July 29, 2020 compiled with the assistance of company engineers:

1. **MassDEP requires Housatonic to continue Special Monitoring as required in August 2018 and Housatonic may continue that monitoring at alternate locations approved in writing by MassDEP. The current approved alternate locations are: a. 314 N. Plain Road; and b. 2 Bernard Gibbons Drive (Gt. Barrington Housing Authority)**

Response:

The Company has contracted Housatonic Basin to monitor at the MassDEP locations approved on July 29, 2020.

2. **MassDEP requires Housatonic to explain its deviation from Housatonic's proposed minimum chlorine residual target at the point-of-entry (POE). MassDEP also requires Housatonic to explain the anticipated impact of high distribution system chlorine residuals given other factors, including temperature and the distribution system material of construction, as well as, the anticipated impact of a reduction in chlorine residual.**

Response:

The company adds chlorine in doses that are very appropriate for complying with the different related regulatory requirements. Specifically, enough chlorine must be added to (1) achieve the required disinfection performance (primary disinfection), and (2) maintain an adequate residual throughout the distribution system (secondary disinfection). As is evident from the data provided to MassDEP in our

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Monthly Operating Reports, we consistently achieve CT values for primary disinfection well above that required. As such, chlorine dosing is based primarily on maintaining an optimal chlorine residual concentration in the distribution system.

The previously proposed target POE chlorine concentration of 0.5 to 0.6 mg/L would not be sufficiently high enough to maintain adequate residual in the distribution system. Our goal is to have distribution system chlorine residuals in the range of 0.2 to 0.5 mg/L. Please note that the chlorine residual values you mentioned for May and June 2020 (0.21 to 0.41 mg/L) fall into this range.

Regarding the impact of chlorine concentration on corrosion, we discussed our position on that in our May 9, 2019 to letter to MassDEP (Section 3 on "Lowering chlorine levels may reduce corrosion"). MassDEP's June 19, 2019 reply stated that *"HWW also asserts it will improve sampling procedures, reduce application of chlorine for primary disinfection (while meeting the required disinfection performance)... MassDEP is not persuaded by any of the arguments put forth by HWW. MassDEP cannot approve of this proposed approach."* Given MassDEP's apparent position that lowering the chlorine level would not reduce corrosion, we are confused as to the reasoning behind MassDEP's request for us to explain the impact of "high distribution system chlorine residuals" on corrosion.

3. **MassDEP requires Housatonic to supply documentation of its water treatment plan analyzer calibrations to verify measurements.**

Response:

Company personnel periodically perform verifications of the accuracy of the online analyzers using bench instruments and grab samples. Calibration of the analyzers is conducted as needed based on results of the verifications and in accordance with the manufacturer's recommendations. In addition, a manufacturer's representative from KUNTZE performed calibrations in December 2019 and June 2020.

4. **MassDEP requires Housatonic to explain the variation in chlorine dosing at the water treatment plant and the variation in chlorine residual measured exiting the clearwell.**

Response:

Our chlorine dosing strategy is described in Item #2 above. Chlorine is introduced post slow sand filters en route to the clearwell, and is sampled at two locations subsequent to the clearwell.

- **200-ft Tap:** The first sample is obtained from a tap located 200' after mixing from the feed line to the 1.0 MG tank. This corresponds to the first primary disinfection segment for CT calculations.
- **Point of Entry (POE):** a second sample is drawn after the 1.0 MG tank at the point of entry. This corresponds to the second primary disinfection segment for CT calculations.

It is expected that larger variations in chlorine levels would be observed after Segment 1 compared to after Segment 2. The average water age in the 1-MG storage tank is relatively long, about 10 days. And though the water enters the storage tank at the top and exits at the bottom, it is not characterized as

plug flow, and the assumed baffling factor is 0.1. As such, the storage tank results in some mixing, which helps to level out changes in the chlorine concentration over time.

The consistency of our finished water chlorine concentrations has improved over time as a result of several factors, including the relatively new piping arrangement to the 1-MG storage tank, modifications to SCADA programming conducted in September 2019, and improved dosing strategy.

Note that the clearwell and tank were designed to accommodate average daily flows substantially larger than those the system currently experiences. Household metering, diminished industrial users and conservation efforts have greatly reduced average daily flows.

5. **MassDEP requires Housatonic to provide MassDEP with its system flushing protocols. These protocols include the flushing schedule and direction (source to dead ends), how long Housatonic flushes each hydrant and the order of flushing through the system. MassDEP also requires Housatonic to document whether Housatonic has followed its protocols in 2020.**

Response:

We confirm that the flushing conducted in 2020 followed the established protocols. The company follows a hydrant flushing sequence for 79 hydrants and blow-offs throughout its system. This protocol has been followed for many years. The flushing is broken into three sections to effectively flush those sections of the system and minimize disruption to other parts of the system. The main trunk line from the source intersecting North Plain Road, Van Deusenville Road to Park Street on the southern part of the distribution system bring water from the source which is then drawn sequentially through areas that are divided into sections as described below. Flushing in each of the three sections is conducted to minimize disturbances; however, flushing in general can cause occasional disturbances in other sections of the distribution system.

Section I consists of the transmission main running from the reservoir to the Division Street/North Plain Road, extending to the West Stockbridge Williamsville area. Section II consists of the Van Deusenville Road/downtown core, and extends to the Stockbridge Furnace area, whereas Section III consists primarily of Park Street from Ramsdell Road on the south to the Park Street bridge in the north. When Section I is being flushed, the transmission line to Section II at the intersection of North Plain Road and Main Street is shut off to provide unidirectional flushing. Likewise, when Section II is flushed, the North Plain Road and Main Street valve is closed, and the valve line at the Park Street Bridge is closed. Similarly, Section III is isolated from Sections I and II. Blow offs on secondary streets in each section are conducted upon completion of the primary lines in each section.

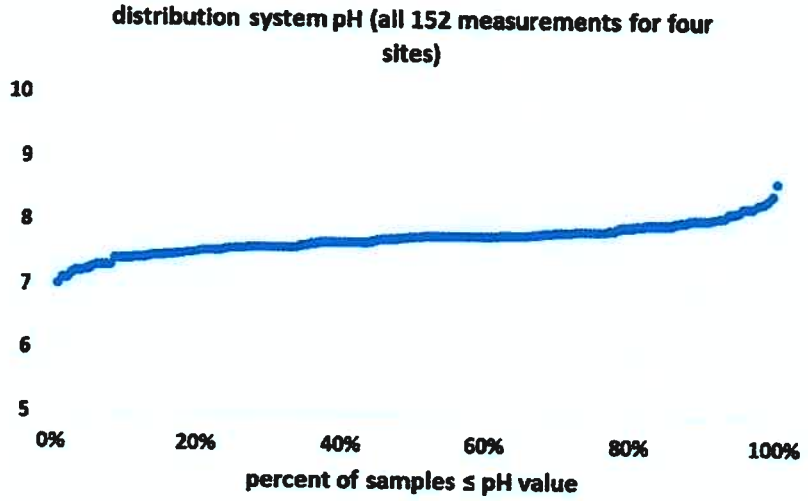
Flushing is conducted until the water is clear in appearance. During July 2020 the flushing times typically ranged from a low of 15 minutes to a maximum of 2 hours on the hydrants with two blow offs which were bled at slow rate for 8-9 hours, while two problematic areas were flushed for up to 72 hours. Chlorine residuals were also monitored at each location.

6. **MassDEP requires Housatonic to explain in writing why it has not implemented approved treatment that incorporates both pH adjustment to maintain a consistent pH and polyphosphate treatment to coat pipes within the distribution system.**

Response:

We previously provided much of this explanation in detail to MassDEP in a letter dated May 9, 2019. A copy of that letter is attached for your reference.

The natural pH of the water is already quite consistent, with approximately 3/4 of the distribution system measurements ranging from a pH of 7.5 to 8.0 (see below plot that includes 152 measurements conducted by an independent certified laboratory at four different locations in 2018 to 2020). And not only is that already a good pH range for corrosion control, but it is higher than the range of 7.3 to 7.5 that MassDEP has recommended for corrosion control at other water systems.



We definitely do not want to raise pH prior to the 1-MG storage tank, as that would decrease the effectiveness of the chlorine disinfection process. Further, we are convinced that addition of a caustic there would actually result in a wider range of pH measurements than are currently observed in the natural water. Given the approximately 10-day contact time in the storage tank, it would be extremely difficult to adjust dosing well enough to achieve a consistent pH in the tank effluent since the impact of any changes in caustic dose made to the tank influent would not be observed for many days.

Previous discussion with MassDEP regarding corrosion control was focused on control of lead and copper. Polyphosphate is not an appropriate inhibitor for lead and copper corrosion (orthophosphate is typically used for that). Instead, polyphosphate is usually used for reducing iron corrosion. We are now appropriately considering the potential use of an ortho/polyphosphate blend for corrosion control.

We are in the process of hiring the Cornwell Engineering Group (Newport News, VA) to evaluate our water chemistry and lead us to an optimal solution for simultaneously controlling iron corrosion as well as lead and copper corrosion. Cornwell's team includes nationally recognized experts in corrosion chemistry

and control. We have sought out their expertise to help avoid any unintended adverse consequences that may result from changing distribution system water chemistry from addition of a new corrosion control chemical. We must be careful to not inadvertently increase lead and copper corrosion as a result of trying to control iron corrosion, with a resulting potential for adverse public health effects.

We believe that this approach demonstrates the sincere commitment that our company has toward addressing the corrosion issues and improving water quality for our customers.

Sincerely,

James J. Mercer

James J. Mercer

Enclosure

cc:

Brian D Harrington, MassDEP (e-copy)
Douglas Paine, MassDEP (e-copy)
Rebecca Jurczyk, GB BOH (e-copy)
James Ericson, P.E., Lenard Engineering, Inc. (e-copy)
Richard W. Gullick, PhD, Water Compliance Solutions, LLC (e-copy)
Robert D. Cox, Jr., Esq., Bowditch & Dewey, LLP (e-copy)

HOUSATONIC WATER WORKS COMPANY

May 9, 2019

VIA EMAIL: *james.bumgardner@mass.gov*

Jim Bumgardner
Drinking Water Program
Bureau of Water Resources
Massachusetts Department of Environmental Protection ("MassDEP")
Western Regional Office
438 Dwight Street
Springfield, MA 01103

RE: Housatonic Water Works
PWS ID# 1113003
BRP WS 34 Chemical Addition Retrofit
Corrosion Control Treatment
Transittal # X280114

Dear Mr. Bumgardner,

The Housatonic Water Works Company (HWW) is under direction from MassDEP to develop and implement a corrosion control strategy to address exceedances of the Lead and Copper Rule (LCR) Action Levels for lead and copper. To meet those requirements, HWW contracted with Lenard Engineering, Inc. ("Lenard") to complete a desktop corrosion control study that was completed in December 2016, and a Basis of Design Report that was completed in October 2017. The results of that evaluation were to recommend a corrosion control system consisting of pH adjustment with potassium hydroxide and addition of a blended orthophosphate/polyphosphate corrosion inhibitor.

The recommended corrosion control system was set forth in HWW's BRP WS-34 Chemical Addition Retrofit for systems that serve less than or equal to 3,300 people permit application received by MassDEP on June 11, 2018, and deemed administratively complete on July 12, 2018. Following a Technical Deficiency Notice to obtain more information, MassDEP received on October 24, 2018 a response from Lenard with the information requested. On November 1, 2018 MassDEP issued its Conditional Permit Approval based on the above-referenced BRP WS-34 permit application and other relevant information received by MassDEP ("Conditional Approval"). The Conditional Approval provides that if any of the design parameters or equipment is modified, HWW must request approval in writing. This letter sets forth HWW's request for such approval as more fully described below.

While working to meet the requirements established by MassDEP, HWW has continued to evaluate the scientific and engineering aspects of both the lead and copper data and potential approaches for meeting the two LCR Action Levels. As part of that continued evaluation, new facts have recently come to light that were not considered by the previous engineering studies, and which HWW believes should be considered prior to constructing new chemical feed systems for meeting the LCR Action Levels.

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Based on the new information that has been acquired, HWW is now proposing an alternative solution to effectively meet the LCR Action Levels that is simpler and does not include the many disadvantages that are associated with increasing pH and adding phosphate-based corrosion inhibitor chemicals. The facts that support this new proposed approach are presented below.

1. **HWW is already very close to meeting the Action Levels:**

HWW's water has never been far above the lead or copper Action Levels, and thus major changes to water chemistry – which can present various adverse unintended consequences – may not be needed.

There were ten (10) rounds of monitoring over the previous six years from 2013 to 2018. The lead 90th percentile values from those data are provided in Figure 1, and for copper in Figure 2.

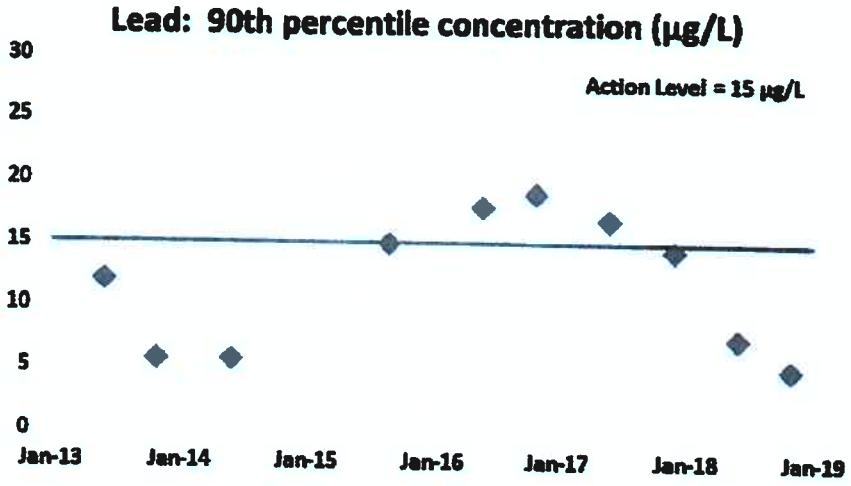

Figure 1. Lead 90th percentile concentration (2013 – 2018)

The following observations are evident from the lead 90th percentile data in Figure 1:

- Currently, the system is well below the lead Action Level, with a 90th percentile value of 5 µg/L.
- The lead 90th percentile value has decreased each of the past four rounds of sampling.
- The water system was above the lead 15 µg/L Action Level for three of the ten monitoring periods, from the first half of 2016 through the first half of 2017.
- The system was below the lead action level in each of the three most recent monitoring periods since then.

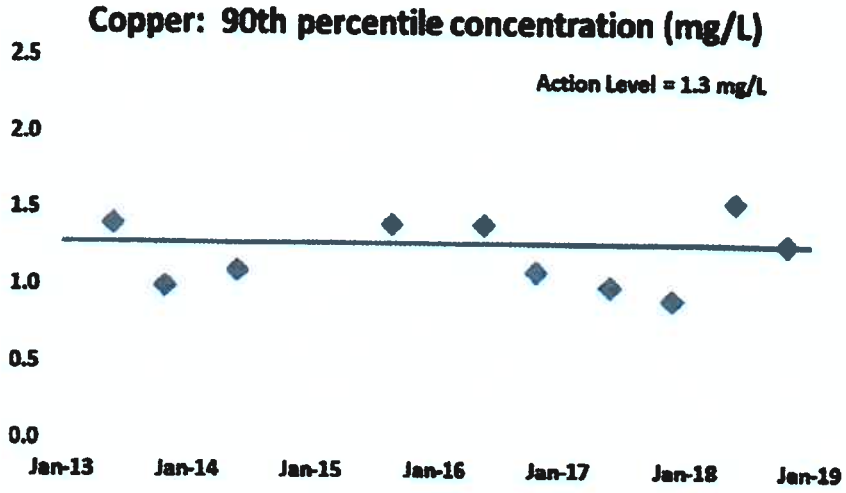

Figure 2. Copper 90th percentile concentration (2013 – 2018)

The following observations are evident from the copper 90th percentile data in Figure 2:

- The water system was above the copper 1.3 mg/L Action Level for four of the ten monitoring periods.
- None of the exceedances were by large amounts. Three of the four exceedances were by only 0.1 mg/L (i.e., were at 1.4 mg/L), and the other result was 1.6 mg/L, which is only 0.3 mg/L above the Action Level.
- Given the method by which 90th percentile values are determined, it wouldn't take a large decrease in the copper level at a single monitoring location (i.e., a single datum point) to have met the Action Level in those cases.
- The consistency of the copper 90th percentile values, and the closeness to meeting the Action Level, suggests that major operational changes may not be required, and that some small changes may be sufficient to meet the Action Level.

2. **There are sampling errors in the LCR monitoring data:**

It has come to the attention of HWW that several of the residents who performed the LCR sampling did not follow the proper sampling instructions that were provided to them. Notably, the residents at 366 North Plain Road and 314 North Plain Road have informed HWW that they used taps for sampling that had not been used for very long times, well above the maximum 18 hours that is allowed in Massachusetts for LCR sampling. These two locations are responsible for many of the high lead results. If those results were falsely high, then substituting lower lead values for the ones measured would result in only one exceedance of the lead Action Level instead of three during the 10 monitoring periods over the past six years, and that exceedance would have been by only 1 µg/L.

HWW understands that the LCR does not allow for invalidating monitoring results due to excessive water age after the samples have been delivered to the Laboratory. As such, this observation will not change any of the previous Action Level exceedances. Nonetheless, HWW believes these sampling errors should be considered when determining a future course of action. As set forth below, HWW requests a delay in the implementation of the proposed corrosion control strategy (pH adjustment and corrosion inhibitor addition) so that HWW may first try to ensure all LCR samples are collected properly so that a true picture may be obtained of the lead and copper concentrations at the LCR monitoring locations.

3. **Lowering chlorine levels may reduce corrosion:**

While chlorine is an excellent disinfectant, it is a corrosive chemical than can contribute toward corrosion of lead and copper. Chlorine increases the oxidation-reduction potential of water, potentially resulting in higher rates of lead and copper corrosion (USEPA, 2016). HWW has found three ways in which the level of chlorine used for primary disinfection may be lowered:

i. HWW has already installed new piping to direct all finished water from the treatment plant through the 1 MG storage tank prior to distribution to the community. With this piping arrangement, the chlorine contact time in the storage tank counts toward disinfection credit. This has allowed for a reduction in the chlorine level necessary to meet the disinfection requirements.

ii. It has recently come to the attention of HWW that excess chlorine has been used to meet the disinfection performance requirements as a result of using an instantaneous flow rate instead of the peak hourly flow rate in determining chlorine contact time for disinfection performance credit. HWW's SCADA system collects data every 30 seconds, for 2,880 readings per day. HWW has been using the one single highest of those 2,880 readings as the peak hourly flow. This means that we have been using the highest instantaneous flow rate during a day instead of the actual peak hourly flow. Peak hourly flow should be determined by finding the average flow rate for each of the 24 hours in a day, and then selecting the one hour with the highest average flow.

HWW is in the process of revising our data collection procedures to reflect using accurate peak hourly flow measurements instead of instantaneous flow readings when determining chlorine contact time. This will substantially increase the calculated chlorine contact time, thus allowing for a substantially lower chlorine dose to meet the primary disinfection requirements.

iii. HWW has been operating extremely conservatively in terms of exceeding the minimum required disinfection credit. For example, in March 2019 the Inactivation Ratio (IR) ranged from 6.9 to 14.1, and averaged 10.2. That average is over ten times the amount of disinfection required. While it is certainly prudent to exceed the minimum required amount by a large factor of safety, this approach may be considered overly conservative. As such, this provides another avenue by which the applied chlorine dose may be reduced.

It is apparent that lowering the chlorine levels could possibly reduce corrosion enough to consistently meet both Action Levels in the future. At minimum, HWW believes that trying this alternative first is a more prudent approach than proceeding at this time with constructing

corrosion control systems that will add at least three additional chemicals to the water and alter the water chemistry in some adverse ways.

HWW would prefer to first reduce the levels of chlorine, then allow the new water chemistry to reach equilibrium (or at least steady state) in the distribution system. Subsequent monitoring of lead and copper should help identify if this approach has been successful for meeting the Action Levels or not. This approach would allow for stabilizing the chlorine levels and establishing a baseline of LCR compliance data prior to deciding to construct a specific corrosion control treatment system.

4. **Expected and potential adverse consequences:**

Making changes to water chemistry often can result in various adverse consequences. The following are some of the disadvantages that corrosion control accomplished via raising pH and adding a phosphate-based corrosion inhibitor present:

a. Higher pH will result in a reduced efficiency of secondary disinfection, as there would be less hypochlorous acid and more hypochlorite ion. Hypochlorous acid is a much more powerful disinfectant than hypochlorite ion.

b. Higher pH is expected to result in increased trihalomethane formation.

c. Higher pH will result in an increased hardness scaling in boilers, hot water heaters, and plumbing fixtures.

d. Higher pH will result in an increased deposition of iron and other metals on plumbing fixtures (e.g., consumers would need to clean toilets more frequently).

e. The current pH of the water is already at a typically good level for drinking water, and is relatively constant. For example, the vast majority of finished water pH readings range from 7.3 to 7.7, with a mean and median of 7.4. Recent data show the pH in the distribution system is already reasonably high with a median value of 7.8. Two locations in the distribution system were sampled 16 times between August 2018 and April 2019, and the mean and median pH was 7.8, with a range of 7.1 to 8.7 (Figure 3). While the addition of potassium hydroxide may increase pH, it is likely to result in a more varied pH than currently exists with the natural water. Control of pH via addition of strong bases or acids is not easy, and for some water systems results in a much more widely varying pH than is experienced by the raw water.

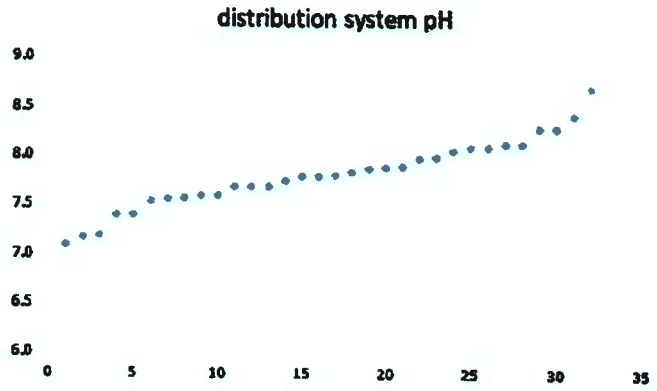

Figure 3. Distribution System pH readings
(32 samples from August 2018 through April 2019, in increasing order)

f. Addition of the corrosion inhibitor chemical will increased the contribution of phosphorus to the wastewater treatment plant influent, making it more difficult for the wastewater plant to achieve the strict phosphorus effluent limitations.

g. All of the risks associated with the manufacture, transportation, storage, and use of the proposed hazardous water treatment chemicals, as well as with construction and operation of the chemical feed systems.

h. Increased cost

i. Increased demands on Operator time

j. Potential unknown and unintended adverse impacts

5. **LCR revisions are expected very soon:**

The US Environmental Protection Agency has been working on revising the Lead and Copper Rule, and the new rule is expected to be proposed by USEPA within the next few months (summer 2019). HWW believes it would be prudent to first take the approach outlined above and see if that is successful, and during that time evaluate how the upcoming changes in the Lead and Copper Rule may affect the situation. Possible changes in the LCR may include new Action Levels, new sampling methods, and/or different requirements for treatment or other methods to meet the Action Levels.

It is important to note that the USEPA guide to corrosion control treatment (USEPA 2016) starts by deliberately stating that:

> *"The general descriptions provided here may not apply to a particular situation based upon the circumstances. Interested parties are free to raise questions and objections about the substance of these technical recommendations and the appropriateness of the application of those technical recommendations to a particular situation. EPA and other decision makers retain the discretion to adopt approaches on a case-by-case basis that differ from those described in this document, where appropriate."*

HWW believes that the unique circumstances of this situation, as described above, present an effective alternative to meeting the LCR Action Level requirements instead of the constructed treatment systems that were previously recommended.

Lastly, if the above approach is approved by MassDEP, HWW is willing to increase monitoring for lead and copper to a quarterly frequency for the next 12 to 18 months in order to more quickly determine if the proposed changes have had the desired effect on the observed lead and copper levels in the distribution system.

In summary, HWW proposes the following:

1. For now, delay construction of new chemical feed systems for raising pH and adding a corrosion inhibitor chemical;
2. Improve the LCR sampling procedures conducted by the residents to assure no falsely high lead and copper results are obtained;
3. Reduce the applied chlorine dose for primary disinfection to reduce corrosion, while consistently meeting the required disinfection performance;
4. Evaluate the impact of the upcoming proposed changes to the LCR; and,
5. Monitor lead and copper closely for the next 12 to 18 months to determine if the above approach was successful in meeting the Action Levels. If needed after that time, consider constructing the new chemical feed systems for additional corrosion control.

This approach would first test an alternative and simpler solution that does not involve the many public health, aesthetic water quality, and operational disadvantages that are known to result from increasing pH and adding a corrosion inhibitor chemical.

HWW and its engineers believe that MassDEP's approval of the forgoing is consistent with its November 1, 2018 Conditional Approval which, at Paragraph 1, noted "MassDEP considers the first year of treatment to be a demonstration study during which time HWW will be required to closely monitor the operation of the treatment system." MassDEP's approval of the foregoing is more likely to assure effective treatment following the completion of the demonstration study. HWW respectfully requests an approval in writing of the foregoing.

We thank you very much for your consideration of this request.

Regards,

James J. Mercer

James J. Mercer
Housatonic Water Works Company

References:

US Environmental Protection Agency, 2016. Optimal Corrosion Control Treatment Evaluation Technical Recommendations for Primacy Agencies and Public Water Systems. USEPA Office of Water. EPA 816-B-16-003, March 2016.

cc: James Ericson, P.E., Lenard Engineering, Inc.
Robert D. Cox, Jr., Esq., Bowditch & Dewey LLP

Gmail

James J. Mercer <housatonicwater@gmail.com>

HWWCO information Meeting

1 message

James J. Mercer <housatonicwater@gmail.com> Mon, Aug 3, 2020 at 9:34 AM
To: Mark Pruhenski <MPruhenski@townofgb.org>

Hi Mark,
Notices for this meeting have been sent out in monthly bills, a separate post card and via social media.
Jim

Housatonic Water Works Company

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HWWCO August 13 2020 Meeting Notice.pdf
70K

HWWCO ZOOM MEETING

Housatonic Water Works Company, in accordance with our Settlement Agreement with the Department of Public Utilities (DPU 15 -179) will be holding our first informational meeting for calendar year 2020 . Due to COVID concerns we will host the meeting via ZOOM on August 13, 2020 to address recent water concerns. A presentation by the company's engineer will be featured as part of the presentation.

Please download Zoom in advance on your computer or tablet or dial in on your phone.

Meeting Date: August 13, 2020, 6:00 P.M.

Computer/ Tablet

Link Address:

https://us02web.zoom.us/j/82136448056?pwd=VnFmWWVOaURHb21raE9ZUnlza08zQT09

Passcode: 992677

Telephone

(dial in, voice-only): 929 205 6099

Webinar ID: 821 3644 8056

Passcode: 992677

Gmail **James J. Mercer <housatonicwater@gmail.com>**

Fwd: Housatonic Water Works 1113003 recent Water Quality - MassDEP Direction

1 message

James J. Mercer <housatonicwater@gmail.com> Tue, Aug 4, 2020 at 7:35 AM
To: Mark Pruhenski <MPruhenski@townofgb.org>

Mark,
This is the original DEPe-mail requested.

Housatonic Water Works Company

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Great Barrington, Massachusetts 01230
(413) 528-1780 phone
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www.housatonicwater.com

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---------- Forwarded message ---------
From: **Doherty, Deirdre (DEP)** <deirdre.doherty@state.ma.us>
Date: Wed, Jul 29, 2020 at 4:06 PM
Subject: Housatonic Water Works 1113003 recent Water Quality - MassDEP Direction
To: James J. Mercer (housatonicwater@gmail.com) <housatonicwater@gmail.com>
Cc: Paine, Douglas (DEP) <douglas.paine@state.ma.us>, Harrington, Brian D (DEP) <brian.d.harrington@state.ma.us>

Mr. Mercer:

Attached is a letter providing MassDEP direction regarding operations and water quality at Housatonic Water Works in recent weeks. Please review and respond.

Respectfully,

Deirdre Doherty

Drinking Water Section Chief

MassDEP-Western Region

1113003-Housatonic-Water Quality-2020-07-29.pdf
1388K

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

SENT VIA ELECTRONIC MAIL
housatonicwater@gmail.com

July 29, 2020

Mr. James Mercer, Treasurer
Housatonic Water Works
80 Maple Ave Ste 1
Great Barrington, MA 01230

DWP-Great Barrington
Housatonic Water Works
PWSID# 1113003
Water Operations
Water Quality

Dear Mr. Mercer:

MassDEP has received complaints from customers of the Housatonic Water Works (Housatonic) that Housatonic is experiencing water quality problems in the last few weeks. In connection with its review of those complaints, MassDEP has reviewed May through July 2020 submittals from Housatonic regarding special monitoring, potential phosphate treatment, routine water quality submittals and routine operations reports.

MassDEP is providing the following direction to Housatonic to address operational and water quality questions and concerns:

1. MassDEP requires Housatonic to continue Special Monitoring as required in August 2018 and Housatonic may continue that monitoring at alternate locations approved in writing by MassDEP. The current approved alternate locations are:
   a. 314 N. Plain Road; and
   b. 2 Bernard Gibbons Drive (Gt. Barrington Housing Authority)

2. MassDEP requires Housatonic to explain its deviation from Housatonic's proposed minimum chlorine residual target at the point-of-entry (POE). Housatonic proposed the target residual within the 2017 water treatment plant changes related to its new approach for reaching the required contact time requirements of the Surface Water Treatment Rule.

Housatonic proposed and MassDEP approved, a target residual POE Chlorine of 0.5 or 0.6 mg/l, depending on water temperature. Recently, POE has ranged from 1 to 1.89 mg/l. Measured chlorine residual within the distribution system in May was 0.24 & 0.21 mg/L and in June 0.37 and 0.41 mg/L according to the Chlorine/Chloramine Reports. MassDEP also requires Housatonic to explain the anticipated impact of high distribution system chlorine residuals given other factors, including temperature and the distribution system material of construction, as well as, the anticipated impact of a reduction in chlorine residual.

3. MassDEP requires Housatonic to provide documentation of its water treatment plant analyzer calibrations to verify measurements.

4. MassDEP requires Housatonic to explain the variation in chlorine dosing at the water treatment plant and the variation in chlorine residual measured exiting the clearwell.

5. MassDEP requires Housatonic to provide MassDEP with its system flushing protocols. These protocols include the flushing schedule and direction (source to dead ends), how long Housatonic flushes each hydrant and the order of flushing through the system. MassDEP also requires Housatonic to document whether Housatonic has followed its protocols in 2020.

6. MassDEP requires Housatonic to explain in writing why it has not implemented approved treatment that incorporates both pH adjustment to maintain a consistent pH and polyphosphate treatment to coat pipes within the distribution system.

If you have questions concerning tis matter, please direct them to me at (413) 755-2148 or Deirdre.doherty@mass.gov or Douglas Paine at (413) 755-2281 or Douglas.paine@mass.gov. Please note that we will check voicemails regularly, but electronic mail communication is preferred.

Respectfully,

Deirdre Doherty

Deirdre Doherty
Drinking Water Section Chief
Bureau of Water Resources

Cc: DWP-Boston
DEP-WERO (e-copy)-B Harrington, D. Paine
(eCopy) Great Barrington Board of Health

W:\BWR\WS\Discolored Water\1113003-Housatonic-Water Quality-2020-07-29

Gmail **James J. Mercer <housatonicwater@gmail.com>**

Re: Housatonic Water Works 1113003 recent Water Quality - MassDEP Direction

1 message

Mark Pruhenski <MPruhenski@townofgb.org> Tue, Aug 4, 2020 at 7:40 AM
To: "James J. Mercer" <housatonicwater@gmail.com>

Got it....thanks Jim!

Sent from my iPhone

On Aug 4, 2020, at 7:36 AM, James J. Mercer <housatonicwater@gmail.com> wrote:

Mark,
This is the original DEPe-mail requested.

Housatonic Water Works Company

80 Maple Avenue, Suite1
Great Barrington, Massachusetts 01230
(413) 528-1780 phone
(413) 528-3024 fax
www.housatonicwater.com

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---------- Forwarded message ---------
From: **Doherty, Deirdre (DEP)** <deirdre.doherty@state.ma.us>
Date: Wed, Jul 29, 2020 at 4:06 PM
Subject: Housatonic Water Works 1113003 recent Water Quality - MassDEP Direction
To: James J. Mercer (housatonicwater@gmail.com) <housatonicwater@gmail.com>
Cc: Paine, Douglas (DEP) <douglas.paine@state.ma.us>, Harrington, Brian D (DEP) <brian.d.harrington@state.ma.us>

Mr. Mercer:

Attached is a letter providing MassDEP direction regarding operations and water quality at Housatonic Water Works in recent weeks. Please review and respond.

Respectfully,

Deirdre Doherty

Drinking Water Section Chief

MassDEP-Western Region

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

<1113003-Housatonic-Water Quality-2020-07-29.pdf>

Gmail

James J. Mercer <housatonicwater@gmail.com>

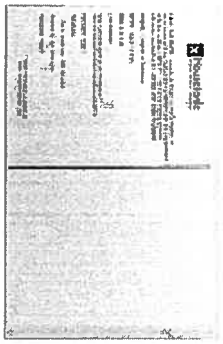
HWWCO Mtg

1 message

James J. Mercer <housatonicwater@gmail.com> Fri, Aug 7, 2020 at 3:20 PM
To: Mark Pruhenski <MPruhenski@townofgb.org>

Sent from my iPhone

2 attachments



IMG_2902.jpg
2154K

IMG_2900.jpg
4427K

Housatonic
Water Works Company
Since 1877

SAVE THE DATE: Housatonic Water Works Company, in accordance with our Settlement Agreement with the Department of Public Utilities (DPU 15 -179) will be holding our first informational meeting for calendar year 2020 via **ZOOM**.

WHERE: Computer or Telephone

WHEN: August 13, 2020

TIME: 6:00 P.M.

Link Address:

https://us02web.zoom.us/j/82136448056?
pwd=VnFmWWVOaURHb21raE9ZUnlza08zQT09

Passcode: 992677

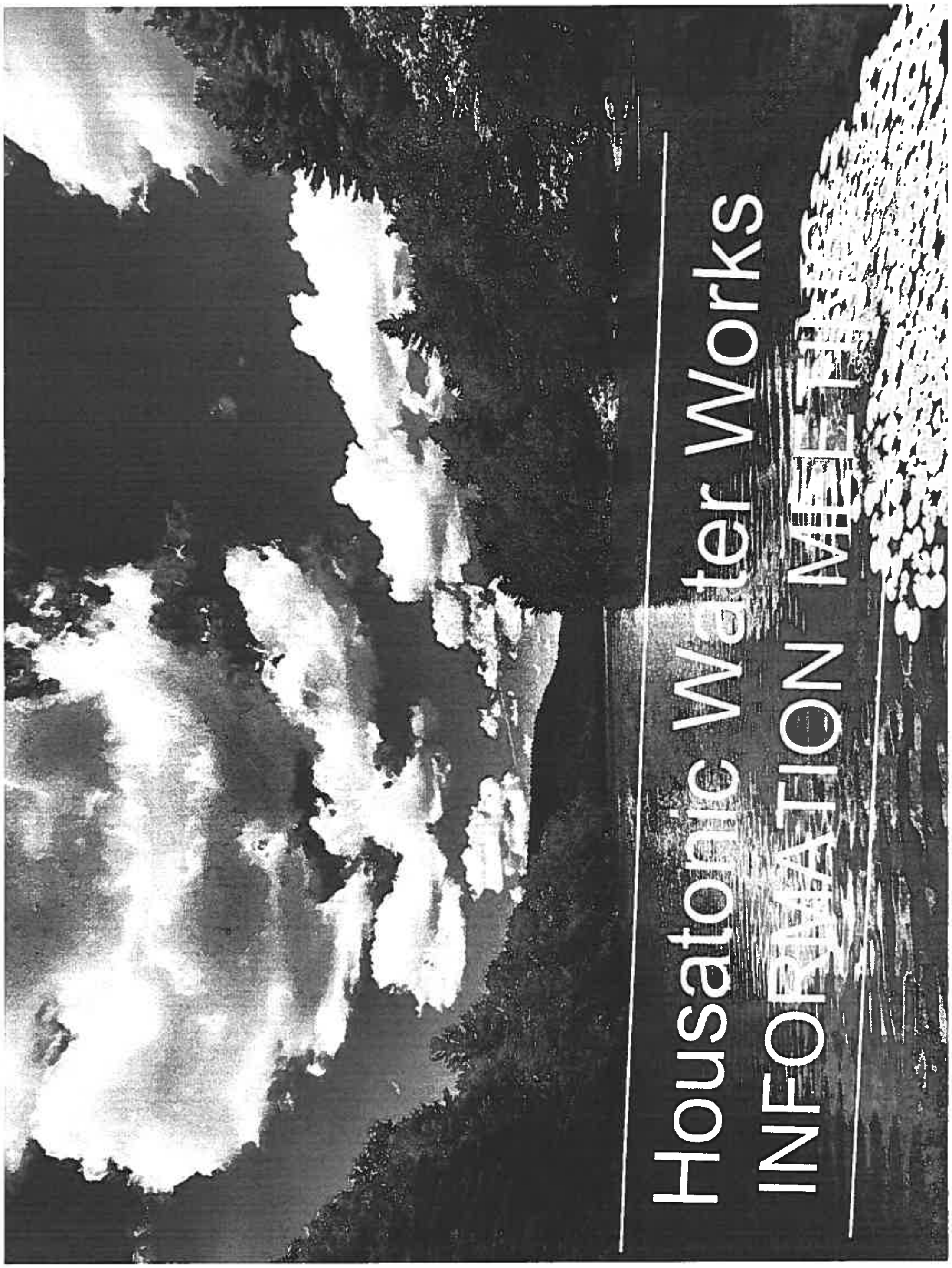
Telephone:

Dial in, voice-only : 929 205 6099

Webinar ID: 821 3644 8056

Passcode: 992677

More information available at
www.housatonicwater.com


Housatonic Water Works
INFORMATION

Gmail **James J. Mercer <housatonicwater@gmail.com>**

DPU

1 message

Mark Pruhenski <MPruhenski@townofgb.org> Wed, Aug 12, 2020 at 2:38 PM
To: "James J. Mercer" <housatonicwater@gmail.com>

Jim,

I was asked at the SB meeting to invite someone from the DPU to our next meeting on the 24th. Do you have a contact there that you can share with me? -m

Mark Pruhenski

Town Manager

413-528-1619 ex 2

mpruhenski@townofgb.org

Pronouns: he/him/his

Town of Great Barrington

334 Main Street

Great Barrington MA 01230

The Secretary of State's office has determined that most e-mails to and from municipal offices and officials are public records. Consequently, confidentiality should not be expected.

Gmail James J. Mercer <housatonicwater@gmail.com>

Re: DPU

1 message

James J. Mercer <housatonicwater@gmail.com> Thu, Aug 13, 2020 at 10:35 AM
To: Mark Pruhenski <MPruhenski@townofgb.org>

Here you go:
Nancy Stevens. Director of Consumer. Department of Public Utilities. One South Station Boston, **MA** 02110. **Nancy.stevens**@state.**ma**.us. 617 -305-3745.

Housatonic Water Works Company

80 Maple Avenue, Suite1
Great Barrington, Massachusetts 01230
(413) 528-1780 phone
(413) 528-3024 fax
www.housatonicwater.com

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On Wed, Aug 12, 2020 at 2:39 PM Mark Pruhenski <MPruhenski@townofgb.org> wrote:

Jim,

I was asked at the SB meeting to invite someone from the DPU to our next meeting on the 24th. Do you have a contact there that you can share with me? -m

Mark Pruhenski

Town Manager

413-528-1619 ex 2

mpruhenski@townofgb.org

Pronouns: he/him/his

Gmail

James J. Mercer <housatonicwater@gmail.com>

Fwd: MassDEP correspondence on Water Quality 2020-08-12

1 message

James J. Mercer <housatonicwater@gmail.com> Thu, Aug 13, 2020 at 10:36 AM
To: Mark Pruhenski <MPruhenski@townofgb.org>

FYI

Housatonic Water Works Company

80 Maple Avenue, Suite1
Great Barrington, Massachusetts 01230
(413) 528-1780 phone
(413) 528-3024 fax
www.housatonicwater.com

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---------- Forwarded message ---------
From: **Doherty, Deirdre (DEP)** <deirdre.doherty@state.ma.us>
Date: Wed, Aug 12, 2020 at 6:02 PM
Subject: MassDEP correspondence on Water Quality 2020-08-12
To: James J. Mercer (housatonicwater@gmail.com) <housatonicwater@gmail.com>
Cc: Harrington, Brian D (DEP) <brian.d.harrington@state.ma.us>, Paine, Douglas (DEP) <douglas.paine@state.ma.us>

MassDEP is sending the attached correspondence to Housatonic Water Works in response to Housatonic's August 1, 2020 letter response and water quality/operations concerns. Attached are also the recent May and June 2020 monthly submittals noted in the correspondence for reference.

Please contact me with any questions.

Respectfully,

Deirdre Doherty

Drinking Water Section Chief

3 attachments

HWWCO June 2020 .pdf
2247K

HWWCO May 2020 .pdf

2344K

1113003-Housatonic-Water Quality-2020-08-12.pdf
2983K

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

SENT VIA ELECTRONIC MAIL
housatonicwater@gmail.com

August 12, 2020

Mr. James Mercer, Treasurer
Housatonic Water Works
80 Maple Ave Ste 1
Great Barrington, MA 01230

DWP-Great Barrington
Housatonic Water Works
PWSID# 1113003
Water Operations
Water Quality

Dear Mr. Mercer:

MassDEP received your response dated August 1, 2020 to the July 29, 2020 MassDEP correspondence address operations and water quality questions and concerns. This letter follows up on your response, as MassDEP determined that Housatonic Water Works ("HWW" or "Housatonic") may not have understood some of the request or provided an incomplete response to some items.

The letter follows the same item list found in the July 29, 2020 MassDEP letter. And adds a new topic and request for information.

1. *MassDEP requires Housatonic to continue Special Monitoring as required in August 2018 and Housatonic may continue that monitoring at alternate locations approved in writing by MassDEP. The current approved alternate locations are:*
    a. *314 N. Plain Road; and*
    b. *2 Bernard Gibbons Drive (Gt. Barrington Housing Authority)*

    MassDEP understands HWW will continue the required monitoring as HWW indicated. MassDEP requires that the water quality results be provided in writing to MassDEP within 24 hours of receipt. Submit results to Deirdre.doherty@mass.gov.

2. *MassDEP requires Housatonic to explain its deviation from Housatonic's proposed minimum chlorine residual target at the point-of-entry (POE). Housatonic proposed the target residual within the 2017 water treatment plant changes related to its new approach for reaching the required contact time requirements of the Surface Water Treatment Rule (SWTR). Housatonic proposed and MassDEP approved, a target residual POE Chlorine of 0.5 or 0.6 mg/l, depending on water temperature. Recently, POE has ranged from 1 to 1.89 mg/l. Measured chlorine residual within the distribution system in May was 0.24 & 0.21 mg/L and in June 0.37 and 0.41 mg/L according to the Chlorine/Chloramine Reports. MassDEP also requires Housatonic to explain the anticipated impact of high distribution system chlorine residuals given other factors, including temperature and the distribution system material of construction, as well as, the anticipated impact of a reduction in chlorine residual.*

   HWW's response states that HWW has, at some point, set a goal of 0.2-0.5 mg/l chlorine residual within the distribution, beyond the point-of-entry location. HWW states this is in part to ensure compliance with the SWTR. HWW's monthly operation reports show that contact time is much higher than the minimum required for compliance with the SWTR. HWW's point of entry chlorine residual is regularly 1.0 mg/l or higher (June 27 was 1.9 mg/l average during peak flow). The SWTR's minimum residual required at the point-of-entry location is 0.2 mg/l. HWW's June distribution residuals were 0.37 and 0.41 mg/l. SWTR standards require a measurable residual (such as 0.05 mg/l) or adequate Heterotrophic Plate counts within the distribution system.

   Given the unlined iron piping in HWW's distribution and current warm water temperatures, the upper range of the distribution chlorine residual goal: 0.3, 0.4 and 0.5 mg/l is high. The high chlorine residuals are likely related to discolored water experienced by HWW customers.

   MassDEP requires HWW to (1) provide a written justification of this distribution residual goal, providing the operational basis for this target and detailing both the positive and negative impacts of such operations, including the potential for discolored water; (2) identify any seasonal adjustments HWW has made and (3) provide the Operation and Maintenance manual pages that reflect the goal, any seasonal adjustments in operation and the operational tasks to achieve the stated distribution residual goal.

3. *MassDEP requires Housatonic to provide documentation of its water treatment plant analyzer calibrations to verify measurements.*

   HWW response indicates verifications and calibrations are periodically done and that the instrument representative calibrated the equipment in June 2020. MassDEP requires HWW to (1) provide the date in June 2020 of the instrument representative's calibration and (2) provide documentation in the form of a copy of its instrument calibration log book pages (or other similar record) documenting each verification and calibration of its equipment for the months of March 2020 through July 2020.

4. *MassDEP requires Housatonic to explain the variation in chlorine dosing at the water treatment plant and the variation in chlorine residual measured exiting the clearwell.*

HWW's response did not address the concern cited by MassDEP. The question concerned the clearwell/Segment 1. MassDEP will describe in more detail its concerns in this letter. MassDEP has attached the May and June 2020 monthly operating reports (the SWTR and Chemical Addition forms) for your reference.
For Segment 1, MassDEP notes the peak flow is steady, as is the contact time. MassDEP notes the daily 'total treated water' volume has some variation (about 10%) but the daily Segment 1 chlorine concentration varies on a daily basis. MassDEP requires that HWW clarify if the 'total treated water' reported on the Chem Add form is the water from Segment 1 where the chlorine is added, or the water entering the distribution system after Segment 2. This will aid in understanding operations.

For example, looking at the last week or June (June 24-30) and HWW's the chlorine concentrations:

Date (June)	Seg. 1 Chlorine concentration (mg/l)	Seg. 1 Chlorine dose (mg/l)	Seg. 1 Contact Time (minutes)	Point-of-Entry Chlorine residual (mg/l)	Total Contact Time ratio (Seg. 1 & 2, must ≥1)	Total treated water (gals)
24	1.18	3	145	1.3	65.9	113,370
25	2.75	2.7	142	1.01	56.5	128,707
26	0.90	2.7	146	1.02	48.4	125,827
27	0.29	3.5	158	1.9	74.8	111,964
28	1.71	3.6	159	1.4	80.9	108,196
29	2.54	3.7	148	1.41	87.0	104,782
30	3.65	3.4	146	1.84	116.4	101,638

MassDEP requires HWW to (1) explain in writing the wide variation of Segment 1 chlorine concentrations while other factors did not vary so greatly; (2) provide a written evaluation on (a) the effect of reducing chlorine used to meet SWTR contact time requirements and (b) HWW's rationale for its SWTR contact time practices; (3) explain in detail the hours of water treatment plant operation (i.e. from 8a.m.-4 p.m.) and (4) provide the flow rate into and out of the clearwell (Segment 1) for the months of May through July 2020.

5. *MassDEP requires Housatonic to provide MassDEP with its system flushing protocols. These protocols include the flushing schedule and direction (source to dead ends), how long Housatonic flushes each hydrant and the order of flushing through the system. MassDEP also requires Housatonic to document whether Housatonic has followed its protocols in 2020.*

HWW responded with a description of its flushing practices. MassDEP expects to find the procedures for flushing within its Operations and Maintenance manual at the next Sanitary Survey.

6. *MassDEP requires Housatonic to explain in writing why it has not implemented approved treatment that incorporates both pH adjustment to maintain a consistent pH and polyphosphate treatment to coat pipes within the distribution system.*

   MassDEP has not concluded that the pH is not stable at HWW. If HWW submits a permit application for a treatment change involving a phosphate/phosphate blend, HWW will at that time be required to provide sufficient documentation to address the pH and its stability throughout the calendar year. MassDEP notes that the pH of the chlorinated water from Segment 1 appears to be altered by its passage through new cement lined piping between the treatment plant and concrete storage tank and the concrete material of the storage tank.

The new information requested of Housatonic Water Works:
MassDEP requires that HWW provide MassDEP written log of water main or joint breaks and leaks and known service connection breaks and leaks between July 2018 and August 2020. For each event, HWW shall provide the date, the pipe/joint material, the location of the break/leak and what the specific problem was (break/leak/other).

MassDEP requires a response to all of the above information request as soon as practical but no later than August 20th, 5 p.m. by email to the MassDEP emails below.

If you have questions concerning this matter, please direct them to me at (413) 755-2148 or Deirdre.doherty@mass.gov or Douglas Paine at (413) 755-2281 or Douglas.paine@mass.gov. Please note that we will check voicemails regularly, but electronic mail communication is preferred.

Respectfully,

Deirdre Doherty
Drinking Water Section Chief
Bureau of Water Resources

Cc: DWP-Boston
DEP-WERO (e-copy)-B Harrington, D. Paine
(eCopy) Great Barrington Board of Health

W:\BWR\WS\Discolored Water\1113003-Housatonic-Water Quality-2020-08-12

Massachusetts Department of Environmental Protection - Drinking Water Program
CHEMICAL ADDITION REPORT - 310 CMR 22.15(4) Chemical Addition Reporting Requirements

C-ADD

I. PWS Information - Refer to "MassDEP Chemical Addition Report Guidance and Instructions" for details.

PWS Name[1]:	Housatonic Water Works	Town[1]:	Great Barrington	PWSID[1]:	1113003
Treatment Plant Name[2]:	Long Pond	Treatment Plant ID[2]:	1113003-01T	Reporting Month[3]:	May
				Reporting Year[3]:	2020

II. Chemical & Operational Information

Chemical Name[4]:	sodium hypochlorite	Purchased Strength (%)[5]:	12.5	Target Range/min[12]:	≥ 0.5 mg/L at POE
Manufacturer[4]:	Slack Chemical Company, Inc. (Carthage, NY)	Purchased Density (lbs/gal)[6]:	9.97	Target Dose (mg/L)[13]:	NA
Product Name[4]:	sodium hypochlorite (12.5% bleach)	Dilution Factor or Mix Ratio[10]:	1.00	Alarm Setting (low)[14]:	0.60
Reason for Adding Chemical[7]:	Disinfection - Segment #1 and Segment #2	NSF Approved (Y/N)[11]:	Y	Alarm Setting (high)[14]:	2.50
				Date of last anti-siphon valve inspection/replacement[15]:	NA

III. Daily Reporting — Note: Water quality data reported on C-ADD form may also be considered for compliance purposes.

Day	Treated Water Volume (gal)[29]	Measured Chemical Used		Calculated Chemical Used (lbs)[28]	Chemical Dosage (mg/L)[23]	Parameters Measured*, Results, Units and Method - (G)rab or Continuous (A)nalyzer[21]			O&M Notes/Comments[22]
		Volume (gal/day)[27]	Weight (lbs/day)[27]			a. chlorine residual at end of Segment 1 (mg/L) via Kuntze analyzer	b. chlorine residual at end of Segment 2 POE (mg/L) via Kuntze analyzer	c.	PWS note any equipment breakdown, off-line status, changes in purchased product or batch mixing day, measured parameters or dosages that are out of target range, etc.
						☐G ☑A	☐G ☑A	☐G ☐A	
1	88086	1.9		2.37	3.2	1.60	1.63		
2	100043	1.9		2.37	2.8	2.13	1.53		
3	111869	1.9		2.37	2.5	2.22	1.57		
4	95973	1.9		2.37	2.9	2.07	1.95		
5	98937	1.9		2.37	2.9	1.21	1.92		
6	102225	1.9		2.37	2.8	1.02	1.80		
7	98077	1.9		2.37	3.0	1.15	1.76		
8	96413	1.9		2.37	2.9	1.26	1.60		
9	90299	1.9		2.37	3.1	3.18	1.62		
10	95793	2.3		2.87	3.6	1.35	1.87		
11	101754	2.3		2.87	3.4	2.56	1.88		
12	107980	2.3		2.87	3.2	1.87	1.72		
13	105969	2.3		2.87	3.2	1.46	1.66		
14	104669	2.3		2.87	3.3	2.18	1.67		
15	99852	2.3		2.87	3.5	1.84	1.69		
16	105262	2.3		2.87	3.3	1.75	1.72		
17	101496	2.3		2.87	3.4	2.61	1.61		
18	100882	2.3		2.87	3.4	2.04	1.79		
19	101133	2.3		2.87	3.4	2.58	1.84		
20	106368	2.3		2.87	3.2	3.07	1.89		
21	108893	2.3		2.87	3.2	1.73	1.39		
22	110771	2.3		2.87	3.1	2.58	1.55		
23	118856	2.3		2.87	2.9	1.81	1.57		
24	125142	2.3		2.87	2.8	2.06	1.63		
25	115586	2.3		2.87	3.0	1.90	1.51		
26	121330	2.3		2.87	2.8	1.83	1.47		
27	126624	2.3		2.87	2.7	2.10	1.65		
28	100530	2.3		2.87	3.4	1.84	1.56		
29	113526	2.3		2.87	3.0	2.18	1.50		
30	122368	2.3		2.87	2.8	2.22	1.36		
31	121672	2.3		2.87	2.8	1.52	1.30		
Total	3298987	67.7		Indicate total # of days the residual was off-target for the month (from Section II) Monthly Target Summary[25]:					0

*Describe result (daily average, min/max, instantaneous reading, grab, etc.) sample location (entry-point, before/after filters, tanks, etc.) and instrumentation used (SCADA, chart recorder, test kit, bench, etc.)[20]

a. Chlorine is monitored continuously via a Kuntze analyzer. Daily chlorine residual values provided are for the average value during the hour of peak hourly flow.

b. Chlorine is monitored continuously via a Kuntze analyzer. Daily chlorine residual values provided are for the average value during the hour of peak hourly flow.

c.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Person - Signature & Date[24]: James J. Mercer 6.8.20

Print Name: James J. Mercer

Title: Primary Certified Operator

Submit to your MassDEP Regional Office within 10 days after the reporting month.

Massachusetts Department of Environmental Protection - Drinking Water Program

TURBIDITY DATA SHEET FOR FILTERED SYSTEMS

SWTR
F

PWSID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Plant Name: Long Pond Reporting Period → Month: May Year: 2020

Filtered Water Turbidity Measured: (check only one) ☑ Combined Filter Effluent ☐ Individual Filter Effluent[1] ☐ Clearwell ☐ Plant Effluent

Filtration Technology: ☐ Conventional ☐ Direct ☐ Alternative | Monthly Turbidity (95%) NTU Limit = 0.3 | Max Day Turbidity NTU Limit = 1

☑ Slow Sand ☐ Diatomaceous Earth | Monthly Turbidity (95%) NTU Limit = 1 | Max Day Turbidity NTU Limit = 5

Day	Max Filtered Water Turbidity Result[2] (NTU)	Number of Turbidity Measurements[3]	Number of Turbidity Measurements ≤ Monthly (95%) NTU Limit[4]	Number of Turbidity Measurements > Max Day NTU Limit[5]
1	0.045	6	6	0
2	0.046	6	6	0
3	0.047	6	6	0
4	0.050	6	6	0
5	0.058	6	6	0
6	0.050	6	6	0
7	0.052	6	6	0
8	0.052	6	6	0
9	0.058	6	6	0
10	0.044	6	6	0
11	0.046	6	6	0
12	0.059	6	6	0
13	0.042	6	6	0
14	0.047	6	6	0
15	0.042	6	6	0
16	0.046	6	6	0
17	0.043	6	6	0
18	0.068	6	6	0
19	0.053	6	6	0
20	0.051	6	6	0
21	0.046	6	6	0
22	0.045	6	6	0
23	0.042	6	6	0
24	0.049	6	6	0
25	0.060	6	6	0
26	0.045	6	6	0
27	0.045	6	6	0
28	0.043	6	6	0
29	0.057	6	6	0
30	0.051	6	6	0
31	0.045	6	6	0
Totals:		186	186	% Turbidity Meeting 95% Limit
		A	B	B/A x 100 % = X
				(Enter on SWTR – Form G)

1. May be used by systems serving less than 10,000 persons, subject to DEP approval.
2. Enter the Maximum Filtered Water Turbidity Result recorded each day, at the 4th hour or other approved interval.
3. Enter the Total # of Turbidity measurements taken for each day. Measurements must be taken at a minimum of 4-hour intervals (i.e. 6 readings per day). For continuous monitors count each 4-hour period as 1 measurement. Record the actual turbidity result at the specified interval of time. Do not average turbidity measurements. If DEP approved, 15-minute readings (i.e. 96 readings per day) may be submitted. Filtered turbidity data must be kept on file for DEP review.
4. Out of the # of turbidity measurements taken and recorded in the previous column, enter the number of turbidity measurements that were less than or equal to the Monthly (95%) NTU Limit for the filtration technology used.
5. If at any at time the filtered turbidity Max Day NTU Limit is exceeded, the DEP must be notified no later than the end of the next business day. For each exceedance, record the turbidity value(s) and date(s) on SWTR - Form G

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Mercer

Date: 6·8·20 Title: Primary Certified Operator

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program
COMPLIANCE DETERMINATION FOR FILTERED SYSTEMS - Monthly Report

SWTR G

I. PWS INFORMATION

PWS ID#: 1113000 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Plant Name: Long Pond Reporting Period: Month: May Year: 2020

II. TURBIDITY PERFORMANCE CRITERIA

1. **Monthly Turbidity (95%) NTU Limit** - The turbidity level of a system's filtered water must be less than or equal to the Monthly Turbidity NTU Limit in at least 95% of the measurements taken each month for the filtration technology used, otherwise SWTR TT Violation (Tier 2)

186	= A	Total # of filtered water turbidity measurements for month (SWTR - Form F)
186	= B	Total # of filtered water turbidity measurements less than or equal to the specified limits for the filtration technology used. (SWTR - Form F)
100.00%	= (B/A) X 100	The percentage of turbidity measurements meeting the Monthly Turbidity 95% NTU Limit.

2. **Max Day NTU Limit** - The turbidity level of a system's filtered water must at no time exceed the Max Day NTU Limit for the filtration technology used, otherwise SWTR TT Violation (Tier 2).

Record the date and turbidity value for any measurements exceeding the Max Day NTU. ☑ Check box if "None"

Date	Value	Date Reported to DEP	Date	Value	Date Reported to DEP

For each day the Max Day NTU limit is exceeded, the DEP must be notified by the end of the next business day. SWTR TT Violation (Tier 2). If DEP is not consulted within 24 hours then it is a SWTR TT (Tier 1) violation requiring public notification within 24 hours.

III. DISINFECTION PERFORMANCE CRITERIA

1. **Point-of-Entry Minimum Disinfectant Residual Criteria** - Residual Disinfectant concentration cannot be <0.2 mg/L for more than 4 hours. SWTR TT Violation (Tier 2).

Minimum Disinfection Residual at Point-of-Entry to Distribution System

Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L
1	1.52	6	1.76	11	1.86	16	1.72	21	1.22	26	1.35	31	1.26
2	1.50	7	1.03	12	1.72	17	1.61	22	1.49	27	1.50	Residual Measured	
3	1.49	8	1.60	13	1.66	18	1.79	23	1.47	28	1.48	☑ Free Cl_2	
4	1.73	9	1.62	14	1.67	19	1.84	24	1.55	29	1.45	☐ Total Cl_2	
5	1.86	10	1.87	15	1.69	20	1.89	25	1.42	30	1.31	☐ Combined Cl_2	

If at any time the residual falls below 0.2 mg/L in the water entering the distribution system, the supplier of water must notify the Department as soon as possible, but no later than by the end of the next business day. The supplier of water also must notify the Department by the end of the next business day whether or not the residual was restored to at least 0.2 mg/L within four hours.

Date(s) Residual < 0.2 mg/L	Duration of Low Level (hrs.)	Date Reported to DEP	Date(s) Residual < 0.2 mg/L	Duration of Low Level (hrs.)	Date Reported to DEP

2. **Distribution System Disinfectant Residual Criteria** - Residual Disinfectant concentration (V) cannot be undetectable in greater than 5% of samples in a month, for any two consecutive months. SWTR TT Violation (Tier 2). Chlorine residuals must be measured at the same time and location as total coliform *distribution routine & repeat* samples. If no residual is detected, an HPC sample must be collected and analyzed.

Total # of HPC samples taken during month: 0 # HPC sites > 500/mL: # HPC sites ≤ 500/mL:

2	= a	# of sites where Cl_2 residual measurements were made, whether a residual was detected or not (should be the same # of sites reported on your monthly RTCR Cl_2 residual report)
0	= b	# of sites HPC samples were analyzed *instead* of Cl_2 residual measurements
0	= c	# of sites where no Cl_2 residual was detected and no HPC sample was analyzed
0	= d	# of sites where no Cl_2 residual was detected and HPC > 500 CFU/mL
0	= e	# of sites where no Cl_2 residual measurement was made and HPC > 500 CFU/mL

Water in the distribution system with a heterotrophic bacteria concentration (HPC) less than or equal to 500/mL, is deemed to have a detectable disinfectant residual for purposes of determining compliance with this requirement. When analyzed, report HPC results on your monthly DEP Bacteriological Report.

$V = \frac{(c + d + e)}{(a + b)} \times 100$ This Month % V = 0.00% Previous Month % V = Is V > 5% for 2 months? No

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: [signature] Date: 6-8-2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS
More than 1 Disinfectant / Sampling Point

SWTR H

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Facility Name: Long Pond | Reporting Period: Month: May Year: 2020

II. DAILY REPORTING:

	Disinfectant Sequence (CT calc / CT 99.9)						Inactivation Ratio SUM[1] (CT calc / CT 99.9)	Inactivation Ratio[2] < 1.0
Day	1st	2nd	3rd	4th	5th	6th		
1	4.0	20.8					24.8	
2	5.0	15.7					20.7	
3	5.2	15.1					20.3	
4	5.4	21.3					26.7	
5	3.6	21.9					25.5	
6	3.4	21.3					24.6	
7	3.9	20.7					24.6	
8	4.6	27.6					32.2	
9	7.8	24.2					32.0	
10	5.0	26.7					31.7	
11	7.6	27.1					34.7	
12	6.9	20.6					27.4	
13	4.8	19.4					24.3	
14	7.4	25.4					32.8	
15	6.0	21.4					27.4	
16	5.9	25.2					31.1	
17	8.2	27.8					35.9	
18	7.0	24.3					31.3	
19	9.6	32.9					42.5	
20	10.2	32.9					43.1	
21	7.8	28.6					36.4	
22	11.3	29.3					40.6	
23	8.5	30.8					39.3	
24	9.6	28.9					38.5	
25	9.7	32.1					41.8	
26	9.7	26.2					35.9	
27	10.5	29.6					40.2	
28	10.6	48.5					59.1	
29	13.5	38.1					51.6	
30	13.7	33.5					47.2	
31	10.6	31.3					41.9	

1. To determine SUM (CT calc/CT 99.9), add (CT calc/CT 99.9) values from the first disinfectant sequence to the last from SWTR - Form I.
2. The inactivation ratio (CT calc / CT 99.9) is determined before or at the first customer during peak hourly flow and if the SUM (CT calc / CT 99.9)<1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved. A "Yes" response above indicates a SWTR Treatment Technique violation.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: [signature] Date: 6-8-20 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS

SWTR
1

I. PWS INFORMATION

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: 0 0606345

Treatment Facility Name: Long Pond Reporting Period: Month: May Year: 2020

Disinfectant[1]: Segment 1 - post clearwell (up in 200-ft long pipe) Sequence of Disinfectant Application: ☑ 1st ☐ 2nd ☐ 3rd ☐ 4th ☐ 5th ☐ 6th

II. DAILY REPORTING: All measurements taken during peak hourly flow.

Day	Peak Hourly Flow[2] (gpm)	Disinfectant Concentration[3] C (mg/L)	Disinfectant Contact Time[4] T (min.)	CT Calc (=C x T)	pH[5]	Water Temp[6] (°C)	CT[7] 99.9	Inactivation Ratio[8] (CT calc / CT 99.9)	Inactivation Ratio[9] <1.0
1	152	1.60	138	221	7.47	8.3	54	4.0	see Form H
2	152	2.13	135	287	7.49	8.5	58	5.0	see Form H
3	152	2.22	132	293	7.46	8.8	56	5.2	see Form H
4	152	2.07	134	278	7.40	9.7	51	5.4	see Form H
5	152	1.21	134	163	7.43	10.3	45	3.6	see Form H
6	152	1.02	143	146	7.42	10.5	43	3.4	see Form H
7	152	1.15	148	170	7.44	10.5	44	3.9	see Form H
8	152	1.26	145	182	7.07	10.5	39	4.6	see Form H
9	152	3.18	120	382	7.12	10.7	49	7.8	see Form H
10	152	1.35	147	198	7.11	10.7	40	5.0	see Form H
11	152	2.56	141	360	7.16	10.4	47	7.6	see Form H
12	152	1.87	181	351	7.15	10.3	44	6.9	see Form H
13	152	1.46	137	201	7.12	10.3	42	4.8	see Form H
14	152	2.19	155	338	7.18	10.3	45	7.4	see Form H
15	152	1.84	139	255	7.11	10.5	43	6.0	see Form H
16	152	1.75	140	244	7.12	10.6	42	5.9	see Form H
17	152	2.61	136	354	7.10	11.5	43	8.2	see Form H
18	152	2.04	135	275	7.07	12.0	39	7.0	see Form H
19	152	2.58	144	373	7.04	12.6	39	9.6	see Form H
20	152	3.07	134	411	7.04	12.9	40	10.2	see Form H
21	152	1.73	151	262	7.01	13.2	34	7.8	see Form H
22	152	2.68	161	416	7.04	13.4	37	11.3	see Form H
23	152	1.81	147	267	6.97	14.1	31	8.6	see Form H
24	152	2.06	144	297	6.96	14.6	31	9.6	see Form H
25	152	1.90	152	289	6.95	14.9	30	9.7	see Form H
26	152	1.83	149	272	6.93	15.6	28	9.7	see Form H
27	152	2.10	140	293	6.93	16.1	28	10.5	see Form H
28	152	1.84	150	277	6.90	16.5	26	10.6	see Form H
29	152	2.16	160	348	6.90	17.3	26	13.5	see Form H
30	152	2.22	156	346	6.89	17.7	25	13.7	see Form H
31	152	1.52	160	244	6.89	17.9	23	10.6	see Form H

Notes:

1. Use a separate form for each disinfectant/sampling point. Enter disinfectant and sequence position, e.g. "ozone/1st" or "ClO_2/3rd". If more than one disinfectant sampling point, you must also complete SWTR Form H and calculate the cummulative inactivation ratio SUM (CT calc/CT 99.9) to determine compliance.
2. Peak hourly flow means the highest pumpage *hour* during the day, not the absolute peak flow at any instant.
3. The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
4. The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow. The time *T* used in calculating *CT*, is the time it takes the water, during peak hourly flow, to move between the point of disinfection application and the point at which the residual is measured.
5. If the system uses free chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
6. The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point during peak hourly flow.
7. Use Inactivation Tables at 310CMR 22.20A Tables 1.1 - 1.6, 2.1 and/or 3.1
8. The inactivation ratio is determined before or at the first customer during peak hourly flow and if the ratio is < 1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved.Note: Add log credits for watershed & filtration to the numerator of inactivation ratio.
9. A "Yes" response above indicates a SWTR Treatment Technique violation (Tier 2).

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Mead Date: 6·8·20 Title: Primary Certified Operator

Phone#: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

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Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS

SWTR

I. PWS INFORMATION

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Facility Name: Long Pond Reporting Period: Month: May Year: 2020

Disinfectant[1]: Segment 2 - storage tank effluent (POE) Sequence of Disinfectant Application: ☐ 1st ☑ 2nc ☐ 3rc ☐ 4th ☐ 5th ☐ 6th

II. DAILY REPORTING: All measurements taken during peak hourly flow.

Day	Peak Hourly Flow[2] (gpm)	Disinfectant Concentration[3] C (mg/L)	Disinfectant Contact Time[4] T (min.)	CT Calc (=C x T)	pH[5]	Water Temp[6] (°C)	CT[7] 99.9	Inactivation Ratio[8] (CT calc / CT 99.9)	Inactivation Ratio[9] <1.0
1	94	1.63	1044	1700	8.50	7.9	82	20.8	see Form H
2	119	1.63	813	1248	8.50	8.2	80	15.7	see Form H
3	124	1.57	764	1200	8.54	8.4	80	15.1	see Form H
4	104	1.96	878	1710	8.55	9.0	80	21.5	see Form H
5	101	1.92	890	1713	8.54	9.3	78	21.9	see Form H
6	109	1.80	892	1607	8.54	9.6	76	21.3	see Form H
7	106	1.76	884	1556	8.56	9.7	75	20.7	see Form H
8	101	1.80	972	1585	7.60	9.6	66	27.6	see Form H
9	112	1.62	844	1367	7.80	9.6	58	24.2	see Form H
10	122	1.67	906	1507	7.70	9.5	56	26.7	see Form H
11	116	1.86	920	1525	7.70	9.5	56	27.1	see Form H
12	144	1.72	635	1092	7.80	9.6	53	20.6	see Form H
13	157	1.66	610	1012	7.60	9.8	52	19.4	see Form H
14	122	1.67	750	1253	7.50	10 1	49	25.4	see Form H
15	139	1.69	676	1143	7.70	10.0	53	21.4	see Form H
16	131	1.72	723	1243	7.60	10 7	49	25.2	see Form H
17	119	1.61	800	1288	7.50	10.9	46	27.8	see Form H
18	156	1.70	620	1110	7.40	10.8	46	24.3	see Form H
19	119	1.84	806	1482	7.40	11.2	45	32.9	see Form H
20	119	1.89	704	1445	7.40	11.7	44	32.9	see Form H
21	120	1.39	787	1098	7.40	12.7	38	28.8	see Form H
22	128	1.65	719	1117	7.40	13.1	38	29.3	see Form H
23	133	1.57	716	1124	7.40	13.8	36	30.8	see Form H
24	148	1.63	629	1022	7.38	14 3	35	28.9	see Form H
25	128	1.51	735	1110	7.37	14.3	35	32.1	see Form H
26	159	1.47	573	840	7 35	15.3	32	26.2	see Form H
27	160	1.65	563	930	7.35	15.9	31	29.6	see Form H
28	100	1.58	946	1472	7 34	16.2	30	48.5	see Form H
29	130	1.50	726	1087	7.34	17.0	29	38.1	see Form H
30	137	1.30	677	922	7 32	17.3	28	33.5	see Form H
31	146	1.30	649	841	7.33	17.5	27	31.3	see Form H

Notes:

1. Use a separate form for each disinfectant/sampling point. Enter disinfectant and sequence position, e.g. "ozone/1st" or "ClO_2/3rd". If more than one disinfectant sampling point, you must also complete SWTR Form H and calculate the cummulative inactivation ratio SUM (CT calc/CT 99.9) to determine compliance.
2. Peak hourly flow means the highest pumpage *hour* during the day, not the absolute peak flow at any instant.
3. The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
4. The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow. The time 'T' used in calculating 'CT', is the time it takes the water, during peak hourly flow, to move between the point of disinfection application and the point at which the residual is measured.
5. If the system uses free chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
6. The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point during peak hourly flow.
7. Use Inactivation Tables at 310CMR 22.20A Tables 1.1 - 1.6, 2.1 and/or 3.1
8. The inactivation ratio is determined before or at the first customer during peak hourly flow and if the ratio is < 1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved.Note: Add log credits for watershed & filtration to the numerator of inactivation ratio.
9. A "Yes" response above indicates a SWTR Treatment Technique violation (Tier 2).

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my

PWS Authorized Signature: [signature] Date: 6.8.20 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are

Massachusetts Department of Environmental Protection - Drinking Water Program
CHLORINE/CHLORAMINES - MONTHLY REPORT

Cl

I. PWS INFORMATION:

MONTH: May | YEAR: 2020

PWS ID #: 1113003 | PWS Name: Housatonic Water Works | City/Town: Great Barrington | Class: ☑CM ☐TNC ☐NC

II. ANALYTICAL INFORMATION: Refer to your MassDEP Coliform Sampling Plan and/or DBPR monitoring plan to help complete this section.

Type Measured: ☑ Free Chlorine ☐Total Chlorine ☐ombined Chlorine Analytical Method: SM 4500-Cl: 88 ☐ D ☐ E ☐ F ☐ G ☐ H I ASTM D1253- ☐

Notes:

DEP APPROVED SAMPLE SITE INFORMATION[1]			CHLORINE RESULT[2] (mg/L)	COLLECTION AND ANALYSIS[3]:		COLLECTED AND ANALYZED BY:
DEP Sample Type[1,4]	DEP Location Code #[1]	DEP Approved SAMPLE LOCATION[1]		DATE	TIME	
RS	EP1	Point of Entry	1.19	5/13/2020	9:20	Erick Bartlett
RS	001	Pleasant and Main	0.24	5/13/2020	8:59	Erick Bartlett
RS	002	Brookside School	0.21	5/13/2020	8:52	Erick Bartlett

[1] DEP Sample Type, Location Code#, and DEP Approved Sample Site Location must correspond to the same information on your DEP Total Coliform Sampling Plan.
[2] SWTR systems: HPC must be collected at distribution sites with zero chlorine residual and results reported on the DEP Bacteriological Monthly Report form and on the appropriate SWTR Form.
[3] Collection and Analysis: Chlorine residual shall be measured in the field (immediately upon collection) at the same time and location in the distribution system as total coliforms are sampled. Record ND values as 0 (zero).
[4] Sample Type: RS-Routine Distribution Sample, RO-Original Site Repeat, UR-Upstream Repeat, DR-Downstream Repeat, AR-Additional Repeat, or SS-Special Sample (as determined by DEP).
[5] All DISTRIBUTION samples taken and analyzed shall be included in determining compliance, even if that number is greater than the minimum required. If you collect repeat coliform samples within the distribution system during the month, you must also measure for a detectable chlorine residual at the repeat sites and include these samples. DO NOT include raw water (RW) or plant tap (PT) chlorine residual samples in your calculations.

III. COMPLIANCE REPORTING:

Total # of Samples Collected for Month[5]: 2 | Average Chlorine Result of All Samples For Month[6] (mg/L): 0.23

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

Primary Certified Operator Signature and Date: James J Mercer 6.8.2020

DEP Review Status:	☐ Accepted ☐Disapproved	Review Comments:	

Massachusetts Department of Environmental Protection - Drinking Water Program

CHEMICAL ADDITION REPORT - 310 CMR 22.15(4) Chemical Addition Reporting Requirements

C-ADD

I. PWS Information - Refer to "MassDEP Chemical Addition Report Guidance and Instructions" for details.

PWS Name[1]:	Housatonic Water Works	Town[1]:	Great Barrington	PWSID[1]:	1113003
Treatment Plant Name[2]:	Long Pond	Treatment Plant ID#[2]:	1113003-01T	Reporting Month[3]:	June
				Reporting Year[3]:	2020

II. Chemical & Operational Information

Chemical Name[4]:	sodium hypochlorite	Purchased Strength (%)[8]:	12.5	Target Range/min[12]:	≥ 0.5 mg/L at POE
Manufacturer[5]:	Slack Chemical Company, Inc. (Carthage, NY)	Purchased Density (lbs/gal)[9]:	9.97	Target Dose (mg/L)[13]:	NA
Product Name[6]:	sodium hypochlorite (12.5% bleach)	Dilution Factor or Mix Ratio[10]:	1.00	Alarm Setting (low)[14]:	0.60
Reason for Adding Chemical[7]:	Disinfection - Segment #1 and Segment #2	NSF Approved (Y/N)[11]:	Y	Alarm Setting (high)[14]:	2.50
				Date of last anti-siphon valve inspection/replacement[15]:	NA

III. Daily Reporting

Note: Water quality data reported on C-ADD form may also be considered for compliance purposes.

Day	Treated Water Volume (gal)[16]	Measured Chemical Used		Calculated Chemical Used (lbs)[16]	Chemical Dosage (mg/L)[16]	Parameters Measured*, Results, Units and Method - (G)rab or Continuous (A)nalyzer[23]			O&M Notes/Comments[22]
		Volume (gal/day)[17]	Weight (lbs/day)[17]			a. chlorine residual at end of Segment 1 (mg/L) via Kuntze analyzer	b. chlorine residual at end of Segment 2 POE (mg/L) via Kuntze analyzer	c.	PWS note any equipment breakdown, off-line status, changes in purchased product or batch mixing day, measured parameters or dosages that are out of target range, etc.
						☐G ☑A	☐G ☑A	☐G ☐A	
1	110021	2.3		2.87	3.1	1.68	1.41		
2	107436	2.3		2.87	3.2	1.39	1.38		
3	115990	2.3		2.87	3.0	2.07	1.48		
4	136606	2.3		2.87	2.5	2.01	1.39		
5	115306	2.3		2.87	3.0	1.57	1.35		
6	115294	2.3		2.87	3.0	1.46	1.28		
7	113051	2.3		2.87	3.0	2.14	1.34		
8	121256	2.3		2.87	2.8	1.54	1.45		
9	133900	2.3		2.87	2.6	1.50	1.36		
10	127423	2.3		2.87	2.7	1.94	1.25		
11	108346	2.3		2.87	3.2	2.13	1.12		
12	116413	2.3		2.87	3.0	1.52	1.15		
13	114530	2.3		2.87	3.0	1.89	1.24		
14	124210	2.3		2.87	2.8	1.97	1.30		
15	129189	2.3		2.87	2.7	1.71	1.30		
16	126570	2.3		2.87	2.7	1.45	1.30		
17	135823	2.3		2.87	2.5	1.71	1.17		
18	122676	2.3		2.87	2.8	1.74	1.10		
19	134648	2.3		2.87	2.6	1.44	1.16		
20	151483	2.3		2.87	2.3	1.46	1.08		
21	149539	2.3		2.87	2.3	1.13	1.49		
22	156135	2.3		2.87	2.2	1.02	1.22		
23	142513	2.3		2.87	2.4	1.02	1.51		
24	113370	2.3		2.87	3.0	1.18	1.30		
25	128707	2.3		2.87	2.7	2.75	1.01		
26	125827	2.3		2.87	2.7	0.90	1.02		
27	111984	2.6		3.24	3.5	0.29	1.90		
28	108196	2.6		3.24	3.6	1.71	1.40		
29	104782	2.6		3.24	3.7	2.54	1.41		
30	101638	2.3		2.87	3.4	3.65	1.84		
Total	3702839	69.9		Indicate total # of days the residual was off-target for the month (from Section II) Monthly Target Summary[23]:					0

*Describe result (daily average, min/max, instantaneous reading, grab, etc.) sample location (entry-point, before/after filters, tanks, etc.) and instrumentation used (SCADA, chart recorder, test kit, bench, etc.)[20]

a.	Chlorine is monitored continuously via a Kuntze analyzer. Daily chlorine residual values provided are for the average value during the hour of peak hourly flow.
b.	Chlorine is monitored continuously via a Kuntze analyzer. Daily chlorine residual values provided are for the average value during the hour of peak hourly flow.
c.	

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Person - Signature & Date[24]:	James J Mercer 7/8/2020
Print Name:	James J. Mercer
Title:	Primary Certified Operator

Submit to your MassDEP Regional Office within 10 days after the reporting month.

Massachusetts Department of Environmental Protection - Drinking Water Program

TURBIDITY DATA SHEET FOR FILTERED SYSTEMS

SWTR F

PWS INFORMATION

PWSID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Plant Name: Long Pond Reporting Period → Month: June Year: 2020

DAILY REPORTING

Filtered Water Turbidity Measured: (check only one) ☑ Combined Filter Effluent ☐ Individual Filter Effluent[1] ☐ Clearwell ☐ Plant Effluent

Filtration Technology:			
☐ Conventional ☐ Direct ☐ Alternative	Monthly Turbidity (95%) NTU Limit = 0.3	Max Day Turbidity NTU Limit = 1
☑ Slow Sand ☐ Diatomaceous Earth	Monthly Turbidity (95%) NTU Limit = 1	Max Day Turbidity NTU Limit = 5

Day	Max Filtered Water Turbidity Result[2] (NTU)	Number of Turbidity Measurements[3]	Number of Turbidity Measurements ≤ Monthly (95%) NTU Limit[4]	Number of Turbidity Measurements > Max Day NTU Limit[5]
1	0.043	6	6	0
2	0.043	6	6	0
3	0.049	6	6	0
4	0.047	6	6	0
5	0.040	6	6	0
6	0.055	6	6	0
7	0.050	6	6	0
8	0.043	6	6	0
9	0.041	6	6	0
10	0.047	6	6	0
11	0.048	6	6	0
12	0.049	6	6	0
13	0.043	6	6	0
14	0.042	6	6	0
15	0.041	6	6	0
16	0.041	6	6	0
17	0.041	6	6	0
18	0.044	6	6	0
19	0.039	6	6	0
20	0.048	6	6	0
21	0.054	6	6	0
22	0.042	6	6	0
23	0.043	6	6	0
24	0.040	6	6	0
25	0.054	6	6	0
26	0.041	6	6	0
27	0.041	6	6	0
28	0.040	6	6	0
29	0.045	6	6	0
30	0.041	6	6	0
Totals:		180	180	% Turbidity Meeting 95% Limit B/A x 100 % = X
		A	B	(Enter on SWTR – Form G)

1. May be used by systems serving less than 10,000 persons, subject to DEP approval.
2. Enter the Maximum Filtered Water Turbidity Result recorded each day, at the 4th hour or other approved interval.
3. Enter the Total # of Turbidity measurements taken for each day. Measurements must be taken at a minimum of 4-hour intervals (i.e. 6 readings per day). For continuous monitors count each 4-hour period as 1 measurement. Record the actual turbidity result at the specified interval of time. Do not average turbidity measurements. If DEP approved, 15-minute readings (i.e. 96 readings per day) may be submitted. Filtered turbidity data must be kept on file for DEP review.
4. Out of the # of turbidity measurements taken and recorded in the previous column, enter the number of turbidity measurements that were less than or equal to the Monthly (95%) NTU Limit for the filtration technology used.
5. If at any at time the filtered turbidity Max Day NTU Limit is exceeded, the DEP must be notified no later than the end of the next business day. For each exceedance, record the turbidity value(s) and date(s) on SWTR - Form G

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Mer

Date: 7/8/2020 Title: Primary Certified Operator

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program

CT DETERMINATION FOR FILTERED SYSTEMS

More than 1 Disinfectant / Sampling Point

SWTR H

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Facility Name: Long Pond | Reporting Period: Month: June Year: 2020

II. DAILY REPORTING:

	Disinfectant Sequence (CT calc / CT 99.9)						Inactivation Ratio SUM[1] (CT calc / CT 99.9)	Inactivation Ratio[2] ≤ 1.0
Day	1st	2nd	3rd	4th	5th	6th		
1	10.1	42.2					52.3	
2	9.2	40.9					50.1	
3	12.6	42.2					54.8	
4	13.4	34.0					47.3	
5	10.6	44.3					54.9	
6	9.1	30.6					39.7	
7	14.6	39.1					53.6	
8	11.0	37.5					48.4	
9	10.9	33.7					44.7	
10	14.1	38.5					52.7	
11	13.5	36.0					49.5	
12	11.9	39.8					51.7	
13	12.2	40.5					52.7	
14	15.0	36.4					51.4	
15	11.6	37.9					49.4	
16	11.3	33.4					44.7	
17	13.8	27.8					41.6	
18	13.0	30.3					43.3	
19	10.9	34.2					45.1	
20	10.5	27.7					38.2	
21	10.0	36.7					46.7	
22	9.2	30.8					40.1	
23	9.5	43.5					53.0	
24	11.0	54.9					65.9	
25	21.0	35.5					56.5	
26	8.9	39.5					48.4	
27	3.2	71.6					74.8	
28	16.7	64.2					80.9	
29	20.4	66.7					87.0	
30	24.8	91.5					116.4	

1. To determine SUM (CT calc/CT 99.9), add (CT calc/CT 99.9) values from the first disinfectant sequence to the last from SWTR - Form I.
2. The inactivation ratio (CT calc / CT 99.9) is determined before or at the first customer during peak hourly flow and if the SUM (CT calc / CT 99.9)<1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved. A "Yes" response above indicates a SWTR Treatment Technique violation.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Mun Date: 7·8·2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

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Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS

SWTR
I

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Facility Name: Long Pond Reporting Period: Month: June Year: 2020

Disinfectant[1]: Segment 2 - storage tank effluent (POE) Sequence of Disinfectant Application: ☐ 1st ☑ 2nd ☐ 3rd ☐ 4th ☐ 5th ☐ 6th

II. DAILY REPORTING: All measurements taken during peak hourly flow.

Day	Peak Hourly Flow[2] (gpm)	Disinfectant Concentration[3] C (mg/L)	Disinfectant Contact Time[4] T (min.)	CT Calc (=C x T)	pH[5]	Water Temp[6] (°C)	CT[7] 99.9	Inactivation Ratio[8] (CT calc / CT 99.9)	Inactivation Ratio[9] <1.0
1	118	1.41	793	1117	7.34	18.0	26	42.2	see Form H
2	123	1.38	773	1065	7.34	18.2	26	40.9	see Form H
3	124	1.48	750	1108	7.35	18.3	26	42.2	see Form H
4	146	1.39	625	870	7.33	18.4	26	34.0	see Form H
5	117	1.35	819	1107	7.33	18.7	25	44.3	see Form H
6	161	1.28	589	755	7.33	18.8	25	30.6	see Form H
7	127	1.34	728	974	7.34	18.8	25	39.1	see Form H
8	140	1.46	640	928	7.35	19.1	25	37.5	see Form H
9	157	1.36	597	813	7.34	19.3	24	33.7	see Form H
10	127	1.25	735	920	7.34	19.3	24	38.5	see Form H
11	124	1.12	734	821	7.32	19.6	23	36.0	see Form H
12	120	1.15	781	913	7.34	19.7	23	39.8	see Form H
13	124	1.24	752	930	7.35	19.9	23	40.5	see Form H
14	140	1.30	640	830	7.36	20.1	23	36.4	see Form H
15	131	1.30	663	858	7.35	20.2	23	37.9	see Form H
16	154	1.30	583	755	7.36	20.3	23	33.4	see Form H
17	171	1.17	518	608	7.35	20.5	22	27.8	see Form H
18	149	1.10	587	646	7.35	20.8	21	30.3	see Form H
19	148	1.16	615	714	7.35	21.2	21	34.2	see Form H
20	174	1.08	530	574	7.34	21.1	21	27.7	see Form H
21	173	1.49	511	758	7.33	21.8	21	36.7	see Form H
22	182	1.22	492	602	7.32	22.1	20	30.8	see Form H
23	161	1.51	566	855	7.34	22.6	20	43.5	see Form H
24	123	1.30	788	1023	7.34	23.1	19	54.9	see Form H
25	143	1.01	612	621	7.35	23.5	18	35.5	see Form H
26	134	1.02	683	693	7.35	23.5	18	39.6	see Form H
27	127	1.90	732	1393	7.40	23.7	19	71.6	see Form H
28	114	1.40	835	1167	7.40	23.9	18	64.2	see Form H
29	109	1.41	870	1230	7.41	23.8	18	66.7	see Form H
30	94	1.84	979	1797	7.43	23.7	20	91.5	see Form H

Notes:

1.Use a separate form for each disinfectant/sampling point. Enter disinfectant and sequence position, e.g. "ozone/1st" or "ClO$_2$/3rd". If more than one disinfectant sampling point, you must also complete SWTR Form H and calculate the cummulative inactivation ratio SUM (CT calc/CT 99.9) to determine compliance.
2. Peak hourly flow means the highest pumpage *hour* during the day, not the absolute peak flow at any instant.
3. The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
4. The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow. The time *T* used in calculating *CT*, is the time it takes the water, during peak hourly flow, to move between the point of disinfection application and the point at which the residual is measured.
5. If the system uses free chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
6. The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point during peak hourly flow
7. Use Inactivation Tables at 310CMR 22.20A Tables 1.1 - 1.6, 2.1 and/or 3.1
8. The inactivation ratio is determined before or at the first customer during peak hourly flow and if the ratio is < 1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved.Note: Add log credits for watershed & filtration to the numerator of inactivation ratio.
9. A "Yes" response above indicates a SWTR Treatment Technique violation (Tier 2).

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my

PWS Authorized Signature: James J Mercer Date: 7/8/2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

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Massachusetts Department of Environmental Protection - Drinking Water Program
COMPLIANCE DETERMINATION FOR FILTERED SYSTEMS - Monthly Report

SWTR G

I. PWS INFORMATION

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Plant Name: Long Pond Reporting Period: Month: June Year: 2020

II. TURBIDITY PERFORMANCE CRITERIA

1. Monthly Turbidity (95%) NTU Limit - The turbidity level of a system's filtered water must be less than or equal to the Montly Turbidity NTU Limit in at least 95% of the measurements taken each month for the filtration technology used, otherwise SWTR TT Violation (Tier 2)

180	= A	Total # of filtered water turbidity measurements for month (SWTR - Form F)
180	= B	Total # of filtered water turbidity measurements less than or equal to the specified limits for the filtration technology used. (SWTR - Form F)
100.00%	= (B/A) X 100	The percentage of turbidity measurements meeting the Monthly Turbidity 95% NTU Limit.

2. Max Day NTU Limit - The turbidity level of a system's filtered water must at no time exceed the Max Day NTU Limit for the filtration technology used, otherwise SWTR TT Violation (Tier 2).

Record the date and turbidity value for any measurements exceeding the Max Day NTU. ☑ Check box if "None"

Date	Value	Date Reported to DEP	Date	Value	Date Reported to DEP

For each day the Max Day NTU limit is exceeded, the DEP must be notified by the end of the next business day. SWTR TT Violation (Tier 2). If DEP is not consulted within 24 hours then it is a SWTR TT (Tier 1) violation requiring public notification within 24 hours.

III. DISINFECTION PERFORMANCE CRITERIA

1. Point-of-Entry Minimum Disinfectant Residual Criteria - Residual Disinfectant concentration cannot be <0.2 mg/L for more than 4 hours. SWTR TT Violation (Tier 2).

Minimum Disinfection Residual at Point-of-Entry to Distribution System

Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L
1	1.32	6	1.20	11	1.08	16	1.20	21	0.96	26	0.80	31	
2	1.30	7	1.14	12	1.09	17	1.12	22	1.07	27	1.01	Residual Measured	
3	1.29	8	1.26	13	1.21	18	1.04	23	1.20	28	0.99	☑	Free Cl_2
4	1.32	9	1.31	14	1.20	19	1.02	24	1.15	29	1.30	☐	Total Cl_2
5	1.24	10	1.16	15	1.21	20	1.05	25	0.84	30	1.51	☐	Combined Cl_2

If at any time the residual falls below 0.2 mg/L in the water entering the distribution system, the supplier of water must notify the Department as soon as possible, but no later than by the end of the next business day. The supplier of water also must notify the Department by the end of the next business day whether or not the residual was restored to at least 0.2 mg/L within four hours.

Date(s) Residual < 0.2 mg/L	Duration of Low Level (hrs.)	Date Reported to DEP	Date(s) Residual < 0.2 mg/L	Duration of Low Level (hrs.)	Date Reported to DEP

2. Distribution System Disinfectant Residual Criteria - Residual Disinfectant concentration (V) cannot be undetectable in greater than 5% of samples in a month, for any two consecutive months. SWTR TT Violation (Tier 2). Chlorine residuals must be measured at the same time and location as total coliform *distribution routine & repeat* samples. If no residual is detected, an HPC sample must be collected and analyzed.

Total # of HPC samples taken during month: 0 # HPC sites > 500/mL: # HPC sites ≤ 500/mL:

2	= a	# of sites where Cl_2 residual measurements were made, whether a residual was detected or not (should be the same # of sites reported on your monthly RTCR Cl_2 residual report)
0	= b	# of sites HPC samples were analyzed *instead* of Cl_2 residual measurements
0	= c	# of sites where no Cl_2 residual was detected and no HPC sample was analyzed
0	= d	# of sites where no Cl_2 residual was detected and HPC > 500 CFU/mL
0	= e	# of sites where no Cl_2 residual measurement was made and HPC > 500 CFU/mL

Water in the distribution system with a heterotrophic bacteria concentration (HPC) less than or equal to 500/mL, is deemed to have a detectable disinfectant residual for purposes of determining compliance with this requirement. When analyzed, report HPC results on your monthly DEP Bacteriological Report.

$V = \frac{(c + d + e)}{(a + b)} \times 100$

This Month % V = 0.00% Previous Month % V = Is V > 5% for 2 months? No

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Meiers Date: 7/8/2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

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Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS

SWTR
I

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: 0.0821705

Treatment Facility Name: Long Pond Reporting Period: Month: June Year: 2020

Disinfectant[1]: Segment 1 - post clearwell (tap in 200-ft long pipe) Sequence of Disinfectant Application: ☑ 1st ☐ 2nd ☐ 3rd ☐ 4th ☐ 5th ☐ 6th

II. DAILY REPORTING: All measurements taken during peak hourly flow.

Day	Peak Hourly Flow[2] (gpm)	Disinfectant Concentration[3] C (mg/L)	Disinfectant Contact Time[4] T (min.)	CT Calc (=C x T)	pH[5]	Water Temp[6] (°C)	CT[7] 99.9	Inactivation Ratio[8] (CT calc / CT 99.9)	Inactivation Ratio[9] <1.0
1	152	1.68	140	235	6.92	18.1	23	10.1	see Form H
2	152	1.39	149	206	6.92	18.0	23	9.2	see Form H
3	152	2.07	150	310	6.93	18.0	25	12.6	see Form H
4	152	2.01	160	321	6.93	18.2	24	13.4	see Form H
5	152	1.57	151	238	6.89	18.4	22	10.6	see Form H
6	152	1.46	136	199	6.89	18.6	22	9.1	see Form H
7	152	2.14	160	342	6.91	18.7	24	14.6	see Form H
8	152	1.54	151	233	6.90	19.1	21	11.0	see Form H
9	152	1.50	152	228	6.89	19.2	21	10.9	see Form H
10	152	1.94	161	312	6.90	19.2	22	14.1	see Form H
11	152	2.13	138	295	6.90	19.6	22	13.5	see Form H
12	152	1.52	158	241	6.89	19.6	20	11.9	see Form H
13	152	1.89	136	257	6.91	19.8	21	12.2	see Form H
14	152	1.97	160	316	6.91	20.0	21	15.0	see Form H
15	152	1.71	137	235	6.90	20.0	20	11.6	see Form H
16	152	1.45	151	220	6.89	20.1	19	11.3	see Form H
17	152	1.71	161	275	6.89	20.2	20	13.8	see Form H
18	152	1.74	148	257	6.89	20.4	20	13.0	see Form H
19	152	1.44	142	204	6.88	20.7	19	10.9	see Form H
20	152	1.46	132	193	6.88	20.9	18	10.5	see Form H
21	152	1.13	148	167	6.86	21.7	17	10.0	see Form H
22	152	1.02	145	149	6.89	22.2	16	9.2	see Form H
23	152	1.02	144	147	6.89	22.8	15	9.5	see Form H
24	152	1.18	145	171	6.91	23.1	16	11.0	see Form H
25	152	2.75	142	390	6.95	23.4	19	21.0	see Form H
26	152	0.90	146	132	6.94	23.4	15	8.9	see Form H
27	152	0.29	158	46	6.98	23.1	14	3.2	see Form H
28	152	1.71	159	273	6.95	23.5	16	16.7	see Form H
29	152	2.54	148	376	6.97	23.2	18	20.4	see Form H
30	152	3.65	146	532	7.01	23.2	21	24.8	see Form H

Notes:

1. Use a separate form for each disinfectant/sampling point. Enter disinfectant and sequence position, e.g. "ozone/1st" or "ClO_2/3rd". If more than one disinfectant sampling point, you must also complete SWTR Form H and calculate the cummulative inactivation ratio SUM (CT calc/CT 99.9) to determine compliance.
2. Peak hourly flow means the highest pumpage *hour* during the day, not the absolute peak flow at any instant.
3. The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
4. The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow. The time 'T' used in calculating 'CT', is the time it takes the water, during peak hourly flow, to move between the point of disinfection application and the point at which the residual is measured.
5. If the system uses free chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
6. The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point during peak hourly flow.
7. Use Inactivation Tables at 310CMR 22.20A Tables 1.1 - 1.8, 2.1 and/or 3.1
8. The inactivation ratio is determined before or at the first customer during peak hourly flow and if the ratio is < 1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved Note: Add log credits for watershed & filtration to the numerator of inactivation ratio.
9. A "Yes" response above indicates a SWTR Treatment Technique violation (Tier 2).

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Mears Date: 7·8·2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

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Massachusetts Department of Environmental Protection - Drinking Water Program
CHLORINE/CHLORAMINES - MONTHLY REPORT

Cl

I. PWS INFORMATION:

MONTH: June | YEAR: 2020

PWS ID #: 1113003 | PWS Name: Housatonic Water Works | City/Town: Great Barrington | Class: ☑CM ☐TNC ☐NC

II. ANALYTICAL INFORMATION: Refer to your MassDEP Coliform Sampling Plan and/or DBPR monitoring plan to help complete this section.

Type Measured: ☑ Free Chlorine ☐Total Chlorine ☐ombined Chlorine Analytical Method: SM 4500-Cl: 86 ☐ D ☐ E ☐ F ☐ G ☐ H I ASTM D1253- ☐

Notes:

DEP APPROVED SAMPLE SITE INFORMATION[1]			CHLORINE RESULT[2] (mg/L)	COLLECTION AND ANALYSIS[3]:		COLLECTED AND ANALYZED BY:
DEP Sample Type[1,4]	DEP Location Code #[1]	DEP Approved SAMPLE LOCATION[1]		DATE	TIME	
RS	EP1	Point of Entry	1.10	6/17/2020	14:26	Tim Vreeland
RS	001	Pleasant and Main	0.41	6/17/2020	14:50	Tim Vreeland
RS	002	Brookside School	0.37	6/17/2020	14:40	Tim Vreeland

[1] DEP Sample Type, Location Code#, and DEP Approved Sample Site Location must correspond to the same information on your DEP Total Coliform Sampling Plan

[2] SWTR systems: HPC must be collected at distribution sites with zero chlorine residual and results reported on the DEP Bacteriological Monthly Report form and on the appropriate SWTR Form.

[3] Collection and Analysis: Chlorine residual shall be measured in the field (immediately upon collection) at the same time and location in the distribution system as total coliforms are sampled. Record ND values as 0 (zero).

[4] Sample Type: RS-Routine Distribution Sample, RO-Original Site Repeat, UR-Upstream Repeat, DR-Downstream Repeat, AR-Additional Repeat, or SS-Special Sample (as determined by DEP).

[5] All DISTRIBUTION samples taken and analyzed shall be included in determining compliance, even if that number is greater than the minimum required. If you collect repeat coliform samples within the distribution system during the month, you must also measure for a detectable chlorine residual at the repeat sites and include these samples. DO NOT include raw water (RW) or plant tap (PT) chlorine residual samples in your calculations.

III. COMPLIANCE REPORTING: Total # of Samples Collected for Month[5]: 2 | Average Chlorine Result of All Samples For Month[5] (mg/L): 0.39

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I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

Primary Certified Operator Signature and Date: 7.8.2020

DEP Review Status:	☐ Accepted ☐Disapproved	Review Comments:	

Gmail James J. Mercer <housatonicwater@gmail.com>

Response to MASSDEP 8/12/20 letter

1 message

James J. Mercer <housatonicwater@gmail.com> Thu, Aug 20, 2020 at 6:06 PM
To: "Doherty, Deirdre (DEP)" <deirdre.doherty@state.ma.us>, "Harrington, Brian D (DEP)" <brian.d.harrington@state.ma.us>, Rebecca Jurczyk <rjurczyk@townofgb.org>, Jim Ericson <ericson@lenard-eng.com>, Rich Gullick <wcs.llc@comcast.net>, "Cox, Jr., Robert D." <RCOX@bowditch.com>
Bcc: Mark Pruhenski <MPruhenski@townofgb.org>, "William E. Martin" <wem@martinoliveira.com>

Hi,

Please see the attached response. Thank you.

Jim

Housatonic Water Works Company

80 Maple Avenue, Suite1
Great Barrington, Massachusetts 01230
(413) 528-1780 phone
(413) 528-3024 fax
www.housatonicwater.com

The information contained in this email message may be privileged, confidential, and protected from disclosure. Any unauthorized use, printing, copying,disclosure, dissemination of or reliance upon this communication by persons other than the intended recipient may be subject to legal restriction or sanction. If you think that you have received this E-mail message in error, please reply to the sender and delete this email promptly.

MADEP Response to08122020.pdf
1460K

HOUSATONIC WATER WORKS COMPANY
SINCE 1897

August 20, 2020

VIA EMAIL: *deirdre.doherty@state.ma.us*

Ms. Deirdre Doherty
Drinking Water/Municipal Services Chief
Bureau of Water Resources
Massachusetts Department of Environmental Protection (MassDEP)
436 Dwight Street
Springfield, MA 01103

RE: Housatonic Water Works Company
PWSID #1113003
Response to MassDEP 8/12/20 letter

Dear Ms. Doherty:

Below are responses to your letter of August 12, 2020 compiled with the assistance of company consultants.

1. **MassDEP requires Housatonic to continue Special Monitoring as required in August 2018 and Housatonic may continue that monitoring at alternate locations approved in writing by MassDEP.**

   Response: Sampling for the special monitoring program restarted on August 5, 2020, and the results were provided to MassDEP.

2. **MassDEP requires HWW to (1) provide a written justification of this distribution residual goal, providing the operational basis for this target and detailing both the positive and negative impacts of such operations, including the potential for discolored water; (2) identify any seasonal adjustments HWW has made; and (3) provide the Operation and Maintenance manual pages that reflect the goal, any seasonal adjustments in operation and the operational tasks to achieve the stated distribution residual goal.**

   Response:

   1) Disinfection is of utmost importance. Killing pathogenic microorganisms is the top priority for water treatment.
      - Maintaining a chlorine residual of at least 0.2 mg/L in the far reaches of a distribution system is the standard minimum goal in the U.S. drinking water supply industry, and is our goal as well.

80 Maple Avenue, Suite 1, Great Barrington, MA 01230

Tel: 413.528.1780
Fax: 413.528.3024
E-mail: housatonicwater@gmail.com
www.housatonicwater.com

- Operationally, if 0.2 mg/L is a minimum goal in the distribution system, then one would need to target a range higher than that to provide a factor of safety in the outcome. Further, for HWW there is a long lag time between changes in chlorine dose at the water treatment plant and when those changes are observed near the ends of the distribution system (including about 10 days of time in the one million-gallon storage tank). We should not set too low a target because of the long time between a change in dose and a resulting response impact in the distribution system.
- HWW's target range for chlorine residual in the distribution system is very common for U.S. water systems, as is shown by the results of the 2017 Water Utility Disinfection Survey Report published by the American Water Works Association (AWWA, April 2018). Figure 27 from that report, copied below, shows a majority of the U.S. water utilities surveyed had target minimum chlorine residuals for their distribution systems in the range of 0.2 to 0.5 mg/L (green outline added for emphasis).

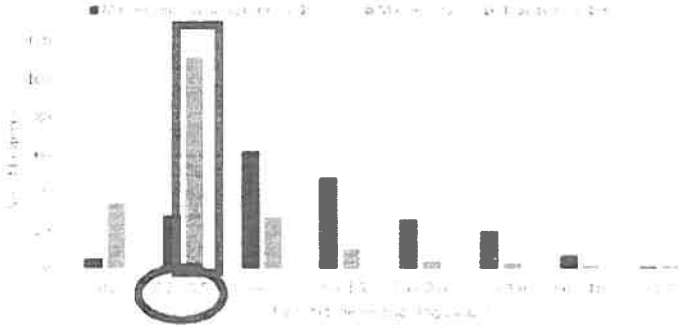


Figure 27 Target chlorine residuals for secondary disinfection (n=197)

Source: 2017 Water Utility Disinfection Survey Report, published by AWWA (April 2018)

  - The distribution system chlorine residuals were higher in summer 2019 than in summer 2020, yet no similar colored water incident occurred in 2019. Also, there are areas with higher chlorine levels closer to the water treatment plant that have not experienced colored water.
  - HWW's water chemistry is currently being studied by the Cornwell Engineering Group, experts in corrosion control chemistry and treatment.
  - Housatonic Water maintains that distribution system chlorine residuals of 0.2 to 0.5 mg/L are appropriate for secondary disinfection, and we question MassDEP's characterization that *"the high chlorine residuals are likely related to discolored water experienced by HWW customers."*

2) Specific chlorine dosing adjustments were made on 5/20/20, 6/27/20, 6/30/20, and 7/20/20.
3) See attached excerpt from our Operation and Maintenance manual (Attachment A).

3. **MassDEP requires HWW to (1) provide the date in June 2020 of the instrument representative's calibration and (2) provide documentation in the form of a copy of its instrument calibration/log book (or other similar record) documenting each verification and calibration of its equipment for the months of March 2020 through July 2020.**

   Response:

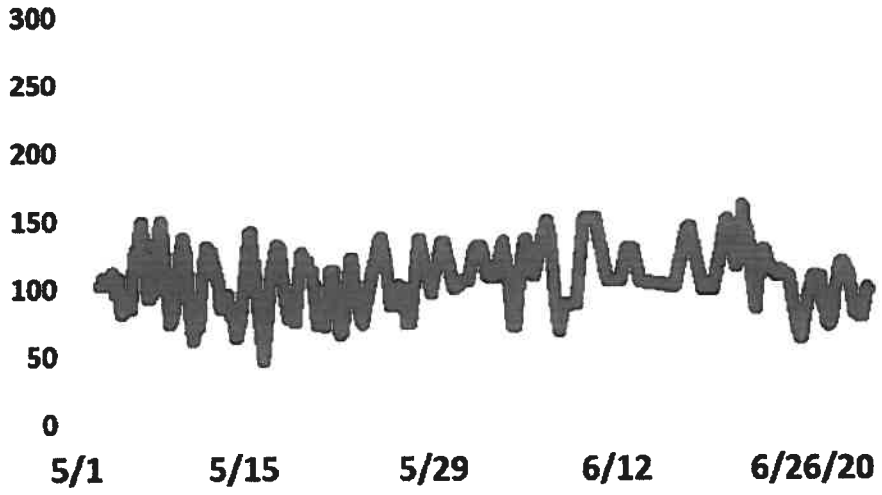
   1) The factory representative for Kuntze Meters (pH, chlorine, temperature) conducted instrument inspections and calibrations on May 7, 2020 and July 27, 2020.
   2) We perform verification checks approximately biweekly, and more frequently when something seems unusual. We take some notes regarding the readings, and are in the process of improving our recordkeeping for instrument verifications and calibrations.

4. **MassDEP requires HWW to (1) explain in writing the wide variation of Segment 1 chlorine concentrations while other factors did not vary so greatly; (2) provide a written evaluation on (a) the effect of reducing chlorine used to meet SWTR contact time requirements and (b) HWW's rational for its SWRR contact time practices; (3) explain in detail the hours of water treatment plant operation (i.e. from 8a.m.-4p.m.) and (4) provide the flow rate into and out of the clearwell (Segment 1) for the months of May through June 2020.**

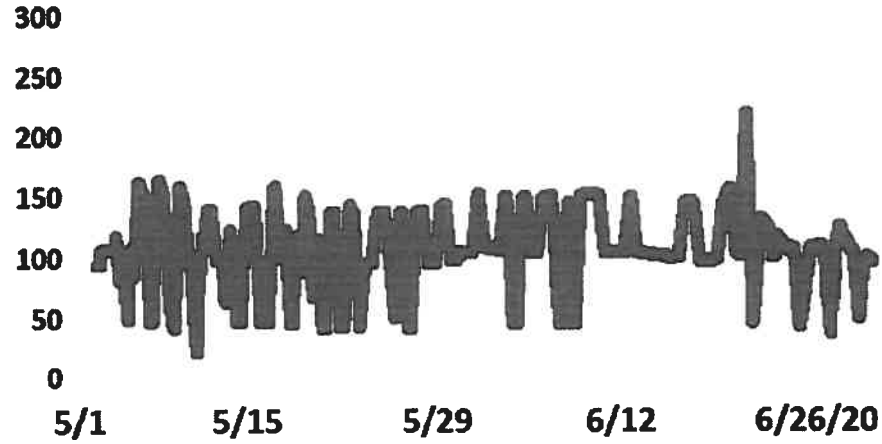
   Response:

   1) The Segment 1 chlorine residual measurements have varied more than expected, and at times so has the Segment 2 chlorine residual. The wide variation may be due to issues with the online instrumentation (Kuntze monitors). HWW identified irregularities in the Kuntze monitor results, and the factory representative was brought in to evaluate the situation and make necessary adjustments, including replacement of a defective cable. Note that the finished water should have a more steady chlorine residual than the Contact Tank effluent as a result of mixing that occurs in the storage tank due to non-plug flow conditions.
   2) The chlorine dose could be reduced and still meet the primary disinfection requirements, but HWW's current chlorine dosing is appropriate because of the need to maintain an adequate residual in the distribution system (secondary disinfection). Finished water residuals are mostly in the range of 1.0 to 1.5 mg/L, and distribution system residuals have been ≤ 0.4 mg/L for a long time. The chlorine residual range has both tightened and been lowered over time, and HWW is satisfied with the recent residuals measured in the distribution system. Additional information about HWW's disinfection strategy is provided in the Response to Question #2 above.
   3) The water treatment plant is operated continuously, 24 hours per day.
   4) SCADA data are available for the filter effluent flow (contact tank influent) and the contact tank effluent flow (what is pumped up to the 1-MG storage tank). Shown below are plots of values for both the filter effluent flow and contact tank effluent flow.

filter effluent flow (gpm), 10-min. running avg.



Contact Tank effluent flow (gpm), 10-hr running avg.



5) MassDEP requested clarification about the "total treated water" reported on the ChemAdd form. That is measured for water entering the distribution system after Segment 2 (Point of Entry, POE), and not for water from Segment 1 where the chlorine is added.

5. **MassDEP expects to find the procedures for flushing within its Operations and Maintenance manual at the next Sanitary Survey.**

   Response:

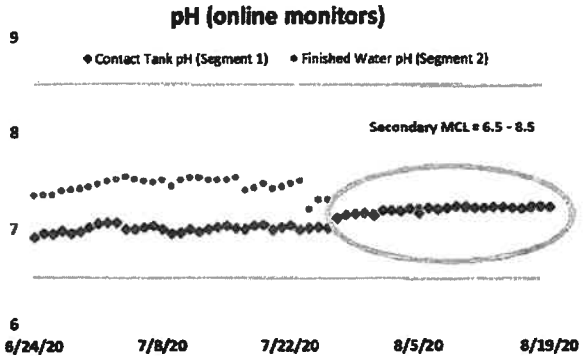
- HWW will include the flushing procedures in the O&M manual.

6. **MassDEP notes that the pH of the chlorinated water from Segment 1 appears to be altered by its passage through the new cement-lined piping between the treatment plant and concrete storage tank and the concrete material of the storage tank.**

Response:

- We recognized that the difference in pH values for the contact tank and finished water were too large to be practical (sometimes more than a full pH unit difference), and we believed this was indicative of calibration needs for the pH monitors (primarily for Segment #2), and not a matter of the pipe or tank material. Accordingly, the Kuntze factory representative was brought in to make necessary adjustments. As a result, it appears that the pH meter issues have now been solved, and that the previous pH data for Segment #2 are not very reliable.

  As shown in the plot below, the most recent calibration adjustments made on July 27, 2020 for both the finished water pH monitor and contact tank pH monitor brought these two pH levels into the same range (area of the green circle in the plot below).



7. **MassDEP requires that HWW provide MassDEP written log of water main or joint breaks and leaks and known service connection breaks and leaks between July 2018 and August 2020. For each event, HWW shall provide the date, the pipe/joint material, the location of the break/leak and what the specific problem was (break/leak/other).**

Response:

12/10/2018	Replaced hydrant replaced on Grove Street
11/19/2019	Replaced hydrant on Housatonic Court
11/25/2019	Service line repair with clamps on–224 Highland Street
7/13/2020	2" plastic line, Ramsdell Road, repaired with a clamp
8/9/2020	2" plastic line, Ramsdell Road, repaired with a clamp again

We understand the importance of the colored water problems, and are investigating potential solutions through our work with the Cornwell Engineering Group, Lenard Engineering, and Water Compliance Solutions, LLC. HWW held a public information meeting on August 13, 2020 to help inform our customers about our approaches for solving the colored water problems and we look forward to finding the correct solution.

Please let us know if you need anything further.

Sincerely,

James J. Mercer

Enclosure

cc:

Brian Harrington, MassDEP (e-copy)
Douglas Paine, MassDEP (e-copy)
Rebecca Jurczyk, GB BOH (e-copy)
James Ericson, P.E., Lenard Engineering, Inc. (e-copy)
Richard W. Gullick, PhD, Water Compliance Solutions, LLC (e-copy)
Robert D. Cox, Jr., Esq., Bowditch & Dewey, LLC (e-copy)

Filtered water flows by gravity to a two-cell, baffled contact basin located to the east of the filters. Just prior to exiting the operations building, the filtered water is disinfected by injecting sodium hypochlorite into the common header pipe. Hypochlorite is flow paced and pumped directly from a 350 gallon tank with no dilution at a dosage of approximately 1 mg/L. In 2010, Housatonic Water Works installed a 600-gallon containment structure for the tank. The dimensions of each cell of the contact basin are 46 feet by 15 feet for a total capacity of 125,000 gallons at the overflow elevation. Each cell has the identical configuration. A 39-foot long baffle wall is installed in each compartment, from floor to ceiling, creating a 7-foot wide channel. The filtered water pipe enters the contact basin 4-feet above the finished floor elevation. Six (6) feet away from the inlet pipe is a portal wall with 2-inch diameter holes drilled approximately 2 feet on center to a height of 6 feet. An identical portal wall is installed at the end of the other channel, located 6 feet from the end of the channel. The outlet pipe is installed 2 feet above the finished floor. There is no chemical addition for corrosion control. All piping that identifies direction of flow, raw water, filtered water and finished water has been marked.

Treated water flows by gravity back to the operations building where the high lift pumps discharge the treated water to the 1.0 MG storage tank installed to the east end above Long Pond. Water will flow from the high lift pumps into the top of the tank and exits the bottom into the distribution system based on system demand. The two pumps (one 20 horsepower and one 25 horsepower) operate in duty/stand-by mode and are controlled by the level in the storage tank.

All of the plant equipment can be operated manually or automatically based on tank levels. Normal operation, outside of filter cleanings, etc., is to have a single operator present two hours per day. The storage tank has both high and low level alarms. There is a continuous turbidity monitor for each slow sand filter, and a KUNTZE in-line chlorine/ Ph/ temperature analyzer records the chlorine concentration leaving the CT basin as it is pumped to the 1.0 MG tank(Segment 1) and a second KUNTZE analyzer records similar data on the water going to town (Segment 2). A high chlorine alarm set point is 1.50 mg/L with the low alarm set at 0.75 mg/L at Segment 2. There is no emergency generator. In the event of a power failure, there is no flow from the plant and all flow will come from the 1.0 MG storage tank only. Based on the 2019 ASR the average flow to the distribution system was 151,797 gallons per day, calculating to approximately 6.5 days of water storage at an average daily flow. It was noted that Housatonic Water Works formerly had a bypass at the filter plant which was used during periods of high demand. Water would bypass the filters during emergencies from the increase demand. In 1997, the by-pass was eliminated.

Flushing Protocols:

The company follows a hydrant flushing sequence for 79 hydrants and blow-offs throughout its system. This protocol has been followed for many years. The flushing is broken into three

Gmail James J. Mercer <housatonicwater@gmail.com>

Fwd: Rubin Mills

1 message

James J. Mercer <housatonicwater@gmail.com> Thu, Aug 27, 2020 at 10:42 AM
To: Charles Burger <cburger@townofgb.org>, Sean Van Deusen <svandeusen@townofgb.org>, Mark Pruhenski <MPruhenski@townofgb.org>

Hi,
Please be advised that at 8:15 this morning Hampshire Fire flowed over 500 gallons per minute through a standpipe at the Rubin Mill without HWWCO authorization which caused roily water throughout the entire town.

Sent from my iPhone

Begin forwarded message:

From: Christofer Palmer <CPalmer@hampshirefirellc.com>
Date: August 27, 2020 at 10:09:44 AM EDT
To: "housatonicwater@gmail.com" <housatonicwater@gmail.com>
Subject: Rubin Mills

Good morning Jim,

We performed a required five (5) year standpipe flow test per NFPA today, 08-27-2020 at Rubin Mills. We were unaware that we needed to contact the water department for this required five (5) year test. We have noted the account accordingly for any future Standpipe/hydrant testing where large amounts of water will be drained/flowed.

Going forward we will make sure to contact the water department and we apologize for any inconvenience this may have caused you or the town of Housatonic.

Thank you

Christofer

Please note our new address below

Hampshire
Fire Protection LLC

Service Manager

Christofer A. Palmer

Hampshire Fire Protection, LLC

20A Turnpike Industrial Road

Westfield, MA 01085

Office: 413-642-3287

Direct: 413-642-8477

Fax: 413-642-3792

www.hampshirefirellc.com

Gmail James J. Mercer <housatonicwater@gmail.com>

RE: Rubin Mills

1 message

Mark Pruhenski <MPruhenski@townofgb.org> Thu, Aug 27, 2020 at 12:03 PM
To: "James J. Mercer" <housatonicwater@gmail.com>

Thanks Jim. I shared it with the SB. We've been getting calls and emails all morning.

From: James J. Mercer <housatonicwater@gmail.com>
Sent: Thursday, August 27, 2020 10:42 AM
To: Charles Burger <cburger@Townofgb.org>; Sean Van Deusen <svandeusen@townofgb.org>; Mark Pruhenski <MPruhenski@Townofgb.org>
Subject: Fwd: Rubin Mills

Hi,

Please be advised that at 8:15 this morning Hampshire Fire flowed over 500 gallons per minute through a standpipe at the Rubin Mill without HWWCO authorization which caused roily water throughout the entire town.

Sent from my iPhone

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> **From:** Christofer Palmer <CPalmer@hampshirefirellc.com>
> **Date:** August 27, 2020 at 10:09:44 AM EDT
> **To:** "housatonicwater@gmail.com" <housatonicwater@gmail.com>
> **Subject: Rubin Mills**
>
> Good morning Jim,
>
> We performed a required five (5) year standpipe flow test per NFPA today, 08-27-2020 at Rubin Mills. We were unaware that we needed to contact the water department for this required five (5) year test. We have noted the account accordingly for any future Standpipe/hydrant testing where large amounts of water will be drained/flowed.

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Thank you

Christofer

Please note our new address below

Hampshire Fire Protection LLC

Service Manager

Christofer A. Palmer

Hampshire Fire Protection, LLC

20A Turnpike Industrial Road

Westfield, MA 01085

Office: 413-642-3287

Direct: 413-642-8477

Fax: 413-642-3792

www.hampshirefirellc.com

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

FW: Fresh water in a clean toilot

Inbox ×

Mark Pruhenski <MPruhenski@townofgb.org>
to Brian, Deirdre, me

Hello Deirdre and Brian,

I'm forwarding this along as discussed at our meeting a few weeks ago. This is a photo sent from one

Best, Mark

Mark Pruhenski
Town Manager
413-528-1619 ex 2
mpruhenski@townofgb.org

Pronouns: he/him/his

Town of Great Barrington
334 Main Street
Great Barrington MA 01230

The Secretary of State's office has determined that most e-mails to and from municipal offices and officials are public records. Consequently, confidentiality should not be expected.

Gmail

James J. Mercer <housatonicwater@gmail.com>

FW: Housatonic water photo from yesterday

1 message

Mark Pruhenski <MPruhenski@townofgb.org> Fri, Aug 28, 2020 at 9:44 AM
To: "Doherty, Deirdre (DEP)" <deirdre.doherty@state.ma.us>, "Harrington, Brian D (DEP)" <brian.d.harrington@state.ma.us>
Cc: "James J. Mercer" <housatonicwater@gmail.com>

-----Original Message-----
From: Kate Burke <kburke@Townofgb.org>
Sent: Friday, August 28, 2020 8:50 AM
To: Ed Abrahams <eabrahams@Townofgb.org>; Steve Bannon <sbannon@Townofgb.org>; Leigh Davis <LDavis@Townofgb.org>; Bill Cooke <bcooke@Townofgb.org>; Mark Pruhenski <MPruhenski@Townofgb.org>
Subject: Housatonic water photo from yesterday

This was sent to me by Gretchen and Reed Anderson that live on Park Street. They asked that I share it with you all.

Mark was any sort of code red contact made with customers after the flushing at Robin Mills?

2 attachments

IMG_2713.JPG
1781K

ATT00001.c
1K

ATTACHMENT B

DocuSign Envelope ID: 61BD891A-43CB-4FC8-9114-3B64A5526077

HOUSATONIC WATER WORKS AND CORNWELL ENGINEERING GROUP, INC.
Colored Water Treatment Desktop Study

OVERVIEW OF PROJECT

Housatonic Water Works (HWW) has in the past dealt with seasonal colored water complaints in addition to Lead and Copper Rule Action Level Exceedance issues. The objective of this study is to focus on colored water complaints and recommend treatment that will not negatively impact lead and copper corrosion in the system. This study will also allow identification and recommendations of appropriate water quality parameters (WQPs) to monitor, and what threshold values need to be maintained in order to establish and preserve optimal conditions. Also, any additional recommended testing (e.g., laboratory solubility studies) will be described. This project will evaluate iron/manganese corrosion issues, and will recommend remedial measures or additional efforts, as needed.

SCOPE OF SERVICES

ENGINEER will provide the deliverables in electronic format. HWW will comment on the draft documents, and the ENGINEER will review and submit final versions to HWW.

The proposed study described in this work authorization will include:

a. Review current treatment and distribution system and compile data: Review of current system infrastructure, operations, and water quality data. Evaluate additional data needs, and work with HWW to collect additional data as needed.

b. Develop Action Plan: Review system monitoring, operations, and regulatory correspondence. Evaluate data and applicability of alternate remedial measures. Develop an action plan which will include short-term and long-term recommendations to address system issues. Short-term solutions may include recommendations for additional studies.

c. Engineering Memorandum: The memorandum will provide a summary of findings including water characteristics and recommendations for future treatment, as well as future studies, if needed (e.g., laboratory solubility studies). This will also address any implications of the proposed changes for iron/manganese control on lead/copper CCT.

Task 1: Review current treatment and distribution system and compile data

Compile existing data, evaluate additional data needs, and work with HWW to collect additional information (WQ data, GIS files, operational data, etc.).

Task 2: Develop Action Plan

Evaluation of water mains and service line information available from HWW (GIS), and results of historical iron/manganese monitoring from treated water at the entry point and at locations in the distribution system. This may include evaluation of results from additional samples by HWW (including a list of recommended constituents, parameters, and locations). The findings will be summarized in the final project memorandum (see next item), which may include recommendations for system modifications or additional studies, as needed. Implications of

iron/manganese control strategies on simultaneous compliance (e.g., LCR, DBPR, RTCR, etc.) will be discussed and evaluated, and incorporated into Action Plan.

Task 3: Engineering Memorandum

The final project deliverable will include a hardcopy and electronic version of a memorandum describing the findings from this study. This memorandum will be sealed by a Professional Engineer licensed in the state of Massachusetts.

B. PROJECT SCHEDULE

The ENGINEER will begin the project as soon as possible. Project completion is targeted for September 30, 2020.

C. PAYMENT TO ENGINEER

Cornwell Engineering Group, Inc. (ENGINEER) shall be reimbursed by HWW on a Time and Materials basis for an amount not to exceed $5,000, unless adjusted at a later date for Task 1. After collecting data and other information in Task 1, a budget for Task 2 and 3 will be proposed and developed for HWW approval. Hourly rates shall include:

- D. Cornwell = $230/hr
- R. Brown = $165/hr
- Project engineer = $90/hr

D. DESIGNATION OF PROJECT MANAGERS

The Authority's Project Manager for this project will be James Mercer. The Engineer's representative (Project Manager) will be Richard Brown.

IN WITNESS WHEREOF, the parties hereto have caused their names to be set as of the day and year first above written.

Housatonic Water Works

DocuSigned by:
By: James Mercer
CC5DBBFA3A5041B...

Name: James J. Mercer
Title: Treasurer

Date: 8/10/2020

Cornwell Engineering Group, Inc.

By: _____

Name: ~~David A. Cornwell, PhD, P.E.~~
Title: ~~President~~
Richard A. Brown
Vice President

Date: August 10, 2020

ATTACHMENT C

Gmail

James J. Mercer <housatonicwater@gmail.com>

discuss Housatonic corrosion control

1 message

David A. Cornwell <DCornwell@cornwellinc.com> Thu, Jul 30, 2020 at 8:51 AM
To: "housatonicwater@gmail.com" <housatonicwater@gmail.com>, Richard Brown <RBrown@cornwellinc.com>, Savannah Mika <SMika@cornwellinc.com>, "wcs.llc@comcast.net" <wcs.llc@comcast.net>

David Cornwell is inviting you to a scheduled Zoom meeting.

Join Zoom Meeting

https://cornwellinc.zoom.us/j/7148875715

Meeting ID: 714 887 5715

One tap mobile

+13126266799,,7148875715# US (Chicago)

+19292056099,,7148875715# US (New York)

Dial by your location

+1 312 626 6799 US (Chicago)

+1 929 205 6099 US (New York)

+1 301 715 8592 US (Germantown)

+1 346 248 7799 US (Houston)

+1 669 900 6833 US (San Jose)

+1 253 215 8782 US (Tacoma)

Meeting ID: 714 887 5715

Find your local number: https://cornwellinc.zoom.us/u/acHH0g6dNt

invite.ics
3K

Gmail

James J. Mercer <housatonicwater@gmail.com>

RE: discuss Housatonic corrosion control

1 message

Richard Brown <RBrown@cornwellinc.com> Thu, Aug 6, 2020 at 1:58 PM
To: "James J. Mercer" <housatonicwater@gmail.com>
Cc: Savannah Mika <SMika@cornwellinc.com>

Please review and contact me if you want to discuss. Best place to phone is cell (757-288-7338)

Richard A. Brown, PE

Cornwell Engineering Group, Inc.

rbrown@cornwellinc.com

757-873-1534 x224 (757-288-7338 cell)

HWW Proposal - DRAFT 2020-08-05.docx
27K

HOUSATONIC WATER WORKS AND CORNWELL ENGINEERING GROUP, INC.
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IN WITNESS WHEREOF, the parties hereto have caused their names to be set as of the day and year first above written.

Housatonic Water Works

By: _____

Name: Jim Mercer
Title: Owner

Date: _____

Cornwell Engineering Group, Inc.

By: _____

Name: David A. Cornwell, PhD, P.E.
Title: President

Date: _____

Gmail **James J. Mercer <housatonicwater@gmail.com>**

RE: MassDEP correspondence on Water Quality 2020-08-12

1 message

David A. Cornwell <DCornwell@cornwellinc.com> Thu, Aug 13, 2020 at 11:06 AM
To: "wcs.llc@comcast.net" <wcs.llc@comcast.net>, Richard Brown <RBrown@cornwellinc.com>
Cc: "James J. Mercer" <housatonicwater@gmail.com>, "Savannah Mika <SMika@cornwellinc.com <Savannah Mika" <SMika@cornwellinc.com>

They are off base. If anything it might need be higher, but its too early in our analysis to know that

There used to be a rule of thumb based on some testing the steel corrosion increased above Cl of 0.4 mg/L. but the other mechanism of chlorine on iron pipes is to form hard Fe3+ turbucles that prevent discolored water.

Did we get any Fe/Mn data yet from the discolored water and from the POE?

From: wcs.llc@comcast.net <wcs.llc@comcast.net>
Sent: Thursday, August 13, 2020 10:41 AM
To: Richard Brown <RBrown@cornwellinc.com>
Cc: 'James J. Mercer' <housatonicwater@gmail.com>; David A. Cornwell <DCornwell@cornwellinc.com>; Savannah Mika <SMika@cornwellinc.com
Subject: FW: MassDEP correspondence on Water Quality 2020-08-12

Hi Richard,

MassDEP apparently doesn't like the 0.2 to 0.5 mg/L goal we set at Housatonic for the distribution system chlorine residual samples. They say in the attached letter that "*Given the unlined iron piping in HWW's distribution and current warm water temperatures, the upper range of the distribution chlorine residual goal: 0.3,0.4 and 0.5 mg/l is high. The high chlorine residuals are likely related to discolored water experienced by HWW customers*".

What do you think of that? Have you heard of cases where 0.3 or even 0.5 mg/L chlorine causes rusty or yellow water?

Thanks,

Rich

From: James J. Mercer <housatonicwater@gmail.com>
Sent: Wednesday, August 12, 2020 6:30 PM
To: Jim Ericson <ericson@lenard-eng.com>; Rich Gullick <wcs.llc@comcast.net>
Subject: Fwd: MassDEP correspondence on Water Quality 2020-08-12

Jim and Rich,

Are you available for a teleconference to discuss this matter Friday morning?

Jim

80 Maple Avenue, Suite1

Great Barrington, Massachusetts 01230

(413) 528-1780 phone
(413) 528-3024 fax
www.housatonicwater.com

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---------- Forwarded message ---------
From: Doherty, Deirdre (DEP) <deirdre.doherty@state.ma.us>
Date: Wed, Aug 12, 2020 at 6:02 PM
Subject: MassDEP correspondence on Water Quality 2020-08-12
To: James J. Mercer (housatonicwater@gmail.com) <housatonicwater@gmail.com>
Cc: Harrington, Brian D (DEP) <brian.d.harrington@state.ma.us>, Paine, Douglas (DEP) <douglas.paine@state.ma.us>

MassDEP is sending the attached correspondence to Housatonic Water Works in response to Housatonic's August 1, 2020 letter response and water quality/operations concerns. Attached are also the recent May and June 2020 monthly submittals noted in the correspondence for reference.

Please contact me with any questions.

Respectfully,

Deirdre Doherty

Drinking Water Section Chief

MassDEP
Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

SENT VIA ELECTRONIC MAIL
housatonicwater@gmail.com

August 12, 2020

Mr. James Mercer, Treasurer
Housatonic Water Works
80 Maple Ave Ste 1
Great Barrington, MA 01230

DWP-Great Barrington
Housatonic Water Works
PWSID# 1113003
Water Operations
Water Quality

Dear Mr. Mercer:

MassDEP received your response dated August 1, 2020 to the July 29, 2020 MassDEP correspondence address operations and water quality questions and concerns. This letter follows up on your response, as MassDEP determined that Housatonic Water Works ("HWW" or "Housatonic") may not have understood some of the request or provided an incomplete response to some items.

The letter follows the same item list found in the July 29, 2020 MassDEP letter. And adds a new topic and request for information.

1. *MassDEP requires Housatonic to continue Special Monitoring as required in August 2018 and Housatonic may continue that monitoring at alternate locations approved in writing by MassDEP. The current approved alternate locations are:*
    a. *314 N. Plain Road; and*
    b. *2 Bernard Gibbons Drive (Gt. Barrington Housing Authority)*

    MassDEP understands HWW will continue the required monitoring as HWW indicated. MassDEP requires that the water quality results be provided in writing to MassDEP within 24 hours of receipt. Submit results to Deirdre.doherty@mass.gov.

2. *MassDEP requires Housatonic to explain its deviation from Housatonic's proposed minimum chlorine residual target at the point-of-entry (POE). Housatonic proposed the target residual within the 2017 water treatment plant changes related to its new approach for reaching the required contact time requirements of the Surface Water Treatment Rule (SWTR). Housatonic proposed and MassDEP approved, a target residual POE Chlorine of 0.5 or 0.6 mg/l, depending on water temperature. Recently, POE has ranged from 1 to 1.89 mg/l. Measured chlorine residual within the distribution system in May was 0.24 & 0.21 mg/L and in June 0.37 and 0.41 mg/L according to the Chlorine/Chloramine Reports. MassDEP also requires Housatonic to explain the anticipated impact of high distribution system chlorine residuals given other factors, including temperature and the distribution system material of construction, as well as, the anticipated impact of a reduction in chlorine residual.*

   HWW's response states that HWW has, at some point, set a goal of 0.2-0.5 mg/l chlorine residual within the distribution, beyond the point-of-entry location. HWW states this is in part to ensure compliance with the SWTR. HWW's monthly operation reports show that contact time is much higher than the minimum required for compliance with the SWTR. HWW's point of entry chlorine residual is regularly 1.0 mg/l or higher (June 27 was 1.9 mg/l average during peak flow). The SWTR's minimum residual required at the point-of-entry location is 0.2 mg/l. HWW's June distribution residuals were 0.37 and 0.41 mg/l. SWTR standards require a measurable residual (such as 0.05 mg/l) or adequate Heterotrophic Plate counts within the distribution system.

   Given the unlined iron piping in HWW's distribution and current warm water temperatures, the upper range of the distribution chlorine residual goal: 0.3, 0.4 and 0.5 mg/l is high. The high chlorine residuals are likely related to discolored water experienced by HWW customers.

   MassDEP requires HWW to (1) provide a written justification of this distribution residual goal, providing the operational basis for this target and detailing both the positive and negative impacts of such operations, including the potential for discolored water; (2) identify any seasonal adjustments HWW has made and (3) provide the Operation and Maintenance manual pages that reflect the goal, any seasonal adjustments in operation and the operational tasks to achieve the stated distribution residual goal.

3. *MassDEP requires Housatonic to provide documentation of its water treatment plant analyzer calibrations to verify measurements.*

   HWW response indicates verifications and calibrations are periodically done and that the instrument representative calibrated the equipment in June 2020. MassDEP requires HWW to (1) provide the date in June 2020 of the instrument representative's calibration and (2) provide documentation in the form of a copy of its instrument calibration log book pages (or other similar record) documenting each verification and calibration of its equipment for the months of March 2020 through July 2020.

4. *MassDEP requires Housatonic to explain the variation in chlorine dosing at the water treatment plant and the variation in chlorine residual measured exiting the clearwell.*

HWW's response did not address the concern cited by MassDEP. The question concerned the clearwell/Segment 1. MassDEP will describe in more detail its concerns in this letter. MassDEP has attached the May and June 2020 monthly operating reports (the SWTR and Chemical Addition forms) for your reference.
For Segment 1, MassDEP notes the peak flow is steady, as is the contact time. MassDEP notes the daily 'total treated water' volume has some variation (about 10%) but the daily Segment 1 chlorine concentration varies on a daily basis. MassDEP requires that HWW clarify if the 'total treated water' reported on the Chem Add form is the water from Segment 1 where the chlorine is added, or the water entering the distribution system after Segment 2. This will aid in understanding operations.

For example, looking at the last week or June (June 24-30) and HWW's the chlorine concentrations:

Date (June)	Seg. 1 Chlorine concentration (mg/l)	Seg. 1 Chlorine dose (mg/l)	Seg. 1 Contact Time (minutes)	Point-of-Entry Chlorine residual (mg/l)	Total Contact Time ratio (Seg. 1 & 2, must ≥1)	Total treated water (gals)
24	1.18	3	145	1.3	65.9	113,370
25	2.75	2.7	142	1.01	56.5	128,707
26	0.90	2.7	146	1.02	48.4	125,827
27	0.29	3.5	158	1.9	74.8	111,964
28	1.71	3.6	159	1.4	80.9	108,196
29	2.54	3.7	148	1.41	87.0	104,782
30	3.65	3.4	146	1.84	116.4	101,638

MassDEP requires HWW to (1) explain in writing the wide variation of Segment 1 chlorine concentrations while other factors did not vary so greatly; (2) provide a written evaluation on (a) the effect of reducing chlorine used to meet SWTR contact time requirements and (b) HWW's rationale for its SWTR contact time practices; (3) explain in detail the hours of water treatment plant operation (i.e. from 8a.m.-4 p.m.) and (4) provide the flow rate into and out of the clearwell (Segment 1) for the months of May through July 2020.

5. *MassDEP requires Housatonic to provide MassDEP with its system flushing protocols. These protocols include the flushing schedule and direction (source to dead ends), how long Housatonic flushes each hydrant and the order of flushing through the system. MassDEP also requires Housatonic to document whether Housatonic has followed its protocols in 2020.*

HWW responded with a description of its flushing practices. MassDEP expects to find the procedures for flushing within its Operations and Maintenance manual at the next Sanitary Survey.

6. *MassDEP requires Housatonic to explain in writing why it has not implemented approved treatment that incorporates both pH adjustment to maintain a consistent pH and polyphosphate treatment to coat pipes within the distribution system.*

   MassDEP has not concluded that the pH is not stable at HWW. If HWW submits a permit application for a treatment change involving a phosphate/phosphate blend, HWW will at that time be required to provide sufficient documentation to address the pH and its stability throughout the calendar year. MassDEP notes that the pH of the chlorinated water from Segment 1 appears to be altered by its passage through new cement lined piping between the treatment plant and concrete storage tank and the concrete material of the storage tank.

The new information requested of Housatonic Water Works:
MassDEP requires that HWW provide MassDEP written log of water main or joint breaks and leaks and known service connection breaks and leaks between July 2018 and August 2020. For each event, HWW shall provide the date, the pipe/joint material, the location of the break/leak and what the specific problem was (break/leak/other).

MassDEP requires a response to all of the above information request as soon as practical but no later than August 20th, 5 p.m. by email to the MassDEP emails below.

If you have questions concerning this matter, please direct them to me at (413) 755-2148 or Deirdre.doherty@mass.gov or Douglas Paine at (413) 755-2281 or Douglas.paine@mass.gov. Please note that we will check voicemails regularly, but electronic mail communication is preferred.

Respectfully,

Deirdre Doherty
Drinking Water Section Chief
Bureau of Water Resources

Cc: DWP-Boston
DEP-WERO (e-copy)-B Harrington, D. Paine
(eCopy) Great Barrington Board of Health

W:\BWR\WS\Discolored Water\1113003-Housatonic-Water Quality-2020-08-12

Massachusetts Department of Environmental Protection - Drinking Water Program
CHEMICAL ADDITION REPORT - 310 CMR 22.15(4) Chemical Addition Reporting Requirements

C-ADD

I. PWS Information - Refer to "MassDEP Chemical Addition Report Guidance and Instructions" for details.

PWS Name[1]:	Housatonic Water Works	Town[1]:	Great Barrington	PWSID[1]:	1113003
Treatment Plant Name[1]:	Long Pond	Treatment Plant ID[2]:	1113003-01T	Reporting Month[3]:	May
				Reporting Year[3]:	2020

II. Chemical & Operational Information

Chemical Name[4]:	sodium hypochlorite	Purchased Strength (%)[8]:	12.5	Target Range/min[12]:	≥ 0.5 mg/L at POE
Manufacturer[4]:	Slack Chemical Company, Inc. (Carthage, NY)	Purchased Density (lbs/gal)[9]:	9.97	Target Dose (mg/L)[13]:	NA
Product Name[5]:	sodium hypochlorite (12.5% bleach)	Dilution Factor or Mix Ratio[10]:	1.00	Alarm Setting (low)[14]:	0.60
Reason for Adding Chemical[7]:	Disinfection - Segment #1 and Segment #2	NSF Approved (Y/N)[11]:	Y	Alarm Setting (high)[14]:	2.50
				Date of last anti-siphon valve inspection/replacement[15]:	NA

III. Daily Reporting — Note: Water quality data reported on C-ADD form may also be considered for compliance purposes.

Day	Treated Water Volume (gal)[16]	Measured Chemical Used: Volume (gal/day)[17]	Measured Chemical Used: Weight (lbs/day)[17]	Calculated Chemical Used (lbs)[18]	Chemical Dosage (mg/L)[19]	Parameters Measured*, Results, Units and Method - (G)rab or Continuous (A)nalyzer[20]: a. chlorine residual at end of Segment 1 (mg/L) via Kuntze analyzer ☐G ☑A	b. chlorine residual at end of Segment 2 POE (mg/L) via Kuntze analyzer ☐G ☑A	c. ☐G ☐A	O&M Notes/Comments[22]
1	88086	1.9		2.37	3.2	1.60	1.63		
2	100043	1.9		2.37	2.8	2.13	1.53		
3	111869	1.9		2.37	2.5	2.22	1.57		
4	96973	1.9		2.37	2.9	2.07	1.95		
5	98937	1.9		2.37	2.9	1.21	1.92		
6	102225	1.9		2.37	2.8	1.02	1.80		
7	96077	1.9		2.37	3.0	1.15	1.76		
8	98413	1.9		2.37	2.9	1.26	1.60		
9	90299	1.9		2.37	3.1	3.18	1.62		
10	95793	2.3		2.87	3.6	1.35	1.87		
11	101754	2.3		2.87	3.4	2.56	1.86		
12	107990	2.3		2.87	3.2	1.87	1.72		
13	105969	2.3		2.87	3.2	1.46	1.66		
14	104869	2.3		2.87	3.3	2.18	1.87		
15	99652	2.3		2.87	3.5	1.84	1.69		
16	105262	2.3		2.87	3.3	1.75	1.72		
17	101496	2.3		2.87	3.4	2.61	1.61		
18	100882	2.3		2.87	3.4	2.04	1.79		
19	101133	2.3		2.87	3.4	2.58	1.64		
20	108368	2.3		2.87	3.2	3.07	1.89		
21	108893	2.3		2.87	3.2	1.73	1.39		
22	110771	2.3		2.87	3.1	2.58	1.55		
23	118856	2.3		2.87	2.9	1.81	1.57		
24	128142	2.3		2.87	2.8	2.06	1.63		
25	115586	2.3		2.87	3.0	1.90	1.51		
26	121330	2.3		2.87	2.8	1.83	1.47		
27	126824	2.3		2.87	2.7	2.10	1.65		
28	100530	2.3		2.87	3.4	1.84	1.56		
29	113526	2.3		2.87	3.0	2.18	1.50		
30	122366	2.3		2.87	2.8	2.22	1.36		
31	121872	2.3		2.87	2.9	1.52	1.30		
Total	3296967	67.7		Indicate total # of days the residual was off-target for the month (from Section II) Monthly Target Summary[21]:					0

*Describe result (daily average, min/max, instantaneous reading, grab, etc.) sample location (entry-point, before/after filters, tanks, etc.) and instrumentation used (SCADA, chart recorder, test kit, bench, etc.)[20]

a.	Chlorine is monitored continuously via a Kuntze analyzer. Daily chlorine residual values provided are for the average value during the hour of peak hourly flow.
b.	Chlorine is monitored continuously via a Kuntze analyzer. Daily chlorine residual values provided are for the average value during the hour of peak hourly flow.
c.	

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Person - Signature & Date[24]:	James J. Mercer 6.8.20
Print Name:	James J. Mercer
Title:	Primary Certified Operator

Submit to your MassDEP Regional Office within 10 days after the reporting month.

Massachusetts Department of Environmental Protection - Drinking Water Program

TURBIDITY DATA SHEET FOR FILTERED SYSTEMS

SWTR F

PWSID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Plant Name: Long Pond Reporting Period → Month: May Year: 2020

Filtered Water Turbidity Measured: (check only one) ☑ Combined Filter Effluent ☐ Individual Filter Effluent[1] ☐ Clearwell ☐ Plant Effluent

Filtration Technology:

☐ Conventional ☐ Direct ☐ Alternative	Monthly Turbidity (95%) NTU Limit = 0.3	Max Day Turbidity NTU Limit = 1
☑ Slow Sand ☐ Diatomaceous Earth	Monthly Turbidity (95%) NTU Limit = 1	Max Day Turbidity NTU Limit = 5

Day	Max Filtered Water Turbidity Result[2] (NTU)	Number of Turbidity Measurements[3]	Number of Turbidity Measurements ≤ Monthly (95%) NTU Limit[4]	Number of Turbidity Measurements > Max Day NTU Limit[5]
1	0.045	6	6	0
2	0.046	6	6	0
3	0.047	6	6	0
4	0.050	6	6	0
5	0.058	6	6	0
6	0.050	6	6	0
7	0.052	6	6	0
8	0.052	6	6	0
9	0.058	6	6	0
10	0.044	6	6	0
11	0.046	6	6	0
12	0.058	6	6	0
13	0.042	6	6	0
14	0.047	6	6	0
15	0.042	6	6	0
16	0.046	6	6	0
17	0.043	6	6	0
18	0.068	6	6	0
19	0.053	6	6	0
20	0.051	6	6	0
21	0.046	6	6	0
22	0.045	6	6	0
23	0.042	6	6	0
24	0.049	6	6	0
25	0.060	6	6	0
26	0.045	6	6	0
27	0.045	6	6	0
28	0.043	6	6	0
29	0.057	6	6	0
30	0.051	6	6	0
31	0.045	6	6	0
Totals:		186	186	% Turbidity Meeting 95% Limit B/A x 100 % = X
		A	B	(Enter on SWTR – Form G)

1. May be used by systems serving less than 10,000 persons, subject to DEP approval.
2. Enter the Maximum Filtered Water Turbidity Result recorded each day, at the 4th hour or other approved interval.
3. Enter the Total # of Turbidity measurements taken for each day. Measurements must be taken at a minimum of 4-hour intervals (i.e. 6 readings per day). For continuous monitors count each 4-hour period as 1 measurement. Record the actual turbidity result at the specified interval of time. Do not average turbidity measurements. If DEP approved, 15-minute readings (i.e. 96 readings per day) may be submitted. Filtered turbidity data must be kept on file for DEP review.
4. Out of the # of turbidity measurements taken and recorded in the previous column, enter the number of turbidity measurements that were less than or equal to the Monthly (95%) NTU Limit for the filtration technology used.
5. If at any at time the filtered turbidity Max Day NTU Limit is exceeded, the DEP must be notified no later than the end of the next business day. For each exceedance, record the turbidity value(s) and date(s) on SWTR - Form G

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Mercer

Date: 6.8.20 Title: Primary Certified Operator

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program
COMPLIANCE DETERMINATION FOR FILTERED SYSTEMS - Monthly Report

SWTR G

I. PWS INFORMATION

PWS ID#: 1119000 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Plant Name: Long Pond Reporting Period: Month: May Year: 2020

II. TURBIDITY PERFORMANCE CRITERIA

1. **Monthly Turbidity (95%) NTU Limit** - The turbidity level of a system's filtered water must be less than or equal to the Monthly Turbidity NTU Limit in at least 95% of the measurements taken each month for the filtration technology used, otherwise SWTR TT Violation (Tier 2)

186	= A	Total # of filtered water turbidity measurements for month (SWTR - Form F)
186	= B	Total # of filtered water turbidity measurements less than or equal to the specified limits for the filtration technology used. (SWTR - Form F)
100.00%	= (B/A) X 100	The percentage of turbidity measurements meeting the Monthly Turbidity 95% NTU Limit.

2. **Max Day NTU Limit** - The turbidity level of a system's filtered water must at no time exceed the Max Day NTU Limit for the filtration technology used, otherwise SWTR TT Violation (Tier 2).

Record the date and turbidity value for any measurements exceeding the Max Day NTU. ☑ Check box if "None"

Date	Value	Date Reported to DEP		Date	Value	Date Reported to DEP

For each day the Max Day NTU limit is exceeded, the DEP must be notified by the end of the next business day. SWTR TT Violation (Tier 2). If DEP is not consulted within 24 hours then it is a SWTR TT (Tier 1) violation requiring public notification within 24 hours.

III. DISINFECTION PERFORMANCE CRITERIA

1. **Point-of-Entry Minimum Disinfectant Residual Criteria** - Residual Disinfectant concentration cannot be <0.2 mg/L for more than 4 hours. SWTR TT Violation (Tier 2).

Minimum Disinfection Residual at Point-of-Entry to Distribution System

Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L
1	1.52	6	1.76	11	1.86	16	1.72	21	1.22	26	1.35	31	1.26
2	1.50	7	1.03	12	1.72	17	1.61	22	1.49	27	1.50	Residual Measured	
3	1.49	8	1.60	13	1.66	18	1.79	23	1.47	28	1.48	☑ Free Cl_2	
4	1.73	9	1.62	14	1.67	19	1.84	24	1.56	29	1.45	☐ Total Cl_2	
5	1.88	10	1.87	15	1.69	20	1.89	25	1.42	30	1.31	☐ Combined Cl_2	

If at any time the residual falls below 0.2 mg/L in the water entering the distribution system, the supplier of water must notify the Department as soon as possible, but no later than by the end of the next business day. The supplier of water also must notify the Department by the end of the next business day whether or not the residual was restored to at least 0.2 mg/L within four hours.

Date(s) Residual < 0.2 mg/L	Duration of Low Level (hrs.)	Date Reported to DEP		Date(s) Residual < 0.2 mg/L	Duration of Low Level (hrs.)	Date Reported to DEP

2. **Distribution System Disinfectant Residual Criteria** - Residual Disinfectant concentration (V) cannot be undetectable in greater than 5% of samples in a month, for any two consecutive months. SWTR TT Violation (Tier 2). Chlorine residuals must be measured at the same time and location as total coliform *distribution routine & repeat* samples. If no residual is detected, an HPC sample must be collected and analyzed.

Total # of HPC samples taken during month: 0 # HPC sites > 500/mL: # HPC sites ≤ 500/mL:

2	= a	# of sites where Cl_2 residual measurements were made, whether a residual was detected or not (should be the same # of sites reported on your monthly RTCR Cl_2 residual report)
0	= b	# of sites HPC samples were analyzed *instead* of Cl_2 residual measurements
0	= c	# of sites where no Cl_2 residual was detected and no HPC sample was analyzed
0	= d	# of sites where no Cl_2 residual was detected and HPC > 500 CFU/mL
0	= e	# of sites where no Cl_2 residual measurement was made and HPC > 500 CFU/mL

Water in the distribution system with a heterotrophic bacteria concentration (HPC) less than or equal to 500/mL, is deemed to have a detectable disinfectant residual for purposes of determining compliance with this requirement. When analyzed, report HPC results on your monthly DEP Bacteriological Report.

$V = \frac{(c + d + e)}{(a + b)} \times 100$

This Month % V = 0.00% Previous Month % V = Is V > 5% for 2 months? No

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: Date: 6-8-2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS
More than 1 Disinfectant / Sampling Point

SWTR
H

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Facility Name: Long Pond | Reporting Period: Month: May Year: 2020

II. DAILY REPORTING:

	Disinfectant Sequence (CT calc / CT 99.9)						Inactivation Ratio SUM[1] (CT calc / CT 99.9)	Inactivation Ratio[2] ≤ 1.0
Day	1st	2nd	3rd	4th	5th	6th		
1	4.0	20.8					24.8	
2	5.0	15.7					20.7	
3	5.2	15.1					20.3	
4	5.4	21.3					26.7	
5	3.6	21.9					25.5	
6	3.4	21.3					24.8	
7	3.9	20.7					24.6	
8	4.6	27.6					32.2	
9	7.6	24.2					32.0	
10	5.0	26.7					31.7	
11	7.6	27.1					34.7	
12	6.9	20.6					27.4	
13	4.8	19.4					24.3	
14	7.4	25.4					32.8	
15	6.0	21.4					27.4	
16	5.9	25.2					31.1	
17	8.2	27.8					35.9	
18	7.0	24.3					31.3	
19	9.6	32.9					42.5	
20	10.2	32.9					43.1	
21	7.8	28.6					36.4	
22	11.3	29.3					40.6	
23	8.5	30.8					39.3	
24	9.6	28.9					38.5	
25	9.7	32.1					41.8	
26	9.7	26.2					35.9	
27	10.5	29.6					40.2	
28	10.6	48.5					59.1	
29	13.5	38.1					51.6	
30	13.7	33.5					47.2	
31	10.6	31.3					41.9	

1. To determine SUM (CT calc/CT 99.9), add (CT calc/CT 99.9) values from the first disinfectant sequence to the last from SWTR - Form I.
2. The inactivation ratio (CT calc / CT 99.9) is determined before or at the first customer during peak hourly flow and if the SUM (CT calc / CT 99.9)<1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved. A "Yes" response above indicates a SWTR Treatment Technique violation.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: [signature] Date: 6-8-20 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS

SWTR
1

I. PWS INFORMATION

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: 0 0606345

Treatment Facility Name: Long Pond Reporting Period: Month: May Year: 2020

Disinfectant[1]: Segment 1 - post clearwell (tap in 200-ft long pipe) Sequence of Disinfectant Application: ☑ 1st ☐ 2nc ☐ 3rd ☐ 4th ☐ 5th ☐ 6th

II. DAILY REPORTING: All measurements taken during peak hourly flow.

Day	Peak Hourly Flow[2] (gpm)	Disinfectant Concentration[3] C (mg/L)	Disinfectant Contact Time[4] T (min.)	CT Calc (=C x T)	pH[5]	Water Temp[6] (°C)	CT[7] 99.9	Inactivation Ratio[8] (CT calc / CT 99.9)	Inactivation Ratio[9] <1.0
1	152	1.60	138	221	7.47	8.3	54	4.0	see Form H
2	152	2.13	135	287	7.49	8.5	58	5.0	see Form H
3	152	2.22	132	293	7.48	8.6	56	5.2	see Form H
4	152	2.07	134	278	7.40	9.7	61	4.4	see Form H
5	152	1.21	134	163	7.43	10.3	45	3.6	see Form H
6	152	1.02	143	146	7.42	10.5	43	3.4	see Form H
7	152	1.15	148	170	7.44	10.6	44	3.9	see Form H
8	152	1.39	145	182	7.07	10.6	39	4.6	see Form H
9	152	3.18	120	382	7.12	10.7	49	7.8	see Form H
10	152	1.35	147	199	7.11	10.7	40	5.0	see Form H
11	152	2.56	141	360	7.16	10.4	47	7.6	see Form H
12	152	1.87	161	301	7.15	10.3	44	6.9	see Form H
13	152	1.46	137	201	7.12	10.3	42	4.8	see Form H
14	152	2.19	155	339	7.18	10.3	46	7.4	see Form H
15	152	1.84	139	255	7.11	10.5	43	6.0	see Form H
16	152	1.75	140	244	7.12	10.6	42	5.9	see Form H
17	152	2.61	136	354	7.10	11.5	43	8.2	see Form H
18	152	2.04	135	275	7.07	12.0	39	7.0	see Form H
19	152	2.56	144	373	7.04	12.6	39	9.6	see Form H
20	152	3.07	134	411	7.04	12.9	40	10.2	see Form H
21	152	1.73	151	262	7.01	13.2	34	7.8	see Form H
22	152	2.58	161	416	7.01	13.4	37	11.3	see Form H
23	152	1.81	147	267	6.97	14.1	31	8.6	see Form H
24	152	2.06	144	297	6.96	14.5	31	9.6	see Form H
25	152	1.90	152	289	6.95	14.9	30	9.7	see Form H
26	152	1.83	149	272	6.93	15.6	28	9.7	see Form H
27	152	2.10	140	293	6.93	16.1	26	10.5	see Form H
28	152	1.84	150	277	6.90	16.5	26	10.6	see Form H
29	152	2.18	160	348	6.90	17.3	26	13.5	see Form H
30	152	2.22	156	346	6.89	17.7	25	13.7	see Form H
31	152	1.52	160	244	6.89	17.9	23	10.6	see Form H

Notes:

1. Use a separate form for each disinfectant/sampling point. Enter disinfectant and sequence position, e.g. "ozone/1st" or "ClO_2/3rd". If more than one disinfectant sampling point, you must also complete SWTR Form H and calculate the cummulative inactivation ratio SUM (CT calc/CT 99.9) to determine compliance.
2. Peak hourly flow means the highest pumpage *hour* during the day, not the absolute peak flow at any instant.
3. The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
4. The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow. The time *T* used in calculating *CT*, is the time it takes the water, during peak hourly flow, to move between the point of disinfection application and the point at which the residual is measured.
5. If the system uses free chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
6. The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point during peak hourly flow.
7. Use Inactivation Tables at 310CMR 22.20A Tables 1.1 - 1.6, 2.1 and/or 3.1
8. The inactivation ratio is determined before or at the first customer during peak hourly flow and if the ratio is < 1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved.Note: Add log credits for watershed & filtration to the numerator of inactivation ratio.
9. A "Yes" response above indicates a SWTR Treatment Technique violation (Tier 2).

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: [signature] Date: 6.8.20 Title: Primary Certified Operator

Phone#: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are

Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS

SWTR
I

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Facility Name: Long Pond Reporting Period: Month: May Year: 2020

Disinfectant[1]: Segment 2 - storage tank effluent (POE) Sequence of Disinfectant Application: ☐ 1st ☑ 2nc ☐ 3rc ☐ 4th ☐ 5th ☐ 6th

II. DAILY REPORTING: All measurements taken during peak hourly flow.

Day	Peak Hourly Flow[2] (gpm)	Disinfectant Concentration[3] C (mg/L)	Disinfectant Contact Time[4] T (min.)	CT Calc (=C x T)	pH[5]	Water Temp[6] (°C)	CT[7] 99.9	Inactivation Ratio[8] (CT calc / CT 99.9)	Inactivation Ratio[9] <1.0
1	94	1.63	1044	1700	8.50	7.9	82	20.8	see Form H
2	119	1.53	813	1245	8.50	8.2	80	15.7	see Form H
3	124	1.57	764	1200	8.54	8.4	80	15.1	see Form H
4	104	1.95	878	1710	8.55	9.0	80	21.3	see Form H
5	101	1.92	890	1713	8.54	9.3	78	21.9	see Form H
6	109	1.80	892	1607	8.54	9.8	76	21.3	see Form H
7	106	1.76	884	1556	8.56	9.7	75	20.7	see Form H
8	101	1.60	972	1555	7.80	9.8	56	27.8	see Form H
9	112	1.62	844	1367	7.80	9.8	56	24.2	see Form H
10	122	1.67	906	1507	7.70	9.5	56	26.7	see Form H
11	118	1.88	820	1525	7.70	9.5	56	27.1	see Form H
12	144	1.72	835	1092	7.60	9.6	53	20.6	see Form H
13	157	1.66	810	1012	7.60	9.8	52	19.4	see Form H
14	122	1.67	750	1255	7.50	10.1	49	25.4	see Form H
15	139	1.69	676	1143	7.70	10.0	53	21.4	see Form H
16	181	1.72	723	1243	7.60	10.7	49	25.3	see Form H
17	119	1.61	800	1288	7.50	10.9	46	27.8	see Form H
18	166	1.76	620	1110	7.40	10.9	46	24.3	see Form H
19	119	1.84	806	1482	7.40	11.2	45	32.9	see Form H
20	119	1.89	764	1443	7.40	11.7	44	32.9	see Form H
21	120	1.39	787	1098	7.40	12.7	38	28.6	see Form H
22	128	1.55	719	1117	7.40	13.1	38	29.5	see Form H
23	133	1.57	716	1124	7.40	13.8	36	30.8	see Form H
24	149	1.63	629	1022	7.39	14.5	35	28.9	see Form H
25	128	1.51	735	1110	7.37	14.3	35	32.1	see Form H
26	159	1.47	573	840	7.35	15.3	32	26.2	see Form H
27	160	1.65	563	930	7.35	15.9	31	29.6	see Form H
28	100	1.58	946	1472	7.34	16.2	30	48.6	see Form H
29	130	1.50	726	1087	7.34	17.0	29	38.1	see Form H
30	137	1.38	577	822	7.32	17.3	28	33.6	see Form H
31	146	1.30	649	841	7.33	17.5	27	31.3	see Form H

Notes:

1. Use a separate form for each disinfectant/sampling point. Enter disinfectant and sequence position, e.g. "ozone/1st" or "ClO_2/3rd". If more than one disinfectant sampling point, you must also complete SWTR Form H and calculate the cummulative inactivation ratio SUM (CT calc/CT 99.9) to determine compliance.
2. Peak hourly flow means the highest pumpage *hour* during the day, not the absolute peak flow at any instant.
3. The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
4. The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow. The time *T* used in calculating *CT*, is the time it takes the water, during peak hourly flow, to move between the point of disinfection application and the point at which the residual is measured.
5. If the system uses free chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
6. The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point during peak hourly flow.
7. Use Inactivation Tables at 310CMR 22.20A Tables 1.1 - 1.6, 2.1 and/or 3.1
8. The inactivation ratio is determined before or at the first customer during peak hourly flow and if the ratio is < 1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved. Note: Add log credits for watershed & filtration to the numerator of inactivation ratio.
9. A "Yes" response above indicates a SWTR Treatment Technique violation (Tier 2).

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my

PWS Authorized Signature: [signature] Date: 6.8.20 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are

Massachusetts Department of Environmental Protection - Drinking Water Program
CHLORINE/CHLORAMINES - MONTHLY REPORT

Cl

I. PWS INFORMATION:

MONTH: May | YEAR: 2020

PWS ID #: 1113003 | PWS Name: Housatonic Water Works | City/Town: Great Barrington | Class: ☑CM ☐TNC ☐NC

II. ANALYTICAL INFORMATION: Refer to your MassDEP Coliform Sampling Plan and/or DBPR monitoring plan to help complete this section.

Type Measured: ☑ Free Chlorine ☐Total Chlorine ☐ombined Chlorine Analytical Method: SM 4500-Cl: 86 ☐ D ☐ E ☐ F ☐ G ☐ H I ASTM D1253- ☐

Notes:

DEP APPROVED SAMPLE SITE INFORMATION[1]			CHLORINE RESULT[2] (mg/L)	COLLECTION AND ANALYSIS[3]:		COLLECTED AND ANALYZED BY:
DEP Sample Type[1,4]	DEP Location Code #[1]	DEP Approved SAMPLE LOCATION[1]		DATE	TIME	
RS	EP1	Point of Entry	1.19	5/13/2020	9:20	Erick Bartlett
RS	001	Pleasant and Main	0.24	5/13/2020	8:59	Erick Bartlett
RS	002	Brookside School	0.21	5/13/2020	8:52	Erick Bartlett

[1] DEP Sample Type, Location Code#, and DEP Approved Sample Site Location must correspond to the same information on your DEP Total Coliform Sampling Plan.
[2] SWTR systems: HPC must be collected at distribution sites with zero chlorine residual and results reported on the DEP Bacteriological Monthly Report form and on the appropriate SWTR Form.
[3] Collection and Analysis: Chlorine residual shall be measured in the field (immediately upon collection) at the same time and location in the distribution system as total coliforms are sampled. Record ND values as 0 (zero).
[4] Sample Type: RS-Routine Distribution Sample, RO-Original Site Repeat, UR-Upstream Repeat, DR-Downstream Repeat, AR-Additional Repeat, or SS-Special Sample (as determined by DEP).
[5] All DISTRIBUTION samples taken and analyzed shall be included in determining compliance, even if that number is greater than the minimum required. If you collect repeat coliform samples within the distribution system during the month, you must also measure for a detectable chlorine residual at the repeat sites and include these samples. DO NOT include raw water (RW) or plant tap (PT) chlorine residual samples in your calculations.

III. COMPLIANCE REPORTING:

Total # of Samples Collected for Month[5]: 2 | Average Chlorine Result of All Samples For Month[6] (mg/L): 0.23

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

Primary Certified Operator Signature and Date: James J Mecca 6.8.2020

DEP Review Status:	☐ Accepted ☐Disapproved	Review Comments:	

Massachusetts Department of Environmental Protection - Drinking Water Program
CHEMICAL ADDITION REPORT - 310 CMR 22.15(4) Chemical Addition Reporting Requirements

C-ADD

I. PWS Information - Refer to "MassDEP Chemical Addition Report Guidance and Instructions" for details.

PWS Name[1]:	Housatonic Water Works	Town[1]:	Great Barrington	PWSID[1]:	1113003
Treatment Plant Name[2]:	Long Pond	Treatment Plant ID#[2]:	1113003-01T	Reporting Month[3]:	June
				Reporting Year[3]:	2020

II. Chemical & Operational Information

Chemical Name[4]:	sodium hypochlorite	Purchased Strength (%)[8]:	12.5	Target Range/min[13]:	≥ 0.5 mg/L at POE
Manufacturer[5]:	Slack Chemical Company, Inc. (Carthage, NY)	Purchased Density (lbs/gal)[9]:	9.97	Target Dose (mg/L)[13]:	NA
Product Name[6]:	sodium hypochlorite (12.5% bleach)	Dilution Factor or Mix Ratio[10]:	1.00	Alarm Setting (low)[14]:	0.60
Reason for Adding Chemical[7]:	Disinfection - Segment #1 and Segment #2	NSF Approved (Y/N)[11]:	Y	Alarm Setting (high)[14]:	2.50
				Date of last anti-siphon valve inspection/replacement[15]:	NA

III. Daily Reporting — Note: Water quality data reported on C-ADD form may also be considered for compliance purposes.

Day	Treated Water Volume (gal)[16]	Measured Chemical Used: Volume (gal/day)[17]	Measured Chemical Used: Weight (lbs/day)[17]	Calculated Chemical Used (lbs)[18]	Chemical Dosage (mg/L)[19]	Parameters Measured*, Results, Units and Method - (G)rab or Continuous (A)nalyzer[21]: a. chlorine residual at end of Segment 1 (mg/L) via Kuntze analyzer	b. chlorine residual at end of Segment 2 POE (mg/L) via Kuntze analyzer	c.	O&M Notes/Comments[22]
						☐G ☑A	☐G ☑A	☐G ☐A	PWS note any equipment breakdown, off-line status, changes in purchased product or batch mixing day, measured parameters or dosages that are out of target range, etc.
1	110021	2.3		2.87	3.1	1.68	1.41		
2	107436	2.3		2.87	3.2	1.39	1.38		
3	115990	2.3		2.87	3.0	2.07	1.48		
4	136606	2.3		2.87	2.6	2.01	1.39		
5	115306	2.3		2.87	3.0	1.57	1.35		
6	115294	2.3		2.87	3.0	1.46	1.28		
7	113051	2.3		2.87	3.0	2.14	1.34		
8	121256	2.3		2.87	2.8	1.54	1.45		
9	133900	2.3		2.87	2.6	1.50	1.36		
10	127423	2.3		2.87	2.7	1.94	1.25		
11	108346	2.3		2.87	3.2	2.13	1.12		
12	116413	2.3		2.87	3.0	1.52	1.15		
13	114530	2.3		2.87	3.0	1.89	1.24		
14	124210	2.3		2.87	2.8	1.97	1.30		
15	129189	2.3		2.87	2.7	1.71	1.30		
16	126570	2.3		2.87	2.7	1.45	1.30		
17	135823	2.3		2.87	2.5	1.71	1.17		
18	122676	2.3		2.87	2.6	1.74	1.10		
19	134648	2.3		2.87	2.6	1.44	1.16		
20	151483	2.3		2.87	2.3	1.46	1.08		
21	149539	2.3		2.87	2.3	1.13	1.49		
22	156135	2.3		2.87	2.2	1.02	1.22		
23	142513	2.3		2.87	2.4	1.02	1.51		
24	113370	2.3		2.87	3.0	1.18	1.30		
25	126707	2.3		2.87	2.7	2.75	1.01		
26	125827	2.3		2.87	2.7	0.90	1.02		
27	111964	2.6		3.24	3.5	0.29	1.90		
28	108196	2.6		3.24	3.6	1.71	1.40		
29	104782	2.6		3.24	3.7	2.54	1.41		
30	101638	2.3		2.87	3.4	3.65	1.84		
Total	3702839	69.9		Indicate total # of days the residual was off-target for the month (from Section II) Monthly Target Summary[20]:					0

*Describe result (daily average, min/max, instantaneous reading, grab, etc.) sample location (entry-point, before/after filters, tanks, etc.) and instrumentation used (SCADA, chart recorder, test kit, bench, etc.)[20]

a.	Chlorine is monitored continuously via a Kuntze analyzer. Daily chlorine residual values provided are for the average value during the hour of peak hourly flow.
b.	Chlorine is monitored continuously via a Kuntze analyzer. Daily chlorine residual values provided are for the average value during the hour of peak hourly flow.
c.	

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Person - Signature & Date[24]:	James J. Mercer 7/8/2020
Print Name:	James J. Mercer
Title:	Primary Certified Operator

Submit to your MassDEP Regional Office within 10 days after the reporting month.

Massachusetts Department of Environmental Protection - Drinking Water Program

TURBIDITY DATA SHEET FOR FILTERED SYSTEMS

SWTR
F

1. PWS INFORMATION:

PWSID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Plant Name: Long Pond Reporting Period → Month: June Year: 2020

2. DAILY REPORTING:

Filtered Water Turbidity Measured: (check only one) ☑ Combined Filter Effluent ☐ Individual Filter Effluent[1] ☐ Clearwell ☐ Plant Effluent

Filtration Technology:

☐ Conventional ☐ Direct ☐ Alternative	Monthly Turbidity (95%) NTU Limit = 0.3	Max Day Turbidity NTU Limit = 1
☑ Slow Sand ☐ Diatomaceous Earth	Monthly Turbidity (95%) NTU Limit = 1	Max Day Turbidity NTU Limit = 5

Day	Max Filtered Water Turbidity Result[2] (NTU)	Number of Turbidity Measurements[3]	Number of Turbidity Measurements ≤ Monthly (95%) NTU Limit[4]	Number of Turbidity Measurements > Max Day NTU Limit[5]
1	0.043	6	6	0
2	0.043	6	6	0
3	0.049	6	6	0
4	0.047	6	6	0
5	0.040	6	6	0
6	0.055	6	6	0
7	0.050	6	6	0
8	0.043	6	6	0
9	0.041	6	6	0
10	0.047	6	6	0
11	0.048	6	6	0
12	0.049	6	6	0
13	0.043	6	6	0
14	0.042	6	6	0
15	0.041	6	6	0
16	0.041	6	6	0
17	0.041	6	6	0
18	0.044	6	6	0
19	0.039	6	6	0
20	0.048	6	6	0
21	0.054	6	6	0
22	0.042	6	6	0
23	0.043	6	6	0
24	0.040	6	6	0
25	0.054	6	6	0
26	0.041	6	6	0
27	0.041	6	6	0
28	0.040	6	6	0
29	0.045	6	6	0
30	0.041	6	6	0
Totals:		180	180	% Turbidity Meeting 95% Limit
		A	B	B/A x 100 % = X
				(Enter on SWTR – Form G)

1. May be used by systems serving less than 10,000 persons, subject to DEP approval.
2. Enter the Maximum Filtered Water Turbidity Result recorded each day, at the 4th hour or other approved interval.
3. Enter the Total # of Turbidity measurements taken for each day. Measurements must be taken at a minimum of 4-hour intervals (i.e. 6 readings per day). For continuous monitors count each 4-hour period as 1 measurement. Record the actual turbidity result at the specified interval of time. Do not average turbidity measurements. If DEP approved, 15-minute readings (i.e. 96 readings per day) may be submitted. Filtered turbidity data must be kept on file for DEP review.
4. Out of the # of turbidity measurements taken and recorded in the previous column, enter the number of turbidity measurements that were less than or equal to the Monthly (95%) NTU Limit for the filtration technology used.
5. If at any at time the filtered turbidity Max Day NTU Limit is exceeded, the DEP must be notified no later than the end of the next business day. For each exceedance, record the turbidity value(s) and date(s) on SWTR - Form G

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Mercier

Date: 7/8/2020 Title: Primary Certified Operator

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program
COMPLIANCE DETERMINATION FOR FILTERED SYSTEMS - Monthly Report

SWTR G

I. PWS INFORMATION

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Plant Name: Long Pond Reporting Period: Month: June Year: 2020

II. TURBIDITY PERFORMANCE CRITERIA

1. Monthly Turbidity (95%) NTU Limit - The turbidity level of a system's filtered water must be less than or equal to the Montly Turbidity NTU Limit in at least 95% of the measurements taken each month for the filtration technology used, otherwise SWTR TT Violation (Tier 2)

180	= A	Total # of filtered water turbidity measurements for month (SWTR - Form F)
180	= B	Total # of filtered water turbidity measurements less than or equal to the specified limits for the filtration technology used. (SWTR - Form F)
100.00%	= (B/A) X 100	The percentage of turbidity measurements meeting the Monthly Turbidity 95% NTU Limit.

2. Max Day NTU Limit - The turbidity level of a system's filtered water must at no time exceed the Max Day NTU Limit for the filtration technology used, otherwise SWTR TT Violation (Tier 2).

Record the date and turbidity value for any measurements exceeding the Max Day NTU. ☑ Check box if "None"

Date	Value	Date Reported to DEP		Date	Value	Date Reported to DEP

For each day the Max Day NTU limit is exceeded, the DEP must be notified by the end of the next business day. SWTR TT Violation (Tier 2). If DEP is not consulted within 24 hours then it is a SWTR TT (Tier 1) violation requiring public notification within 24 hours.

III. DISINFECTION PERFORMANCE CRITERIA

1. Point-of-Entry Minimum Disinfectant Residual Criteria - Residual Disinfectant concentration cannot be <0.2 mg/L for more than 4 hours. SWTR TT Violation (Tier 2).

Minimum Disinfection Residual at Point-of-Entry to Distribution System

Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L	Day	Cl_2 mg/L
1	1.32	6	1.20	11	1.08	16	1.20	21	0.96	26	0.80	31	
2	1.30	7	1.14	12	1.09	17	1.12	22	1.07	27	1.01		
3	1.29	8	1.26	13	1.21	18	1.04	23	1.20	28	0.99	Residual Measured	
4	1.32	9	1.31	14	1.20	19	1.02	24	1.15	29	1.30	☑ Free Cl_2	
5	1.24	10	1.16	15	1.21	20	1.05	25	0.84	30	1.51	☐ Total Cl_2	
												☐ Combined Cl_2	

If at any time the residual falls below 0.2 mg/L in the water entering the distribution system, the supplier of water must notify the Department as soon as possible, but no later than by the end of the next business day. The supplier of water also must notify the Department by the end of the next business day whether or not the residual was restored to at least 0.2 mg/L within four hours.

Date(s) Residual < 0.2 mg/L	Duration of Low Level (hrs.)	Date Reported to DEP		Date(s) Residual < 0.2 mg/L	Duration of Low Level (hrs.)	Date Reported to DEP

2. Distribution System Disinfectant Residual Criteria - Residual Disinfectant concentration (V) cannot be undetectable in greater than 5% of samples in a month, for any two consecutive months. SWTR TT Violation (Tier 2). Chlorine residuals must be measured at the same time and location as total coliform *distribution routine & repeat* samples. If no residual is detected, an HPC sample must be collected and analyzed.

Total # of HPC samples taken during month: 0 # HPC sites > 500/mL: # HPC sites ≤ 500/mL:

2	= a	# of sites where Cl_2 residual measurements were made, whether a residual was detected or not (should be the same # of sites reported on your monthly RTCR Cl_2 residual report)
0	= b	# of sites HPC samples were analyzed *instead* of Cl_2 residual measurements
0	= c	# of sites where no Cl_2 residual was detected and no HPC sample was analyzed
0	= d	# of sites where no Cl_2 residual was detected and HPC > 500 CFU/mL
0	= e	# of sites where no Cl_2 residual measurement was made and HPC > 500 CFU/mL

Water in the distribution system with a heterotrophic bacteria concentration (HPC) less than or equal to 500/mL, is deemed to have a detectable disinfectant residual for purposes of determining compliance with this requirement. When analyzed, report HPC results on your monthly DEP Bacteriological Report.

$V = \frac{(c + d + e)}{(a + b)} \times 100$

This Month % V = 0.00% Previous Month % V = Is V > 5% for 2 months? No

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Meurer Date: 7/8/2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS
More than 1 Disinfectant / Sampling Point

SWTR H

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Facility Name: Long Pond | Reporting Period: Month: June Year: 2020

II. DAILY REPORTING:

	Disinfectant Sequence (CT calc / CT 99.9)						Inactivation Ratio SUM[1] (CT calc / CT 99.9)	Inactivation Ratio[2] < 1.0
Day	1st	2nd	3rd	4th	5th	6th		
1	10.1	42.2					52.3	
2	9.2	40.9					50.1	
3	12.6	42.2					54.8	
4	13.4	34.0					47.3	
5	10.6	44.3					54.9	
6	9.1	30.6					39.7	
7	14.6	39.1					53.6	
8	11.0	37.5					48.4	
9	10.9	33.7					44.7	
10	14.1	38.6					52.7	
11	13.5	36.0					49.5	
12	11.9	39.8					51.7	
13	12.2	40.5					52.7	
14	15.0	36.4					51.4	
15	11.6	37.9					49.4	
16	11.8	33.4					44.7	
17	13.8	27.8					41.6	
18	13.0	30.3					43.3	
19	10.9	34.2					45.1	
20	10.5	27.7					38.2	
21	10.0	36.7					46.7	
22	9.2	30.8					40.1	
23	9.5	43.5					53.0	
24	11.0	54.9					65.9	
25	21.0	35.5					56.5	
26	8.9	39.5					48.4	
27	3.2	71.6					74.8	
28	16.7	64.2					80.9	
29	20.4	66.7					87.0	
30	24.8	91.5					116.4	

1. To determine SUM (CT calc/CT 99.9), add (CT calc/CT 99.9) values from the first disinfectant sequence to the last from SWTR - Form I.
2. The inactivation ratio (CT calc / CT 99.9) is determined before or at the first customer during peak hourly flow and if the SUM (CT calc / CT 99.9)<1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved. A "Yes" response above indicates a SWTR Treatment Technique violation.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Mun Date: 7.8.2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

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Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS

SWTR
I

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: Great Barrington

Treatment Facility Name: Long Pond Reporting Period: Month: June Year: 2020

Disinfectant[1]: Segment 2 - storage tank effluent (POE) Sequence of Disinfectant Application: ☐ 1st ☑ 2nc ☐ 3rc ☐ 4th ☐ 5th ☐ 6th

II. DAILY REPORTING: All measurements taken during peak hourly flow.

Day	Peak Hourly Flow[2] (gpm)	Disinfectant Concentration[3] C (mg/L)	Disinfectant Contact Time[4] T (min.)	CT Calc (=C x T)	pH[5]	Water Temp[6] (°C)	CT[7] 99.9	Inactivation Ratio[8] (CT calc / CT 99.9)	Inactivation Ratio[9] <1.0
1	118	1.41	793	1117	7.34	18.0	26	42.2	see Form H
2	123	1.38	773	1066	7.34	18.2	26	40.9	see Form H
3	124	1.48	750	1108	7.35	18.3	26	42.2	see Form H
4	148	1.39	625	870	7.33	18.4	26	34.0	see Form H
5	117	1.35	819	1107	7.33	18.7	25	44.3	see Form H
6	161	1.26	589	786	7.33	18.8	25	30.6	see Form H
7	127	1.34	728	974	7.34	18.8	25	39.1	see Form H
8	140	1.45	640	928	7.35	19.1	25	37.6	see Form H
9	157	1.36	597	813	7.34	19.3	24	33.7	see Form H
10	127	1.26	735	920	7.34	19.3	24	38.5	see Form H
11	124	1.12	734	821	7.32	19.6	23	36.0	see Form H
12	120	1.15	791	913	7.34	19.7	23	39.8	see Form H
13	124	1.24	752	930	7.35	19.9	23	40.6	see Form H
14	140	1.30	640	830	7.36	20.1	23	36.4	see Form H
15	131	1.30	663	858	7.35	20.2	23	37.9	see Form H
16	154	1.30	583	758	7.36	20.3	23	33.4	see Form H
17	171	1.17	518	608	7.35	20.5	22	27.8	see Form H
18	149	1.10	587	646	7.36	20.6	21	30.3	see Form H
19	148	1.16	615	714	7.35	21.2	21	34.2	see Form H
20	174	1.08	530	574	7.34	21.1	21	27.7	see Form H
21	173	1.49	511	758	7.33	21.8	21	36.7	see Form H
22	182	1.22	482	602	7.32	22.1	20	30.8	see Form H
23	161	1.51	566	855	7.34	22.6	20	43.5	see Form H
24	123	1.30	788	1023	7.34	23.1	19	54.9	see Form H
25	143	1.01	612	621	7.35	23.6	18	35.6	see Form H
26	134	1.02	683	693	7.36	23.5	18	39.5	see Form H
27	127	1.90	732	1393	7.40	23.7	19	71.6	see Form H
28	114	1.40	835	1167	7.40	23.9	18	64.2	see Form H
29	109	1.41	870	1230	7.41	23.8	18	66.7	see Form H
30	94	1.84	978	1797	7.43	23.7	20	91.5	see Form H

Notes:

1. Use a separate form for each disinfectant/sampling point. Enter disinfectant and sequence position, e.g. "ozone/1st" or "ClO_2/3rd". If more than one disinfectant sampling point, you must also complete SWTR Form H and calculate the cummulative inactivatoe ratio SUM (CT calc/CT 99.9) to determine compliance.
2. Peak hourly flow means the highest pumpage *hour* during the day, not the absolute peak flow at any instant.
3. The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
4. The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow. The time *T* used in calculating *CT*, is the time it takes the water, during peak hourly flow, to move between the point of disinfection application and the point at which the residual is measured.
5. If the system uses free chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
6. The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point during peak hourly flow.
7. Use Inactivation Tables at 310CMR 22.20A Tables 1.1 - 1.6, 2.1 and/or 3.1
8. The inactivation ratio is determined before or at the first customer during peak hourly flow and if the ratio is < 1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved.Note: Add log credits for watershed & filtration to the numerator of inactivation ratio
9. A "Yes" response above indicates a SWTR Treatment Technique violation (Tier 2).

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my

PWS Authorized Signature: James J Mercer Date: 7/8/2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

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Massachusetts Department of Environmental Protection - Drinking Water Program
CT DETERMINATION FOR FILTERED SYSTEMS

SWTR
I

I. PWS INFORMATION:

PWS ID#: 1113003 PWS Name: Housatonic Water Works PWS Town: 0.0821705

Treatment Facility Name: Long Pond Reporting Period: Month: June Year: 2020

Disinfectant[1]: Segment 1 - post clearwell (tap in 200-ft long pipe) Sequence of Disinfectant Application: ☑ 1st ☐ 2nd ☐ 3rd ☐ 4th ☐ 5th ☐ 6th

II. DAILY REPORTING: All measurements taken during peak hourly flow.

Day	Peak Hourly Flow[2] (gpm)	Disinfectant Concentration[3] C (mg/L)	Disinfectant Contact Time[4] T (min.)	CT Calc (=C x T)	pH[5]	Water Temp[6] (°C)	CT[7] 99.9	Inactivation Ratio[8] (CT calc / CT 99.9)	Inactivation Ratio[9] <1.0
1	152	1.68	140	235	6.92	18.1	23	10.1	see Form H
2	152	1.39	149	208	6.92	18.0	23	9.2	see Form H
3	152	2.07	150	310	6.93	18.0	25	12.6	see Form H
4	152	2.01	160	321	6.93	18.2	24	13.4	see Form H
5	152	1.57	151	238	6.89	18.4	22	10.8	see Form H
6	152	1.46	136	199	6.89	18.6	22	9.1	see Form H
7	152	2.14	160	342	6.91	18.7	24	14.6	see Form H
8	152	1.54	151	233	6.90	19.1	21	11.0	see Form H
9	152	1.50	152	228	6.89	19.2	21	10.9	see Form H
10	152	1.94	161	312	6.90	19.2	22	14.1	see Form H
11	152	2.13	138	295	6.90	19.6	22	13.5	see Form H
12	152	1.52	158	241	6.89	19.6	20	11.9	see Form H
13	152	1.89	136	257	6.91	19.8	21	12.2	see Form H
14	152	1.97	160	316	6.91	20.0	21	15.0	see Form H
15	152	1.71	137	235	6.90	20.0	20	11.8	see Form H
16	152	1.45	151	220	6.89	20.1	19	11.3	see Form H
17	152	1.71	161	275	6.89	20.2	20	13.8	see Form H
18	152	1.74	148	257	6.89	20.4	20	13.0	see Form H
19	152	1.44	142	204	6.88	20.7	19	10.9	see Form H
20	152	1.46	132	193	6.88	20.9	18	10.8	see Form H
21	152	1.13	148	167	6.88	21.7	17	10.0	see Form H
22	152	1.02	145	149	6.89	22.2	16	9.2	see Form H
23	152	1.02	144	147	6.89	22.8	15	9.5	see Form H
24	152	1.19	145	171	6.91	23.1	16	11.0	see Form H
25	152	2.75	142	390	6.95	23.4	19	21.0	see Form H
26	152	0.90	149	132	6.94	23.4	15	8.9	see Form H
27	152	0.29	158	46	6.98	23.1	14	3.2	see Form H
28	152	1.71	159	273	6.96	23.5	16	16.7	see Form H
29	152	2.54	148	376	6.97	23.2	18	20.4	see Form H
30	152	3.65	146	532	7.01	23.2	21	24.8	see Form H

Notes:

1. Use a separate form for each disinfectant/sampling point. Enter disinfectant and sequence position, e.g. "ozone/1st" or "ClO_2/3rd". If more than one disinfectant sampling point, you must also complete SWTR Form H and calculate the cummulative inactivation ratio SUM (CT calc/CT 99.9) to determine compliance.
2. Peak hourly flow means the highest pumpage *hour* during the day, not the absolute peak flow at any instant.
3. The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
4. The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow. The time *T* used in calculating *CT*, is the time it takes the water, during peak hourly flow, to move between the point of disinfection application and the point at which the residual is measured.
5. If the system uses free chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
6. The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point during peak hourly flow.
7. Use Inactivation Tables at 310CMR 22.20A Tables 1.1 - 1.6, 2.1 and/or 3.1
8. The inactivation ratio is determined before or at the first customer during peak hourly flow and if the ratio is < 1.0, the 99.9% *Giardia lamblia* inactivation requirement has not been achieved Note: Add log credits for watershed & filtration to the numerator of inactivation ratio.
9. A "Yes" response above indicates a SWTR Treatment Technique violation (Tier 2).

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

PWS Authorized Signature: James J Mercer Date: 7·8·2020 Title: Primary Certified Operator

Phone #: 413-528-1780 Fax: 413-528-3024 Email: housatonicwater@gmail.com

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are

Massachusetts Department of Environmental Protection - Drinking Water Program
CHLORINE/CHLORAMINES - MONTHLY REPORT

Cl

I. PWS INFORMATION:

MONTH: June | YEAR: 2020

PWS ID #: 1113003 | PWS Name: Housatonic Water Works | City/Town: Great Barrington | Class: ☑CM ☐TNC ☐NC

II. ANALYTICAL INFORMATION: Refer to your MassDEP Coliform Sampling Plan and/or DBPR monitoring plan to help complete this section.

Type Measured: ☑ Free Chlorine ☐Total Chlorine ☐ombined Chlorine Analytical Method: SM 4500-Cl 86 ☐ D ☐ E ☐ F ☐ G ☐ H I ASTM D1253- ☐

Notes:

DEP APPROVED SAMPLE SITE INFORMATION[1]			CHLORINE RESULT[2] (mg/L)	COLLECTION AND ANALYSIS[3]:		COLLECTED AND ANALYZED BY:
DEP Sample Type[1,4]	DEP Location Code #[1]	DEP Approved SAMPLE LOCATION[1]		DATE	TIME	
RS	EP1	Point of Entry	1.10	6/17/2020	14:26	Tim Vreeland
RS	001	Pleasant and Main	0.41	6/17/2020	14:50	Tim Vreeland
RS	002	Brookside School	0.37	6/17/2020	14:40	Tim Vreeland

[1] DEP Sample Type, Location Code#, and DEP Approved Sample Site Location must correspond to the same information on your DEP Total Coliform Sampling Plan.
[2] SWTR systems: HPC must be collected at distribution sites with zero chlorine residual and results reported on the DEP Bacteriological Monthly Report form and on the appropriate SWTR Form.
[3] Collection and Analysis: Chlorine residual shall be measured in the field (immediately upon collection) at the same time and location in the distribution system as total coliforms are sampled. Record ND values as 0 (zero).
[4] Sample Type: RS-Routine Distribution Sample, RO-Original Site Repeat, UR-Upstream Repeat, DR-Downstream Repeat, AR-Additional Repeat, or SS-Special Sample (as determined by DEP).
[5] All DISTRIBUTION samples taken and analyzed shall be included in determining compliance, even if that number is greater than the minimum required. If you collect repeat coliform samples within the distribution system during the month, you must also measure for a detectable chlorine residual at the repeat sites and include these samples. DO NOT include raw water (RW) or plant tap (PT) chlorine residual samples in your calculations.

III. COMPLIANCE REPORTING:

Total # of Samples Collected for Month[5]: 2 | Average Chlorine Result of All Samples For Month[5] (mg/L): 0.39

In accordance with 310 CMR 22.15(2), if mailing paper reports, TWO copies of this report must be received by your MassDEP Regional Office no later than 10 days after the end of the month in which the results are received or no later than 10 days after the end of the monitoring period, whichever is sooner. Please note: Electronic reporting (eDEP) deadline is the same as above.

I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best extent of my knowledge.

Primary Certified Operator Signature and Date: 7.8.2020

DEP Review Status:	☐ Accepted ☐Disapproved	Review Comments:	

Gmail

James J. Mercer <housatonicwater@gmail.com>

RE: Report

1 message

Richard Brown <RBrown@cornwellinc.com> Mon, Oct 26, 2020 at 4:31 PM
To: "James J. Mercer" <housatonicwater@gmail.com>, "David A. Cornwell" <DCornwell@cornwellinc.com>, "wcs.llc@comcast.net" <wcs.llc@comcast.net>, Savannah Mika <SMika@cornwellinc.com>

I will be completing it this week

Richard A. Brown, PE

Cornwell Engineering Group, Inc.

rbrown@cornwellinc.com

757-873-1534 x224 (757-288-7338 cell)

From: James J. Mercer <housatonicwater@gmail.com>
Sent: Monday, October 26, 2020 3:57 PM
To: David A. Cornwell <DCornwell@cornwellinc.com>; wcs.llc@comcast.net; Richard Brown <RBrown@cornwellinc.com>; Savannah Mika <SMika@cornwellinc.com>
Subject: Report

Hi Dave

I understand that Rich got off our comments on the report. I'm really anxious to get this into DEP do you think it will be completed this week?

Jim

80 Maple Avenue, Suite1

Great Barrington, Massachusetts 01230

(413) 528-1780 phone
(413) 528-3024 fax
www.housatonicwater.com

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Gmail

James J. Mercer <housatonicwater@gmail.com>

Fwd: Cornwell Report

1 message

James J. Mercer <housatonicwater@gmail.com> Tue, Nov 3, 2020 at 10:42 AM
To: "David A. Cornwell" <DCornwell@cornwellinc.com>, Richard Brown <RBrown@cornwellinc.com>, Savannah Mika <SMika@cornwellinc.com>
Bcc: Rich Gullick <wcs.llc@comcast.net>

FYI

Housatonic Water Works Company

80 Maple Avenue, Suite1
Great Barrington, Massachusetts 01230
(413) 528-1780 phone
(413) 528-3024 fax
www.housatonicwater.com

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---------- Forwarded message ---------
From: **James J. Mercer** <housatonicwater@gmail.com>
Date: Tue, Nov 3, 2020 at 10:41 AM
Subject: Cornwell Report
To: Doherty, Deirdre (DEP) <deirdre.doherty@state.ma.us>, Harrington, Brian D (DEP) <brian.d.harrington@state.ma.us>, Paine, Douglas (DEP) <douglas.paine@state.ma.us>, Rebecca Jurczyk <rjurczyk@townofgb.org>, Jim Ericson <ericson@lenard-eng.com>, Rich Gullick <wcs.llc@comcast.net>, Cox, Jr., Robert D. <RCOX@bowditch.com>
Cc: Mark Pruhenski <MPruhenski@townofgb.org>

Dear Ms. Doherty

Please see the attached correspondence and report.

Thank you.

Jim Mercer

Housatonic Water Works Company

80 Maple Avenue, Suite1
Great Barrington, Massachusetts 01230
(413) 528-1780 phone
(413) 528-3024 fax
www.housatonicwater.com

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2 attachments

DEP Letter 11032020.pdf
242K

Cornwell Full Report.pdf
567K

HOUSATONIC WATER WORKS COMPANY

SINCE 1897

November 3, 2020

VIA EMAIL: *deirdre.doherty@state.ma.us*

Ms. Deirdre Doherty
Drinking Water/Municipal Services Chief
Bureau of Water Resources
Massachusetts Department of Environmental Protection (MassDEP)
436 Dwight Street
Springfield, MA 01103

RE: Housatonic Water Works Company
PWSID #1113003
Cornwell Report

Dear Ms. Doherty:

Attached is the report that Cornwell Engineering Group prepared.

It appears that there are two separate causes of the colored water issues:

- Suspended particles from hydraulic disturbances: Roily water observations originate during water main flushing, hydrant testing, and when water is used to battle fires. At these times there are high volumes of water moving through the distribution system. During these events sediment (iron rust) in the pipes gets stirred up. These disturbances often result in a turbid, darker colored water with suspended particles.

- Clear yellow color from manganese: In both summer 2018 and summer 2020, some parts of the distribution system experienced a clear (transparent) water with a light yellow color. Based on Cornwell's recent data analysis, we now believe that yellow water was caused by manganese in the treated water. At all times, the low level of manganese was of no health risk.

80 Maple Avenue, Suite 1, Great Barrington, MA 01230

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The report identifies manganese as the primary source of the colored water and the company is developing a plan to remediate the situation in a timely manner.

Sincerely,

James J. Mercer

Enclosure

cc:

Brian Harrington, MassDEP (e-copy)
Douglas Paine, MassDEP (e-copy)
Rebecca Jurczyk, GB BOH (e-copy)
James Ericson, P.E., Lenard Engineering, Inc. (e-copy)
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CORNWELL
ENGINEERING GROUP

October 29, 2020
Housatonic Water Works
Memorandum No. 15400-002

Subject: Desktop Study – Colored Water and Corrosion Assessment

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Housatonic Water Works Company (HWWC) has tasked Cornwell Engineering Group, Inc. (Cornwell) with investigating the colored water events that seasonally occur in their system (typically during warner months), as well as the corrosivity of the water. The following memorandum discusses and summarizes the HWWC water quality characteristics and their implications on solubility or precipitation of hardness, iron, manganese, lead, or copper, and provides direction for an action plan to resolve the issues.

SYSTEM DESCRIPTION

The water source for the HWWC system is surface water from Long Pond. Treatment consists of slow sand filtration, addition of sodium hypochlorite, and chlorine contact as depicted in the treatment schematic in Figure 1. Current average daily production is 0.11 MG.

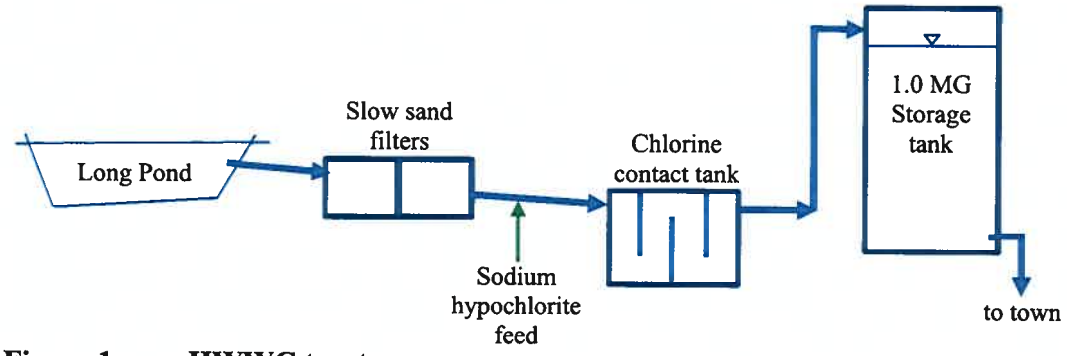


Figure 1 HWWC treatment schematic

Characteristics of the water mains and service lines, as reported in the December 2016 Desktop Study Report (Lenard 2016), are summarized in Table 1 and in the following items:

- Water main upgrades were initiated in the 1990s and included about 14,000 LF (mostly ductile iron and polyethylene as per Table 1), and most (if not all) of the remaining system pipes are >100 years old and are made of cast iron or steel.

- The characteristics of the "steel" pipe are not reported by Lenard (2016), but the data suggests that > 80 percent of the pipes are unlined cast iron or "steel" pipes >100 years old
- There are some asbestos cement (transite) pipes in the system. Information on sizes has not been reported, but these pipes are typically used for larger mains in a water system.
- No lead service lines have been identified in the system over the past ~35 years. Only a few lead goosenecks were encountered during that time, and they were removed. No other lead goosenecks are currently known to exist, and HWWC policy is to promptly remove any that may be found in the future.
- In addition to company-owned mains, there are approximately ten streets that are privately owned with privately owned water mains. These are typically steel lines, over 50 years old, and don't have hydrants or blowoffs on the end to flush out stale or dirty water. This situation may impact water quality in these areas.

Table 1 HWWC Water Mains and Service Lines (Lenard 2016)

Water Mains		
Material	Lineal Feet (LF)	Percent of Total
Cast iron	64,497	54.3%
Steel†	34,734	29.2%
Ductile iron	14,671	12.3%
Transite (asbestos cement)	4,552	3.8%
Polyethylene (PE)	380	0.3%
Total	118,834	100.0%
Service Lines		
Material	Number	Percent of Total
Galvanized	784	91.6%
Copper	71	8.3%
Ductile Iron	1	0.1%
Total	856	100%

HWWC WATER QUALITY – ENTRY POINT AND DISTRIBUTION SYSTEM

Historical data are summarized in Table 2, with data from the distribution system separated by low color (<15 PCU) and high color (>15 PCU). Data for the distribution system includes data from August 22, 2018 through March 16, 2020 plus data from additional five sampling events in August 2020. Data for point of entry (POE) for pH from the WTP monitoring data was only used from July 27, 2020 through most recent data provided (September 7, 2020) due to pH probe calibration issues (Figure 5). Additional data at POE was also collected and measured by an independent laboratory, similar to the distribution sites. This additional POE data included 5 sampling events, one from August 22, 2018 and four from recent sampling events in August of 2020. Therefore, POE data may not be representative of conditions observed during the colder months. Calcium hardness at POE was reported in the 2016 desktop corrosion control treatment (CCT) study (Lenard 2016), and was assumed to be similar at the distribution sites for calculated values. Calculated parameters such as Larson and Skold Index (LSK), calcium carbonate precipitation potential (CCPP), dissolved inorganic carbon (DIC), and chloride to sulfate mass ratio (CSMR) are also included. Calculations for CCPP and DIC were performed assuming a water temperature of 20°C.

Since colored water is a main concern in the HWWC system, Table 2 separates distribution data by color above or below the secondary maximum contaminant level (SMCL) of 15 PCU. Note that colored water data are still limited.

Most of the other parameters and constituents are about the same at the POE and in the distribution system, and except for color and manganese the results during high color events (>15 PCU) are about the same as on low color events (<15 PCU). On dates when the color is >15 PCU, the manganese is higher than on the dates when the color is <15 PCU. More than half of the manganese results in the distribution system samples with color <15 PCU were below the detection limit (<0.002 mg/L): 86 of 155 samples, and 145 of the 155 samples were <0.010 mg/L. For distribution samples >15 PCU, no manganese values were below the detection limit. When the color was ≥30 PCU the manganese was ≥0.09 mg/L. Further discussion on manganese and colored water is included in the next section.

Iron, manganese, and total color data are evaluated in the discussion below, followed by a discussion of pH, lead and copper, use of polyphosphate, hardness precipitation, and free chlorine residuals.

Table 2 Housatonic Water Works Water Quality (2018 – 2020)

Parameter/Constituent	POE Median, n=5	DS (color>15 PCU) Median, n=6	DS (color<15 PCU) Median, n=155
pH*	7.3	7.7	7.8
Total Alkalinity (mg/L $CaCO_3$)	80	78	80
Calcium Hardness (mg/L $CaCO_3$)	48	--	--
Total Hardness (mg/L $CaCO_3$)	--	--	--
Total Iron (mg/L)	<0.05	0.093	<0.05
Total Manganese (mg/L)	0.086	0.018	<0.002
Chloride (mg/L)	14.2	14.3	14.7
Sulfate (mg/L)	<5	<5	<5
Free Chlorine Residual (mg/L)	1.13	0.45	0.35
Apparent color (PCU) †	20	20	0
Total Dissolved Solids (mg/L)	107	113	105
DIC (mg/L as C)*	21.9	19.8	19.9
LSK	<0.32	<0.52	<0.32
CCPP (mg/L $CaCO_3$)	-18.5		
Saturation pH	8.16		
LSI	-0.96		
CSMR (mg/mg)	>2.8	>2.8	>2.9

* = the POE pH data used to determine the median included five samples from an independent certified laboratory, plus one value per day from the treatment plant's analyzer from 7/27/20 through 9/27/20. The DIC was calculated using paired pH and alkalinity data on dates when alkalinity was also measured.

† = APHA platinum/cobalt (Pt/Co) color units, unfiltered[1] (ASTM 2019)

DIC = Dissolved inorganic carbon (also known as "total carbonate")

LSK = Larson-Skold Index

CCPP = Calcium carbonate precipitation potential ("+" = precipitation, "-" = dissolution)

LSI = Langelier Saturation Index

CSMR = Chloride to sulfate mass ratio

IRON AND MANGANESE

Results from Table 2 show that iron was consistently below the SMCL, even during high color events (>15 PCU). Previously colored water complaints were thought by HWWC to be from iron corrosion due to the aging iron pipes in the system, but none of the iron results reported, including samples with total color 40 to 50 PCU, exceeded the 0.3 mg/L iron SMCL.

The Larson-Skold Index (LSK) is used to describe the corrosivity of water towards iron, although it does not account for all iron corrosion mechanisms. Table 3 shows the interpretation with respect

[1] "True" color (filtered water sample) is measured the same way as apparent color (unfiltered water sample), except with suspended material (e.g., turbidity) removed by filtration before determination of "true" color.

to potential for iron corrosion associated with calculated LSK values (Leitz and Guerra 2013). The index is calculated using the ratio of equivalent weight of chloride and sulfate ions to the equivalent weight of bicarbonate and carbonate ions, shown in the following equation.

$$LSK = \frac{(Cl^- + SO_4^{2-})}{(HCO_3^- + CO_3^{2-})} = \frac{\text{eq. weight of chloride + eq. weight of sulfate}}{\text{eq. weight of bicarbonate and carbonate}}$$

Table 3 Larson-Skold Index
(Source: Leitz and Guerra 2013)

LSK Value	Significance
< 0.8	Chloride and sulfate concentrations will not interfere with natural film formation
0.8 < LSK < 1.2	Chloride and sulfate concentrations may interfere with natural film formation; corrosion may occur
> 1.2	High corrosion rates are anticipated

Calculations based on the recent sampling, using POE alkalinity of 80 mg/L $CaCO_3$ as an estimate for the sum of carbonate and bicarbonate, a chloride of 14.2 mg/L, and sulfate as the detection limit of 5 mg/L, gives a Larson-Skold Index of about <0.32 (as shown in equation below)[2]. As shown in Table 3, an LSK of 0.3 suggests the water quality conditions are not conducive to iron corrosion. This is supported by the low measured iron levels in the distribution system, as levels are historically below the SMCL even during high color sampling events.

$$LSK = \frac{(Cl^- + SO_4^{2-})}{(HCO_3^- + CO_3^{2-})} \cong \frac{\left(\frac{14.2\ mg/L}{35.45\ mg/meq}\right) + \left(\frac{<5\ mg/L}{48\ mg/meq}\right)}{\left(\frac{80\ mg/L\ as\ CaCO_3}{50\ mg/meq}\right)} = <0.32$$

Figure 2 shows manganese in the raw water, at point of entry, and in the distribution system from Summer 2018 through Summer 2020. Manganese in the distribution system varies seasonally, with higher levels in the warmer months. Manganese exceeds the SMCL at the POE in multiple measurements in August 2018 and August 2020. One measurement in the distribution system in August 2018 is at the SMCL and two exceed the SMCL in August 2020. There are no data available for the colder months for manganese in the raw water and the point of entry.

[2] The sum of the equivalent weights of carbonate and bicarbonate at normal pH of drinking water can be approximated as the alkalinity in mg/L as $CaCO_3$ divided by a factor of 50 mg $CaCO_3$ per meq

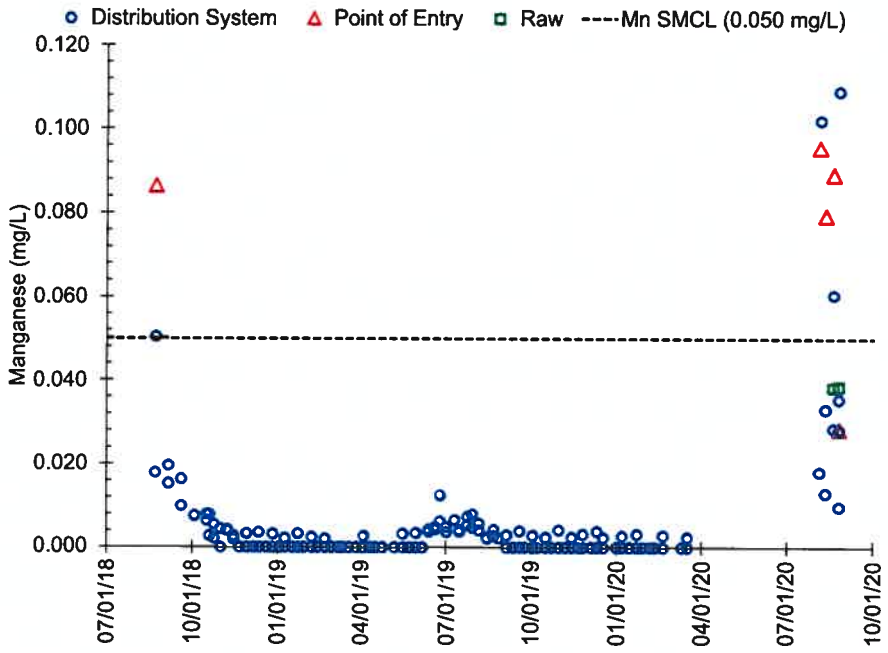


Figure 2 Manganese in raw, point of entry, and distribution system water

The higher manganese levels in the summer correspond to the same time period when most colored water complaints are received. Figure 3 compares manganese versus total color in samples where both were analyzed (see exception discussed later in this paragraph). This figure shows that events with manganese above the SMCL occur when there is high color in the same sample.

Figure 4 shows the same type of plot but with iron instead of manganese. This figure shows that even during high color events, the iron levels are below the SMCL of 0.3 mg/L. There does not appear to be any trend between high color events and high iron.

The results from these two figures for iron and manganese versus color show that:

a) iron never occurred above the SMCL, even during periods of total color up to 50 PCU

b) manganese increased on dates that higher total color was measured

c) for this particular limited data set of colored-water samples, manganese and color in the distribution system are similar to, or lower than, levels observed at the POE, suggesting that for these specific distribution system locations the color and manganese are not increasing to levels that are higher than at the entry point.

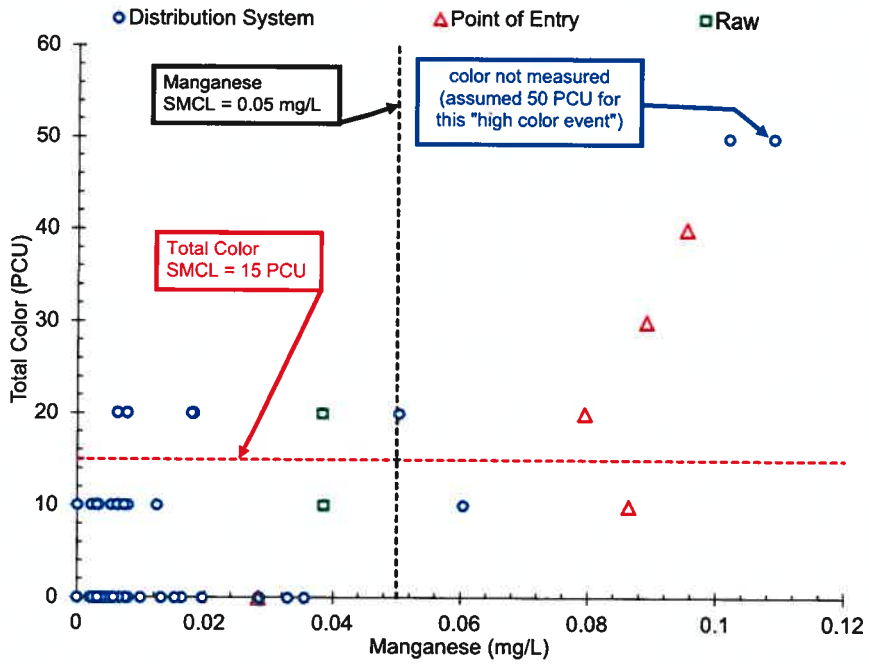


Figure 3 Manganese versus Total Color

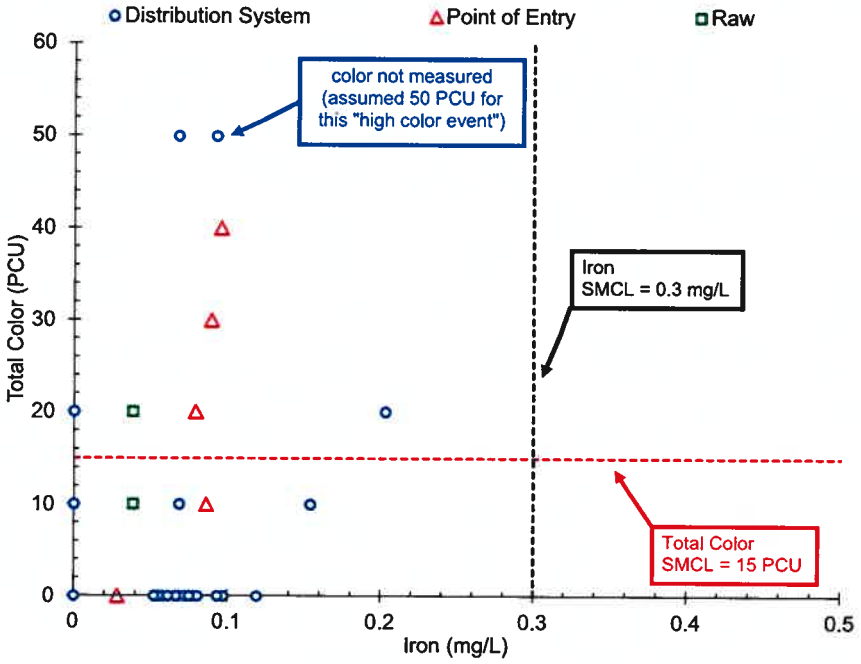


Figure 4 Iron versus Total Color

Following a hydraulic disturbance (e.g., main breaks or water main flushing) it is common for turbid water to be observed, and this has been reported in the HWWC system.

pH

HWWC provided water treatment plant data, which included pH data at two points in the water treatment process identified as "Segment 1" (exiting the contact tank) and "Segment 2" (point of entry). There were some reported issues with pH measurements at the WTP in the past, and the pH probes were re-calibrated on July 27, 2020. Figure 5 compares data before and after recalibration in the two segments, but only data after recalibration were used in Table 2 and in the following discussion. Dissolved inorganic carbon (DIC) is calculated from paired alkalinity and pH data, so only data after recalibration was used to calculate DIC at the POE. Distribution system monitoring locations have measured pH values ranging between approximately 7.2 to 8.2, though typically is in the range of 7.5 to 8.0 (Figure 6 and Figure 7). These figures demonstrate that there are fewer than 10 percent of pH values at any distribution system location that are <7.2..

The pH in the distribution system is within the desired range for lead and copper solubility control (see later discussion), so adjustment of pH at the WTP will not be necessary if this pH range can be maintained in the distribution system. Routine monitoring of the distribution system and WTP pH should be continued.

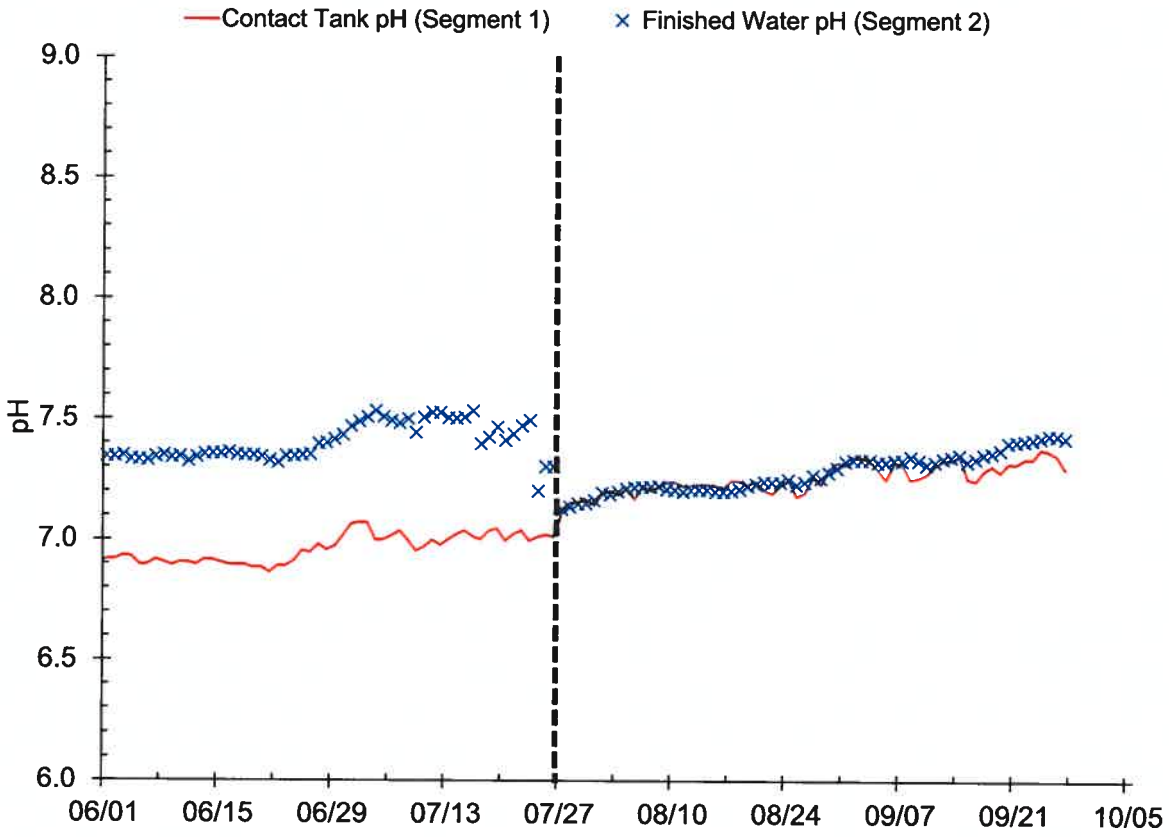


Figure 5 **Historical pH data for Segments 1 and 2 at the WTP (Through September 27, 2020)**

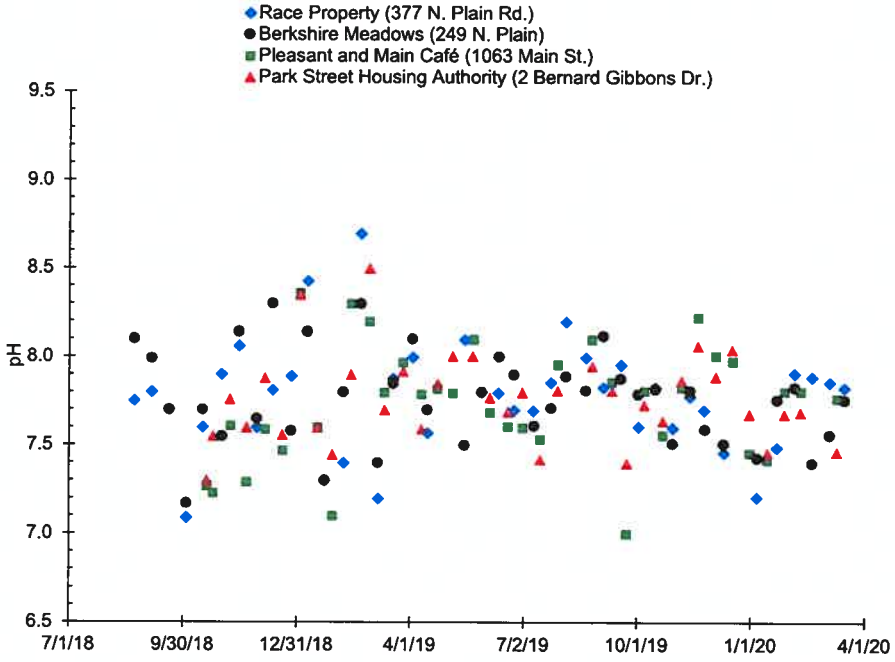


Figure 6 Distribution system (DS) pH versus date (August 2018 through August 2020)

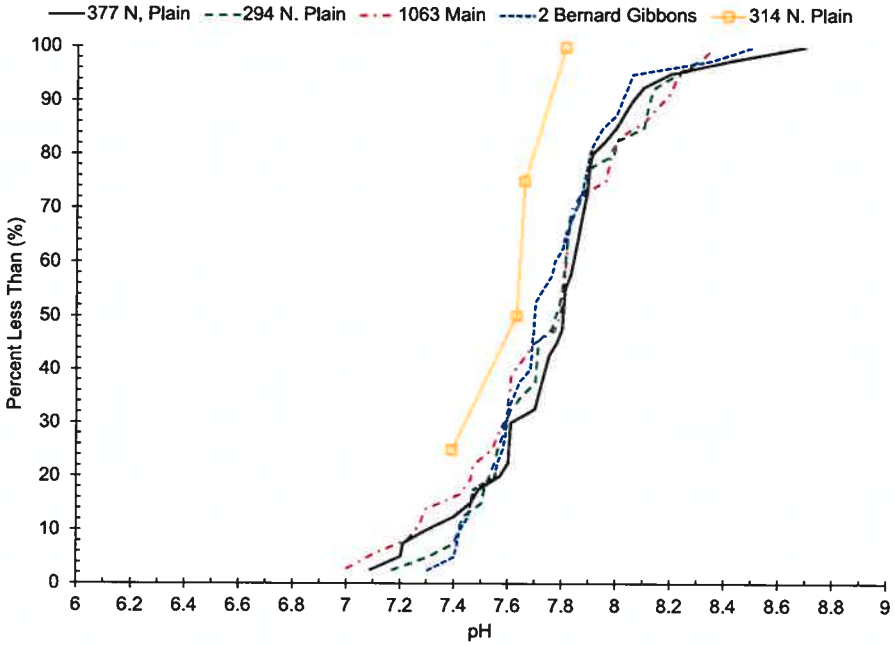


Figure 7 Percentile Distribution of DS pH (August 2018 through August 2020)

LEAD AND COPPER

Based on historical LCR data, lead and copper levels have been relatively high in certain compliance periods. In the last 7 years, there have been three lead action level (AL) exceedances and four copper action level exceedances. According to HWWC, some of the high lead levels in the system were due to a customer(s) not following LCR compliance sampling protocols. In response, HWWC implemented an education program for the sampling efforts. Recent data have been lower, without an Action Level exceedance in the past three years (six monitoring periods). Below is a summary table of the 90th percentile for lead and copper since 2013 (Table 4). Data from individual locations provided by HWWC also shows that high lead (or copper) results, including results leading to action level exceedances, are not limited to a single household location.

Table 4 Historical 90th percentile lead and copper data

Compliance Period	2013		2014	2015	2016		2017		2018		2019		2020
	Jun	Nov	Jun	Sep	Jun	Nov	Jun	Dec	Jun	Nov	May	Dec	Apr
Lead (µg/L)	16	6	6	15	18	19	17	14	7	5	12	6	3
Copper (mg/L)	1.4	1.0	1.1	1.4	1.4	1.1	1.0	0.2	1.6	1.3	1.0	0.9	0.8

Lead 90th percentile action level = 15 µg/L Copper 90th percentile action level = 1.3 mg/L

The lead and copper in recent years is trending lower. There has been no treatment change, other than maintenance of lower chlorine residuals (see later discussion about the need to maintain free chlorine residuals). Concentrations of lead and copper can be higher in warmer months, so monitoring results in warmer periods (June to September) should be noted to see if these trends continue. Even the 0.77 copper in April 2020 is high, based on Cornwell's experience, for an LCR compliance level since this is generally old copper at existing monitoring locations. For copper, a key issue is copper solubility after a new pipe or fixture is added. Old copper pipe can eventually develop a protective scale. However, new copper pipe has a higher solubility since it has not had time to form the protective scale. One way to evaluate the potential impact of adding new pipe is to use existing solubility models in the literature, as discussed below (note these models tend to overpredict solubility).

Theoretical and experimental solubility models for lead and copper were used to characterize HWWC water quality related to potential corrosion. A summary of recommended future actions for HWWC are included later in this memorandum. The lead and copper solubility relationships described in this memorandum are based on theoretical and experimentally determined conditions, and associated assumptions, that can be used for relative comparisons of different water sources. However, data evaluated by Cornwell in field and laboratory studies with water samples from various water systems has revealed that the relationships used to develop these curves result in

conservative (high) estimates of lead and copper solubility. For example, we have found the results for copper solubility are from 3 to 6 times lower in actual treated water than are predicted from the Lytle equation discussed below. So, the HWWC water may not be corrosive to copper (or lead), though this can be verified in laboratory solubility studies.

Theoretical Copper Solubility

The DIC of the water entering the distribution system was estimated to be between 20 and 22 mg/L as C. This was calculated using paired alkalinity and pH data from Table 2.

The 90th percentile from LCR copper compliance data has been consistently ≥1.0 mg/L in the last 7 years, with 4 action level exceedances in the same time period. At HWWC there are some homes with copper service lines, and copper pipe and fittings are likely in premise plumbing.

Figure 8 depicts experimental copper solubility estimated using the equation below developed by Lytle et al (2018). The HWWC used in this figure is 21.9 mg/L as C, and curves are shown in the figure for four different pH values.

$$Cu = 56.68 \times e^{-0.77 \times pH} \times e^{-0.20 \times PO4} \times DIC^{0.59}$$

Where:

Cu = predicted copper solubility (mg/L)

pH = pH (unitless)

PO4 = orthophosphate residual in mg/L as PO4

DIC = dissolved inorganic carbon (mg/L as C)

The pH in homes in the distribution system typically range between 7.2 to 8.2. Results in this figure suggest that the control of copper corrosion is achievable without the addition of orthophosphate if the pH is consistently above 7.3, since copper solubility using the Lytle equation is 1.3 mg/L or less.

A range of water quality conditions deemed "corrosive" to copper are shown in Figure 9 (no orthophosphate present). This figure reflects definitions recommended during the NDWAC (National Drinking Water Advisory Committee) discussions for the new revisions to the LCR (NDWAC 2015a&b). Water quality that falls in the unshaded region is considered to be non-corrosive to copper. Conditions that plot in the shaded region are corrosive to copper unless orthophosphate (at proper dose and pH) is added. Paired pH and alkalinity data from distribution system monitoring locations are plotted in Figure 9. Figure 9 demonstrated that when the distribution pH is >7.2, the water quality conditions are not conducive to copper corrosion. Limited copper solubility would be expected in HWWC treated water without orthophosphate if the pH is

maintained >7.2 under current alkalinity/DIC conditions, as shown in Figure 8 and Figure 9. Since HWWC copper levels are higher than expected based on theory and are higher than observed in most other surface water systems, additional evaluation of copper solubility for HWWC is recommended.

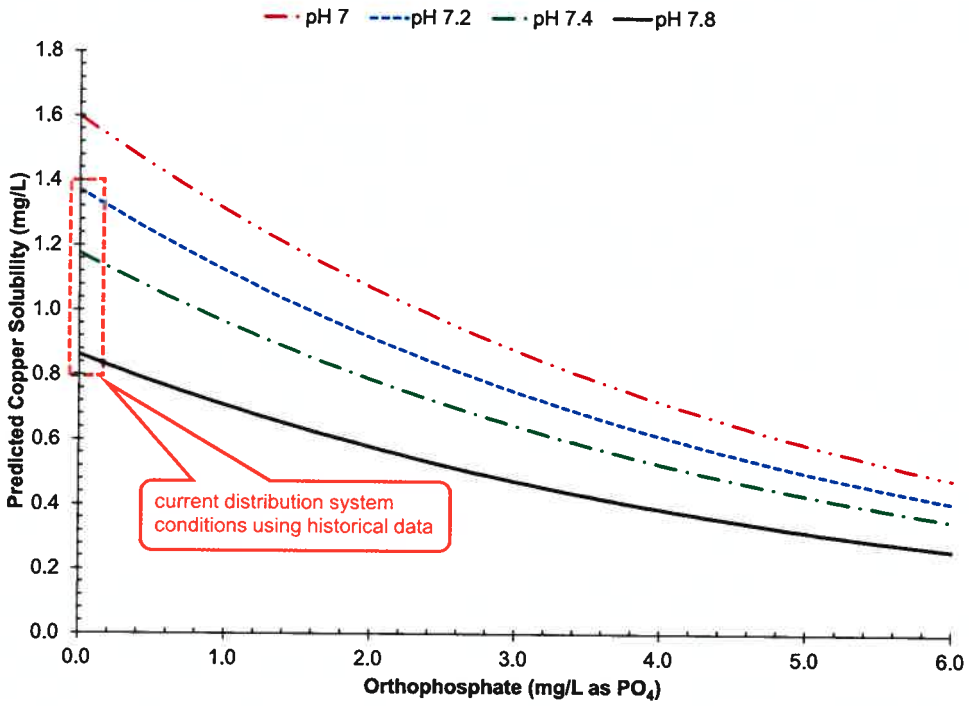


Figure 8 **Experimental copper solubility equation as a function of DIC, PO4, and pH. Assumes a constant DIC of 21.9 mg/L as C.**

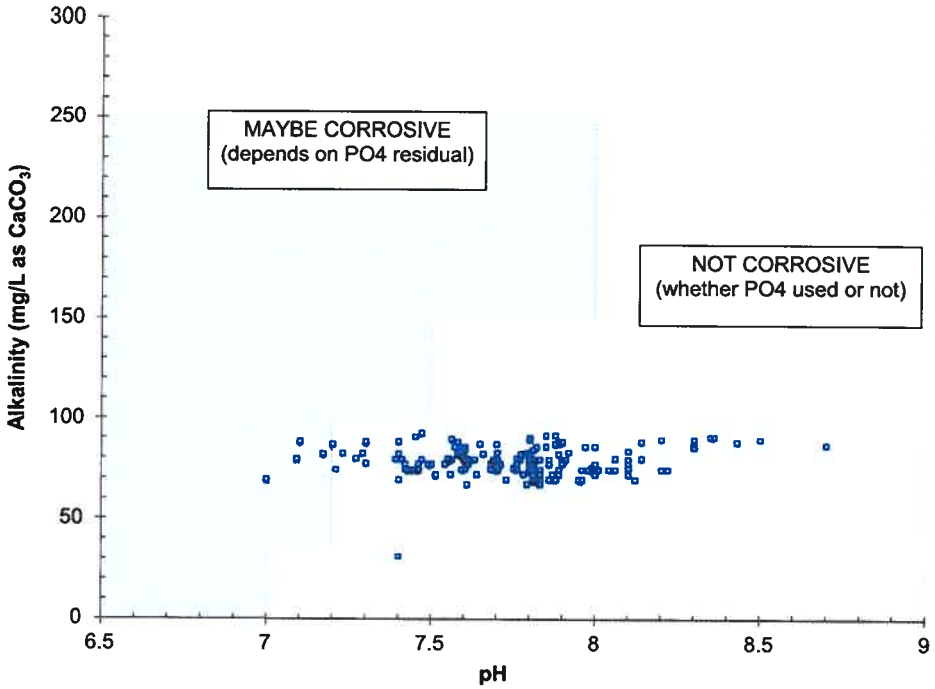


Figure 9 **NDWAC defined conditions corrosive to copper (no orthophosphate present) versus paired pH and alkalinity data from the distribution system**

Theoretical Lead Solubility

The HWWC system 90th percentile lead exceeded the 15 µg/L action level during 2016 and 2017, and has exceeded 10 µg/L at various times since 2013 (Table 4). Recent data have been more favorable (HWWC passed the lead AL for the past three years covering the most recent six monitoring periods, perhaps due to increased attention to proper sampling procedures). HWWC has indicated there are no known lead service lines or lead goosenecks in their system, and whenever they encountered lead goosenecks (just a few were found in 35 years), the goosenecks were removed. According to HWWC, >90 percent of the service lines are galvanized iron. LCR monitoring results indicate there are likely still some sources of lead somewhere, which may be within individual household plumbing, though it is unknown whether this is due to lead solder or brass plumbing fixtures, or some other lead-containing sources.

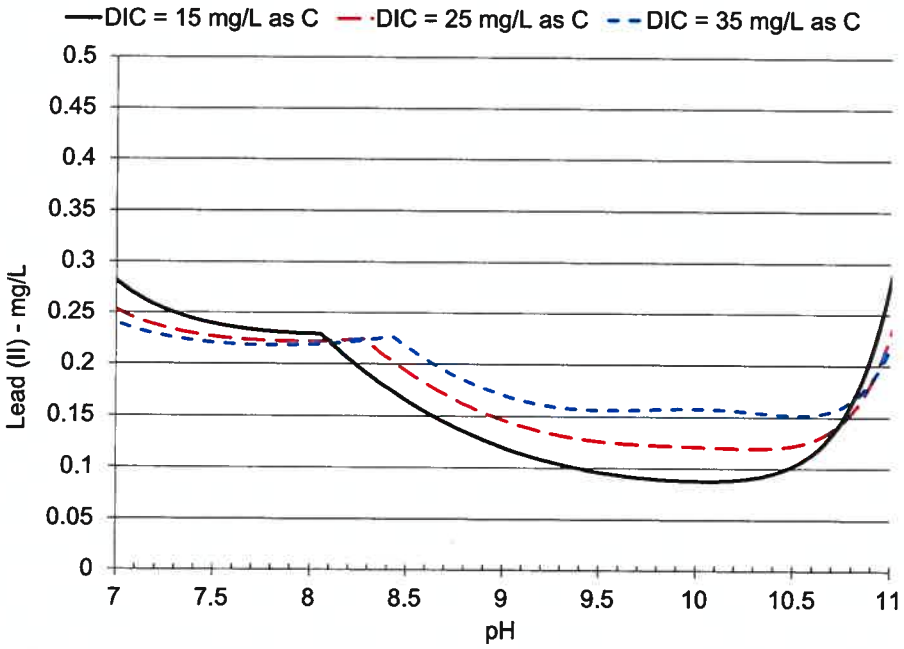


Figure 10 **Theoretical Lead Solubility from Visual MINTEQ**

Note: Assumes: a) DIC values are constant, b) water temperature 25 C, c) no orthophosphate present, d) no lead (IV) present, and e) cerussite and hydrocerussite are present.

Figure 10 is a theoretical lead solubility curve developed using chemical equilibrium mathematical model software (Visual MINTEQ (version 3.1 (https://vminteq.lwr.kth.se/)), literature data for stability constants and solubility products, water quality data (DIC, water temperature, pH), and assumed equilibrium with carbonate solids (hydrocerussite and cerussite). The curve was developed for three different DIC values of 15, 25, and 35 mg/L as C. The DIC of the HWWC system is similar to the 25 mg/L as C line in this figure. The figure indicates the pH would need to be raised to >9 in order to minimize the lead solubility without the use of orthophosphate. That is not recommended given the potential to precipitate calcium carbonate above the 8.2 saturation pH for this water source.

Figure 11 is a theoretical curve from Schock (2015) comparing lead solubility (vertical axis) with orthophosphate dose (horizontal axis). There are four sets of solid colored lines at bottom of the chart depicting predicted lead solubility at DIC 4.8 mg/L as C for pH 7.0, 7.5, 8.0, and 8.5. Similarly, higher in the graph are four lines for DIC 48.0 mg/L as C at the same four pH values. Note this graph assumes no polyphosphate present and assumes room temperature. This graph shows that:

- For a given DIC, when no orthophosphate is added, the lower the pH the higher the lead solubility.
- As PO_4 increases, lead solubility decreases for each combination of pH and DIC conditions.

For the HWWC system (DIC ~22 mg/L as C) the results would plot between the 4.8 and 48 mg/L DIC curves, and suggest the ability of orthophosphate to reduce the solubility of lead for the pH range of the HWWC system.

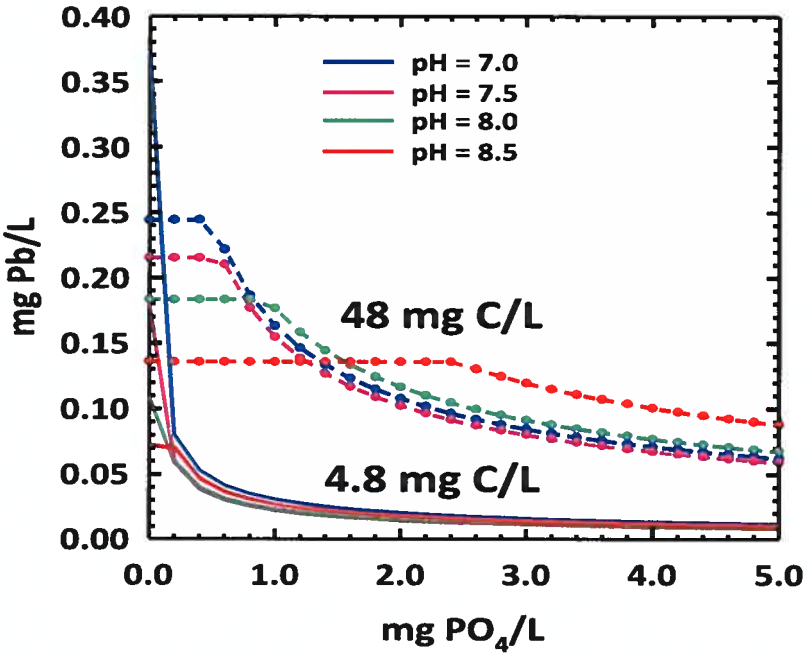


Figure 11 Lead solubility versus orthophosphate at 4.8 and 48 mg/L DIC at pH from 7.0 to 8.5 (Schock 2015)

USE OF POLYPHOSPHATE

Note that when this report refers to orthophosphate for lead and copper solubility control it is referring to the free PO_4 not a polyphosphate. Polyphosphate can be used to help keep iron and manganese from causing colored water and staining household plumbing and clothes. However, the use of polyphosphate complicates lead and copper corrosion control treatment.

Orthophosphate is used to promote formation of insoluble lead and copper phosphates. Polyphosphate added to keep iron and manganese from precipitating (i.e., forming scale), can also keep lead and copper from forming a protective crystalline scale. Furthermore, when lead and copper scales do form in the presence of polyphosphate, any polyphosphate incorporated into the scale can make the scale less stable. When polyphosphate is used with orthophosphate, the lead and copper solubility can be higher than if you add orthophosphate alone, although there is some

amelioration of this as the polyphosphate gets older and naturally degrades from poly- to ortho-phosphate. Overall, there may be some instances where adding polyphosphate may be beneficial, especially when objectives other than lead and copper control are considered, but in most cases lead and copper control is optimized when orthophosphate is added alone.

Cornwell recommends adding iron or manganese removal when iron or manganese are above their SMCLs. Adding polyphosphate after this treatment will not be necessary for sequestration control of iron or manganese. In addition, if orthophosphate is needed for lead or copper control, it is recommended that it be added alone and not part of a blended phosphate. Since the treated water at the entry point in this system exceeds the 0.05 mg/L MCL for manganese, at least during warmer times of the year, it is recommended that treatment for manganese removal be added full-time, or at least seasonal, to limit manganese entering the distribution system. The best place to install manganese removal (and associated oxidation), orthophosphate injection, and any pH adjustment needs to be evaluated separately, though it is likely this will all happen following slow sand filtration.

HARDNESS AND CALCIUM CARBONATE PRECIPITATION

Since corrosion control methods may include pH adjustment, the calcium carbonate precipitation potential and saturation pH should be considered in order to anticipate the impact of raising or lowering the pH in a water system. The distribution pH ranges from about 7.2 to 8.2, and typically is between 7.5 and 8.0, which is below the saturation pH and the resulting CCPP is negative. Calcium carbonate precipitation is not expected in this water source unless the pH is raised above the saturation pH of 8.2. Distribution system pH should continue to be monitored to see if it consistently remains within the 7.2 to 8.2 range, and if additional lead or copper control is needed then it may be necessary to add orthophosphate (after evaluating dose and pH conditions needed). The current distribution system pH already ranges from 7.2 to 8.2 so an additional pH increase is not recommended due to potential calcium carbonate precipitation complications. The calcium hardness of the system is 48 mg/L as $CaCO_3$, but no total hardness data have been reported.

CHLORINE RESIDUAL

On occasion, distribution system chlorine residuals in late 2019 and early 2020 dipped below the minimum recommended target residual of 0.2 mg/L, as shown in Figure 12. The chlorine residual should be maintained at a higher level in the distribution system to ensure proper disinfection. These residuals need to balance other concerns (DBP formation versus microbial control – see also Roth and Cornwell 2018).

Corrosion chemistry is complex, and it is difficult to determine whether lower chlorine residual may or may not have any positive implication for lead or copper corrosion. Higher free chlorine can increase iron levels in the water, but it is also important to note that chlorine residuals that are too low can lead to microbial growth in the distribution system, which can result in lower pH and consequently can increase the solubility of lead, copper, iron, and other metals. Adjustment of free chlorine doses as necessary in order to achieve ≥0.2 mg/L residual in all parts of the distribution system in all seasons is recommended. This may require higher residuals in other parts of the system to ensure that all points in the system are ≥0.2 mg/L.

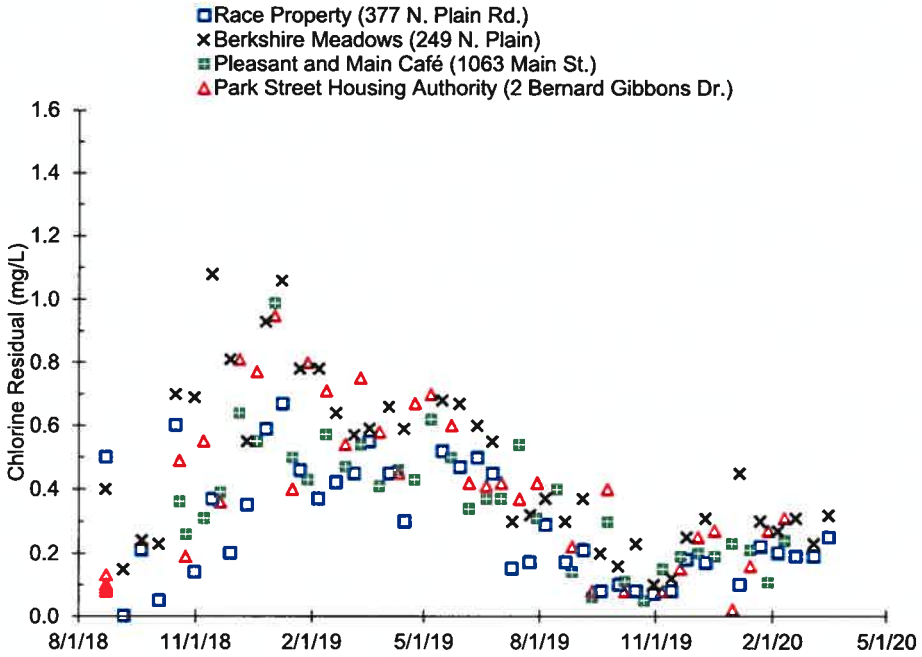


Figure 12 Distribution system chlorine residual

RECOMMENDATIONS AND ACTION PLAN

Based on previous analysis and discussion:

1. **Manganese concentrations above the secondary maximum contaminant limit (SMCL) of 0.05 mg/L are the identified source of the colored water. The manganese is in the treated water leaving the water treatment plant.**

2. Manganese removal should be evaluated and implemented at least seasonally (warmer weather) when higher manganese and higher true color results are observed.

3. The addition of a polyphosphate or a blended phosphate to sequester manganese or iron is not recommended. Polyphosphate or blended phosphate can have a negative effect on lead and copper corrosion.

4. Iron removal at the source does not appear to be necessary, but treatment installed for manganese removal should remove iron if present

5. The current water chemistry in the distribution system, using samples representing "normal" conditions, results in a low Larson-Skold Index, suggesting the water may not be susceptible to iron corrosion. Results from a designated "color event" also show an iron concentration well below the SMCL.

6. Based on the data reviewed, treated water pH has typically been $\geq$7.4 in the distribution system without pH adjustment. However, if future monitoring shows that these pH levels are not regularly achieved, pH adjustment should be evaluated.

7. Free chlorine residuals should be maintained at the target residual of $\geq$0.2 mg/L in all parts of the distribution system in all seasons.

8. Sequential sampling to identify locations of the lead source in the customers' home or service lines is suggested for locations with historically high lead levels, and should also be considered after a treatment change, for example, after addition of: a) manganese removal processes, b) pH adjustment, or c) orthophosphate addition.

9. The current distribution system pH is already close to the saturation pH (8.2), so it may not be possible to increase the pH much higher. Consequently, if lead and copper cannot be controlled under current conditions, the addition of orthophosphate may need to be evaluated. Evaluation of orthophosphate and pH adjustment should include, at minimum,

laboratory solubility studies for lead and copper to evaluate optimal pH and orthophosphate dose.

The conclusions and recommendations for action are summarized in the table below:

Table 5 Summary of recommendations for treatment of metals

Metal	Problem	Evidence	Recommended solution
Lead	Maybe	Action Level (AL) exceedance in past compliance periods, though < AL for the 6 most recent periods after improving sampling procedures	Identify lead sources. If LCR data increase again over time then possibly re-evaluate CCT
Copper	Maybe	AL exceedance in past compliance periods. Theoretical modeling shows POE water likely is corrosive to copper, while the measured values are substantially higher than is typically observed.	Conduct laboratory solubility studies
Iron	No	Levels <SMCL	None needed, but manganese removal will likely remove iron (prior to POE)
Manganese	Yes	Levels >SMCL Colored water complaints	Evaluate removal via oxidation and filtration

REFERENCES

ASTM 2019. *Standard Test Method for Color of Clear Liquids (Platinum-Cobalt Scale) – ASTM D1209-05*. ASTM International: West Conshohocken, PA.

Leitz, F., and K. & Guerra, K. (2013). *Water Chemistry Analysis for Water Conveyance, . Storage, and Desalination Projects: Manuals and Standards Program.* US Department of the Interior, Bureau of Reclamation, Technical Service Center: Denver, CO.

Lenard (Lenard Engineering, Inc.) 2016. *Desktop Corrosion Control Study (December 2016).* Housatonic Water Company: Great Barrington, MA.

Lenard (Lenard Engineering, Inc.) 2017. *Basis of Design Report: Proposed Corrosion Control Treatment (October 2017).* Housatonic Water Company: Great Barrington, MA.

Lytle, D., M. Schock, J. Leo, and B. Barnes. 2018. "A Model for Estimating the Impact of Orthophosphate on Copper in Water." *Jour. AWWA*, 110 (8): E1-E15.

the water in Long Pond was extremely clear, transparent, and free of color. The vegetation found is not likely to be the cause of the colored water issues in the distribution system. Overall the vegetation in the pond does not appear to be very extensive, and was less than is often found in ponds. Moving the intake is not recommended.

As was noted in the Cornwell Engineering Group report that was provided to MassDEP prior to their completion of this Sanitary Survey, the source of the color appears to be manganese (Cornwell, 2020). HWWC intends to install a manganese removal system as a treatment solution for the colored-water issue.

B-6a: Storage Tank:

Corrective Action: Submit a tank inspection and cleaning report.

Response: The 1-MG storage tank was inspected and cleaned on November 9, 2020. The inspection report will be submitted to MassDEP once it is received by HWWC from the contractor.

Note that it is expected that some of the manganese in the source water that has been oxidized by chlorine will likely settle out in the storage tank. That manganese should stay settled on the bottom of the tank unless there is no chlorine residual and anoxic conditions develop, or the sludge is physically disturbed and suspended.

B-6b: Storage Tank:

Corrective Action: Conduct a formal rooftop inspection. Pictures of hatches and vents should be taken and kept with an inspection report.

Response: The rooftop of the storage tank has been regularly inspected for years. The most recent inspection was conducted in November 2020.

B-6c: Storage Tank:

Corrective Action: Provide written notification that appropriate screening has been installed on the overflow line.

Response: Appropriate screening has been ordered from the tank manufacturer, and will be installed when it is received. MassDEP will be notified when this has been completed.

B-7a: Filtration:

Corrective Action: Provide a written report evaluating the current filtration components.

Response: HWWC is providing herein the requested information in lieu of a separate written report. All SCADA filter data for 2020 have been evaluated, and no elevated turbidity issues were found at any time. A review of eight different filter cleanings in 2020 was conducted to evaluate filter flow rates and effluent turbidity when only one filter was actively online. Filter effluent turbidities remained well below the

required levels at all times, and the hydraulic loading rates were within MassDEP guidelines for slow sand filtration.

B-7b: Filtration:

Sanitary Survey Comment: Although this (hydrorake system) cleaning process may reduce head loss through the filter, it may not be adequately removing contaminants such as manganese or organics that result in color which are then being washed through the filters and appear in the distribution system under certain conditions.

Corrective Action: Develop a method of cleaning and re-sanding the filters in a manner described within the Guidelines.

Response: HWWC does not agree with MassDEP's contention that the filter sand cleaning method could be the cause of the occasional colored water incidents, and counters that MassDEP's postulated theory is unsupported speculation. The hydraulic harrowing method used may actually be more proficient at removing manganese and other contaminants as the wash goes deeper into the top of the sand than does typical manual scraping and disposal of the top Schmutzdecke layer. Harrowing can improve organic matter removal by enhancing the density of the bacterial populations (e.g., AWWA Research Foundation's *Manual of Design for Slow Sand Filtration*, 1991; Kem 1996). Enhanced bacterial populations could then potentially enhance manganese removal. MassDEP's suggestion implies an assumption that most of the manganese in the filter is in the top ½-inch or so of sand that is removed during each cleaning, and that is not likely the case.

While particulate manganese can be removed by sand filters, dissolved manganese should pass through unless it has first been oxidized to non-soluble (particulate) form. If manganese does adhere to the filters during periods of high manganese levels in the source water, then that manganese would likely desorb during periods of low manganese levels in the source water in order to maintain thermodynamic equilibrium between the solid and aqueous phase concentrations. Since HWWC's manganese levels are low most of the time, and high levels are observed only infrequently, it is more than likely that the filters are fairly clean of manganese. Dissolved manganese that does pass through the filters can be oxidized by chlorine in the clearwell and storage tank, and settle out in those locations in an insoluble form or pass into the distribution system.

If manganese was stored in the filters it would be in oxidized form and insoluble, and it would then take anoxic conditions to chemically reduce the manganese into soluble form and trigger a substantial release (dissolving of the precipitated manganese), and that is very unlikely as long as the filters are actively used.

B-7c: Filtration:

Corrective Action: Monitor for iron, manganese, and color weekly for each filter effluent.

Response: HWWC will continue to monitor as requested by MassDEP.

B-7d: Filtration:

Corrective Action: The filters must be re-sanded.

Response: HWWC does not agree with this request. There is no indication of a problem with the sand, and there is no evidence that there are any functional or operational problems with the slow sand filters. The filters continue to consistently provide excellent performance, with very low effluent turbidities and no ripening time needed after cleaning. The colored water issues that need to be resolved are caused by occasional spikes in manganese levels (Cornwell Engineering Group, 2020), not by aged sand particles.

B-7e: Filtration:

Corrective Action: Evaluate the filtration system's ability to effectively filter to waste.

Response: The hydraulic washing method for cleaning the sand only takes about an hour per filter (about 3-4 hours total including draining and part of the filling), and is extremely advantageous in that there is no need for a ripening time since the filters continue to provide effective filtration immediately after cleaning. And if some filtering to waste was ever needed, there is an approximate 10-day storage volume available in the 1-MG storage tank to meet customer demand.

Regardless, the current piping and valving system does allow for filter to waste from either filter. After the two individual filter effluents combine into one pipe, there is a single valve that directs that combined flow to either the clearwell (as filtered water) or the lagoon (as filter to waste). As such, while one filter is filtering to waste, the other filter needs to either be taken out of service (flow stopped) or be filtering to waste also. HWWC is considering installation of the necessary two valves and piping to allow for either filter effluent to flow to the clearwell while the other filter is filtering to waste, thus allowing for extended filter to waste periods if that ever became necessary.

B-7f: Filtration:

Corrective Action: Establish a filter loading rate.

Response: The filters consistently provide a water with very low turbidity, well below the regulatory requirements for slow sand filters. Water Compliance Solutions has reviewed all of the filter SCADA data for 2020 (values stored once per minute), and found no issues with filter effluent turbidity at any time, including during and immediately after filter sand cleanings. Filter hydraulic loading rates were determined and were within the MassDEP design guidelines.

The maximum loading rate of the filters is determined by dividing the maximum flow rate by the filter area. We will evaluate this from two perspectives: (1) historical maximum daily flows, and (2) observed flow rates for individual filters while the other filter was offline.

Each filter is 48 ft x 48 ft, for a total of 2,304 ft^2 per filter, and 4,608 ft^2 total for both filters. For HWWC, production flow data are considered for this purpose only after 12/5/19 when a big leak was found and repaired that decreased water demand by approximately 39%. The peak daily flow from 12/6/19 to 11/3/20 was approximately 166,000 gpd (not counting days of system flushing), with an average of 103,346 gpd (counting all days).

The maximum daily flow loading rate is as follows:

Max loading rate (two filters) = 166,000 gal/day ÷ 4,608 ft^2 = 36 gal/day/ft^2
Max loading rate (if one filter) = 166,000 gal/day ÷ 2,304 ft^2 = 72 gal/day/ft^2

The absolute highest daily flow from 12/6/19 to 11/3/20 was approximately 231,000 gpd during a day of heavy flushing on July 12, 2020, which corresponds to an average applied hydraulic loading rate of 50 gal/day/ft^2.

A review of eight different filter cleanings in 2020 was conducted to evaluate filter flow rates and effluent turbidity when only one filter was actively online. Filter effluent turbidities remained well below required levels at all times during and after each of those filter cleanings. Of those eight occasions, the maximum flow rate observed for an individual filter was approximately 120 gpm (173,000 gpd) for Filter #2 on 5/9/20, which corresponds to a hydraulic loading rate of 75 gal/day/ft^2. The maximum turbidity for Filter #2 effluent during and after the time that Filter #1 was offline for cleaning was no higher than 0.06 NTU, well below the maximum turbidity level allowed of 5 NTU with 95% of samples being ≤ 1 NTU. When Filter #1 came back online after the cleaning its effluent turbidity did not change, and was no higher than 0.05 NTU. This lack of a need for ripening time is one of the primary advantages of using a hydraulic harrowing method for cleaning slow sand filters.

The MassDEP guidelines for slow sand filtration indicate that "*the nominal rate may be 45 to 150 gal/day/ft^2 of sand area, with somewhat higher rates accepted based on piloting results.*" The maximum filter flow rates observed at HWWC are within this range or slightly lower, and all filter turbidity data have been very good.

B-8a: Distribution:

Corrective Action: Continue with the current weekly water quality monitoring program.

Response: HWWC will continue to monitor as requested by MassDEP. For the record, that current monitoring program is biweekly, not weekly (other than a temporary request for some filter effluent sampling, as discussed in Item B7c above). HWWC

expects to separately request a modification to the MassDEP-mandated special monitoring program that increases sampling where most beneficial and reduces some unnecessary and overly redundant sampling requirements.

B-8b: Distribution:

Corrective Action: Housatonic has been working with a consultant to review water quality conditions from the source through the distribution system with a goal of addressing distribution water quality complaints. Submit a copy of the consultant's study report by December 31, 2020, and implement recommendations by June 1, 2021.

Response: The report from the Cornwell Engineering Group was previously submitted to MassDEP on November 3, 2020, prior to completion of the Sanitary Survey.

Though HWWC will endeavor to complete the recommended manganese treatment system as soon as possible, the many required steps (conception, design, approval, bidding, construction, etc.) suggest that meeting MassDEP's deadline to implement recommendations by June 1, 2021 may be rather difficult.

B-8c: Distribution:

Corrective Action: Provide written notification that a new hydraulic study of Housatonic's entire distribution system has been completed, and submit a copy of that report.

Response: HWWC will be hiring a contractor in 2021 to inspect each fire hydrant and to conduct fire flow testing of each hydrant.

B-8d: Distribution:

Corrective Action: Provide written notice that it has coded all hydrants in a manner that depicts the size of the water main and the associated water pressure.

Response: This can be completed after the fire flow testing has been completed. HWWC will coordinate with the local fire department about the hydrant color coding. Note that at present all hydrants are freshly painted (actually, HWWC's hydrants look very noticeably nice, and look better than hydrants in almost any other water system).

B-8e: Distribution:

Corrective Action: Submit a copy of its distribution map identifying the location of all water mains not owned by the Water Company.

Response: The requested map is attached to this response to the Sanitary Survey.

B-8f: Distribution:

Corrective Action: Submit a bylaw (or appropriate equivalent) which requires that these mains be maintained by the owners of the properties that they serve. Complete by March 31, 2021.

Response: This is in process.

B-8g: Distribution:

Corrective Action: Written notification to all customers served by a privately owned water main must be completed by the March 31, 2021 date, alerting them to the creation of the bylaw (or equivalent) and providing notice as to where the public water supply ends and the private water main begins.

Response: Understood. MassDEP will be notified when this is completed.

B-8h: CIP for water main replacement:

Corrective Action: Submit an amendment to the current Capital Improvement Plan which prioritizes water main replacement projects, anticipated cost, and a 5-year & 10-year schedule for the priority projects, specific to water main replacement

Response: HWWC believes it is most important to prioritize installation of a manganese removal system, not pipe replacement. As was reported previously to MassDEP, the colored water issues that need to be resolved are caused by occasional spikes in manganese levels, not by the age of the pipes (Cornwell Engineering Group, 2020).

B-9: Sample taps:

Corrective Action: Provide written notice that both taps have either been replaced or adapted in a manner that results in a dedicated unthreaded tap for sample collection only.

Response: The MassDEP inspection was on September 16, 2020. When I visited the treatment plant on 11/10/20, neither the raw water tap nor the finished water tap were threaded. The finished water tap is a tygon tube, and the raw water tap was smooth on the inside but threaded on the outside, which shouldn't matter. No change was made to the taps.

B-10: Unaccounted for water:

Corrective Action: Submit a detailed UAW Plan which identifies its plan of action to reduce its unaccounted water.

Response: A major leak was fixed on December 5, 2019 that reduced the 10-day average demand by 39 percent (based on the 10-day average finished water production preceding and subsequent to 12/5/19). As such, the amount of unaccounted for water has substantially decreased. Note that water lost through leaks would not add to the colored-water problems, and instead would help to flush water out of the system. HWWC has already contracted for a leak study, and will provide the report when it is completed.

C-1: Emergency generator

Corrective Action: MassDEP recommends that Housatonic install the necessary electrical connection to allow for a portable generator to be installed until the installation of an on-site generator is completed.

Response: We agree this would be useful, and a quote has already been obtained for this work. Consideration is also being given to installing either that electrical connection or the actual on-site generator when the treatment plant is upgraded in 2021 with construction of a manganese removal system.

C-2: Chemical purchases:

Corrective Action: Consideration should be given to using a chlorine purchasing system that would allow for more frequent delivery of lesser volumes.

Response: This change was completed prior to the Sanitary Survey. Chlorine purchases are now monthly.

The following attachments are included with this response to the Sanitary Survey:

- HWWC Staffing Plan
- Map of distribution system showing private water lines

I hope MassDEP finds these responses satisfactory. Please do not hesitate to contact me if you have any questions.

Respectfully yours,

Richard W. Gullick

Richard W. Gullick, PhD
Founder/Owner

Water Compliance Solutions, LLC
151 Old Farm Road
Leominster, MA 01453
cell/text: 856-404-0484
wcs.llc@comcast.net

WCS
WATER COMPLIANCE SOLUTIONS

SANITARY SURVEY COMPLIANCE PLAN
RESPONSE FORM for TABLE A or B

Within 30 days of receipt of this inspection report, you must complete and submit this response form if your system has TABLE A –Violations and/or TABLE B-Deficiencies (see attached Compliance Tables). Attach a copy of the completed tables listing the date that the corrective action was or will be taken by your system and all other applicable documentation. (310 CMR 22.04(12))

Please note that violations listed in TABLE A of the Compliance Plan are also a Notice of Noncompliance (NON) pursuant to M.G.L. c.21A, §16 and 310 C.M.R. 5.00 and may require the submission of quarterly written progress reports on the identified violations.

The following corrective actions listed in the Sanitary Survey Compliance Plan(s) TABLE A and/or B has been taken by the public water system. (Please check all that apply).

☐ My system has taken **ALL** of the corrective actions listed within the timeframes specified in the Sanitary Survey Compliance Plan(s).
- For each item, I have listed the completion date of the corrective action within each table.
- I have attached copies of supporting documentation as required.

☒ My system has taken **SOME BUT NOT ALL** of the corrective actions listed within the timeframes specified in the Sanitary Survey Compliance Plan(s). My system **HAS NOT** complied with **ALL** of the requirements set forth in the Sanitary Survey Compliance Plan(s).
- For each item, I have listed the actual or anticipated completion date of the corrective action within each table.
- I have attached copies of supporting documentation as required.
- I have attached a revised corrective action schedule establishing timelines for my system to address outstanding items and I will submit a written progress report each quarter (every 3 months) until all items have been addressed. I understand that my system may be subject to further enforcement action.

☐ My system is **UNABLE** to comply with some or all of the corrective actions within the timeframes specified in the Sanitary Survey Compliance Plan(s). I understand that my system may be subject to further enforcement action.
- An explanation is attached.

I hereby acknowledge receipt of the inspection findings and compliance plan table(s) of the sanitary survey conducted by the Department of Environmental Protection's Drinking Water Program. I certify that under penalty of law I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best of my knowledge and belief.

Water Commissioner, Owner, Owner Representative or Other Responsible Party:

Signature: James J Mercer Date: December 4, 2020

Print Name: JAMES J. MERCER Title: Treasurer

Return this form, a copy of each Compliance Plan Table and all attachments to:
DEP-BWR Drinking Water Program, 436 Dwight Street, Springfield, MA 01103
Attention: Douglas Paine

System Staffing and Comprehensive Operations Plan

System Name: Housatonic Water Works City/Town: Great Barrington PWS ID#: 1113003
System Classification: COM ☒ NTNC ☐ NC ☐ (Check one)

Contract Operator(s)☐ Licensed Staff ☒ No Certified Operator☐ (Check one)

Operator Name: James J. Mercer Phone# 413-528-1780 Grade/Cert# 1T/ 1D

Operator Name: Peter Marks Phone# 413-329-1919 Grade/Cert# 2D/ 1T

Give a brief description of **proposed** operating practices including the number of hours per day, week, or month that the licensed operator will be at the facility. Include the name and telephone number of the person accepted by the licensed operator who will be responsible for the system in the absence of the licensed operator. (See notes below for further information.) *Please note if any of the operators listed above are "grandfathered" due to the changes in 310CMR22.11B.*

Company operations include an operator/staff either at the facility, distribution system or office a minimum 40 hrs./week , on call 24/7 with responsibility for I. **System Operations** such as source condition, facility security, treatment & maintenance (monitoring, emergency plan, maintenance of chemicals, pumps, equipment, facilities, and distribution system (repairs, exercising valve, hydrant repairs ...), storage, and distribution; II. **Regulatory Compliance** such as -water sampling and reporting, monthly & annual reports as required.

Contact Information:

Operator Name: James J. Mercer Phone# 413-528-1780 / 413-446-1801

Operator Name: Peter Marks Phone# 413-329-1919

Other Personnel: Frederick J. Mercer Phone# 413-528-1780/413-446-1679

Please note the following:

1. The primary operator must be able to respond to emergencies within one hour during those times when he or she is not present at the facility.

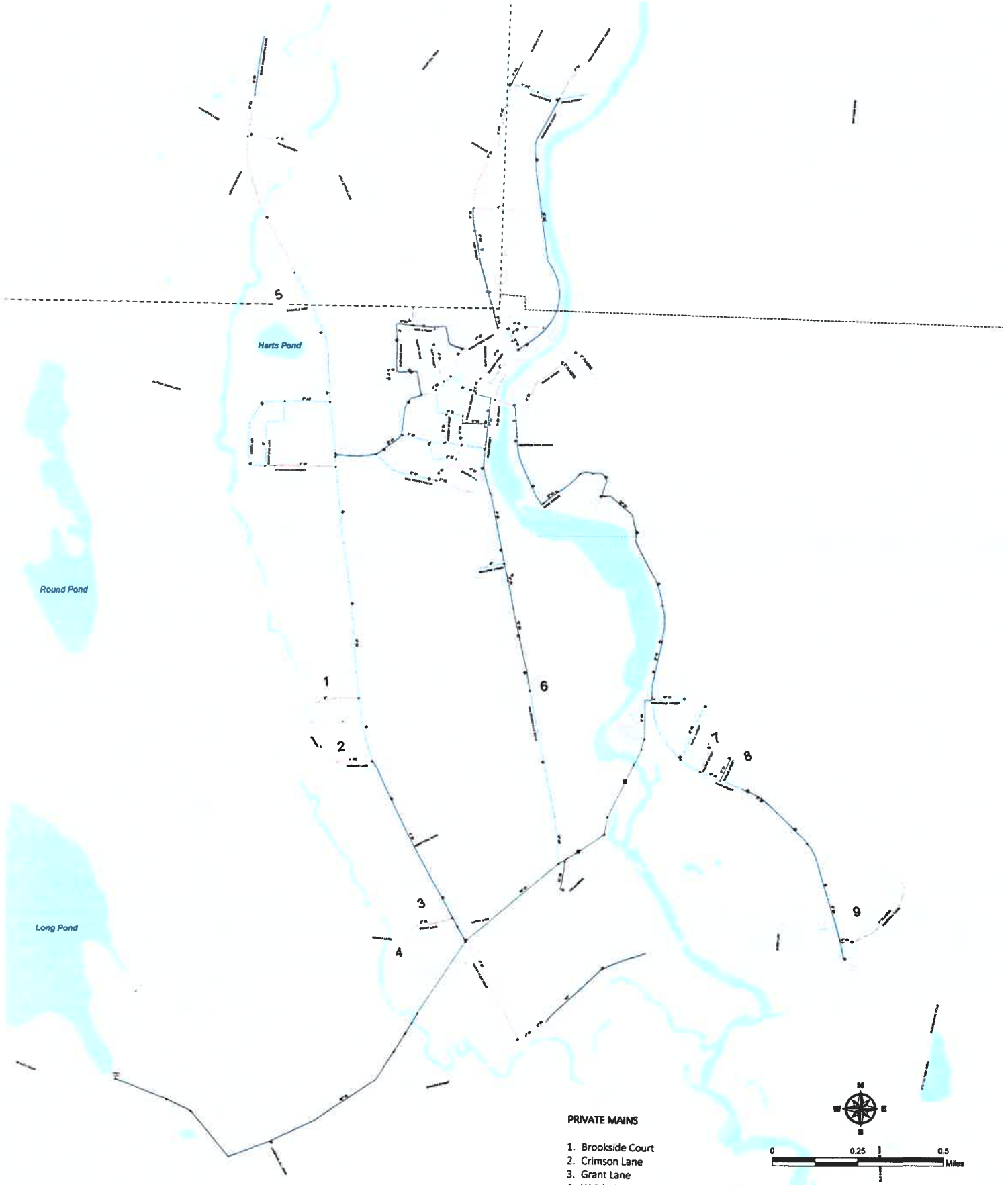
2. The primary operator is responsible for the operation of the system during his or her absence between scheduled visits. The person(s) affiliated with the public water system are acting under the direction of the primary operator.

3. The PWS must have the ability to detect any malfunction in the operation of the facility/system in the absence of the primary operator.

I certify under penalty of law that I am the person authorized to fill out this form and the information contained herein is true, accurate and complete to the best of my knowledge and belief.

James J. Mercer
Signature

November 24, 2020
Date



Housatonic

Water System, June 2017

PRIVATE MAINS

1. Brookside Court
2. Crimson Lane
3. Grant Lane
4. Wright Lane
5. Rachael's Way
6. Nolan Drive
7. Walnut Street
8. Spruce Street
9. Ramsdell Road

N W E S

0 0.25 0.5 Miles

Tighe&Bond
Engineers | Environmental Specialists

MassDEP

ATTACHMENT E

Housatonic
Water Works Company
Since 1897

MASTER PLAN

JANUARY 2016

ATTACHMENT F

Emergency Response Plan

December 2014

Contents

Emergency Response Plan Requirements

Massachusetts Drinking Water Regulations 310 CMR 22.04 require "Each water supplier must prepare and keep in an easily accessible place an Emergency Response Plan (ERP) prepared in accordance with 310 CMR 22.04(13) and the Massachusetts Drinking Water Guidelines and Policies for Public Water Systems, Chapter 12 – Emergency Response Planning Requirements Guidance including Appendix O – Handbook for Water Supply Emergencies." Further, Massachusetts Drinking Water Regulation 310 CMR 22.15 requires the annual submittal of an updated emergency response plan.

This additional guidance document can be used to help meet the requirement for developing an emergency response program. Other methods or formats can also be used to meet the MassDEP Drinking Water Program emergency response program requirements.

Section 1.
Emergency Response Mission and Goals

Mission statement for emergency response	In an emergency, the mission of the Housatonic Water Works Company is to protect the health of our customers by being prepared to respond immediately to a variety of events that may result in contamination of the water or disruption of supplying water.
Goal 1	Be able to quickly identify an emergency and initiate timely and effective response action.
Goal 2	Be able to quickly notify local, state, and federal agencies to assist in the response.
Goal 3	Protect public health by being able to quickly determine if the water is not safe to drink or use and being able to immediately notify customers effectively of the situation and advise them of appropriate protective action.
Goal 4	To be able to quickly respond and repair damages to minimize system down time.

Section 2.
System Information

Example: System information

Public Water System Identification Number (PWS ID#)	1113003	
System name and address	Housatonic Water Works Company	
Directions to the system	Head north on US Route 7 from the center of Great Barrington veer left onto Route 41 for 2.5miles. Then turn left onto Division Street. Proceed 1 miles (pass through one set of blinking lights) Water system entrance gate is on right : 162 Division Street.	
Basic description and location of system facilities	Source of water is Long Pond Reservoir, which has a storage capacity of 263 million gallons with a total surface area of 110 acres. The plant consists of two slow sand filters which measure 50 feet by 50 feet, and a 1.1 million gallon above ground storage tank. A 10 inch cast iron main carries water to the distribution system. A flow paced sodium hypochlorinator located in the pipe room at the filtration plant disinfects the water flowing to town.	
Location/Town	Housatonic, MA	
Population served and service connections from MassDEP Drinking Water Program records.	1300 people	859 connections
System owner (the owner should be listed as a person's name)	Frederick J. Mercer, President	
Name, title, and phone number of person responsible for maintaining and implementing the emergency plan.	James J. Mercer Treasurer (413) 528- 1780 Office (413) 446-1801 Cell (413) 528-5028 Home	

Section 3.
Chain of Command – Lines of Authority

Name and title	Responsibilities during an emergency	Contact numbers
James J. Mercer Primary Certified Water System Operator	Responsible for overall management and decision making for the water system. The Water System Operator is the lead for managing the emergency, providing information to regulatory agencies, the public and news media. All communications to external parties are to be approved by the Water System Operator.	Phone: (413) 528-1780 Cell: (413) 446-1801 Home: (413) 528-5028
James Olmstead Secondary Certified Operator	In charge of operating the water system, performing inspections, maintenance and sampling and relaying critical information, assessing facilities, and providing recommendations to the Water System Operator.	Phone: (413) 644-9614 Pager: 413-261-2150 Home: 413-528-0102
Linda Funk Office Administrator	Responsible for administrative functions in the office including receiving phone calls and keeping a log of events. This person will provide a standard carefully pre-scripted message to those who call with general questions. Additional information will be released through the Water System Operator.	Phone (413) 528-1780 Cell (413) 446-0484 Home (413) 274-6034
Roland Houle Field Staff	Delivers door hangers and supports Water System Operator.	Phone (413) 274-6301

Section 4.
Events that Cause Emergencies

Type of event	Probability or risk (High – Med – Low)	Comments
Flood	Low	System not located in an area vulnerable to flooding.
High winds	Low	5 Day supply of water if power is disrupted.
Ice storm	Low	5 Day supply of water if power is disrupted.
Drought	Low	System has a water restriction bylaw in place if needed.
Terrorism	Low	Gated reservoir access, checked frequently.
Construction accident	Med	Construction crews occasionally hit pipes.
Chemical spill	Low	Complete wellhead protection plan.

Section 5.
Severity of Emergencies (increases as Level number increases)

Level I emergency

Description: The Housatonic Water Works system considers the following as Level I emergencies:

- Distribution line breaks.
- Short power outages.
- Minor mechanical problems in pump-houses.
- Other minor situations where it is not likely that public health will be jeopardized. The system has specific response activities identified for these types of emergencies, including proper sampling, disinfection, and pressure testing activities. System personnel are advised and are directed to work on the problem and are usually capable of resolving the problem within 24 hours. If it is determined that the problem will take longer than 24 hours to resolve and storage is likely to be drawn down below a safe operating level, the situation will be elevated to Level II.

Level II emergency

Description: The Housatonic Water Works system considers the following Level II emergencies:

- Disruption in supply such as a transmission main line break, pump failure with a potential for backflow, and loss of pressure.
- Storage is not adequate to handle disruption in supply.
- An initial positive coliform or E. coli sample.
- An initial primary chemical contaminant sample.
- A minor act of vandalism.
- Drought, with a noticeable and continuing decline of water level in the reservoir.

Level III emergency

Description: The Housatonic Water Works water system considers the following as Level III emergencies:

- A verified acute confirmed coliform MCL or E. coli/fecal positive sample requiring immediate consideration of a health advisory notice to customers.
- A confirmed sample of another primary contaminant requiring immediate consideration of a health advisory notice to customers.
- A loss or complete malfunction of the water treatment facilities for the surface water source, including chlorination.
- An act of vandalism or terrorist threat such as intrusion or damage to a primary facility.
- An immediate threat to public health of the customers and an advisory is required.
- Severe drought significantly affecting reservoir yield.

Level IV emergency

Description: The Housatonic Water Works system considers the following events to be Level IV emergencies:

- Act of terrorism possibly contaminating the water system with biological or chemical agents.
- Flood that infiltrates system facilities and sources.
- Chemical spill within 2000 feet of the system's sources.
- Storm that significantly damages power grid and system facilities.
- Mudslide or other earth shift that causes failure of transmission.

Section 6.
Emergency Notification

Housatonic Water Works Procedures for notifying system customers of potential water shortage.

Who is responsible:	The Water System Operator is responsible for making the decision to notify customers regarding a potential water shortage and the need for water use restrictions. The Water System Operator should consult with field staff to make the decision. Once the decision is made, procedures for notification will be initiated.
Procedures:	• Water System Operator confers with key staff to verify problems. • Water System Operator organizes staff to develop the message to be delivered to the customers. • Water System Operator consults with state drinking water staff regarding the problem. • Water System Operator with assistance from staff prepares customer door hangers, signs, Internet, phone and radio message. • Water System Operator continues to investigate problem and make repairs as necessary. • The water shortage notification will be distributed by: 1. Field staff placing "water shortage notices" on doors and along travel routes. 2. Staff will place signs on main travel routes into the community. 3. Water System Operator contacts WSBS am radio and Board of Health for reverse 911 notification and requests issuance of the water shortage notice and request to curtail water use. 4. Administrative support person will provide a pre-scripted message to phone callers and log in each phone call. • Water System Operator continuously updates the water system n water shortage. • Once water shortage is resolved, re-notify customers.

Emergency Notification Call List

Local Law Enforcement day (413) 528-0306	Local Law Enforcement night (413) 528-0306
Fire Dept day (413) 528-0788	Fire Dept night (413) 274-6357
Ambulance service day (413) 528-3632	
Local Health Jurisdiction day (413) 528-0680	Local Health Jurisdiction after hours (413) 229-9093
Water Testing Laboratory day (413) 243-1416	Water Testing Laboratory after hours (413) 243-0669
Local emergency management day (413) 528-8454	Local emergency management after hours (413) 528-8454
Water System Operator day (413) 528-1780	Water System Operator night (413) 528-5028
Neighboring Water System day (413) 528-0133	Neighboring Water System night (413) 229-3090
Neighboring Water System day (413) 298-5581	Neighboring Water System night
News Media Contact (413) 528-3660	Local Radio Station – WSBS (413) 528-0860
Other- Hazmat Team (413) 499-3050	Other

State notification list

State Police day (413) 243-0600	State Police night (413) 243-0600
Drinking Water Program Regional Office day (888) 304-1133	Drinking Water Program Regional Office after hours (888 304-1133
State testing laboratory day (413) 243-1416	State testing laboratory after hours – (413) 243-1416
Other Hazmat Hotline (800) 424-8802	Other – Dig Safe (888) 344-7233

Service/repair notification list

Electrician day	(413) 446-6768	Electrician night	(413) 446-6768
Electric Utility day – National Grid	(413)584-2660	Electric Utility night	(413) 753-7016
Plumber day	(413) 528-9305	Plumber night	(413) 528-9305
Pump Specialist day	(413) 442-9309	Pump Specialist night	(413) 442-9309
Soil Excavator day	(413) 229-7711	Soil Excavator night	(413) 229-7711
Equipment Rental day		Equipment Rental night	
Sewer Utility	(413) 528-0560	Sewer Utility at night	(413) 528-0560
Chemical Supplies	(413) 528-4520	Pipe Supplier	(800) 322-1327

Notification procedures

Notifying water system customers

Who is Responsible:	**James Mercer**
Procedures:	**Using reverse 911 system; announcement on WSBS radio station**

Alerting local law enforcement, state drinking water officials, and local health

Who is Responsible:	**James Mercer**
Procedures:	**Calling appropriate agencies**

Contacting service and repair contractors

Who is Responsible:	**James Mercer**
Procedures:	**Calling appropriate repair and service contractors**

Contact neighboring water systems, if necessary

Who is Responsible:	James Mercer
Procedures:	Contact Great Barrington Fire District

Procedures for issuing a health advisory

Who is Responsible:	James Mercer
Procedures:	Contact Great Barrington Board of Health

Section 7.
Water Quality Sampling

Housatonic Water Works Water quality sampling

Sampling parameter	Do we have procedures? Yes/No	Basic steps to conduct sampling (sites, frequency, procedures, lab requirements, lab locations, lab contacts, lab hours, etc.)
Coliform Bacteria	Yes	Tested monthly.
Heterotrophic Plate Count (HPC)	No	Develop procedures.
Chlorine Residual	Yes	Tested daily at plant.
Chlorine Demand	Yes	Evaluate procedures.
Nitrate/Nitrite	Yes	Tested as State Requires.
Total Organic Carbon (TOC)	No	Develop procedures.
Total Halogenated Organic Carbon (TOX)	Yes	Tested as State Requires.
Cyanide	No	Develop procedures.

Section 8.
Effective Communication

Effective communication is a key element of emergency response. The effectiveness with which we communicate with each other, our customers, and the media can affect the outcome of the situation.

Developing partnerships with others in our local emergency response network, establishing relationships with our customers and the media, and creating communication tools such as fact sheets and media releases ahead of time will help us communicate efficiently and successfully during a crisis. For example, we will establish positive media relations before an emergency. We will make an effort to meet with reporters in our local area to share information about our water system and how they could receive information should an emergency occur. We will also contact our local emergency response organization and determine what assistance they can provide during an emergency.

During an emergency, the media, our customers, and others will have many questions. We will be prepared by organizing basic facts about the crisis and our water system. We will assemble a team of players quickly, including a main spokesperson and one or more people to answer customer calls.

We should expect our customers to be concerned or upset during a drinking water emergency. How we communicate with people is as important as the content of the information we are delivering. Body language, tone of voice, and expressions of sympathy all play an important role in how the information is received. When an emergency occurs, the news media may be on-scene quickly, requesting information that will inevitably go to the public. We will appoint a spokesperson to communicate to the media. We will make sure the spokesperson is credible, accessible, in a position of authority, and trained in media interview techniques.

We will develop key messages to use with the media that are clear, brief, and accurate. We will make sure our messages are carefully planned and have been coordinated with local and state officials.

We will make sure field and office staff know how to deal with the media and questions from customers and the public. It may be necessary to establish protocols for both field and office staff to respectfully defer questions to the spokesperson.

Small water systems with a limited staff like ours should remember that our MassDEP, Drinking Water Program regional office is available to assist in developing and communicating messages to the media and the public. This can be especially helpful when staff need to focus on sampling or repairs.

Communication Tips

Do:

- Be prepared.
- Designate a spokesperson.
- Provide complete, accurate, and timely information.
- Tell the truth.
- Express empathy.
- Acknowledge uncertainty and offer to get back with more information later.
- Document your communications.

Do not:

- Speculate on the cause or outcome of an incident.
- Blame or debate.
- Minimize or brush off concerns of customers.
- Treat inquiries from interested parties as an annoying distraction from the real business of emergency response.

Example: Designate a spokesperson and alternates

Spokesperson	Alternate 1	Alternate 2
James Mercer, Primary Operator	Linda Funk , Office Administrator	James Olmstead, Operator

Example: Key messages

Develop possible messages in advance, and update them as the emergency develops:

- "We are taking this incident seriously and doing everything we can to resolve it."
- "Our primary concern is protecting our customers' health."
- "Another important concern is keeping the system operational and preventing damage."
- "What we know right now is....."
- "The information we have is incomplete. We will keep you informed as soon as we know more."
- "We have contacted state and local officials to help us respond effectively."
- "If you think you may be ill or need medical advice, contact a physician."
- "We are sampling the water and doing tests to determine whether there is contamination."

Health Advisories

During events when water quality and public health are in question, it may be necessary to issue a health advisory. The term *"Health Advisory"* means advice or recommendations to water system customers on how to protect their health when drinking water is considered unsafe. These advisories are issued when the health risks to the consumers are sufficient, in the estimation of the water system or state or local health officials, to warrant such advice.

Health advisories usually take the form of a drinking water warning or boil water advisory. Communication during these times is critical. MassDEP Drinking Water Program staff are committed to working closely with water systems to determine if an advisory is needed. Health advisories should always be well thought out and provide very clear messages. Health advisories can be challenging and time consuming for the water system and public health partners. They are also inconvenient for water system customers. However, these advisories are necessary in order to protect public health. In determining whether to issue a health advisory, there are many things to consider and questions to answer, usually in a short time period. This is another important reason that water systems should form partnerships in advance of these events. If there are well-formed partnerships, it will be much easier to obtain information, make decisions, and get the information out to the public.

MassDEP Drinking Water Program has put together a number of tools, including fact sheets, brochures, door hangers forms, and template to help water systems be prepared to issue a health advisory. We will learn about health advisories and how to issue them before we actually need to. It will make the process much smoother. We can learn more about the coliform health advisory packet by visiting the MassDEP Drinking Water Web site at: http://www.mass.gov/dep/water/drinking/systems.htm#emerresp.

Section 9.
The Vulnerability Assessment

System component	Description and condition	Vulnerability	Improvements or mitigating actions	Security improvements
Source	Long Pond Reservoir located southwest of Housatonic, off of Division Street. Long Pond has a storage capacity of 260 million gallons with a total surface area of 110 acres.	The source is most vulnerable to contamination from above ground activities, as it is a surface source.	Area is inspected frequently.	
Storage	There is a 1.1 million gallon above-ground concrete storage tank at Long Pond. The tank was last inspected in 2014.			Access to tank is secured.
Treatment	There is a chlorination system at Long Pond in sound operating condition. Only sodium hypochlorite is used for treatment. The chlorinator is kept in excellent condition with spare parts on hand. All operating manuals and control systems diagrams as well as safety procedure manuals and personal protection equipment are located at the Long Pond Facility.			Chemical Storage is secured, chlorinator is in secure alarmed facility.
Pump-house and pumping facilities	The pump-house and pumping facilities are in good condition.			Facility is alarmed.
Computer and telemetry system	Computer and telemetry systems are located in the water systems main office. All systems are in good operating condition. The distribution system maps, treatment plant plans, water chemistry information, and schematic of treatment processes are stored in the office at 80 Maple Avenue, Great Barrington MA. The office is alarmed and computers backed up off premises. Originals are stored off premises	.		Facility is alarmed.

Section 10.
Response Actions for Specific Events

The following tables identify the assessment, set forth immediate response actions, define what notifications need to be made, and describe important follow-up actions.

A. Power outage

Assessment	System is vulnerable to power outages; does not have a generator but has a connection so that one can be rented and plugged into system if needed. Storage is able to supply the system for three days usage, or until power is restored.
Immediate actions	Assess if outage will likely be more than 6 hours. If not, be on alert for changing conditions and monitor storage tank. If yes, complete the following:
Notifications	Power Co. – let them know public water system is experiencing an outage. Taylor Rental – obtain generator; customers – cut back on water usage.
Follow-up actions	Turn off and return generator; return system to general power supply, inspect reservoir and pumping facilities, write report.

B. Transmission or main break

Assessment	HWW is vulnerable to line and main breaks.
Immediate actions	Turn off water, call "Dig Safe" and Wilkinson Excavating to repair.
Notifications	If necessary, notify customers whose water will be shut down.
Follow-up actions	Turn water back on and check to make sure everything is working correctly. Notify customers water is back on. Write report.

C. Service line break

Assessment	HWW 's customers' service lines are vulnerable to breaks as the majority are galvanized.
Immediate actions	Assess Situation.
Notifications	Notify customer that service line is homeowner responsibility- provide copy of Company Rules and Regulations.
Follow-up actions	Monitor repair.

D. Chlorine treatment equipment failure

Assessment	HWW is vulnerable to line treatment equipment failure.
Immediate actions	Install back-up pump, collect water samples and check residual levels and treat as needed.
Notifications	If health issue, notify customer via reverse 911 system.
Follow-up actions	Retest water and make sure levels are normal. Notify customers if needed.

E. Treatment equipment

Assessment	HWW is vulnerable to line treatment equipment failure.
Immediate actions	Assess situation.
Notifications	If health issue arises, notify customer via reverse 911 system.
Follow-up actions	Monitor.

F. Source pump failure

Assessment	Low vulnerability as we have a back-up pumps at our disposal.
Immediate actions	Make sure pump is working correctly.
Notifications	If health issue notify customer via reverse 911 system.
Follow-up actions	Once original pump is fixed make sure everything is working properly.

G. Microbial (coliform, E. coli) contamination

Assessment	Determine how widespread the contamination is and isolate the contamination.
Immediate actions	Turn up chlorinator and flush area affected/Sample/Monitor.
Notifications	Notify Mass DEP, notify customers via reverse 911 system.
Follow-up actions	Test water to make sure no further consideration, notify customers, write emergency report.

H. Chemical contamination

Assessment	Low vulnerability.
Immediate actions	Assess situation, isolate / contain.
Notifications	Notify DEP & Officials and customers via reverse 911 system.
Follow-up actions	Monitor.

I. Vandalism or terrorist attack

Assessment	Housatonic Water has low vulnerability for vandalism or attacks. The office, pump station are alarmed; reservoir access gated.
Immediate actions	Test water for contamination and follow procedures necessary.
Notifications	Notify DEP & Officials and customers via reverse 911 system.
Follow-up actions	Write emergency report.

J. Reduction or loss of water in the well

Assessment	n/a
Immediate actions	
Notifications	
Follow-up actions	

K. Drought

Assessment	Housatonic Water has low vulnerability for drought as per historic data; storage tank holds five days of usage: provisions for interconnection with GBFD in place.
Immediate actions	Monitor tank levels.
Notifications	Follow restriction of usage procedures via reverse 911 system.
Follow-up actions	Make sure water levels are normal; notify customers and write emergency report.

L. Flood

Assessment	HWW has low vulnerable to flooding; however, its pumping station, Filters & CT Basin are located below Long Pond Dam.
Immediate actions	Assess situation /isolate affected facility components / take affected components off line to minimize disruption of service.
Notifications	Notify DEP & Officials and customers via reverse 911 system.
Follow-up actions	Monitor.

M. Earthquake

Assessment	Housatonic Water has low vulnerability per historic data.
Immediate actions	Assess facility/Monitor.
Notifications	Notify DEP & Officials and customers via reverse 911 system if necessary.
Follow-up actions	Monitor.

N. Hazardous materials spill in vicinity of sources or system lines

Assessment	Determine how widespread the contamination is and isolate the contamination.
Immediate actions	Turn up chlorinator and flush area affected.
Notifications	Notify HazMat and Mass DEP. Notify customers via reverse 911 system.
Follow-up actions	Test water to make sure no further contaminations. Notify customers, write emergency report.

O. Electronic Equipment Failure

Assessment	Obtain manual pressure reading at tank.
Immediate actions	Determine tank level and run pump manually as needed.
Notifications	n/a
Follow-up actions	Once fixed take pump off manual and make sure everything resumes as normal.

P. Cyber attack

Assessment	Housatonic Water has low vulnerability. Facility systems, while mostly electronic are not tied into a mainframe.
Immediate actions	Monitor and assess.
Notifications	Notify DEP & Officials and customers via reverse 911 system if necessary.
Follow-up actions	Monitor, Notify DEP & Officials and customers if necessary

Q. Other

Assessment	
Immediate actions	
Notifications	
Follow-up actions	

Section 11.
Alternative Water Sources

Inter connect to adjacent water supply system

Water systems within one-quarter mile of our system	Feasibility of connecting
There is access to another water system (Great Barrington Fire District) located approximately one-quarter mile from the Housatonic Water Works.	Housatonic Water Works has plans to install an interconnection with the Great Barrington Fire District in the future.

Alternate source(s) of water

Alternative sources	Names	Phone	Availability	Is the water safe for drinking?
Bottled Water Supplier	Berkshire Mountain Spring Water	413 229-3997	Up to 4,780 gals. In 5 gal. jugs within 24 hours	yes
Tanker trucks in area available to deliver bulk water	Billy Kie's Construction	413 232-4496	30,000 gallons in less than 6 hours	no

Section 12.
Curtailing Water Usage

Curtailing water use:

Water curtailment measures	Actions
As per the Housatonic Water Works rules and regulations outside water usage including watering lawns can be restricted.	Upon making the decision that curtailment is needed: Activate reverse 911 system to get the curtailment message out. Contact WSBS news to announce curtailment.
Lawns, washing cars, etc.	Message, monitor system usage and spot check meter usage. Continue message as long as curtailment is warranted.

Section 13.
Returning to Normal Operation

Returning to normal operations

Action	Description and actions
Inspect, flush and disinfect the system	Water System Operator James Mercer and support staff inspect all system facilities, ensure all water quality tests have been done and the system has been flushed and disinfected if necessary. Water system operator makes a report to the water system Operator. James Mercer makes decision on current condition of system.
Coordinate with MassDEP Drinking Water Program	Water System Operator coordinates with MassDEP on system.
Verification of Water Quality	Water System Operator.
Notify customers	Water System Operator directs office secretary to notify customers via Reverse 911 program message and dictates letter to customers.
Write emergency report	Water System Operator writes report and sends copy to MassDEP.

Section 14.
Training and Rehearsals

Training

Identify staff position training needs and expectations.	
Position	Training needs and expectations.
Water System Operator	Emergency Response communications, planning, issuing health advisories, suspicious activity training.
Water System Operator	Emergency response communications, emergency response planning, suspicious activity training.
Field support- Water System Operator	Emergency response communications, suspicious activity training.
Administrative support- Water System Operator	Emergency Response communications, planning.

Emergency rehearsals

Schedule for drills, tabletop exercises, and other ways to practice emergency response:

Event	Description	People and organizations involved	Date
Rehearsal	Conduct actual emergency drill	Water system staff	unannounced
On-site training drills	Conduct specific drills, communications, water Line breaks, sampling with a professional trainer	Water system staff and professional trainer	to be scheduled

Section 15.
Plan Approval

Plan approval

This plan is officially in effect when reviewed, approved, and signed by the following people:

Name /Title	Signature/ Date
James J. Mercer Water System Operator	 12·29·14

Emergency Response Plan

September 2020

Contents

Emergency Response Plan Requirements

Massachusetts Drinking Water Regulations 310 CMR 22.04 require "Each water supplier must prepare and keep in an easily accessible place an Emergency Response Plan (ERP) prepared in accordance with 310 CMR 22.04(13) and the Massachusetts Drinking Water Guidelines and Policies for Public Water Systems, Chapter 12 – Emergency Response Planning Requirements Guidance including Appendix O – Handbook for Water Supply Emergencies." Further, Massachusetts Drinking Water Regulation 310 CMR 22.15 requires the annual submittal of an updated emergency response plan.

This additional guidance document can be used to help meet the requirement for developing an emergency response program. Other methods or formats can also be used to meet the MassDEP Drinking Water Program emergency response program requirements.

Section 1.
Emergency Response Mission and Goals

Mission statement for emergency response	In an emergency, the mission of the Housatonic Water Works Company is to protect the health of our customers by being prepared to respond immediately to a variety of events that may result in contamination of the water or disruption of supplying water.
Goal 1	Be able to quickly identify an emergency and initiate timely and effective response action.
Goal 2	Be able to quickly notify local, state, and federal agencies to assist in the response.
Goal 3	Protect public health by being able to quickly determine if the water is not safe to drink or use and being able to immediately notify customers effectively of the situation and advise them of appropriate protective action.
Goal 4	To be able to quickly respond and repair damages to minimize system down time.

Section 2.
System Information

Example: System information

Public Water System Identification Number (PWS ID#)	1113003	
System name and address	Housatonic Water Works Company	
Directions to the system	Head north on US Route 7 from the center of Great Barrington veer left onto Route 41 for 2.5miles. Then turn left onto Division Street. Proceed 1 miles (pass through one set of blinking lights) Water system entrance gate is on right : 162 Division Street.	
Basic description and location of system facilities	Source of water is Long Pond Reservoir, which has a storage capacity of 263 million gallons with a total surface area of 110 acres. The plant consists of two slow sand filters which measure 50 feet by 50 feet, and a 1.1 million gallon above ground storage tank. A 10 inch cast iron main carries water to the distribution system. A flow paced sodium hypochlorinator located in the pipe room at the filtration plant disinfects the water flowing to town.	
Location/Town	Housatonic, MA	
Population served and service connections from MassDEP Drinking Water Program records.	1300 people	859 connections
System owner (the owner should be listed as a person's name)	Frederick J. Mercer, President	
Name, title, and phone number of person responsible for maintaining and implementing the emergency plan.	James J. Mercer Treasurer (413) 528- 1780 Office (413) 446-1801 Cell (413) 528-5028 Home	

Section 3.
Chain of Command – Lines of Authority

Name and title	Responsibilities during an emergency	Contact numbers
James J. Mercer Primary Certified Water System Operator	Responsible for overall management and decision making for the water system. The Water System Operator is the lead for managing the emergency, providing information to regulatory agencies, the public and news media. All communications to external parties are to be approved by the Water System Operator.	Phone: (413) 528-1780 Cell: (413) 446-1801 Home: (413) 528-5028
Peter Marks Secondary Certified Operator	In charge of operating the water system, performing inspections, maintenance and sampling and relaying critical information, assessing facilities, and providing recommendations to the Water System Operator.	Phone: (413) 528-1033 Cell: (413) 328-1919
Linda Funk Office Administrator	Responsible for administrative functions in the office including receiving phone calls and keeping a log of events. This person will provide a standard carefully pre-scripted message to those who call with general questions. Additional information will be released through the Water System Operator.	Phone (413) 528-1780 Cell (413) 446-0484 Home (413) 274-6034
Roland Houle Field Staff	Delivers door hangers and supports Water System Operator.	Phone (413) 274-6301

Section 4.
Events that Cause Emergencies

Type of event	Probability or risk (High – Med – Low)	Comments
Flood	Low	System not located in an area vulnerable to flooding.
High winds	Low	5 Day supply of water if power is disrupted.
Ice storm	Low	5 Day supply of water if power is disrupted.
Drought	Low	System has a water restriction bylaw in place if needed.
Terrorism	Low	Gated reservoir access, checked frequently.
Construction accident	Med	Construction crews occasionally hit pipes.
Chemical spill	Low	Complete wellhead protection plan.

Section 5.
Severity of Emergencies (increases as Level number increases)

Level I emergency

Description: The Housatonic Water Works system considers the following as Level I emergencies:

- Distribution line breaks.
- Short power outages.
- Minor mechanical problems in pump-houses.
- Other minor situations where it is not likely that public health will be jeopardized. The system has specific response activities identified for these types of emergencies, including proper sampling, disinfection, and pressure testing activities. System personnel are advised and are directed to work on the problem and are usually capable of resolving the problem within 24 hours. If it is determined that the problem will take longer than 24 hours to resolve and storage is likely to be drawn down below a safe operating level, the situation will be elevated to Level II.

Level II emergency

Description: The Housatonic Water Works system considers the following Level II emergencies:

- Disruption in supply such as a transmission main line break, pump failure with a potential for backflow, and loss of pressure.
- Storage is not adequate to handle disruption in supply.
- An initial positive coliform or E. coli sample.
- An initial primary chemical contaminant sample.
- A minor act of vandalism.
- Drought, with a noticeable and continuing decline of water level in the reservoir.

Level III emergency

Description: The Housatonic Water Works water system considers the following as Level III emergencies:

- A verified acute confirmed coliform MCL or E. coli/fecal positive sample requiring immediate consideration of a health advisory notice to customers.
- A confirmed sample of another primary contaminant requiring immediate consideration of a health advisory notice to customers.
- A loss or complete malfunction of the water treatment facilities for the surface water source, including chlorination.
- An act of vandalism or terrorist threat such as intrusion or damage to a primary facility.
- An immediate threat to public health of the customers and an advisory is required.
- Severe drought significantly affecting reservoir yield.

Level IV emergency

Description: The Housatonic Water Works system considers the following events to be Level IV emergencies:

- Act of terrorism possibly contaminating the water system with biological or chemical agents.
- Flood that infiltrates system facilities and sources.
- Chemical spill within 2000 feet of the system's sources.
- Storm that significantly damages power grid and system facilities.
- Mudslide or other earth shift that causes failure of transmission.

Section 6.
Emergency Notification

Housatonic Water Works Procedures for notifying system customers of potential water shortage.

Who is responsible:	The Water System Operator is responsible for making the decision to notify customers regarding a potential water shortage and the need for water use restrictions. The Water System Operator should consult with field staff to make the decision. Once the decision is made, procedures for notification will be initiated.
Procedures:	• Water System Operator confers with key staff to verify problems. • Water System Operator organizes staff to develop the message to be delivered to the customers. • Water System Operator consults with state drinking water staff regarding the problem. • Water System Operator with assistance from staff prepares customer door hangers, signs, Internet, phone and radio message. • Water System Operator continues to investigate problem and make repairs as necessary. • The water shortage notification will be distributed by: 1. Field staff placing "water shortage notices" on doors and along travel routes. 2. Staff will place signs on main travel routes into the community. 3. Water System Operator contacts WSBS am radio and Board of Health for reverse 911 notification and requests issuance of the water shortage notice and request to curtail water use. 4. Administrative support person will provide a pre-scripted message to phone callers and log in each phone call. • Water System Operator continuously updates the water system n water shortage. • Once water shortage is resolved, re-notify customers.

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Notification procedures

Notifying water system customers

Who is Responsible:	**James Mercer**
Procedures:	**Using reverse 911 system; announcement on WSBS radio station**

Alerting local law enforcement, state drinking water officials, and local health

Who is Responsible:	**James Mercer**
Procedures:	**Calling appropriate agencies**

Contacting service and repair contractors

Who is Responsible:	**James Mercer**
Procedures:	**Calling appropriate repair and service contractors**

Contact neighboring water systems, if necessary

Who is Responsible:	James Mercer
Procedures:	Contact Great Barrington Fire District

Procedures for issuing a health advisory

Who is Responsible:	James Mercer
Procedures:	Contact Great Barrington Board of Health

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Water Quality Sampling

Housatonic Water Works Water quality sampling

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Effective Communication

Effective communication is a key element of emergency response. The effectiveness with which we communicate with each other, our customers, and the media can affect the outcome of the situation.

Developing partnerships with others in our local emergency response network, establishing relationships with our customers and the media, and creating communication tools such as fact sheets and media releases ahead of time will help us communicate efficiently and successfully during a crisis. For example, we will establish positive media relations before an emergency. We will make an effort to meet with reporters in our local area to share information about our water system and how they could receive information should an emergency occur. We will also contact our local emergency response organization and determine what assistance they can provide during an emergency.

During an emergency, the media, our customers, and others will have many questions. We will be prepared by organizing basic facts about the crisis and our water system. We will assemble a team of players quickly, including a main spokesperson and one or more people to answer customer calls.

We should expect our customers to be concerned or upset during a drinking water emergency. How we communicate with people is as important as the content of the information we are delivering. Body language, tone of voice, and expressions of sympathy all play an important role in how the information is received. When an emergency occurs, the news media may be on-scene quickly, requesting information that will inevitably go to the public. We will appoint a spokesperson to communicate to the media. We will make sure the spokesperson is credible, accessible, in a position of authority, and trained in media interview techniques.

We will develop key messages to use with the media that are clear, brief, and accurate. We will make sure our messages are carefully planned and have been coordinated with local and state officials.

We will make sure field and office staff know how to deal with the media and questions from customers and the public. It may be necessary to establish protocols for both field and office staff to respectfully defer questions to the spokesperson.

Small water systems with a limited staff like ours should remember that our MassDEP, Drinking Water Program regional office is available to assist in developing and communicating messages to the media and the public. This can be especially helpful when staff need to focus on sampling or repairs.

Communication Tips

Do:

- Be prepared.
- Designate a spokesperson.
- Provide complete, accurate, and timely information.
- Tell the truth.
- Express empathy.
- Acknowledge uncertainty and offer to get back with more information later.
- Document your communications.

Do not:

- Speculate on the cause or outcome of an incident.
- Blame or debate.
- Minimize or brush off concerns of customers.
- Treat inquiries from interested parties as an annoying distraction from the real business of emergency response.

Example: Designate a spokesperson and alternates

Spokesperson	Alternate 1	Alternate 2
James Mercer, Primary Operator	Linda Funk , Office Administrator	Peter Marks, Operator

Example: Key messages

Develop possible messages in advance, and update them as the emergency develops:

- "We are taking this incident seriously and doing everything we can to resolve it."
- "Our primary concern is protecting our customers' health."
- "Another important concern is keeping the system operational and preventing damage."
- "What we know right now is....."
- "The information we have is incomplete. We will keep you informed as soon as we know more."
- "We have contacted state and local officials to help us respond effectively."
- "If you think you may be ill or need medical advice, contact a physician."
- "We are sampling the water and doing tests to determine whether there is contamination."

Health Advisories

During events when water quality and public health are in question, it may be necessary to issue a health advisory. The term *"Health Advisory"* means advice or recommendations to water system customers on how to protect their health when drinking water is considered unsafe. These advisories are issued when the health risks to the consumers are sufficient, in the estimation of the water system or state or local health officials, to warrant such advice.

Health advisories usually take the form of a drinking water warning or boil water advisory. Communication during these times is critical. MassDEP Drinking Water Program staff are committed to working closely with water systems to determine if an advisory is needed. Health advisories should always be well thought out and provide very clear messages. Health advisories can be challenging and time consuming for the water system and public health partners. They are also inconvenient for water system customers. However, these advisories are necessary in order to protect public health. In determining whether to issue a health advisory, there are many things to consider and questions to answer, usually in a short time period. This is another important reason that water systems should form partnerships in advance of these events. If there are well-formed partnerships, it will be much easier to obtain information, make decisions, and get the information out to the public.

MassDEP Drinking Water Program has put together a number of tools, including fact sheets, brochures, door hangers forms, and template to help water systems be prepared to issue a health advisory. We will learn about health advisories and how to issue them before we actually need to. It will make the process much smoother. We can learn more about the coliform health advisory packet by visiting the MassDEP Drinking Water Web site at: http://www.mass.gov/dep/water/drinking/systems.htm#emerresp.

Section 9.
The Vulnerability Assessment

System component	Description and condition	Vulnerability	Improvements or mitigating actions	Security improvements
Source	Long Pond Reservoir located southwest of Housatonic, off of Division Street. Long Pond has a storage capacity of 260 million gallons with a total surface area of 110 acres.	The source is most vulnerable to contamination from above ground activities, as it is a surface source.	Area is inspected frequently.	
Storage	There is a 1.1 million gallon above-ground concrete storage tank at Long Pond. The tank was last inspected in 2014.			Access to tank is secured.
Treatment	There is a chlorination system at Long Pond in sound operating condition. Only sodium hypochlorite is used for treatment. The chlorinator is kept in excellent condition with spare parts on hand. All operating manuals and control systems diagrams as well as safety procedure manuals and personal protection equipment are located at the Long Pond Facility.			Chemical Storage is secured, chlorinator is in secure alarmed facility.
Pump-house and pumping facilities	The pump-house and pumping facilities are in good condition.			Facility is alarmed.
Computer and telemetry system	Computer and telemetry systems are located in the water systems main office. All systems are in good operating condition. The distribution system maps, treatment plant plans, water chemistry information, and schematic of treatment processes are stored in the office at 80 Maple Avenue, Great Barrington MA. The office is alarmed and computers backed up off premises. Originals are stored off premises	.		Facility is alarmed.

Section 10.
Response Actions for Specific Events

The following tables identify the assessment, set forth immediate response actions, define what notifications need to be made, and describe important follow-up actions.

A. Power outage

Assessment	System is vulnerable to power outages; does not have a generator but has a connection so that one can be rented and plugged into system if needed. Storage is able to supply the system for three days usage, or until power is restored.
Immediate actions	Assess if outage will likely be more than 6 hours. If not, be on alert for changing conditions and monitor storage tank. If yes, complete the following:
Notifications	Power Co. – let them know public water system is experiencing an outage. Taylor Rental – obtain generator; customers – cut back on water usage.
Follow-up actions	Turn off and return generator; return system to general power supply, inspect reservoir and pumping facilities, write report.

B. Transmission or main break

Assessment	HWW is vulnerable to line and main breaks.
Immediate actions	Turn off water, call "Dig Safe" and Wilkinson Excavating to repair.
Notifications	If necessary, notify customers whose water will be shut down.
Follow-up actions	Turn water back on and check to make sure everything is working correctly. Notify customers water is back on. Write report.

C. Service line break

Assessment	HWW 's customers' service lines are vulnerable to breaks as the majority are galvanized.
Immediate actions	Assess Situation.
Notifications	Notify customer that service line is homeowner responsibility- provide copy of Company Rules and Regulations.
Follow-up actions	Monitor repair.

D. Chlorine treatment equipment failure

Assessment	HWW is vulnerable to line treatment equipment failure.
Immediate actions	Install back-up pump, collect water samples and check residual levels and treat as needed.
Notifications	If health issue, notify customer via reverse 911 system.
Follow-up actions	Retest water and make sure levels are normal. Notify customers if needed.

E. Treatment equipment

Assessment	HWW is vulnerable to line treatment equipment failure.
Immediate actions	Assess situation.
Notifications	If health issue arises, notify customer via reverse 911 system.
Follow-up actions	Monitor.

F. Source pump failure

Assessment	Low vulnerability as we have a back-up pumps at our disposal.
Immediate actions	Make sure pump is working correctly.
Notifications	If health issue notify customer via reverse 911 system.
Follow-up actions	Once original pump is fixed make sure everything is working properly.

G. Microbial (coliform, E. coli) contamination

Assessment	Determine how widespread the contamination is and isolate the contamination.
Immediate actions	Turn up chlorinator and flush area affected/Sample/Monitor.
Notifications	Notify Mass DEP, notify customers via reverse 911 system.
Follow-up actions	Test water to make sure no further consideration, notify customers, write emergency report.

H. Chemical contamination

Assessment	Low vulnerability.
Immediate actions	Assess situation, isolate / contain.
Notifications	Notify DEP & Officials and customers via reverse 911 system.
Follow-up actions	Monitor.

I. Vandalism or terrorist attack

Assessment	Housatonic Water has low vulnerability for vandalism or attacks. The office, pump station are alarmed; reservoir access gated.
Immediate actions	Test water for contamination and follow procedures necessary.
Notifications	Notify DEP & Officials and customers via reverse 911 system.
Follow-up actions	Write emergency report.

J. Reduction or loss of water in the well

Assessment	n/a
Immediate actions	
Notifications	
Follow-up actions	

K. Drought

Assessment	Housatonic Water has low vulnerability for drought as per historic data; storage tank holds five days of usage: provisions for interconnection with GBFD in place.
Immediate actions	Monitor tank levels.
Notifications	Follow restriction of usage procedures via reverse 911 system.
Follow-up actions	Make sure water levels are normal; notify customers and write emergency report.

L. Flood

Assessment	HWW has low vulnerable to flooding; however, its pumping station, Filters & CT Basin are located below Long Pond Dam.
Immediate actions	Assess situation /isolate affected facility components / take affected components off line to minimize disruption of service.
Notifications	Notify DEP & Officials and customers via reverse 911 system.
Follow-up actions	Monitor.

M. Earthquake

Assessment	Housatonic Water has low vulnerability per historic data.
Immediate actions	Assess facility/Monitor.
Notifications	Notify DEP & Officials and customers via reverse 911 system if necessary.
Follow-up actions	Monitor.

N. Hazardous materials spill in vicinity of sources or system lines

Assessment	Determine how widespread the contamination is and isolate the contamination.
Immediate actions	Turn up chlorinator and flush area affected.
Notifications	Notify HazMat and Mass DEP. Notify customers via reverse 911 system.
Follow-up actions	Test water to make sure no further contaminations. Notify customers, write emergency report.

O. Electronic Equipment Failure

Assessment	Obtain manual pressure reading at tank.
Immediate actions	Determine tank level and run pump manually as needed.
Notifications	n/a
Follow-up actions	Once fixed take pump off manual and make sure everything resumes as normal.

P. Cyber attack

Assessment	Housatonic Water has low vulnerability. Facility systems, while mostly electronic are not tied into a mainframe.
Immediate actions	Monitor and assess.
Notifications	Notify DEP & Officials and customers via reverse 911 system if necessary.
Follow-up actions	Monitor, Notify DEP & Officials and customers if necessary

Q. Other

Assessment	
Immediate actions	
Notifications	
Follow-up actions	

Section 11.
Alternative Water Sources

Inter connect to adjacent water supply system

Water systems within one-quarter mile of our system	Feasibility of connecting
There is access to another water system (Great Barrington Fire District) located approximately one-quarter mile from the Housatonic Water Works.	Housatonic Water Works has plans to install an interconnection with the Great Barrington Fire District in the future.

Alternate source(s) of water

Alternative sources	Names	Phone	Availability	Is the water safe for drinking?
Bottled Water Supplier	Berkshire Mountain Spring Water	413 229-3997	Up to 4,780 gals. In 5 gal. jugs within 24 hours	yes
Tanker trucks in area available to deliver bulk water	Billy Kie's Construction	413 232-4496	30,000 gallons in less than 6 hours	no

Section 12.
Curtailing Water Usage

Curtailing water use:

Water curtailment measures	Actions
As per the Housatonic Water Works rules and regulations outside water usage including watering lawns can be restricted.	Upon making the decision that curtailment is needed: Activate reverse 911 system to get the curtailment message out. Contact WSBS news to announce curtailment.
Lawns, washing cars, etc.	Message, monitor system usage and spot check meter usage. Continue message as long as curtailment is warranted.

Section 13.
Returning to Normal Operation

Returning to normal operations

Action	Description and actions
Inspect, flush and disinfect the system	Water System Operator James Mercer and support staff inspect all system facilities, ensure all water quality tests have been done and the system has been flushed and disinfected if necessary. Water system operator makes a report to the water system Operator. James Mercer makes decision on current condition of system.
Coordinate with MassDEP Drinking Water Program	Water System Operator coordinates with MassDEP on system.
Verification of Water Quality	Water System Operator.
Notify customers	Water System Operator directs office secretary to notify customers via Reverse 911 program message and dictates letter to customers.
Write emergency report	Water System Operator writes report and sends copy to MassDEP.

Section 14.
Training and Rehearsals

Training

Identify staff position training needs and expectations.	
Position	Training needs and expectations.
Water System Operator	Emergency Response communications, planning, issuing health advisories, suspicious activity training.
Water System Operator	Emergency response communications, emergency response planning, suspicious activity training.
Field support- Water System Operator	Emergency response communications, suspicious activity training.
Administrative support- Water System Operator	Emergency Response communications, planning.

Emergency rehearsals

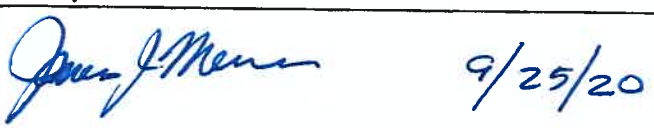
Schedule for drills, tabletop exercises, and other ways to practice emergency response:

Event	Description	People and organizations involved	Date
Rehearsal	Conduct actual emergency drill	Water system staff	unannounced
On-site training drills	Conduct specific drills, communications, water Line breaks, sampling with a professional trainer	Water system staff and professional trainer	to be scheduled

Section 15.
Plan Approval

Plan approval

This plan is officially in effect when reviewed, approved, and signed by the following people:

Name /Title	Signature/ Date
James J. Mercer Water System Operator	 9/25/20

ATTACHMENT G

May 2019

Hydrant Flushing

Our hydrant flushing program will be conducted May 13-17 and May 20-24 during the hours of 9:00-11:00AM and 1:00-4:00PM. This is a highly beneficial and mandatory program for public water systems. It ensures our water quality is at its best and allows us to test our hydrants and mainline valves. We apologize for any reduction in pressure or discolored water that this may cause. The discolored water may not be aesthetically pleasing, but it will be temporary and it is not harmful, however we do advise you to take precautions regarding your laundry routine.

To help you plan accordingly, the following represents the anticipated flushing schedule and location.

HYDRANT FLUSHING SEQUENCE:

DAY 1

1. Christian Hill Road near 184 Christian Hill Road
2. North Plain Road near 249 North Plain Road
3. North Plain Road near 249 North Plain Road
4. North Plain Road near 257 North Plain Road
5. North Plain Road Frog Hollow
6. Crimson Lane blow off Crimson Lane
7. North Plain Road near 342 North Plain
8. Brookside blow off near Brookside Court
9. North Plain Road near 337 North Plain
10 North Plain Road near 364 North Plain
11. North Plain Road & Main near 380 North Plain Road
12. Linda Lane near 18 Linda Lane
13. Wyantenuck Street near 30 Wyantenuck Street
14. North Plain Road near 396 North Plain Road
15. North Plain Road near 410 North Plain Road
16. North Plain Road corner of Pixley Hill Road
17. Water Street blow off Water Street
18. Great Barrington Road near 276 Great Barrington Road
19. North Plain Road & Division Street near intersection
20. Division Street 70 Division Street
21. 63 Division Street Blow off
22. Park & Maple Street near 284 Park Street
23. Maple Street near 12 Maple Street
24. Walnut Street near 12 Walnut Street –blow off
25. Spruce Street hydrant
26. Park Street near 283 Park Street
27. Park Street near 243 Park Street
28. Park Street near 244 Park Street
29. Park Street near 229 Park Street
30. Park Street 115 Park Street; hydrant end
31. Grove Street near 223 Grove Street
32. Ramsdell Road across from last house/ blow off
33. Mountain Street near 8 Mountain Street
34. Park Street near 308 Park Street

35. Park Street near 316 Park Street
36. Park Street near 334 Park Street
37. Great Barrington Housing #1 Hydrant
38. Great Barrington Housing near #17 hydrant
39. Cone Avenue near 362
40. Park Street near 372 Park Street
41. Park Street near 386 Park Street
42. Park Street near 395 Park Street
43. Park Street near Barbieri
44. Park Street near Country Curtains/ 420 Park Street
45. VanDeusenville Road 16 VanDeusenville Road/ Lanoue
46. VanDeusenville Road 97 VanDeusenville Road
47. VanDeusenville Road 39 VanDeusenville Road
48. VanDeusenville Road 55 VanDeusenville Road
49. VanDeusenville Road 69 VanDeusenville Road/ Amerigas
50. VanDeusenville Road 89 VanDeusenville Road/Stortis
51. VanDeusenville Road 99 VanDeusenville Road
52. Front Street 117 Front Street
53. Front Street 133 Front Street
54. Oak Street near 319 Oak
55. Main Street near 1020 Main Street
55. South Street near 208 South Street
56. Main Street near 1045 Main Street
57. Forrest Street near 8 Forrest Street
58. Highland Street near 208 Highland Street
59. Highland Street near 213 Highland Street
60. Pleasant Street near 212 Pleasant/ Housatonic School
61. Meadow Street near 81 Meadow Street
62. Fire Station
63. Depot & Main Street
64. Main Street near 1100 Main
65. Route 183 at Town Line near house #66
66. Blow off in woods
67. Furnace District near 5 Furnace District
68. Apple Street near 3 Apple Street
69. Housatonic Court near 2 Housatonic Court
70. Furnace District at Route 183 near house #54
71. Route 183 near house #50/ blow off – end of pipe
72. High Street near 34 High Street
73. High Street near 32 High Street
74. High Street near 21 High Street/ 2 hydrants
75. Hart Street near 32 Hart Street
76. Kirk & North Street near 32 Kirk Street
77. Kirk Street near 28 Kirk Street
78. Fairview Road near 5 Fairview Road
79. Prospect Street near 328 Prospect Street

July 2020

Hydrant Flushing

During this warm weather we have experienced increased flows and reports of roily water in some sections of our service area. In an effort to alleviate this situation we will be flushing hydrants between July 7-10 and July 13-17 during the hours of 9:00-11:00AM and 1:00-4:00PM.
There may be reductions in pressure and/or discolored water .The discolored water may not be aesthetically pleasing; however, we do advise you to take precautions regarding your laundry routine.

To help you plan accordingly, the following represents our anticipated flushing schedule.

HYDRANT FLUSHING SEQUENCE:

DAY 1

1. Christian Hill Road	near 184 Christian Hill Road
2. North Plain Road	near 249 North Plain Road
3. North Plain Road	near 249 North Plain Road
4. North Plain Road	near 257 North Plain Road
5. North Plain Road	near 276 North Plain Road
6. Crimson Lane blow off	end of street
7. North Plain Road	near 342 North Plain

DAY 2

8. Brookside blow off	near Brookside Court
9. North Plain Road	near 337 North Plain
10 North Plain Road	near 364 North Plain
11. North Plain Road & Main	near 380 North Plain Road
12. Linda Lane	near 18 Linda Lane
13. Wyantenuck Street	near 30 Wyantentuck Street
14. North Plain Road	near 396 North Plain Road
15. North Plain Road	near 410 North Plain Road
16. North Plain Road	corner of Pixley Hill Road

DAY 3

17. Water Street blow off	end of street
18. Great Barrington Road	near 276 Great Barrington Road
19. North Plain Road & Division Street	near intersection
20. Division Street	near 70 Division Street
21. Division Street	near 63 Division Street
22. Park & Maple Street	near 284 Park Street
23. Maple Street	near 12 Maple Street
24. Walnut Street blow off	near 12 Walnut Street

DAY 4

25. Spruce Street	end of street
26. Park Street	near 283 Park Street
27. Park Street	near 243 Park Street
28. Park Street	near 244 Park Street
29. Park Street	near 229 Park Street
30. Park Street	near 115 Park Street
31. Grove Street	near 223 Grove Street
32. Ramsdell Road	across from last house/ blow off

DAY 5

33. Mountain Street	near 8 Mountain Street
34. Park Street	near 308 Park Street
35. Park Street	near 316 Park Street
36. Park Street	near 334 Park Street
37. Great Barrington Housing	near #1 Hydrant
38. Great Barrington Housing	near #17 hydrant
39. Cone Avenue	near 362 Park Street
40. Park Street	near 372 Park Street

DAY 6

41. Park Street	near 386 Park Street
42. Park Street	near 395 Park Street

43. Park Street	near bridge
44. Park Street	near 420 Park Street
45. Van Deusenville Road	near 16 Van Deusenville Road
46. Van Deusenville Road	near 97 Van Deusenville Road
47. Van Deusenville Road	near 55 Van Deusenville Road
48. Van Deusenville Road	near 69 Van Deusenville Road

DAY 7

49. Van Deusenville Road	near 89 Van Deusenville Road
50. Van Deusenville Road	near 99 Van Deusenville Road
51. Front Street	near 117 Front Street
52. Front Street	near 133 Front Street
53. Oak Street	near 319 Oak Street
54. Main Street	near 1020 Main Street
55. South Street	near 208 South Street
56. Main Street	near 1045 Main Street

DAY 8

57. Forrest Street	near 8 Forrest Street
58. Highland Street	near 208 Highland Street
59. Highland Street	near 213 Highland Street
60. Pleasant Street	near 212 Pleasant Street
61. Meadow Street	near 81 Meadow Street
62. Fire Station	near fire station
63. Depot & Main Street	near intersection

DAY 9

64. Main Street	near 1100 Main
65. Route 183 at Town Line	near house #66
66. Blow off in woods	near Route 183
67. Furnace District	near 5 Furnace District

68. Apple Street	near 3 Apple Street
69. Housatonic Court	near 2 Housatonic Court
70. Furnace District at Route 183	near house #54

DAY 10

71. Route 183	near house #50/ blow off – end of pipe
72. High Street	near 34 High Street
73. High Street	near 32 High Street
74. High Street	near 21 High Street/ 2 hydrants
75. Hart Street	near 32 Hart Street
76. Kirk & North Street	near 32 Kirk Street
77. Kirk Street	near 28 Kirk Street
78. Fairview Road	near 5 Fairview Road
79. Prospect Street	near 328 Prospect Street

ATTACHMENT H

HOUSATONIC WATER WORKS COMPANY

SINCE 1897

For Immediate Press Release, July 30, 2018

PRESS RELEASE

HOUSATONIC ANNOUNCES WATER MAIN FLUSHING PROGRAM

August 1-7, 2018

Housatonic Water Works Company will be flushing water mains via hydrants throughout our distribution system from August 1 –August 7, 2018.

The purpose of system flushing is to remove accumulated sediment in our mains which has caused roily water in various sections of town. Flushing may result in temporary discoloration of the water, as well as reduced water pressure. The water discoloration is not a health risk as the Company continues to meet regulated disinfection levels.

The Company appreciates your patience as we work to maintain the quality of our drinking water. For additional information on roily water, please visit our web-site at housatonicwater@gmail.com and follow us on Facebook.

80 Maple Avenue, Suite 1, Great Barrington, MA 01230

Tel: 413.528.1780
Fax: 413.528.3024
E-mail: housatonicwater@gmail.com
www.housatonicwater.com

Housatonic Water Works Company
Since 1897

80 Maple Avenue, Suite 1
Great Barrington, MA 01230-1953
RETURN SERVICE REQUESTED

WATER BILL

MONDAY - FRIDAY
OFFICE HOURS 9:00 A.M. - 5:00 P.M
Phone: (413) 528-1780
www.housatonicwater.com

ACCOUNT NUMBER: [redacted]
SERVICE ADDRESS: 5 MOUNTAIN VIEW STREET

[redacted] 1 311
[redacted]
HOUSATONIC MA 01236-0358

MESSAGE CENTER

Flushing of water lines will be conducted April 10-24, excluding holiday. You may experience roily water during this time.

BILLING DATE : 04/03/2017

SERVICE	SERVICE PERIOD FROM	TO	PREVIOUS READING	PRESENT READING	QUANTITY	AMOUNT DUE
WATER	03/01/2017	04/03/2017	1176000	1176000	0	40.94

pd 4/8/17

Water Rate: $40.94 for first 2500 gallons; minimum allowance 2,500 gallons per month
Excess 2,500 gallons $9.67 per 1000 gallons
Complete Rates, Rules and Regulations are available at www.housatonicwater.

CURRENT	$40.94
PAST DUE	$0.00
AMOUNT DUE	$40.94

Housatonic Water Works Company
Since 1897

80 Maple Avenue, Suite 1
Great Barrington, MA 01230-1953
RETURN SERVICE REQUESTED

WATER BILL

MONDAY - FRIDAY
OFFICE HOURS 9:00 A.M. - 5:00 P.M
Phone: (413) 528-1780
www.housatonicwater.com

ACCOUNT NUMBER [redacted]
SERVICE ADDRESS: 5 MOUNTAIN VIEW STREET

[redacted]
P.O. [redacted]
HOUSATONIC MA 01236-0358

MESSAGE CENTER

Flushing of water lines will be conducted May 21-31. You may experience roily water during that time.

BILLING DATE : 04/30/2018

SERVICE	SERVICE PERIOD FROM	TO	PREVIOUS READING	PRESENT READING	QUANTITY	AMOUNT DUE
WATER	04/02/2018	04/29/2018	25383	27156	1773	40.94

Bal. 5/15 118

Water Rate: $40.94 for first 2500 gallons; minimum allowance 2,500 gallons per month
Excess 2,500 gallons $9.67 per 1000 gallons
Complete Rates, Rules and Regulations are available at www.housatonicwater.

CURRENT	$40.94
PAST DUE	$0.00
AMOUNT DUE	$40.94

Housatonic Water Works Company
Since 1897
80 Maple Avenue, Suite 1
Great Barrington, MA 01230-1953
RETURN SERVICE REQUESTED

WATER BILL

MONDAY - FRIDAY
OFFICE HOURS 9:00 A.M. - 5:00 P.M
Phone: (413) 528-1780
www.housatonicwater.com

ACCOUNT NUMBER: [redacted]
SERVICE ADDRESS: 5 MOUNTAIN VIEW STREET

[redacted] 1 315
P.O. BOX [redacted]
HOUSATONIC MA 01236-0358

MESSAGE CENTER

Flushing will be conducted May 13-17 and May 20-24 during the hours of 9:00-11:00 a.m. and 1:00-4:00 p.m.

BILLING DATE : 05/01/2019

SERVICE	SERVICE PERIOD FROM	TO	PREVIOUS READING	PRESENT READING	QUANTITY	AMOUNT DUE
WATER	03/31/2019	04/30/2019	48321	50019	1698	40.94

Pd 5/6/19

Water Rate: $40.94 for first 2500 gallons; minimum allowance 2,500 gallons per month
Excess 2,500 gallons $9.67 per 1000 gallons
Complete Rates, Rules and Regulations are available at www.housatonicwater.

CURRENT	$40.94
PAST DUE	$0.00
AMOUNT DUE	$40.94

Housatonic Water Works Company
Since 1897
80 Maple Avenue, Suite 1
Great Barrington, MA 01230-1953
RETURN SERVICE REQUESTED

WATER BILL

MONDAY - FRIDAY
OFFICE HOURS 9:00 A.M. - 5:00 P.M
Phone: (413) 528-1780
www.housatonicwater.com

ACCOUNT NUMBER: [redacted]
SERVICE ADDRESS: 5 MOUNTAIN VIEW STREET

418 1 AV 0.389
[redacted] 3 56
P.O. BOX 358
HOUSATONIC MA 01236-0358

MESSAGE CENTER

Housatonic Water Works 2019 Consumer Confidence Report is enclosed.

Flushing of mains will be conducted May 11-22. You may experience roily water during that time.

BILLING DATE : 04/30/2020

SERVICE	SERVICE PERIOD FROM	TO	PREVIOUS READING	PRESENT READING	QUANTITY	AMOUNT DUE
WATER	03/30/2020	04/29/2020	73428	75687	2259	44.73

Pd. 5/8/20

Water Rate: $44.73 for first 2500 gallons; minimum allowance 2,500 gallons per month
Excess 2,500 gallons $10.57 per 1000 gallons
Complete Rates, Rules and Regulations are available at www.housatonicwater.

CURRENT	$44.73
PAST DUE	$0.00
AMOUNT DUE	$44.73

ATTACHMENT I

Housatonic Water Works Company
2015 - 2020 Capital Budget and Capital Expenditures

2015

BUDGET	25,000	
ACQUISITIONS		
Master Meter	4,440	
Total Acquisitions	**4,440**	

2016

BUDGET	80,000	
ACQUISITIONS		
SCADA Control System	40,988	
Alkalinity Sensor	21,610	
2016 Ford F-150	33,324	
Total Acquisitions	**95,922**	

2017

BUDGET	500,000	
ACQUISITIONS		
Distribution Mains:		
North Street	25,253	
Wyantenuck Street	48,253	
Park Street	14,965	
183 Depot	104,202	
183 Bridge	8,420	
Long Pond Road	97,390	(multi-year project completed in 2018)
2 Hydrants	5,606	
595 Meters	254,041	
3 Meters	3,137	
Software for Meters	1,800	
2016 Ford F-150	33,680	(traded in during 2019)
Corrosion Control Project	11,373	(multi-year project not completed yet)
Total Acquisitions	**596,747**	

Acquired through Contribuiton in Aid of Construction:

183 Bridge Distribution Main	105,246

2018

BUDGET	100,000	
ACQUISITIONS		
Distribution Mains:		
Long Pond Road	8,677	(multi-year project completed in 2018)
164 Meters	69,556	
Chainsaw	576	
3 Stenner Pumps	2,175	
3 Master Meter Analyzers	17,783	
SCADA System Improvements	11,744	
Corrosion Control Project	18,777	(multi-year project not completed yet)
Total Acquisitions	**129,288**	

2019

BUDGET	40,000	
ACQUISITIONS		
3 Hydrants	7,546	
39 Meters	14,956	
Blower	749	
Telephone System	3,224	
Hisco Pump	2,551	
SCADA System Improvements	3,090	
Chlorine Tank	930	
Stenner Pump	966	
Corrosion Control Project	7,005	(multi-year project not completed yet)
2020 Ford F-150	44,398	
Less: Trade-in 2016 Ford F-150	(20,000)	
Total Acquisitions	**42,164**	

2020

BUDGET	35,000	
ACQUISITIONS		
Purification Equipment	8,391	(work in process)
Water Qualit Control Project	16,390	(work in process)
Corrosion Control Project	10,113	(multi-year project not completed yet)
Chlorine & pH Analyzer	3,275	
Transducer	979	
Total Acquisitions	**39,148**	