ws	1113003		PWS Name:	Housato	onic Water	Works C	company]	City/Town	Great Barri	ngton
0 0	COM O NTNO	Moni	toring Freque	ency:	Quarterly	O Annual	or less N	Monitoring	Type: Ro		Reduced () Increased
la	RTIFICATION: w that I am the ut this form and	person aut	horized to	YEAR	2021	QUARTER	Q1: Jan	-Mar O	Q2: Apr-Jun	⊚ Q3:	Jul-Sep O	
	ained herein is plete to the bes			Primary Or	mesh perator Signat	Merco	m			F	Date:	7,20
	•		Control of the local division in the local d	7			RAMINAT	ION - C	OMPLETE	TABLES		
	CHLORINE I				and the state of t	OI OIILO	IVANIIIVAT	1014 - 01	OWN LL IL	IADEL	A, Da C	
٠.	Month	Year	# Samples	Name and Address of the Owner, where the Owner, which the Owner, where the Owner, which the	Avg (ppm)	1						
	January 2021 2		NAME AND ADDRESS OF THE OWNER, OF TAXABLE PARTY.	NAME AND ADDRESS OF TAXABLE PARTY.	0.89	1	Chle	orine Runn	ing Annual Ave	rage (RAA):	0.74	
1	February	2021	2	(0.92	1		(Avera	age of 12 Monthl	y Averages	0.74	
	March	2021	2		1.10]			Chlorine M	IRDL (ppm)	4.0	
	April	2021	2		1.04				Cilionitie W	inde (ppiii)	4.0	
2	May	2021	2		1.02	1			s Chlorine MRDL		I MICE	
	July 2021		THE R. P. LEWIS CO., LANSING, MICH.	2 0.69 2 0.78		1		if Yes, the	en MRDL violatio	n for period	140	
			_			1						
3	August	2021	2		0.62	l						
-	September			SALES OF THE OWNER, WHEN PERSONS	0.30	1	1Note that y	ou are rec	quired to notify	MassDEF	within 10 da	iys
	October	October 2020 2 0.30 ovember 2020 2 0.28				1	of the end of the quarter of any DBPR MCL or					
4						violation. Tier 2 (30 day) Public Notification mus					ust also be	
_	December	2020	2		0.91	1	5.045					
	TTHM COME	PLIANCE	04//		1 00/4				J = 21/2 /			
	Sample Loc	ation	Q1 (Jan Date		Q2 (Ap	-	Q3 (Jul		Q4 (Oct		OEL1	LRA
) [Depot Rd.		2/9/2021	ppb 56	5/10/2021	ppb 39	8/9/2021	ppb 98	11/9/2020	ppb 41	Q3 73	59
_												
			HO.									
	HAAF COME	LIANCE	MCL = 8	o (bbb)		Was OEL	exceeded?*	NO		Was M	CL exceede	17' NO
	HAA5 COMP		Q1 (Jan	- Mar)	Q2 (Apr	r - Jun)	Q3 (Jul	- Sen)	Q4 (Oct	- Decl	OEL1	
	Sample Loc	ation	Date	ppb	Date	ppb	Date	ppb	Date	ppb	Q3	LRA
D	Depot Rd.		2/9/2021	56	5/10/2021	58	8/9/2021	100	11/9/2020	44	79	65
_												
-												
-												_
_												
												_
			MCL = 60	(ppb)		Was OEL	exceeded?*	YES		Was M	CL exceeded	1?' YES
	PWS has exceptally and pws has exceptally at least 100 pws has exceptable by the pws has excepta	ceeded the reporting ceeded the	OEL for TT only. (Refer to OEL for TT	— HM and/0 to letter re HM and/0	egarding sea OR HAA5 ar	asonal OE nd must <u>co</u>	L exceedan	ces)	an Operation	-	² OELs apply sampling qua	
	Report within PWS continu PWS NO LO (Refer to quart PWS has except)	n 90 days o es to quali NGER QU erly monitol	of receipt of the fifty for reduce the first for the first	the analyted monitor reduced "Instruction	ical results ring based of monitoring l ons" Tab)	(systems on LRAAs based on a	sampling qu of TTHM ar average con	nd HAA5 ncentratio	nly). (and TOC if a ns of TTHM,	applicable HAA5 an	e) ad/or TOC.	

1113003	Housatonic Water Works Company	Great Barrington
PWSID:	PWS Name:	City/Town:
SURFACE OR	GWUDI SYSTEMS >499 SEEKING OR ON REDUCED TTHM/F	HAA5 MONITORING - COMPLETE TABLE E

				Pla	int 1	Pla	int 2	Pla	ant 3	PI	ant 4
E.		Pla	nt Name:								
		MONTH	YEAR	Monthly Avg (ppm)	Quarterly Avg (ppm)						
		January									
	Q1	February									
		March									
water)	Q2	April									
/at		May									
		June									
(raw	-	July									
	Q3	August									
700		September									
		October									
	Q4	November									
		December									
		(Average of last 4 quarte									

SYSTEMS USING OZONATION - COMPLETE TABLE F

			r	Plant 1	Plant 2	Plant 3	Plant 4
=.		Dlant	Names	riait i	Platit 2	Fiants	Plant 4
-			Name:				
1		MONTH	YEAR	Monthly Avg (ppm)	Monthly Avg (ppm)	Monthly Avg (ppm)	Monthly Avg (ppm)
		January					
5	Q1	February					
Water		March					
		April					
	Q2	May					
חוווווווווווווווו		June					
	Q3	July					
_		August					
ו אווסוום		September					
		October					
21	Q4	November					
1		December					
	Running Annual Average: (Average of last 12 monthly averages)						
		Was Bromate MCL Exceeds (MCL = 0.010 ppm)					
	Quali	fy for Reduced Bromate Mo (RAA<0.0025 ppm)	nitoring?				

	DEFINITIONS
Monthly Average:	Average of all results within the current month.
Quarterly Average:	Average of three monthly averages.
Running Annual Average (RAA):	Average of one year of consecutive compliance periods, including the current one. 4 quarters (THM/HAA5 and TOC) or 12 months (Cl and Bromate).
Total # of Samples:	Total number of samples collected during the monitoring period.
Locational Running Annual Average (LRAA):	RAA from the <u>same</u> sample location. Average of this quarter and three prior consecutive quarterly averages at the same location.
Operational Evaluation Level (OEL):	Average of the two previous quarter's results and twice the current quarter's results

Note: Record and calculate all ND or < MDL results as the number 0 (zero).	
COMMENTS:	

Massachusetts Department of Environmental Protection - Drinking Water Program Stage 2 Disinfection By-Product Rule Operational Evaluation Report For use with the DBPR Quarterly Compliance Worksheet

١.	GENERAL INFORMATION						
	PWSID: 1113003 PWS Name:	Housatonic Water W	orks Company		Town:	Great B	arrington
	CERTIFICATION: I certify under penalties of law that I am the person authorized to fill out this form and the	itoring Period:	Year: 20)21 Qı	ıarter:	3 - J	ul-Sep
	information contained herein is true, accurate and complete to the best extent of my knowledge.	Amo a Meson			4	Church	1 2022
	Brim	nary Operator Signature:			100	Date:	2022
11.	MONITORING RESULTS						
	Refer to Stage 2 DBPR Quarterly Com	pliance Worksheet for co	omplete results s	summary.			
		Location #		2 :	3	4	
	Enter Sample Location Code(s) where OELs we Has an OEL exceedance occurred at this location		10003 No		-		
	If YES, when did the exceedance occur? (Year/0		NO		-		
	Was the cause determined for the previous exce	,					
	Are the previous evaluations applicable to the cu	irrent OEL exceedance?					
	The August 2021 HAAF res	sult was atmical in that it	is much high an	Man an af	4141-	04	
	The August 2021 HAA5 res quarterly samples obtained sin						
	the 31 quarterly samples had						
	53 ug/L. The August 2021 TTI	HM result was also atypic	cally high. See a	ttached plot	s for H	AA5 and	
	Notes:	TTHM.					
111	. OPERATIONAL EVALUATION FINDI	NGS					
Α.	seasonal exemption indicated on Section D			ved scope.		☐ Yes	☑ No
B.	Did you confirm that proper Data Collection Refer to Page 2-6 in the OEL Guidance Manual					☑ Yes	□ No
C.	Did the distribution system cause or cont					☐ Yes	□ No
	If YES or POSSIBLY explain (expand cell or atta	ach additional pages if necessa	nry)			Possibly	
	A lot of flushing was conducted in summanused by spikes in source water many that were conducted. Distribution system than previously. See attached plots for	ganese levels. There we m chlorine residuals wer	re also pipe and	hydrant reg	pairs		
D.	Did the treatment system cause or contrib	oute to your OEL exceedan	ce(s)?			☐ Yes	☑ No
	If YES or POSSIBLY explain (expand cell or atta	nch additional pages if necessa	ry)			☐ Possibly	
	There were no large variations in treatment times slightly higher than recently. See	nent plant performance, see attached plots for chlo	though chlorine	residuals we	ere		
	There is no treatment system for remove than the slow sand filtration process wheremoval, though recent TOC results suggested.	ich can be expected to p	rovide about 15	% TOC			

E.	Did source water quality cause or contribute to your OEL exceedance(s)?	✓ Yes	□ No
	If YES or POSSIBLY explain (expand cell or attach additional pages if necessary) Probably, given the large amount of rain before the 3rd and 4th quarter sampling events. July was by far the wettest July in recorded history in the area, and there was also heavy rain in late	☐ Possibly	
	October (samples were collected on 8/9/21 and 11/10/21). So that may have affected the amount and/or type of organic matter in the Long Pond source water.		
	No TOC data are available from August or November 2021. TOC monitoring on September 7th and 20th both indicated raw water TOC levels of ~3.8 mg/L compared to a filter effluent result of ~1.7 mg/L TOC. This suggests the slow sand filters are removing about 55% of the TOC, and		
	down to a level (1.7 mg/L) that typically would not cause problems with formation of excessive DBPs. Note also the raw water had atypically high levels of manganese in August 2021, and so		
	perhaps some other unknown water quality factor also impacted DBP formation.		
	Attach all supporting operational or other data that support the determination of the cause(s) of your OEL e		
G.	If you are unable to determine the cause(s) of the OEL exceedance(s), list the steps that you can use to be in the future. (attach additional pages if necessary)	tter identify	the cause(s)
	HWWC has reduced the chlorine residual levels. HWWC will also monitor raw water and finis quarterly for the next year, on the same days as the compliance DBP samples are	hed water	for TOC
Н.	List steps that could be considered to minimize future OEL exceedances (attach additional pages if necessary)		
-	 While chlorine levels have been conventional (i.e., no sudden increase in dose), in response HAA5 experienced in 2021 HWWC has reduced chlorine dosing while maintaining sufficient le 2. Monitor quarterly for TOC 	to the large	e change in sinfection
1.	Total Number of Pages Submitted, including attachments and checklists: 17		

PWS	1113003 SID:]	PWS Name:	Housate	onic Water	Works C	Company			City/Town	Great Barring	ton
	COM ONTN	C Moni	toring Frequ	iency: ®	Quarterly	O Annual	l or less	Monitorin	g Type: ® Ro			ncreased
of la fill o conf	RTIFICATION: aw that I am the out this form and tained herein is aplete to the be	e person aut d the inform s true, accur	horized to ation ate and	YEAR Primary O	2021 2021 2002 y perator Signa	ma	R: O Q1: Jar	n-Mar O	Q2: Apr-Jun	O Q3:	Jul-Sep Q4:	
		SYSTE	MS USING	CHLOR	RINATION	or CHLC	RAMINAT	ION - C	OMPLETE	TABLES	S A, B & C	
A.	CHLORINE	RESIDUA	COMPLIA	NCE		_						
	Month	Year	# Samples	The second second second	y Avg (ppm)							r
Q1	January February	2021	2		0.89	-	Chi		ning Annual Ave			
	March	2021	2	-	1.10	1		(Maci	age of 12 World	y Averages	,	
	April	2021	2	Name and Address of the Owner, where the Owner, which the	1.04	1			Chlorine M	IRDL (ppm)	4.0	
Q2	May	2021	2		1.02	1		Wa	s Chlorine MRDL	exceeded'		
	June	2021	2		0.69	1			en MRDL violatio			
	July	2021	2	-	0.78							
Q3		2021	2	_	0.62	1						
_	September	2021	2	Name and Address of the Owner, where	0.94	1	1Note that	you are re	quired to notify	MassDEF	within 10 days	
Q4	October November	2021	2		0.46	-	of the end	of the quai	rter of any DBF	PR MCL or	MRDL	
W4	November 2021 2 0.48 violation. Tier 2 December 2020 2 0.91						ier 2 (30 d	ay) Public Noti	fication m	ust also be		
	December	2020			0.91	1						
B.	TTHM COM	PLIANCE										
	Sample Loc	ation	Q1 (Jan	_	THE R. P. LEWIS CO., LANSING, MICH.	r - Jun)	Q3 (Jul	_	Q4 (Oct	- Dec)	OEL1	LRAA
10 [Depot Rd.		2/9/2021	ppb 56	Date	ppb	Date	ppb	Date	ppb	Q4	
10.	opot rtd.		2/9/2021	36	5/10/2021	39	8/9/2021	98	11/10/2021	73	71	67
H												
			MCL = 8	0 (ppb)		Was OEL	exceeded?*	NO		Was M	CL exceeded?"	NO
C.	HAA5 COME	PLIANCE	04/1	15	1 - 00 //							
	Sample Loc	ation	Q1 (Jan Date	ppb	Q2 (Ap	1	Q3 (Jul	_	Q4 (Oct	-	OEL1	LRAA
10 D	Depot Rd.		2/9/2021	56	5/10/2021	ppb 58	8/9/2021	100	Date 11/10/2021	77	Q4	
						- 00	0/0/2021	100	11/10/2021	11	78	73
_												
			MCI - 6	(nnh)		Wes OF		1700				
			MCL = 6			Was OEL	exceeded?*	YES		Was M	CL exceeded?'	YES
	PWS has exc	ceeded the	OEL for TT	HM and/C	OR HAA5 bi	ut is author	rized to limi	t the scop	oe of the OEL		² OELs apply to s sampling quarter	ystems ly only.
N	evaluation to	reporting (OFI for TT	to letter re	egarding se	asonal OE	L exceedan	ices)		50		
W.	Report within	n 90 dave o	of receipt of	the analyt	JK HAA5 ar	na must <u>co</u>	omplete and	d submit	an Operatio	nal Eval	uation	
	PWS continu	es to quali	fy for reduce	ad monito	ring boood	(aysterns	sampling qu	iarterly of	nly). (and TOC if a			
	PWS NO LO	NGER OIL	ALIFIES for	reduced	monitoring	nased on	or i i Hivi ar	IU HAA5	(and TOC if a ons of TTHM,	applicable	e) 	
-	(Refer to quart	erly monitor	ing criteria on	"Instructio	ns" Tab)	Jaseu OII 8	average con	centratio	ins of LIHM,	HAA5 an	a/or TOC.	
	PWS has exc	deeded the	MCL for TT	HM or HA	AA5 during	ANNUAL r	nonitoring a	nd theref	fore will be su	bject to I	NCREASED	
	monitoring (quarterly d	ual sample	sets at ea	ch location	until furth	er notice.			ajoot to <u>I</u>	TONLAGED	

1113003	Housatonic Water Works Company	Great Barrington
PWSID:	PWS Name:	City/Town:

SURFACE OR GWUDI SYSTEMS >499 SEEKING OR ON REDUCED THM/HAA5 MONITORING - COMPLETE TABLE E

				Pla	int 1	Pla	ant 2	Pla	ant 3	P	ant 4
E.		Pla	ant Name:								
		MONTH	YEAR	Monthly Avg (ppm)	Quarterly Avg (ppm)						
	7	January									
	Q1	February									
		March									
water)	Q2	April									
/at		May									
		June									
raw		July									
_	Q3	August									
TOC		September									
_		October									
	Q4	November									
		December									
		(Average of last 4 quar									

SYSTEMS USING OZONATION - COMPLETE TABLE F

			Г	Plant 1	Plant 2	Plant 3	Plant 4
F.		Plant I	Name:				
		MONTH Y	EAR	Monthly Avg (ppm)	Monthly Avg (ppm)	Monthly Avg (ppm)	Monthly Avg (ppm)
		January					
er)	Q1	February					
water)		March					
	Q2	April					
ec		May					
S		June					Anna and an
(finished	Q3	July					
		August					
BROMATE		September					
Š		October					
2	Q4	November					
n		December					
	Running Annual Average: (Average of last 12 monthly averages)						
		Was Bromate MCL Exceeded (MCL = 0.010 ppm)	17 1				
	Quali	fy for Reduced Bromate Mor (RAA<0.0025 ppm)	nitoring?				

DEFINITIONS					
	Average of all results within the current month.				
	Average of three monthly averages.				
	Average of one year of consecutive compliance periods, including the current one. 4 quarters (THM/HAA5 and TOC) or 12 months (CI and Bromate).				
Total # of Samples:	Total number of samples collected during the monitoring period.				
Locational Running Annual Average (LRAA):	RAA from the <u>same</u> sample location. Average of this quarter and three prior consecutive quarterly averages at the same location.				
Operational Evaluation Level (OEL):	Average of the two previous quarter's results and twice the current quarter's results				

	Note: Record and calculate all ND or < MDL results as the number 0 (zero).	
COMMENTS:		

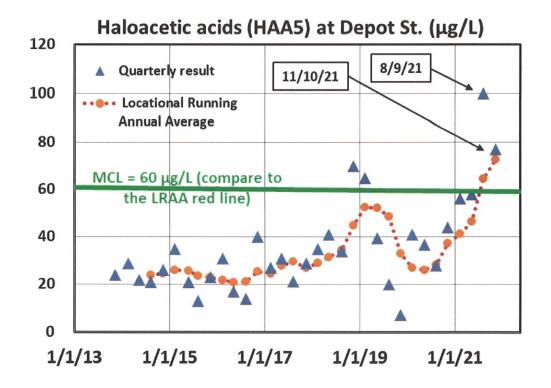
Massachusetts Department of Environmental Protection - Drinking Water Program Stage 2 Disinfection By-Product Rule Operational Evaluation Report

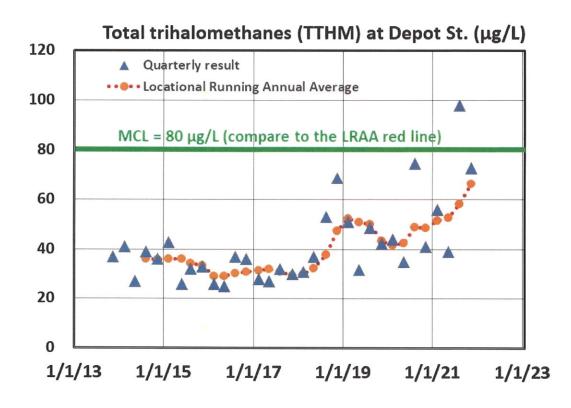
For use with the DBPR Quarterly Compliance Worksheet

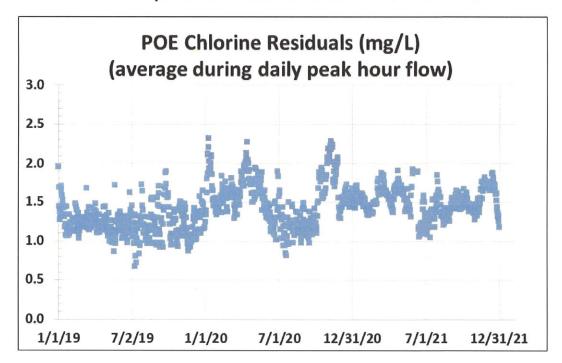
l.	GENERAL INFORMATION		
	PWSID: 1113003 PWS Name: Housatonic Water Works Company Town:	Great E	Barrington
	CERTIFICATION: I certify under penalties of law that I am the person authorized to fill out this form and the information contained herein is true. Monitoring Period: Year: 2021 Quarter:	4 - 0	ct-Dec
	extent of my knowledge. America America America	February	7, 2622
	Primary Operator Signature:	Date:	
11.	MONITORING RESULTS		
	Refer to Stage 2 DBPR Quarterly Compliance Worksheet for complete results summary.		
	Location # 1 2 3	4	í
	Enter Sample Location Code(s) where OELs were exceeded: Has an OEL exceedance occurred at this location in the past? Yes		
	If YES, when did the exceedance occur? (Year/Quarter)		
	Was the cause determined for the previous exceedance? Yes		
	Are the previous evaluations applicable to the current OEL exceedance?		
	The August and November 2021 HAA5 results were atypically high. Previously, since the	he start of	
	Stage 2 D/DBPR monitoring only two of the 31 quarterly samples had been above 60 up	/L, and the	
	previous highest LRAA for HAA5 was 53 ug/L. The August and November 2021 TTH	√ results	
	Notes: were also atypically high. See attached plots for HAA5 and TTHM.		
III	OPERATIONAL EVALUATION FINDINGS		
	•		
A.	seasonal exemption indicated on Section D of the Quarterly Compliance Worksheet? If NO proceed to Item B. If YES, attach a copy of written approval from MassDEP including approved scope.	☐ Yes	☑ No
В.	Did you confirm that proper Data Collection and Analysis Protocols Were Followed? Refer to Page 2-6 in the OEL Guidance Manual for more information on evaluating these protocols.	✓ Yes	□ No
^	The state of the s		
C.	Did the distribution system cause or contribute to your OEL exceedance(s)? If YES or POSSIBLY explain (expand cell or attach additional pages if necessary)	☐ Yes	☐ No
		Possibly	
	A lot of flushing was conducted in summer and early fall 2021 due to the colored water issues caused by spikes in source water manganese levels. There were also pipe and hydrant repairs		
	that were conducted. Distribution system chlorine residuals were slightly higher during 2021		
	than previously. See attached plots for chlorine residual data.		
D.	Did the treatment system cause or contribute to your OEL exceedance(s)?	☐ Yes	☑ No
	If YES or POSSIBLY explain (expand cell or attach additional pages if necessary)		
		Possibly	
	There were no leave and interesting in the state of the s		
	There were no large variations in treatment plant performance, though chlorine residuals were at times slightly higher than recently. See attached plots for chlorine residual data.		
	There is no treatment system for removing natural organic matter from the raw water, other		
	than the slow sand filtration process which can be expected to provide about 15% TOC removal, though recent TOC results suggest even greater TOC removal by the filters (~55%).		

Ε.	Did source water quality cause or contribute to your OEL exceedance(s)?	✓ Yes	☐ No
	If YES or POSSIBLY explain (expand cell or attach additional pages if necessary)	Possibly	
	Probably, given the large amount of rain before the 3rd and 4th quarter sampling events. July		
	was by far the wettest July in recorded history in the area, and there was also heavy rain in late		
	October (samples were collected on 8/9/21 and 11/10/21). So that may have affected the		
	amount and/or type of organic matter in the Long Pond source water.		
	No TOC data are available from August or November 2021. TOC monitoring on September 7th		
	and 20th both indicated raw water TOC levels of ~3.8 mg/L compared to a filter effluent result of		
	~1.7 mg/L TOC. This suggests the slow sand filters are removing about 55% of the TOC, and		
	down to a level (1.7 mg/L) that typically would not cause problems with formation of excessive		
	DBPs. Note also the raw water had atypically high levels of manganese in August 2021, and so		
	perhaps some other unknown water quality factor also impacted DBP formation.		
		8	
F.	Attach all supporting operational or other data that support the determination of the cause(s) of your OEL e	exceedance	(s).
G.	If you are unable to determine the cause(s) of the OEL exceedance(s), list the steps that you can use to be	etter identify	the cause(s)
	in the future. (attach additional pages if necessary)		• •
	HWWC will monitor raw water and finished water for TOC quarterly for the next year, on the	same days	s as the
	compliance DBP samples are collected.		
ū	List stone that sould be considered to minimize future OFI averaged areas (-11-1-11).		
П.	List steps that could be considered to minimize future OEL exceedances (attach additional pages if necessary,	1	
	1. While chlorine levels have been conventional (i.e., no sudden increase in dose), in response	to the large	e change in
	HAA5 experienced in 2021 HWWC has reduced chlorine dosing while maintaining sufficient le	evels for dis	sinfection
	2. Monitor quarterly for TOC		
١.	Total Number of Pages Submitted, including attachments and checklists: 17		
		£	

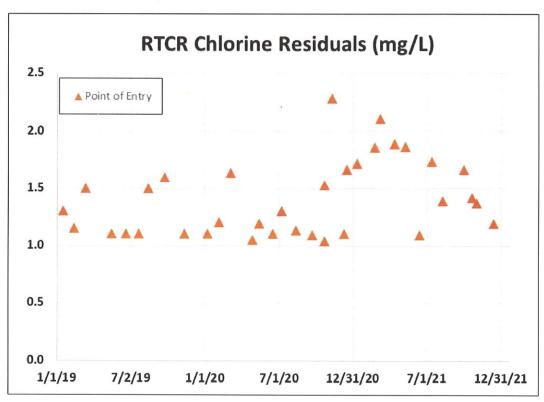
Quarterly Disinfection Byproduct results and Locational Running Annual Average (LRAA) for the Housatonic Water Works Company during the Stage 2 D/DBPR



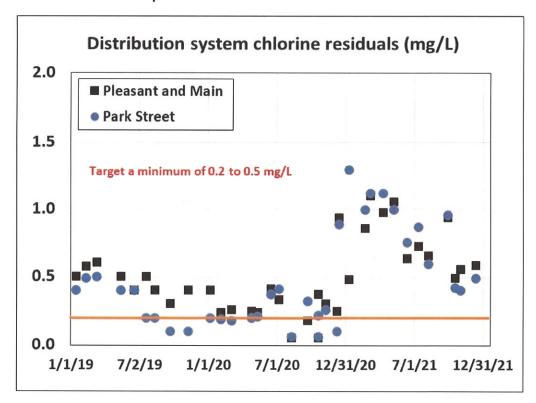




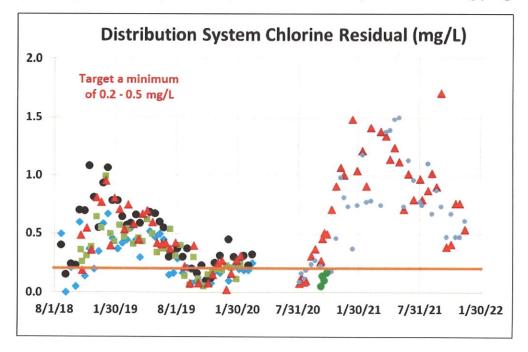
Point of Entry chlorine residuals levels for HWWC in 2019 – 2021, sampled for the Revised Total Coliform Rule



Distribution System chlorine residual levels for HWWC in 2019 – 2021, sampled for the Revised Total Coliform Rule



Distribution System chlorine residuals levels for HWWC in 2018 – 2021, sampled as part of the "special" required distribution system monitoring program



TTHM and HAA5 Sample Collection and Handling Page 1 of 2 Checklist							
Facility	/ Name	Housatonic Water Works					
Check	list Cor	mpleted by. Nick Bruzzi Date: January 26, 2022					
Yes	No						
X		Did you obtain appropriate sample collection vials provided from the laboratory?					
X		Did the sample vials contain the proper preservative and dechlorinating agents?					
		Was each vial labeled using waterproof labels and indelible ink?					
		Did each vial contain the following information on the label?					
X		Unique sample ID					
		System name					
X		Sample location					
		Sample date and time					
		Analysis required, if not already on label					
		Did you remove the aerator from the tap if there was one present?					
X		Did you open the water tap and allow the system to flush until the water temperature had stabilized (usually about 3-5 minutes)?					
		Did you adjust the flow so that no air bubbles were visually detected in the flowing stream?					
		Did you slowly fill the sample vial almost to the top without overflowing?					
K		Were you careful not to rinse out any of the preservative/dechlorinating agent during this process?					
		After the bottle was filled, did you invert it three or four times to mix the sample with the preservative and dechlorinating agents?					
	Image: Control of the	If you collected a TTHM sample that requires acidification, did you: - N/A					
		Let the sample set for about 1 minute, allowing the dechlorinating chemical to take effect?- N/A					
		Carefully open the vial and adjust the pH of the TTHM sample to < 2 by adding approximately 4 drops of hydrochloric acid for every 40 mL of sample (amount of acid needed will depend on buffering capacity of sample)? - N/A					
		Recap the vial, and invert three or four times? - N/A					

TTHI	TTHM and HAA5 Sample Collection and Handling Page 2 of 2						
Chec	cklist						
Yes	No						
X		Did you invert the vial and tap it to check for air bubbles?					
		If bubbles were detected, did you carefully open the vial and add more sample water using the cap to achieve a headspace-free sample? <i>Note that air bubbles would more likely lead to a lower level of THMs or HAAs.</i> No bubbles were observed/detected					
X		Did you immediately cool the samples to 4°C by placing them in a cooler with frozen refrigerant packs or ice, or in a refrigerator? Samples should be maintained at this temperature during shipping to the laboratory.					
		Did you complete the Sample Chain of Custody provided by the laboratory and include it with the sample shipment?					
	X	Was the sample holding time of 14 days exceeded?					
		Was the extract holding time exceeded? EPA Method 551.1: 14 days at a temperature less than -10°C EPA Method 552.1: 48 hours at 4°C or less EPA Method 552.2: 7 days at 4°C or 14 days at a temperature less than -10°C EPA Method 552.3: 21 days for MTBE extraction solvent at -10°C or less OR 28 days for TAME extraction solvent at -10°C or less Standard Method 6251 B: 21 days at -11°C					
	X	Did the laboratory invalidate the sample?					
Note	es/Com	nments					
-							
		· ·					

* For both 9/9/2021 and 11/10/2021 DBP sampling

So	urce W	/atei	Evaluation Checklist	Pag	e 1 of 2	
-	NO DATA			S 80	No.	
Sys	tem Name	:Hou	isatonic Water Works Company	, ,		
Che			by: Richard Gullick (WCS, LLC) Date:	1/31/200	32	
A.	Do you h	ave so	ource water temperature data? - not directly, but at tu	Yes	No	
	If NO,	proce	ed to item B. If YES, was the source water temperature	☐Yes	No	
	high?		ed to item B. If YES, answer the following questions for th			
			OEL exceedance.	o timo pono	_	
	Yes	No				
		×	Was the raw water storage time longer than usual?	*		
		M	Did you place another water source on-line?	.85		
		×	Were river/reservoir flow rates lower than usual? If yes, indic lower flow rates and the anticipated impact on the OEL exce		on of	
	×		Did point or non-point sources in the watershed contribute to exceedance? There are no point sources, but contributes patural organic	t waters	shed	
В.			ta that characterizes organic matter in your source water (e.g.,	Myan	□No	
			VA, color, THM formation potential)? - TOCdata for 9/7/2 ed to item C. If YES, were these values higher than + 9/20	/21		+01
	norma	al?		L res	-	TOC
18		-	ed to item C. If YES, answer the following questions for th OEL exceedance.		" ' .	v 3,8
	Yes	No	- July 2021 was the wettest in M	corded	1212161	evera
	M		Did heavy rainfall or snowmelt occur in the watershed?	ins in o	neavy	end
		X		re 1/10/01.	sampling 5	epti
		M	Did lake or reservoir turnover occur? - not for 19 -9., a	nel show		vera 3,3n
		•	Did point or non-point sources in the watershed contribute to	the OFI	r	0 n
	X		exceedance? Instral sources			z ve
		M	Did an algal bloom occur in the source water?			arge
			If algal blooms were present, were appropriate algae control employed (e.g., addition of copper sulfate)?	measures		l, ffer
		M	Did a taste and odor incident occur?			= 100
C.	Do you ha	ave so	urce water bromide data?	Yes	MNo	
			ed to item D. If YES, were the bromide levels higher or	Yes	□No	
			ormal? ed to item D. If YES, answer the following questions for th			
	prior t		DEL exceedance.			
	Yes	No				
			Has saltwater intrusion occurred?	850	8	
			Are you experiencing a long-term drought?	37		
			Did heavy rainfall or snowmelt occur in the watershed?		s ==	
			Did you place another water source on-line?		P	18
			Are you aware of any industrial spills in the watershed?			

Sc	urce	Wate	r Evaluation Checklist	Page	2 of 2
D.	Do you	ı have so	ource water turbidity or particle count data?	Yes	□No
			eed to item E. If YES, were the turbidity values or particle	□Yes	No
			her than normal? eed to item E. If YES, answer the following questions for the		
	pric	or to the	OEL exceedance.		
	Yes		y of the second	7	
		M	Did lake or reservoir turnover occur?		8 98 0
	×		Did heavy rainfall or snowmelt occur in the watershed? ~ ~ CO T	d rain-	s In
		M	Did logging, fires, or landslides occur in the watershed?	,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
21		X	Were river/reservoir flow rates higher than normal?		
E.			ource water pH or alkalinity data? ーゟ。ナゟ	Yes	□No
		O, proc	eed to item F. If YES, was the pH or alkalinity different from	□Yes	MNo
	If N	O, proc	eed to item F. If YES, answer the following questions for the	time period	i
	prio Yes		OEL exceedance.		
			Was there an algal bloom in the source water?	•	.00
			If algal blooms were present, were algae control measures emp	Novad2 -	NA
				noyeu: /	V //
			Did heavy rainfall or snowmelt occur in the watershed?		
		×	Has the PWS experienced diurnal pH changes in source water?	?	
F.	Concl	usion			
				Yes	□No
	Did so	urce wat	er quality factors contribute to your OEL exceedance?	Possib	lv.
				☐ 1 0331D	iy
	If Y	ES or Po	OSSIBLY, explain below.		
	The	m	ost likely cause of the land	re in	crease
			5 observed in August and Nov		
.0	1021	15	a change in the natural organ	nic m	a Her
î	n + l	ne	Long Pond source water due	40 4	be
	econ	d-br	reaking precipitation in Jul	'ye	
_				,	

* For both 8/9/2021 and 11/10/2021 DBP sampling

Tr	eatmer	it Pr	ocess Evaluation Checklist	Pag	ge 1 of 4	
	NO DATA					
Fac Che	cility Name ecklist Con	: Hous npleted	satonic Water Works Company by:Richard Gollick (WCS, LLC) Date: 1/31,	1200	a	
A.	Review f historical	inished finishe	I water data for the time period prior to the OEL exceedance(s) are water data using the following questions:			
	Were D Wod Was fini	BP pre	ecursors (TOC, DOC, SUVA, bromide, etc.) higher than normal? For Aug. or Nov., but Sept. 2021 TOC of at a vater pH higher or lower than normal? were similar to 2020data	☐ Yes	No -	enknown
	Wasthe	finish	ed water temperature higher than normal?	□Yes	No	
	Wasfini	shed v	vater turbidity higher than normal?	☐Yes	No	× ×
	Wasthe	disinf	ectant concentration leaving the plant(s) higher than normal?	☐Yes	X No	
	Were fin	ished	water TTHM/HAA5 levels higher than normal? - not analyzed	Yes	☐ No	
			nal and water quality data available to the system operator for ion making?	X Yes	□No	
В.	Does the	treatm	nent process include predisinfection?	□Yes	MNo	
12	If NO, proceed to item C. If YES, answer the following questions for the period in which an OEL exceedance occurred: Yes No					
			Was disinfected raw water stored for an unusually long time?			
			Were treatment plant flows lower than normal?			
			Were treatment plant flows equally distributed among different to	rains?		
			Were water temperatures high or warmer than usual?			
			Were chlorine feed rates outside the normal range?			
			Was a disinfectant residual present in the treatment train following	ng predis	infection?	
			Were online instruments utilized for process control?			
			Did you switch to free chlorine as the oxidant?			
			Was there a recent change (or addition) of pre-oxidant?			
			Did you change the location of the predisinfection application?			
C.	Does you	r treati	ment process include presedimentation?	☐Yes	⊠No	
			ed to item D. If YES, answer the following questions for the peedance occurred:	eriod in v	which	
			Were flows low?			
			Were flows high?			
			Were online instruments utilized for process control?			
			Was sludge removed from the presedimentation basin?			
			Was sludge allowed to accumulate for an excessively long time	?		. 9
			Do you add a coagulant to your presedimentation basin?			
			Was there a problem with the coagulant feed?			

Tre	Treatment Process Evaluation Checklist Page 2 of 4						
D.	Does your treatment process include coagulation and/or flocculation? If NO, proceed to item E. If YES, answer the following questions for the period in which an OEL exceedance occurred: Yes No						
	l		Were there any feed pump failures or were feed pumps operatinates?	ng at impro	per feed		
			Were chemical feed systems controlled by flow pacing?				
			Were there changes in coagulation practices or the feed point?				
			Did you change the type or manufacturer of the coagulant?		;		
			Do you suspect that the coagulant in use at the time of the OEL not meet industry standards?	exceedan	ice did		
			Did the pH or alkalinity change at the point of coagulant addition	1?			
			Were there broken or plugged mixers?				
			Were flow rates above the design rate or was there short-circuit	ing?	•		
E.	Does you	r treatn	nent process include sedimentation or clarification?	☐Yes	₩No		
			ed to item F. If YES, answer the following questions for the p sedance occurred:	eriod in w	/hich		
			Were there changes in plant flow rate that may have resulted in settling time or carry-over of process solids?	a decreas	e in		
			Were settled water turbidities higher than normal?				
1			Was there any disruption in the sludge blanket that may have re to the point of disinfection?	sulted in c	carryover		
			Was there any maintenance in the basin that may have stirred s bottom of the basin and caused it to carry over to the point of dis addition?		n the		
			Was sludge allowed to accumulate for an excessively long time malfunction in the sludge removal equipment?	or was the	ere a		

Tr	Treatment Process Evaluation Checklist Page 3 of 4						
F.	Does you	ur treatr	ment process include filtration? - two slows and filters Yes No				
		-	ed to item G. If YES, answer the following questions for the period in which sedance occurred:				
		M	Was there an increase in individual or combined filter effluent turbidity or particle counts?				
		M	Was there an increase in turbidity or particle loading onto the filters? find reation				
		Was there an increase in flow onto the filters or malfunction of the rate of flow controllers?					
	Were any filters taken off-line for an extended period of time that caused the other filters to operate near maximum design capacity and created the conditions for possible breakthrough?						
		M	Were any filters operated beyond their normal filter run time?				
 Were there any unusual spikes in individual filter effluent turbidity (which may indicate particulate or colloidal TOC breakthrough) in the days leading to the excursion? Were all filters run in a filter-to-waste mode during initial filter ripening? 							
			If biological filtration is used, were there any process upsets that may have resulted in the breakthrough of TOC (leave blank if not applicable)?				
G.	prior to a	a clearv proce	tment process include primary disinfection by injecting chlorine Yes \sum No vell? ed to item H. If YES, answer the following questions for the period in which redance occurred:				
		×	Was there a sudden increase in the amount of chlorine fed or an increase in the chlorine residual?				
		図	Was there an increase in clearwell holding time?				
		×	Was the plant shut down or were plant flows low?				
		M	Was there an increase in clearwell water temperature?				
		区	Did you switch to free chlorine recently as the primary disinfectant?				
		×	Was the inactivation of Giardia and/or viruses exceptionally high?				
40		M	Was there a change in the mixing strategy (i.e., mixers not used, adjustment of tank level)?				
Н.	Does you	ır plant	recycle spent filter backwash or other streams?				
	If NO, proceed to item I. If YES, answer the following questions for the period in which an OEL exceedance occurred:						
	Yes	No	Did a change in the recycle stream quality contribute to increased DBP precursor loading that was not addressed by treatment plant processes?				
			Did a recycle event result in flows in excess of typical or design flows?				

Tr	eatmen	t Pro	ocess Evaluation Checklist	Pag	e 4 of 4
l.	Do you in		disinfectant after your clearwell to maintain a distribution ?	□Yes	ĭNo
			eed to item J. If YES, answer the following questions for the pe eedance occurred:	eriod in w	hich
			Was there a sudden increase in the amount of chlorine fed?		
			Was there a switch from chloramines to free chlorine for a burno	ut period	?
			If using chloramines, was the chlorine to ammonia ratio in the pro-	oper rang	e?
			Was there a problem with either chlorine or ammonia mixing?		12
J.	Lead and to reduce treatment coagulation If NO,	Coppethe Darge on/floce	ed to item K. If YES, explain below and consult EPA's Simulta	□Yes	⊠No
			e Guidance Manual for alternative compliance approaches.		
			p course a balance-more chlorine t		
Q	nd TC	R_{j}	and less chlorine for DBPR and L	ER.	
K.	Conclusi	on			
	Did treatm OEL excee		ctors and/or variations in the plant performance contribute to the e(s)?	☐ Yes	No
	If YES	or PC	OSSIBLY, explain below.		
·	There	w	ere no significant variations in	2 trea	tment
	Plant	P	er formance.		
9	dosing.	mai	residual concentration have been intaining more than enough chied all disinfection requirement	reduc	ed,

* For both 8/9/2021 and 11/10/2021 DBP sampling

Distribution System Evaluation Checklist					Page 1 of 2		
System Name: Housatonic Water Works Company							
Checklist Completed by: Richard Gullick (Water Compliance Date: 1/31/2022							
A.	location	where	sinfectant residual or temperature data for the monitoring you experienced the OEL exceedance? eed to item B. If YES, answer the following questions for the	Yes e period in v	□ No w hich		
	an OEL exceedance occurred: \(\langle not exactly there, but data						
	Yes	No	available for nea	rby	that		
		,M	location?				
		図	Was the disinfectant residual lower than normal for that time of location?	of the year at	that		
	×		Was the disinfectant residual higher than normal for that time location? Slightly so for August - see				
B.	Do you have maintenance records available for the time period just prior to the OEL exceedance?						
	If NO, proceed to Item C. If YES, answer the following questions:						
	Yes	No					
		M	Did any line breaks or replacements occur in the vicinity of the	e exceedanc	e?		
		×	Were any storage tanks or reservoirs taken off-line and cleane	aned?			
	M		Did flushing or other hydraulic disturbances (e.g., fires) occur the exceedance?	ur in the vicinity of			
	区		Were any valves operated in the vicinity of the OEL exceedant	ices?			
C.			s metered, do you have access to historical records showing dividual service connections?	Yes	□No		
If NO, proceed to item D. If YES, was overall water use in your system unusually low, indicating higher than normal water age?							
D.	Do you have high-volume customers in your system (e.g., an industrial processing plant)?				™No		
			eed to item E. If YES, was there a change in water use by a e customer?	☐ Yes	□ No		
E.	Is there a finished water storage facility hydraulically upstream from the monitoring location where you experienced the OEL exceedance?						
	If NO, proceed to item F. If YES, review storage facility operations and water quality data to answer the following questions for the period in which the OEL exceedance occurred:						
	Yes	No	Was a disinfectant residual detected in the stored water or at	the tank outle	et?		
8		M	Do you know of any mixing problems with the tank or reservoi				
		×	Does the facility operate in "last in-first out" mode? - In at				
		M	Was the tank or reservoir drawn down more than usual prior to exceedance, indicating a possible discharge of stagnant wate	usual prior to OEL			
`		M	as there a change in water level fluctuations that would have resulted in creased water age within the tank or reservoir?				

Distribution System Evaluation Checklist	Pag	e 2 of 2				
F. Does your system practice booster chlorination?	Yes	No				
If NO, proceed to item G. If YES, was there an increase in booster chlorination feed rates?	Yes	☐ No				
G. Did you have customer complaints in the vicinity of the OEL exceedance?	Yes	☐ No				
If NO, proceed to item H. If YES, explain.						
Complaints were received related to colore	ed wa	ter				
in summer and early full 2021, caused by						
manganese. Raw water manganese levels were						
high in August, then low in November.						
H. Did concern about complying with a rule other than Stage 2 DBPR, such as the Lead and Copper rule, the TCR, or any other rule constrain your options to reduce the DBP levels at this site? For example, are you limited by the need to maintain a detectable disinfectant residual in your ability to control DBP levels in the distribution system?	☐ Yes	No				
If NO, proceed to item I. If YES, explain below and consult EPA's Simultaneous						
Compliance Guidance Manual for alternative compliance approaches.						
There is of course a balance - more of		ne				
DBPR and LCR.	100					
I. Conclusion	†I					
	☐ Yes	□ No				
Did the distribution system cause or contribute to the OEL exceedance(s)?	Possil	oly				
If NO, proceed to evaluations of treatment systems and source water. If YES or POSSIBLY, explain below.						
There was a lot of flushing distribution system						
pipes due to the colored mater in summer and						
tall 2021 Distribution system chlorine residuals						
fall 2021. Distribution system chorine residuals were slightly higher than in recent history. Though						
these two factors may have contributed, i	+ doe					

not seem likely that they would cause such an atypical increase in HAAS.