



PROGRESS MICHIGAN

POWERING PROGRESS TOGETHER

Hugh Madden
215 S. Washington Square, Suite 100
Lansing, MI 48933

September 30, 2015

FOIA Coordinator
Department of Environmental Quality
P.O. Box 30457
Lansing, MI 48909-7957

Via email: deqfoia@michigan.gov

Pursuant to Michigan Freedom of Information Act § 15.231 et seq., on behalf of Progress Michigan, I am requesting electronic copies of all emails from January 1, 2013 through the present date, sent to or received between the Michigan Department of Environmental Quality and the Office of the Governor regarding water service for the City of Flint. This request includes emails sent or received by Emergency Managers as well as all city officials and employees. This request also includes emails sent or received using the private email accounts of any of the requested individuals or organizations.

Please include any attachments that were a part of these emails such as word documents, or PDFs or other types of documents. Please also include copies of emails in which any of the above were simply "cc-ed" or "bcc-ed".

If there are any fees for searching or copying these records, please inform me if the cost will exceed \$50.00. However, I would also like to request a waiver of all fees in that the disclosure of the requested information is in the public interest and the request is limited in scope.

If you deny any or this entire request, please cite each specific exemption you feel justifies the refusal to release the information and notify me of the appeal procedures available to me under the law.

When responding to this request, please do so in an electronic format, via email, at hugh@progressmichigan.org.

Sincerely,

Hugh Madden, Progress Michigan

(517) 999-3646

6877-15
EXEC - RMD
Lansing
Due: 10-22-15

10 DAY EXT.
ISSUED

FEE WAIVER DENIED
RW



** ADDITIONAL INFO***Woosley, Rosemary (DEQ)**

From: Hugh Madden <hugh@progressmichigan.org>
Sent: Monday, October 26, 2015 4:16 PM
To: DEQFOIA
Subject: Clarification of FOIA Request

To clarify/amend my FOIA request dated September 30, 2015:

I am looking for emails pertaining to violations of the Safe Drinking Water Act by the City of Flint from the beginning of the switch from the Detroit Water system to the Flint River as the main source of drinking water. In addition, I am seeking emails regarding the need for adequate corrosion control within the Flint water system.

This request includes all communications with Emergency Managers, Flint officials, the office of the Governor, the Department of Treasury and any other emails that pertain to the requested information.

--

Hugh Madden
Communications Director
Progress Michigan

Shekter Smith, Liane (DEQ)

From: Poy, Thomas <poy.thomas@epa.gov>
Sent: Monday, September 21, 2015 12:19 PM
To: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ)
Subject: FW: Flint MI: LCR Enforcement Issues
Attachments: Flint LCR for FOIA 6429-15 (5).pdf; FOIA 15-585 Part 2 55pgs (12).pdf

Liane/Richard/Steve: Marc Edwards sent the email below to a number of EPA addressees. You probably want to forward this to Dan Wyant too.

Tom

Tom Poy
 Chief, Ground Water and Drinking Water Branch
 USEPA - Region 5
 (312) 886-5991

From: Shoven, Heather
Sent: Monday, September 21, 2015 7:33 AM
To: Bair, Rita; Damato, Nicholas; Poy, Thomas
Cc: Deltoral, Miguel
Subject: FW: Flint MI: LCR Enforcement Issues

Hi Tom, Nick, and Rita --

I will set up a meeting to discuss this email. Let me know if you would like me to include HQ. Thanks!

Best wishes,
 Heather

Heather A. Shoven | Enforcement Team Leader | U.S. Environmental Protection Agency, Region 5
 Ground Water and Drinking Water Branch | 77 W. Jackson Blvd (WG-15J) | Chicago, IL 60604 | 312-886-0153

From: Marc Edwards [<mailto:edwardsm@vt.edu>]
Sent: Sunday, September 20, 2015 9:30 PM
To: Schock, Michael; Lytle, Darren; kempic.jeffrey@epa.gov; Burneson, Eric; demarco.carol@epa.gov; Murphy, Thomas; Shoven, Heather; Deltoral, Miguel
Subject: Flint MI: LCR Enforcement Issues

Mike, Darren, Jeff, Eric, Carol and Miguel and R5 MI/Enforcement personnel (as listed on the R5 webpage).

In this e-mail, I am making you aware of what we know regarding the Flint lead situation.

1) They do not have an approved lead sampling pool. Only 13 of the lowest lead sampled homes from 2014, were resampled in 2015.

The homes sampling high in 2014, were not asked to be resampled.

At best, their program is sending out sampling bottles at random across the city.

2) This message exemplifies the type of site selection, that they are doing to satisfy their high risk LCR monitoring pool site.

That is, none. They are not even hiding it.

<http://www.flintneighborhoodsunited.org/drinking-water-testing/>.

3) Furthermore, in a video now on the ACLU website, at the end of the interview, Mike Glasgow (Flint LCR program) notes what is perfectly obvious from looking at the MDEQ FOIA materials.

“we threw out bottles everywhere just to collect as many as we can, just to hit our number, and we just turn in every result we get in.”

Moreover, they do not have the records to show the homes have lead pipe. ***“we are still looking for the records”***

See video here. Start at 4 minutes and 13 seconds to see the admission. <https://vimeo.com/139882021>

4) On top of that, according to my count, MDEQ covered up no fewer than 5 violations in the 2015 sample round. These include:

a) Technical violation in that what they now stamp as the “draft” report (attached) is late (the signed date is 7/28/2015). It was due 7/10/2015. The final “revised” report is dated 8/20/2015 (also attached), which is 40 days late.

b) Although 87 sites from 2014 were not resampled, no written justification for the site changes was provided in the FOIA materials, and this is required by law.

The statement given today by Flint, that residents were not resampled because they did not want to participate, is contradicted by my conversations with residents.

c) In the original 71 samples Flint submitted late, the lead 90%ile action level was exceeded. MDEQ took the initiative to invalidate 2 samples, dropping Flint below the Action Level.

Flint never requested in writing that any of the samples be invalidated (see the comments written in the box of page 1, FOIA 15-585).

Mike Glasgow says that the 2 high samples were deleted based on the conference call. Only the high samples were scrutinized for meeting the sample pool criteria.

No low samples were investigated. I have the e-mails.

4) The “Draft 7/28/2015” and “revised 8/20/2015” LCR reports, on page 1, check boxes that note Tier 1 sites are not used. MDEQ asks no questions about that. In video Mike admits he has no knowledge of what sites actually have lead pipe or not.

5) Flint did not achieve the minimum number of samples as determined before the sampling round. In his e-mail Mike Glasgow (see below, and see FLINT LCR FOR FOIA...pdf) acknowledges this will be a technical violation. The draft LCR clearly indicates that the minimum was not achieved. MDEQ responds “we are discussing options” to handle this technical violation. In the August 20th revised final report, even this technical violation magically disappears (see comments box on page 1....).

From: Rosenthal, Adam (DEQ)
Sent: Friday, July 10, 2015 11:28 AM
To: 'Michael Glasgow'
Cc: Brent Wright
Subject: RE: lead/copper

we are discussing options regarding this and future rounds of monitoring and will get back with you.

thanks,

Adam Rosenthal, EQA
 MDEQ – Office of Drinking Water and Municipal Assistance
 Lansing District – Constitution Hall 1SW
 PO Box 30242
 Lansing, MI 48909
 517-284-6644
 fax: 517-241-3571

For MORs, Lab Results & Reporting Forms:
DEQ-DWMA-Lansing@michigan.gov

From: Michael Glasgow [<mailto:mglasgow@cityofflint.com>]
Sent: Thursday, July 09, 2015 2:19 PM
To: Rosenthal, Adam (DEQ)
Cc: Brent Wright
Subject: Re: lead/copper

Adam,

I just sent the last of the samples to the lab today. Unfortunately we did not reach 100 samples. I believe the count I have is 76 total. Since we have had a few more hits this round, we are going to continue to solicit samples for our own informational purposes. I am disappointed in the turnout of sampling, we distributed close to 200 sample bottles. With this monitoring violation will we be required to collect another round of 100 samples?

KEY POINTS:

- 1) FLINT HAS LOTS OF LEAD PIPE, NO CORROSION CONTROL TREATMENT, AND HAS HAD NO LEGITIMATE LCR TESTING FOR AT LEAST A YEAR.
- 2) AMONGST LOW INCOME INFANTS, BREAST FEEDING RATES ARE LOWER, AND FORMULA USE IS HIGHER. MANY FLINTS RESIDENTS CANNOT AFFORD TO FLUSH DUE TO HIGH WATER RATES. THEY CANNOT AFFORD BOTTLED WATER. THIS IS AN UNPRECEDENTED SITUATION AND EPA NEEDS TO TAKE THIS SERIOUSLY. NOW.
- 3) WE HAVE ONE CHILD WITH ELEVATED BLOOD LEAD ALREADY...IN FACT, THAT IS THE ONLY REASON WE KNOW ABOUT ANY OF THE ABOVE.
- 4) MDEQ IS STILL PUBLICLY INSISTING FLINT WATER HAS TESTED SAFE, IS SAFE, AND THAT FLINT HAS **NO VIOLATIONS** of any sort.

I believe that someone at HQ or in R5 should immediately take decisive action on this issue to protect the public.

Marc

Shekter Smith, Liane (DEQ)

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Tuesday, July 28, 2015 9:47 AM
To: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Philip, Kris (DEQ); Monosmith, Carrie (DEQ); DeBruyn, Dana (DEQ); Dettweiler, Dan (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Cook, Pat (DEQ); Holdwick, Kevin (DEQ)
Cc: Poy, Thomas; Bair, Rita; Damato, Nicholas; Shoven, Heather; Kuefler, Janet; Murphy, Thomas; Porter, Andrea; Deltoral, Miguel
Subject: Final Notes from Michigan semi-annual call on 6/10

I was supposed to finalize these in mid-July, but I didn't receive any changes from anyone, so these notes are final now. Thank you all again for participating.

Jennifer

From: Crooks, Jennifer
Sent: Wednesday, July 01, 2015 5:31 PM
To: Shekter Smith, Liane (DNRE); Richard Benzie; kris philip; Monosmith, Carrie (DNRE); DeBruyn, Dana (DEQ); Dettweiler, Dan (DEQ); Busch, Stephen (DEQ); 'Prysby, Mike (DEQ)'; 'cookp@michigan.gov'; Holdwick, Kevin (DEQ)
Cc: Thomas Poy; Bair, Rita; Damato, Nicholas; Shoven, Heather; Kuefler, Janet; Murphy, Thomas; Porter, Andrea; Deltoral, Miguel
Subject: Draft Notes from Michigan semi-annual call on 6/10

All—Below are my draft notes from our call last week, June 10, 2015. Thank you all for participating. I apologize for the delay in getting these out in draft to you all for review—I was hoping to get a couple of items ironed out that were fuzzy during our discussions, but hasn't happened yet. Several ACTION items below. So, please review to make sure I documented our discussion/agreements correctly, and feel free to edit as needed. I you could get back to me by July 13, that would be great. Thank you!

Jennifer

Attendees:

MDEQ: Liane Shekter-Smith, Richard Benzie, Carrie Monosmith, Kris Philip, Dan Dettweiler, Marjorie Rodriguez (Student), Kevin Holdwick, Mike Prysby, Dana DeBruyn, Steve Busch
 EPA Region 5: Tom Poy, Rita Bair, Nick Damato, Janet Kuefler, Michele Palmer, Tom Murphy, Heather Shoven, Cary McElhinney, Andrea Porter, Miguel Deltoral, Mostafa Noureldin

Summary:

1.Changes in Lead Disinvestments and Commitments for FY 2016 ARDP—for discussion: Due to our extreme focus on lead in drinking water, this is the consensus here.

a. Consumer notification of tap results at NTNCWSs:

(Suggested wording) The NCWS program commits to full implementation of the lead consumer notification of tap results requirement, to begin in CY 2016. Region 5 will assist in a notification outreach effort in late FY 2015 to remaining 698 NTNCWSs that are not schools/daycares, to begin providing lead consumer notice in CY 2016. NCWS program commits to include information on providing lead consumer notice in the annual monitoring letter sent to all NTNCWSs for CY 2016.

STATE: The State found this change in the wording acceptable.

b. Collection of Lead samples at NTNCWSs during June – September 2016 timeframe

(Suggested wording) NCWS program commits to including information in the applicable NTNCWS annual monitoring letters of the requirement to collect their annual/triennial lead sample between June and September only, during CY 2016. The MDEQ NCWS program currently does not have the capability to easily track lead sampling compliance within this specific timeframe.

STATE: The State found this change in the wording acceptable.

c. Follow-up Actions for NTNCWSs that sample outside of June-September 2015 timeframe

(From 5/5/15 call notes w/EPA) MDEQ commits to providing Region 5 with all CY 2015 lead (and copper?) sample data for all NTNCWSs by March 2016 so that EPA can analyze how many PWSs monitored outside the June through October timeframe. EPA commits to follow-up with MDEQ to discuss follow-up actions.

STATE: The State agreed to providing EPA R5 the raw lead and copper data for all CY 2015 for all NTNCWSs. The WaterTrack database does have data, but it can't generate violations. MDEQ doesn't commit to enforcing against 2016 violators in FY 2016. The State said, it is planning on disinvesting in enforcing against these violators due to limited capability of WaterTrack; however, if the State's noncommunity data management capabilities improve during FY 2016, implementation of this disinvestment may become a reality. The State has not designated an alternate timeframe, or done system specific documentation as to why the system qualifies for a different timeframe.

d. Submittal of the lead and copper reporting form

(Suggested wording) MDEQ commits to requiring CWSs and NTNCWSs to submit the lead and copper reporting form via the annual monitoring letters to each system, tracking CWSs and NTNCWSs submittal of the lead and copper reporting form, and commits to issuing violations for failure to submit the lead and copper reporting form. The reporting form provides the address of the sample site, designates sampling site selection criteria, and explanation(s) for any changes in sampling sites.

STATE: Dan Dettweiler stated that the NCWS program was not in a position to do this for the NTNCWSs at this time. Tom Murphy asked how does WaterTrack handle/track high lead results? Tom M said there is a truncation issue on the sample location name field. Dan acknowledged that this problem has been identified, and the Department of Technology Management and Budget (DTMB) has been trying to fix this problem, but it is a challenging problem. Dan stated that sample sites for NTNCWSs are actually identified by LHDs during the sanitary survey and are documented in the sanitary survey. The LHDs check the pdf of the laboratory results that clearly states where the sample was taken, and calculates the 90th percentile. However, Dan stated that the requirement to send in the lead and copper reporting form is not currently in the LHD annual monitoring letter sent to each system. The NTNCWSs do not couple this form to the Lead Consumer Notice, as does the CWSs. Kris Philip pointed out that the LHDs select the sample sites, thus when they are calculating the 90th percentile, they are actually double checking the sites with the results.

From our discussion, the Region concluded that at this time, the LHDs are actively reviewing the lead and copper results and the sample locations when they calculate the 90th percentiles to ensure proper LCR monitoring is conducted by ALL NTNCWSs at the proper sample sites. After our call, I asked for verification of this statement, and Dan Dettweiler responded, "Just as with an exceeding value of an MCL, WaterTrack alerts the LHD when at least one sample for a water system exceeds the AL. A 90th percentile calculation is made only when an exceeding result alerts the LHD. For cases

where there are no exceeding results, private lab samples are reviewed at the time LHDs hand-enter them into WaterTrack. State lab samples, which flow electronically via nightly downloads from the state lab database, are reviewed when pdfs of the analysis reports are, routinely, emailed by the state lab to LHDs. Beyond that, MDEQ's annual evaluation of the LHDs provides another opportunity for us to oversee the proper assigning and use of designated sampling locations."

ACTION: The Region will discuss Dan's response internally, and get back to the State with any issues/concerns.

Kris Philip said that the CWS program is requiring that the systems submit the form, but they are not enforcing whether or not the system submits the form. Often, the CWS will submit the Lead Consumer Notice and the Lead and Copper reporting form together. Kris said if 90%+ are already submitting the forms, then the State will agree to follow-up and enforce this requirement. But, if less than that, will probably be too much of a burden. Kris said they may change the way DEQ is tracking in SDWIS during FY 2016. But, the Region said SDWIS-Prime probably won't be available until 2017 at the earliest.

ACTION: Kris Philip will research with the District Offices to determine the current submittal rate of the lead and copper reporting form from CWSs; and report back to the Region.

2. Enforcement Update with Heather

NTNCWSs under Bottled Water agreements due to Arsenic MCL violations:

Per discussions with Region 5 and the February 2014 EPA/OECA memo, MDEQ has closed the old Arsenic open-ended MCL violations; however, no further quarterly monitoring is being conducted at the (± 27) systems that are still under bottled water agreements. Thus, no more arsenic MCL violations will be reported for these systems and these systems will not become priority systems (ETT score of 11 or more) since only one arsenic MCL violation will be reported (5 points) even though they have a longstanding issue with arsenic noncompliance. The Region would like to discuss the pros and cons of placing these PWSs with arsenic MCL violations on quarterly monitoring as required under 40 CFR Section 141.23(c)(7); and brainstorm possible solutions.

Heather provided an update on how the State is doing in returning ETT systems to compliance; the State is doing very well in achieving its commitment for FY 2015. Heather said the Region is glad to see the State and LHD prioritization of implementation of the drinking water program and NTNCWS schools and daycares.

Referring to the NTNCWSs under BW agreements that are in violation of the Arsenic MCL, Heather said that since there are no more open-ended MCL violations in SDWIS, that no MCL violations can be reported to SDWIS unless there is monitoring to show the system is in non-compliance. Even though the LHD has indicated that these systems are drinking bottled water for public health protection, the use of bottled water cannot be a permanent solution to the fact that the system's drinking water at the tap continues to exceed the MCL for arsenic. Dan said there are 22 systems, where 8 are schools, that should be conducting quarterly monitoring. Dana said that letters have been sent (OR drafted?) to these 22 systems to require quarterly sampling for arsenic; these 22 systems are in 10 different counties so the message from the State is consistent. A secondary effect of this new requirement for the systems, may be that they transition to another water source or install treatment sooner.

The State voiced a concern that multiple quarterly violations could potentially affect the State's relationship with the LHDs financially. Genesee and Oakland Counties have quite a number of noncommunity water systems. Multiple quarterly violations could affect the Dept of Community Health's determination as to whether the LHDs are meeting their minimum program requirements; thus receive full funding for their work with the noncommunity systems for the drinking water program. The LHDs cannot have more than 20% of their systems with violations. The Region wonders how much funding would be cut from a LHD contract if it exceeds the 20% noncompliance level set in the contract?

3. Status of Flint

- a. TTHM levels for May—Due to MDEQ district engineer June 10-RECEIVED; see link to results

<https://www.cityofflint.com/2015/06/01/may-water-testing-results-show-all-locations-are-within-acceptable-limits-for-tthm/>

All samples below the TTHM MCL; one site still has an LRAA above the MCL but decreased from 105 ppb in Feb to 93.5 ppb in May.

Mike Prysby said he is getting ready to issue the construction permit to the City of Flint to install a GAC filter in July, that will remove more TOC to further reduce the potential of developing TTHMs. Mike said he has already issued a construction permit for a transmission line within the City that will help reduce water age.

- b. Lead in Flint

Our discussions with MDEQ indicate that no phosphates/corrosion control has been added to the system since April 2014 when the source of drinking water changed to the Flint River. We understand that the City is just finishing up its second set of 6-month initial monitoring for lead; where the results will probably warrant a Corrosion Control Study to be conducted. Since Flint has lead service lines, we understand some citizen-requested lead sampling is exceeding the Action Level, and the source of drinking water will be changing again in 2016, so to start a Corrosion Control Study now doesn't make sense. The idea to ask Flint to simply add phosphate may be premature; there are many other issues and factors that must be taken into account which would require a comprehensive look at the water quality and the system before any treatment recommendations can/should be made. Miguel is recommending MDEQ and EPA? approach Flint about formally requesting EPA's Office of Research and Development in Cincinnati support on the lead in Flint drinking water issue, and request that Mike Schock, ORD, and possibly Darren Lytle, ORD, to participate in Flint's drinking water advisory committee so that a comprehensive evaluation on how to proceed can be discussed.

Miguel provided a brief summary of the high lead results found at the residence of Ms. Leeanne Walters in Flint. Miguel will follow up with a written summary of the work conducted, sample results, and conclusions.

Miguel believes that lead levels in Flint are being affected by the lack of Corrosion Control being conducted by the City, since the LCR requires 2 6-month initial monitoring for a new source. Steve Busch stated that in the Lead sampling pool, almost all of the lead sample sites are lead service lines, and the State is not seeing large increases in lead levels at the tap. Miguel suggested that EPA experts in Lead, Mike Schock; and in distribution systems, Darren Lytle, be added to the Flint drinking water advisory committee to assist the City/State in determining the best way to proceed to minimize lead in the City's drinking water during the interim use of the Flint River, and subsequent use of Lake Huron water.

Miguel said he will send Mike Schock and Darren Lytle's contact information to Steve and Mike. Steve pointed out that the City is following the LCR requirements, and completing the requirements in a timely manner. Miguel's point is that since the LCR was promulgated 20+ years ago, that research and different situations, like Washington D.C., have educated scientists, experts, and regulators that the existing requirements in the LCR may not be as protective as previously thought. Thus, he can only make recommendations as to how to revise sampling protocols. And Miguel acknowledges that it may be another year before these regulation changes are promulgated in the Long-Term Lead and Copper Rule. In December 2015, the NDWAC recommendation is expected.

The Region asked the State if the Flint River will be a permanent supplemental source of drinking water, once the City of Flint connects with the Karegdodi pipeline from Lake Huron. Mike Prysby said that the City is currently pumping 22MGD, but the City has 40-50 MG of storage. The City is currently working on reducing its unaccounted for water losses, and these water losses are dropping. The State, through the Governor's office, provided disadvantaged system funding, \$2M which includes \$900K for lead detection, and pipe inspection.

4. Update on WaterTrack to SDWIS-State: The migration of WaterTrack data to SDWIS-State was number 39 on the Dept of Technology Management and Budget's (DTMB) project list last year; this year it is

number 30. It doesn't appear this project has a high priority. Does the State have any new information on the progress of this project?

Dan said that the migration of WaterTrack data to SDWIS-State has moved to a priority of 26 with DTMB so far this year. But Dan said they are going to take this project out of the queue, since Ronda Page has returned to the drinking water program from DTMB. Ronda said she re-estimated DTMB's involvement in this project to be far less than originally thought, so there is no need for any program developers or the tech team. This project will only need the Data Team and the web designers only. Ronda said they can set-up on a new server and migrate the data from WaterTrack to SDWIS-State themselves; in-house. Kris Philip remembers migrating the CWS data to SDWIS-State, so she can be a resource for this project. The parts that are needed to be completed by DTMB could be contracted out. Cary McElhinney said that there is a process of withholding PWSS grant funds and re-directing the funds to a HQ contract with SAIC. Richard Benzie said the process worked well last year when MI used PWSS funds to contract with a HQ contractor to conduct NEEDS survey training.

ACTION: Jen will follow up with State and Tribal Programs Branch about the process and timing of holding back funds from the PWSS grant for the purpose of contracting with SAIC.

5. Consequences of cutting the State drinking water program to a "minimal program"

Jennifer had a discussion with Richard Benzie regarding the possibility of the Michigan State Legislature looking to have just a minimal drinking water program, meaning only a program with activities that are required by the Federal SDWA. Jennifer ultimately discussed this internally with Tom Poy. The minimal program suggested would cut out Operator Certification, Capacity Development, Plan Review, Cross Connection Control, Source Water Protection, among other programs that are State required. Operator Certification and Capacity Development, while not required by the Federal regulations, do have financial strings attached. And Plan review/construction permits are required by the SRF program for a loan. Any recent communication with the State Legislature that they might proceed and make this possibility a reality?

Richard and Liane said there is no current threat from the State Legislature to cut the State-funded PWSS program activities. But there is a State-wide impetus to delete old programs and regulations, so this could lead to questioning the purpose of State-funded PWSS program activities. Richard is just being proactive in preparing a justification. Richard remembers a discussion many years ago about what constitutes a "comprehensive drinking water program". Tom Poy and Jennifer commented in a previous communication with Richard that the EPA PWSS primacy program and the State-funded activities in the drinking water program were meant to complement each other. To support this statement, Jennifer sent Richard some PWSS Priority guidance from the 90's, some preamble language from the 1976 SDWA found by our attorney, and language from Section 142 of the SDWA regulations from 1976 that might assist him in his justification.

6. EPA's Resource Message at the LHD Workshop in April

From the 2014 analysis of Shared Goals 2013 data, which is compliance data, for noncommunity systems, there are increasing trends of nitrate M/R violations for both NTNCWSs and TNCWSs. We discussed this on the last semi-annual call. Analysis of the 2015 Shared Goals 2014 data (April 2015) shows an improvement—that of decreasing numbers of bacti/nitrate M/R violations.

However, in light of the upcoming implementation of RTCR in 2016, the question raised here in the Region is: Does the State have a plan with the LHDs as to what activities must be prioritized, and what will fall off the plate? Not all LHDs will need to disinvest based upon each LHD's resources, but some poorly funded LHDs may have to disinvest in some activities/drop activities that have no risk to public health.

Carrie Monosmith said that she met with the RTCR workgroup, comprised of LHD Directors/sanitarions, last fall to identify activities that the state can disinvest in during the next several years as the LHDs begin implementation of RTCR. They could not identify any activity that could be dropped. The main thing that will help the LHDs save time is to get the electronic DWR (eDWR) going, or the CMD portal, which will drastically reduce the LHDs time in inputting laboratory data into WaterTrack/SDWIS-State. From there, they can develop electronic data forms (CROMEER compliant) that the systems can submit.

Thank you!

Jennifer

shekterl@michigan.gov; 'Richard Benzie' <benzier@michigan.gov>; 'kris philip' <philipk@michigan.gov>; 'Monosmith, Carrie (DNRE)' <MONOSMITHC@michigan.gov>; 'DeBruyn, Dana (DEQ)' <DebruynD@michigan.gov>; Dettweiler, Dan (DEQ) <DETTWEILERD@michigan.gov>; Poy, Thomas <poy.thomas@epa.gov>; Kuefler, Janet <kuefler.janet@epa.gov>; Damato, Nicholas <damato.nicholas@epa.gov>; Shoven, Heather <shoven.heather@epa.gov>; Murphy, Thomas <murphy.thomas@epa.gov>; Bair, Rita <bair.rita@epa.gov>; McElhinney, Cary <mcelhinney.cary@epa.gov>; Pniak, Edward <pniak.edward@epa.gov>; 'cookp@michigan.gov'; 'Prysby, Mike (DEQ)' <PRYSBYM@michigan.gov>; Busch, Stephen (DEQ) <BUSCHS@michigan.gov>

Shekter Smith, Liane (DEQ)

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Thursday, September 10, 2015 5:58 PM
To: Shekter Smith, Liane (DEQ)
Cc: Benzie, Richard (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Poy, Thomas; Porter, Andrea; Devereaux, Tracy Jo (DEQ); Kuefler, Janet; Shoven, Heather; Deltoral, Miguel
Subject: Final Notes from call Tuesday 8/31/15 with MI DEQ RE: Flint

Thank you, Liane, for your edits—I incorporated all of your edits, and further clarified who said what.
 Jennifer

Date: August 31, 2015
Present: Liane Shekter Smith, Richard Benzie, Steve Busch, (2 other MDEQ staff?), Tom Poy, Andrea Porter, Janet Kuefler, Jennifer Crooks

STRATEGIC NEXT STEPS FOR FLINT TO ADDRESS LEAD CORROSION CONCERNS

Tom Poy discussed Marc Edwards' website, "Flint, MI Water Study Updates" (<https://flintwaterstudyupdates.wordpress.com/>). The discussion focused on the lead sampling and analytical results Marc Edwards' team posted to their website. Tom emphasized that EPA is not involved with Marc Edwards' work in Flint. Tom mentioned that the Edwards team's samples may not have been analyzed by a certified lab (which is only required for compliance samples) nor taken from sites that qualify as Tier 1 for LCR compliance sampling, but the results give further evidence that lead levels in Flint are trending upward. (The conclusion that there is an increasing trend of lead concentrations at consumer taps builds upon earlier compliance sampling taken by Flint in 2014 and 2015 that showed the 90th percentile of the 1st 6-month sampling period at 6ppb, then the 90th percentile of the 2nd 6-month sampling period at 11ppb.) Everyone at the meeting agreed that Flint is in compliance with the Safe Drinking water Act action level for lead. However, because the city's population exceeds 50,000 persons, MDEQ stated that Flint needs to additionally optimize their treatment process to reduce lead levels further, if possible.

The "Flint, MI Water Study Updates" website is putting added pressure on MDEQ and EPA to ensure that Flint addresses their lack of optimized corrosion control treatment in an expedited manner in order to protect the residents from exposure to high lead levels. Richard noted that there are numerous systems across the country that have installed corrosion control treatment, have optimized their corrosion control, but did not necessarily reduce their lead levels. We all acknowledged that this is true. MDEQ acknowledged that implementing installation of corrosion control treatment in Flint is prudent to protect public health since there are approximately 15,000 lead service lines within the city. EPA acknowledged that to delay installation of corrosion control treatment in Flint would likely cause even higher levels of lead over time as Flint's many lead service lines are continuously in contact with corrosive water.

Region 5 and MDEQ brainstormed on strategic next steps for Flint to address lead corrosion concerns. These steps included:

1. **Public Education for Flint Residents.** Liane has contacted the Department of Community Health to discuss developing a consumer lead education piece outlining the consumer's options to lower the lead in their drinking water. The Region was glad to hear of a plan to initiate Lead Public Education since this will provide the public immediate actions they can take. The educational material could include steps consumers can take to reduce their exposure to lead in drinking water (flushing their lines after long stagnation periods, using filters certified to remove lead, etc.) as well as longer term fixes to remove lead sources (for example, financing the cost to remove any part of a lead service line on the owner's property at the same time as Flint is replacing its portion of the lead service line).

2. **Gathering Information on Flint's Future Treatment Plans.** Steve Busch said Flint and their engineering consultants were meeting this week (Sept 1) to discuss conceptually the necessary optimized corrosion control treatment at Flint. Tom Poy shared EPA lead experts' (Mike Schock and Darren Lytle of EPA's Office of Research and Development in Cincinnati) caution against simply adding orthophosphate without first studying the water quality and existing distribution system conditions to ensure that any installed treatment has a good chance of working. EPA lead experts have research and field experience showing the complexity of optimizing corrosion control treatment when water quality is significantly changed, as is the case for Flint.
3. **Offering Flint Free Help from EPA Experts.** Steve Busch has already provided the names of EPA lead experts (Mike Schock and Darren Lytle) to Flint, as has Susan Hedman, R5 Administrator. MDEQ and Region 5 agree that, to successfully control lead corrosion in the distribution system, Flint needs to review this situation holistically, while also addressing the lead issue in an expedited manner.
4. **Laying Groundwork for MDEQ/EPA Collaboration with Flint.** If Flint accepts the offer of technical assistance for optimizing corrosion control, Tom Poy suggested that MDEQ and EPA lead experts (Mike Schock and Darren Lytle) form a partnership to provide such help. EPA experts are able to provide pipe scale analyses, as well as other laboratory support. Although Flint (using their consultant) bears the ultimate responsibility for designing and installing corrosion control, MDEQ and EPA experts are willing and able to provide advice throughout the process.

END

Jennifer

Jennifer Kurtz Crooks
 Michigan Program Manager
 Ground Water and Drinking Water Branch
 U.S. EPA Region 5
 77 West Jackson Blvd.
 Chicago, Illinois 60604
 312.886.0244
crooks.jennifer@epa.gov
 312.582.5853 (fax)

Shekter Smith, Liane (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Monday, August 03, 2015 3:34 PM
To: Cook, Pat (DEQ); Busch, Stephen (DEQ)
Subject: FW: FOR REVIEW: MDEQ - Flint Call Notes
Attachments: MDEQ Call on July 21_call notes v4.docx

Just received the attached. Haven't reviewed it yet.

From: Hyde, Tinka [<mailto:hyde.tinka@epa.gov>]
Sent: Monday, August 03, 2015 3:31 PM
To: Shekter Smith, Liane (DEQ)
Cc: Poy, Thomas; Bair, Rita
Subject: FOR REVIEW: MDEQ - Flint Call Notes

Hi Liane – Attached are our notes from our call on 7/21 regarding Flint Drinking Water System. Please take a look and let me know if you have any questions or comments. Thanks

Notes on Call with MDEQ on July 21, 2015

MDEQ Implementation of LCR Rule and Flint Issues

Issue #1: Is there a public health concern regarding lead in Flint or other regulatory requirements?

- The 90th percentile results of the 2nd round of monitoring was 11 ppb.
- The population has dropped to under 100,000 and therefore the 1st round of 6-month monitoring was done for 100 samples, but the 2nd round only needed 60 samples.
- Customer-requested samples were included, but MDEQ did not have specifics on how many there were.
- Tinka asked about the timeline for Flint to switch over to the Lake Huron water source. MDEQ said the pipeline is under construction and scheduled to be complete by July 2016. MDEQ expects some delays and thinks a more realistic timeframe is October 2016.
- MDEQ explained that Flint would have 18 months to complete the corrosion control study and the complicating factor of switching over to Lake Huron. Should the corrosion control study be based on the Lake Huron source? MDEQ also explained that once Flint is using Lake Huron water that they would then need to complete 2 more rounds of 6-month monitoring to assess whether any adjustments to the corrosion control treatment was needed.
- MDEQ will be sending a letter to Flint telling them they need to complete a corrosion control study – based on results they are not optimized. Given the timing of completing a corrosion control study and the anticipated switch to Lake Huron water, MDEQ will have discussions with Flint and request that they start corrosion control treatment as soon as possible.
- MDEQ asked for Region 5's opinion on whether the regulations allow for the study requirement for Flint to be waived if MDEQ has Flint start pH adjustments and adding phosphates. Region 5 will look into this and get back to MDEQ with an answer. All acknowledged that if Flint initiated corrosion control treatment and continued to evaluate the system to ensure optimization that these efforts would essentially equate to a corrosion control study.
- The Region raised its concern about looking at treatment more comprehensively to ensure problems with DBPs didn't occur. MDEQ stated that Flint is on the brink of DBP compliance and that bacteriological issues haven't occurred since last year. Any adjustments for corrosion control treatment would need to make sure the other issues weren't exacerbated.
- Region 5 again offered the assistance of ORD staff, Darren Lytle and Mike Schock which MDEQ said they had shared with Flint already.

Issue #2: Discuss optimal corrosion control requirements

Discussion Items:

- MDEQ explained that they did not treat the switch to Flint River water as a "new system", but as a new source. It is their understanding that 2 rounds of 6-month monitoring is still needed to characterize the water quality. They don't know what is optimized until those 2 rounds of 6-month monitoring are completed.

- Region 5 noted that under 141.81(b)(3)(iii) that any system that has been deemed optimized must notify the State of any long-term change in treatment or the addition of a new source. The State must review and approve the change and may require any such system to conduct additional monitoring or other action to ensure that the system maintains minimal levels of corrosion in the distribution system. The State's requirement for 2 additional rounds of 6-month monitoring would fall under the "additional monitoring" prescribed by the State and not the initial 2 rounds of 6-month monitoring for new systems.
- Region 5 explained that they have talked to HQ about the interpretation of regulations and believes that systems that have been deemed optimized need to "maintain" corrosion control. The Region agreed to provide supporting regulatory citations for the language about maintaining corrosion control. Ed Moriarty in OGWDW is also consulting OGC on this topic and the OGC opinion will also be shared.
- MDEQ mentioned that there are other communities that may leave the Detroit system or connect to the new Lake Huron pipeline, but many of those either don't need to treat for corrosion control or will be building new treatment plants. Requirements for maintaining corrosion control for additional communities connecting to the Lake Huron pipeline will be discussed further after receipt of the HQ/OGC opinion.

Issue #3: Discuss Pre-flushing (as time allows)

- Lead compliance sampling procedures in the state of Michigan comply with Federal SDWA requirements which calls for a minimum of 6 hours during which there is no water used from the tap the sample is taken from.
- MDEQ is not interested in changing its position on pre-flushing until new regulations come out. They also pointed out that the pre-flushing instructions are not requirements, but suggestions.
- The Michigan pre-flushing instructions were developed as a way to ensure that sampled faucets were not stagnant for an excessive period of time beyond the targeted 6 hour (i.e., rarely used faucets or when a homeowner has been gone for an extended period of time).

Next Steps:

- **MDEQ will send a letter to Flint regarding the 2 rounds of 6-month monitoring results that exceed 5 ppb and the need for a corrosion control study. They will have discussions with Flint to request that they start corrosion control treatment as soon as possible rather than waiting for the completion of a study that can take 18 months.**
- **MDEQ and the Region were in agreement that it is important to get phosphate addition going in Flint as soon as possible. MDEQ mentioned tapping Mike Shock for help with this in the interim.**
- **Region 5 commented that we now have a path forward for Flint despite a difference of opinion on whether the regulations required Flint to "maintain" corrosion control treatment when they started serving treated water from the Flint River.**
- **MDEQ and Region 5 agreed that after Flint implements corrosion control treatment, when they switch back to Lake Huron water, they will need to continue the corrosion control treatment while conducting monitoring to determine if this treatment is optimized with the new Lake Huron water quality.**

- Region 5 will get back to MDEQ once it gets HQ/OGC's opinion on the need to "maintain" corrosion control treatment once a system is deemed optimized.
- MDEQ and Region 5 agreed that other communities currently implementing corrosion control treatment and change sources will need to continue to provide corrosion control treatment and conduct monitoring to determine whether the treatment is optimized with the new source water quality.
- Region 5 will research and get back to MDEQ on the 141.81 (3)(b)(5) citation and the ability to waive a CCT study.

REF

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Thursday, September 17, 2015 3:08 PM
To: Wurfel, Brad (DEQ); Pallone, Maggie (DEQ)
Cc: Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Sygo, Jim (DEQ)
Subject: Flint Water Elected leader meeting ODWMA Final Draft documents
Attachments: Flint-QuadrantDiagram-Draft.xlsx; City of Flint Background-Draft.docx; FAQ-Flint Customer Tap water lead levels-draft.docx

Brad and Maggie,

Attached are my final edits to the documents you requested. Let me know if you have questions or need anything else.

Stephen Busch, P.E.
MDEQ Lansing District Coordinator
Office of Drinking Water and Municipal Assistance
Lansing and Jackson District Supervisor
517-643-2314
buschs@michigan.gov

DRAFT 9/17/2015

City of Flint Water System Background

Water Service Land Area 34 square miles
550+ miles of public water mains
250+ miles of water mains 75+ years old
70% of public water mains are unlined cast iron pipe
Service population 99,763
Service connections 32,900
Flint Water System established in 1883
Flint Water Treatment Plant #2 completed in 1954
Connection to Detroit Water and Sewerage Department 1967
Flint Water Treatment Plant #2 rehabilitated 1999 – 2005

City of Flint Timeline

April 2013 – Flint notifies DWSD of contract discontinuation and joins the Karegnondi Water Authority
April 2013 – DWSD sets termination of Flint water service contract to April 17, 2014
June 2013 – Karegnondi Water Authority groundbreaking
June 2013 – Flint notifies DEQ of intent to use of Flint Water Treatment Plant full time with Flint River
May 2014 – Flint stops purchasing DWSD water. Starts using the City of Flint WTP and Flint River
August 2014 – Flint E.Coli Bacteria violation, Partial System Boil Water Advisory
August 2014 – Disinfection Byproducts, DEQ requests preemptive Operational Evaluation
September 2014 – Flint Total Coliform Bacteria violation, Partial System Boil Water Advisory
November 2014 – Disinfection Byproducts violation begins
January 2015 – 1st 6 month lead and copper sampling completed 100 samples, 90th% = 6 ppb
July 2015 – 2nd 6 month lead and copper sampling completed 69 samples, 90th% = 11 ppb
August 2015 – Disinfection Byproducts return to compliance
August 2015 – Flint required by DEQ to recommend and install Optimized Corrosion Control Treatment

January 2016 – Flint plans to have Optimized Corrosion Control Treatment operational
July 2016 – Planned connection to Karegnondi Water Authority (Lake Huron water to Flint WTP)

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Tuesday, June 09, 2015 12:39 PM
To: Howes, Sarah (DEQ); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ)
Cc: Prysby, Mike (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Rosenthal, Adam (DEQ); Thelen, Mary Beth (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: Flint Drinking Water TTHM Standard Violation - 2nd quarter 2015
Attachments: Flint VN TTHM 6_9_15.pdf

Attached is a copy of the Violation Notice and Public Notice Template being mailed to the City of Flint by the DEQ Office of Drinking Water and Municipal Assistance regarding an exceedance of the Maximum Contaminant Level (MCL) standard for Total Trihalomethanes at certain locations within the City's drinking water distribution system.

This violation notice is in response to updated monitoring completed in May 2015, which shows the locational running annual average for one of the City's eight compliance sampling locations continues to exceed MCL standard of 0.080 mg/L. It is however, important to note that all individual compliance sample results collected in both May and February were below the 0.080 mg/L levels.

You are being provided an electronic copy of this notice as exceedance of this drinking water standard is expected to generate inquiries from water system customers, news media, and the general public.

Sarah Howes or Maggie Pallone will be informing members of the Michigan legislature.

If you have any questions or would like any additional information, you may contact Michael Prysby, District Engineer, DEQ-ODWMA at 517-290-8817, or you may contact me at the number below.

Stephen Busch, P.E.
Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance
MDEQ
517-643-2314



RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING DISTRICT OFFICE



DAN WYANT
DIRECTOR

June 9, 2015

Mr. Brent Wright, Operations Supervisor
City Of Flint – Department of Public Works
Flint Water Plant
4500 North Dort Highway
Flint, Michigan 48505

WSSN: 02310

Dear Mr. Wright:

SUBJECT: Violation Notice (VN) – Maximum Contaminant Level for Total
Trihalomethanes (TTHM)
2nd Quarter 2015 Monitoring Period

The Department of Environmental Quality (DEQ), Office of Drinking Water and Municipal Assistance (ODWMA), records show that the city of Flint (City) is in violation of the Safe Drinking Water Act, 1976 PA 399, as amended (Act 399); R 325.10610, *Maximum contaminant levels for disinfection byproducts (MCLs)*, of the 1979 Administrative Code.

In accordance with R 325.10610, *MCLs*, of the 1979 Administrative Code, the MCL for disinfection byproduct TTHM is 0.080 milligrams per liter (mg/L) as a Locational Running Annual Average (LRAA) at each monitoring location. As listed in the table below, our records show that the City's highest TTHM LRAA, based on the last four quarters, ending June 30, 2015, is 0.094 mg/L which exceeds the standard, and at this time only one of the eight sample site locations exceed the LRAA standard of 0.080 mg/L.

Our investigation consisted of a review of ODWMA files for laboratory reports received for compliance monitoring. Our investigation is considered complete. This violation began on June 1, 2015, and will continue until the TTHM LRAA is below the MCL at all sample sites.

Mr. Brent Wright

2

June 9, 2015

TTHM Results (mg/L)						
	8/21/14	11/20/14	2/17/15	5/18/15	LRAA	OEL
DBP1 McDonalds 3719 Davison	0.145	0.059	0.0162	0.0514	0.068	0.044
DBP2 Liquor Palace 3302 South Dort Highway	0.127	0.033	0.0168	0.0635	0.060	0.044
DBP3 North Flint Auto 6204 North Saginaw St.	0.118	0.041	0.0149	0.0452	0.055	0.037
DBP4 University Market 2501 Flushing Road	0.196	0.094	0.0245	0.0598	0.094	0.059
DBP5 Taco Bell 3606 Corunna Road	0.181	0.034	0.0151	0.0547	0.072	0.040
DBP6 Rite-Aid Pharmacy 5018 Clio Road	0.144	0.054	0.0192	0.0605	0.069	0.048
DBP7 Salem Housing 3216 MLK Boulevard	0.112	0.050	0.0285	0.0727	0.066	0.056
DBP8 BP Gas Station 822 South Dort Highway	0.112	0.036	0.0199	0.0461	0.054	0.037

We are encouraged by the results from the most recent round of compliance samples collected on May 18, 2015, which again show individual TTHM levels below 0.080 mg/L at all locations throughout the City's system. Operational Evaluation Reports from December 2014, February 2015, and May 2015, have identified possible causes and corrective measures for the previous elevated TTHM levels which we encourage the City to continue implementing. These modifications have likely contributed in part to the reduction in TTHM levels reported for the most recent quarter in comparison to levels in May 2014, and suggest the City may be able to achieve compliance with the TTHM standard at all sites by continuing these efforts.

Our office is currently reviewing the Operational Evaluation Report dated May 29, 2015, and will provide the City and their consultant with comments, as needed, to help address this MCL violation.

Further, the TTHM operational evaluation level (OEL) calculated in accordance with R 325.10719I, *Disinfection byproducts: operational evaluation levels*, of the 1979 Administrative Code, is now below the 0.080 mg/L operational evaluation trigger at all eight sample site locations. However, our office is requesting that an operational evaluation again be conducted incorporating the most recent sample results, given the increase in TTHM levels from February 2015 results, and that the next monitoring period of August has been identified as the City's peak month for TTHM levels. **Please provide our office with an updated Operational Evaluation Report by Monday, August 31, 2015.**

If you have any other factual information you would like us to consider regarding the violation identified in this VN, please provide them in a written response by June 23, 2015.

Mr. Brent Wright

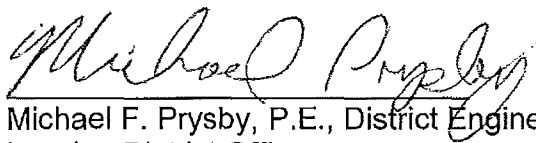
3

March 5, 2015

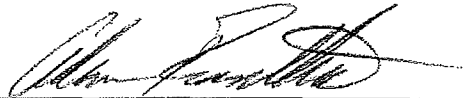
Administrative rule R 325.10403 of Act 399 requires that suppliers provide public notice (PN) as soon as practical, but no later than thirty (30) days after the supplier learns of this type of violation, by mail or direct delivery **and** by any other means reasonably calculated to reach customers not normally reached by mail. Enclosed is a sample PN which contains the minimum required language. The City is encouraged to include additional information regarding its response efforts to this violation. **Please notify your consumers by July 1, 2015, and send us a signed and dated copy of the notice that you issued within ten (10) days of distributing the PN.** This violation must also be included in your 2015 Consumer Confidence Report, due by July 1, 2016. The PN must be repeated every quarter until you no longer exceed the TTHM standard. Failure to issue a PN for this violation will result in a fine of at least \$1,000 per event, with a maximum of \$5,000 per violation.

We anticipate and appreciate your continued cooperation in resolving this matter. If you have any questions regarding this VN, please contact us at the numbers below; at prysbym@michigan.gov; or rosenthala@michigan.gov; or at DEQ, P.O. Box 30242, Lansing, Michigan 48909-7742.

Sincerely,



Michael F. Prysby, P.E., District Engineer
Lansing District Office
Office of Drinking Water and
Municipal Assistance
517-290-8817



Adam Rosenthal, Environmental Quality
Analyst
Lansing District Office
Office of Drinking Water and
Municipal Assistance
517-284-6644

Enclosure

cc: Ms. Jennifer Crooks, U.S. Environmental Protection Agency, Region 5
Mr. Robert Bincsik, City of Flint
Mr. Howard Croft, City of Flint
Mr. Michael Glasgow, City of Flint
Genesee County Health Department
Ms. Liane Shekter Smith, DEQ
Mr. Richard Benzie, DEQ
Mr. Stephen Busch, DEQ

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

City of Flint Did Not Meet Treatment Requirements

Our water system recently violated a drinking water standard. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Samples were collected for total trihalomethanes (TTHM) analysis from eight locations on a quarterly basis (August 21, November 20 of 2014, and February 17 & May 18 of 2015). The average of the results at **ANY** of the eight locations must not exceed the maximum contaminant level (MCL) for TTHMs, otherwise our water system exceeds the MCL. The standard for TTHMs is 80 micro grams per liter ($\mu\text{g/L}$). The location reporting the highest TTHM level was 94 $\mu\text{g/L}$; thus, our water system exceeds the TTHM MCL.

What should I do?

- There is nothing you need to do unless you have a severely compromised immune system, have an infant, or are elderly. These people may be at increased risk and should seek advice about drinking water from their health care providers.
- You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours.

What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.

People who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.

What is being done?

We are currently working on solutions to correct the problem. We anticipate resolving the problem in 2015. Our most recent individual sample results were all less than the 80 $\mu\text{g/L}$ standard, however since compliance is calculated using a locational running annual average (LRAA) of the most recent four quarters, we are still out of compliance with the MCL at one of eight locations.

For more information, please contact Mr. Brent Wright at 517-787-6537, or the Flint Water Plant at 4500 North Dort Highway, Flint, Michigan 48505.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by the City of Flint.

CERTIFICATION:

WSSN: 02310

I certify that this water supply has fully complied with the public notification requirements in the Michigan Safe Drinking Water Act, 1976 PA 399, as amended, and the administrative rules.

Signature	Title	Date Distributed
Reminder to water supplier: This notice/certification must be sent to the Department of Environmental Quality.		

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Friday, June 05, 2015 10:12 AM
To: Antil, Jeffrey (DEQ); Brennan, Patrick (DEQ); Drake, Jerry (DEQ); DuMont, Ralph (DEQ); Joseph, Mark (DEQ); Prysby, Mike (DEQ); Rennaker, Joanne (DEQ); Rosenthal, Adam (DEQ); Skinker, Bethel (DEQ); Swendsen, Kurt (DEQ)
Cc: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ)
Subject: Goings On

My schedule has been chaotic the last couple weeks, but I wanted to give you a little update as to what has been going on and what is upcoming in case you've missed me. I am in Lansing today to work on some Flint stuff and try to get a little organized for the weeks ahead.

- EPA has released its own non-enforcable health advisory levels for the algal toxin microcystin, and draft implementation guidance is expected to be finalized by mid-June. The HAL's differ from what was established by WHO and this will impact communities in Monroe County. Jerry, Jeff, and I will be working with them to make sure everyone is on the same page about monitoring and public notification should an event occur. As of now weekly updates from NASA and Michigan Tech indicate that nutrient loading is down significantly compared to previous peak years in that area of Lake Erie.
- Flint continues to get results below the 80 ppb level for TTHM's but will remain in violation, unless August results come back low. An inquiry from Rep. Neely was addressed last week and the City is permitting replacement of filter media with Granular Activated Carbon.
- I have been trying to scratch out time to keep working with Kurt on training, but appreciate Lansing District staff transferring their historical knowledge of the systems in his district. Kurt and Jeff will be attending a multistate EPA sanitary survey training course here in June.
- The 2012 Michigan Plumbing Code is being updated based on the 2015 International Plumbing Code and the committee I have been working with on this just finished (substantially completed) the draft this week freeing a couple of dates that had been on hold.
- Work on the EPA lead-free law implementation federal workgroup has slowed since a public meeting was held last month, and my role should be closing out soon.
- I had the opportunity to attend a Leadership Forum in mid-May where Governor Snyder gave the keynote speech in the morning and I attended sessions on infrastructure funding attended by MDOT, ASCE, and Mayors of E. Lansing and suburban Detroit. The other session was on Data Management with representative from DTMB, consultants, and a Detroit data project. I ended up sitting down with member of the Public Service Commission to discuss some AWWA proposals and a SEMCOG consultant to discuss the DWSD/Great Lakes Water Authority.
- The ODWMA is being audited by the Michigan Office of Auditor General and with the Lansing District providing the easiest access to the community water supply program we are being asked to "show off" our work. OAG staff will be imbedded with ODWMA on the fourth floor for a few months so this isn't just a simple/quick process. We had a brief meeting this week, but may need to spend some time to help educate them on what we do and just how we do it.
- The AWWA Groundwater Source Water conference was earlier this week and attended by several of you. I gave a presentation on microcystin and the harmful algal bloom situation in Lake Erie yesterday that appeared to be well received. The content of the conference was overall very good. (Director Wyant was the keynote and gave

a specific shout out to our district and indicated that ODWMA is the best at customer service/compliance assistance).

- Yesterday I attended a meeting to discuss implementation of an Electronic Data Management system within ODWMA. The Office is at the top of the lineup within the Department for implementation and district community water supply implementation will begin in the Lansing and Jackson districts over the next 2 years. This will be a huge shift in how we all conduct our work and there will be a lot of growing pains as we move through the process and get our legs under us again. (More on this will be discussed in Jackson on Monday)
- Monday is the Director's first district roundtable visit where we are bringing in local stakeholders to discuss their issues, and Director Wyant will also spend some significant time with district staff. Liane is going to attend and will spend time with staff as well. The Lansing roundtable is in mid-October.
- I continue to work with others in ODWMA to help define how the office will proceed with addressing secondary treatment systems at water customers, and have future meetings with the hospital association and DLARA programs for plumbing, building, and health care facilities.
- Following discussions from a Lansing ODWMA staff meeting last month we will have a planning meeting next week regarding a statewide drinking water lime reuse/disposal workshop for lime softening WTP's. This will include OWMRP, OEA, and MDARD staff.
- Next week also includes a plumbing board meeting, district supervisor meetings for both Lansing and Jackson districts, some enforcement meetings

I may have left something out but as you can see I have been a busy bee. I look forward to spending more time returning my focus to the work going on in our district offices, thankful that you all keep plugging along with what you need to do! Have a great weekend.

Stephen Busch, P.E.
 Lansing and Jackson District Supervisor
 Office of Drinking Water and Municipal Assistance
 MDEQ
 517-643-2314

Shekter Smith, Liane (DEQ)

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Thursday, April 16, 2015 5:42 PM
To: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Philip, Kris (DEQ)
Subject: FINAL BRIEFING: Flint Hot Issue
Attachments: Flint Hot Issue 4-15.doc

FYI

From: Poy, Thomas
Sent: Thursday, April 16, 2015 3:22 PM
To: Crooks, Jennifer; Glowacki, Joanna
Subject: Flint Hot Issue

Here is the Flint Hot Issue item that was sent forward. I believe this is what Susan got.

Tom

Tom Poy
Chief, Ground Water and Drinking Water Branch
USEPA - Region 5
(312) 886-5991

Issue: Flint Drinking Water Issues

Background/Status: Flint has been having issues since changing the source of their drinking water – from purchasing finished water from Detroit (which comes from Lake Huron) to treating Flint River water themselves at the end of April 2014. The quality of the water in the Flint River is different than that from Lake Huron, and requires additional treatment to ensure an acceptable quality drinking water. The Michigan Department of Environmental Quality (MDEQ) has been working closely with the Operator-in-Charge at Flint's Water Treatment plant to ensure that the citizens of Flint are provided drinking water that meets health standards. The use of Flint River water is an interim decision as Flint plans to connect to the Karegnondi pipeline, which will draw water from Lake Huron, in 2016.

Flint exceeded the health standard for *E. coli* in August 2014 and total coliform in September 2014 due to issues with malfunctioning valves in the distribution system creating stagnated water flow in certain areas. Additional chlorine was added to deal with the bacteria problem and these two violations have returned to compliance. However, the additional chlorine has likely contributed to a Disinfection Byproduct violation – Total Trihalomethane (TTHM) - in the fourth quarter of 2014. Compliance with the TTHM health standard is based upon the average of one year of quarterly sample data. The initial monitoring in summer 2014 reported elevated levels of TTHM compounds throughout the City's distribution system. MDEQ staff has worked with Flint to implement operational techniques to reduce TTHM levels. Current levels are below the MCL but consumers will continue to receive public notice of a violation until the running annual average gets below the MCL.

In addition to the MCL violations, there have been other potential issues that have been attributed to the water including, complaints about rashes when using the water to bathe, one home has very high lead in the drinking water (R5 is working with Flint and the homeowner; not sure if this is system-wide issue), and the Genesee County Health Department is looking into an increase in the number of reported cases of Legionaire's Disease in the county in 2014 (still in the investigative stage by the Health Dept – not public knowledge yet). Flint has hired a consultant to help with their drinking water utility. Also, a technical advisory committee has been formed, including Dr. Michael Wright, an EPA-ORD toxicologist, who is providing assistance on health effects.

Congressman Kildee requested clarification to whether the Drinking Water State Revolving Fund (DWSRF) allowed forgiveness of principal and if Flint would be eligible to receive it for older loans (\$22M in loans from 1999, 2000, 2001, 2003). While forgiveness of principal is part of the DWSRF program, Flint would not be eligible to receive it on the older loans. This is the same response provided to Flint by the MDEQ SRF program. Flint may qualify for forgiveness of principal for new loans depending on the state criteria for allocating it.

Message:

- Flint switched from purchasing treated Lake Huron water from Detroit to treating Flint River water themselves until a pipeline being constructed can provide them with raw Lake Huron water to treat in 2016.
- Flint has/had MCL violations and has been working with MDEQ staff, a consultant, and a technical advisory committee to improve operations.
- Flint is not eligible for principal forgiveness on their existing loans.

Contact: Tom Poy, Water Division, (312) 886-5991, poy.thomas@epa.gov

Shekter Smith, Liane (DEQ)

From: Thelen, Mary Beth (DEQ)
Sent: Tuesday, March 17, 2015 11:39 AM
To: Hollins, Harvey (GOV); Clayton, Stacie (GOV)
Cc: Wyant, Dan (DEQ); Wurfel, Brad (DEQ); Sygo, Jim (DEQ); Thelen, Mary Beth (DEQ)
Subject: SDWA Violations - Flint

Importance: High

Dear Harvey,

Director Dan Wyant asked that I send you the following information regarding Flint.

As requested, the following information has been gleaned from our database regarding violations:

In calendar years 2013 and 2014, we've identified 1100 violations (200 are standards violations, i.e., MCLs; and 910 other violations).

This represents 326 community water supplies that had violations over these two years.

Flint has 5 violations in those 2 years (TTHM MCLs at 2 sites and 2 bacti MCLs (1 with E. coli that counts as an additional violation)).

Please let us know if you need anything further. Thank you.

Mary Beth

Mary Beth Thelen
Management Assistant to Director Dan Wyant
Department of Environmental Quality
Constitution Hall, 6th Floor South
Phone: 517-284-6712 or 284-6700 (new numbers)
Fax: 517-241-7401
Thelenm2@michigan.gov

Shekter Smith, Liane (DEQ)

From: Wurfel, Brad (DEQ)
Sent: Tuesday, March 17, 2015 11:17 AM
To: Shekter Smith, Liane (DEQ)
Subject: Re: SDWA Violations

Liane, thank you.
b

Sent from my iPhone

On Mar 17, 2015, at 11:07 AM, "Shekter Smith, Liane (DEQ)" <SHEKTERL@michigan.gov> wrote:

Brad –

As requested, the following information has been gleaned from our database regarding violations:

In calendar years 2013 and 2014, we've identified 1100 violations (200 are standards violations, i.e., MCLs; and 910 other violations).

This represents 326 community water supplies that had violations over these two years.

Flint has 5 violations in those 2 years (TTHM MCLs at 2 sites and 2 bacti MCLs (1 with E. coli that counts as an additional violation)).

Please let us know if you know additional information.

Liane

Shekter Smith, Liane (DEQ)

From: Rosenthal, Adam (DEQ)
Sent: Tuesday, March 17, 2015 10:58 AM
To: Benzie, Richard (DEQ); Ostrander, Debbie (DEQ)
Cc: Lachance, Amy (DEQ); Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ)
Subject: RE: SDWA Violations

326 supplies with violations in '13 & '14

Flint has 5 violations in those 2 yrs - TTHM MCLs at 2 sites & 2 bacti MCLs (1 with e.coli that counts as 2)

From: Benzie, Richard (DEQ)
Sent: Tuesday, March 17, 2015 10:22 AM
To: Rosenthal, Adam (DEQ); Ostrander, Debbie (DEQ)
Cc: Lachance, Amy (DEQ); Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ)
Subject: Re: SDWA Violations

Do I understand that the multiple violations are probably all monitoring violations? If so, I won't worry about lumping them together.

Is there a way to separate out the number of systems that had these 1200 violations?

At the very least we need to be able to show how Flint fits in - what are there numbers over those two years?

Sent using OWA for iPhone

From: Rosenthal, Adam (DEQ)
Sent: Tuesday, March 17, 2015 10:12:37 AM
To: Benzie, Richard (DEQ); Ostrander, Debbie (DEQ)
Cc: Lachance, Amy (DEQ); Busch, Stephen (DEQ)
Subject: RE: SDWA Violations

So far it shows 1110 violations for calendar '13 & '14. 200 are MCL, which leaves 910 other violations. However, there are many violations we would count as 1 that SDWIS counts as more, ie. a system fails to collect DBP – that is 2 or more violations. A VOC MV counts as 20 violations in SDWIS, etc.

What would you like to do?

Adam

From: Benzie, Richard (DEQ)
Sent: Monday, March 16, 2015 4:13 PM
To: Rosenthal, Adam (DEQ); Ostrander, Debbie (DEQ)
Cc: Lachance, Amy (DEQ); Busch, Stephen (DEQ)
Subject: RE: SDWA Violations

Calendar. Thanks. I think they want it to show someone that Flint is not alone in having violations.

From: Rosenthal, Adam (DEQ)
Sent: Monday, March 16, 2015 4:12 PM
To: Benzie, Richard (DEQ); Ostrander, Debbie (DEQ)
Cc: Lachance, Amy (DEQ); Busch, Stephen (DEQ)
Subject: RE: SDWA Violations

I can take a look, calendar or fiscal?

Adam

From: Benzie, Richard (DEQ)
Sent: Monday, March 16, 2015 4:05 PM
To: Ostrander, Debbie (DEQ); Rosenthal, Adam (DEQ)
Cc: Lachance, Amy (DEQ); Busch, Stephen (DEQ)
Subject: SDWA Violations

I need someone to provide a list or summary of the violations that have occurred in 2013 and 2014. Kris is out until Thursday, maybe Friday and Jean is still out for a few weeks. It may be as simple as running a standard report, but it's easier for me to ask you than to figure that out right now.

I thought of you two, as the SDWIS back-up (Deb) and someone Kris tells me is more savvy in manipulating databases than one may realize (Adam). Could either of you provide some sort of report on the statewide violations for the past 2 calendar years? The request from upstairs wants all violations, but I think it would be beneficial to at least say what portion are monitoring violations and what portion are MCL and other violations.

Let me know if you can or cannot meet this request.

Thanks,
Richard

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Thursday, March 05, 2015 1:59 PM
To: Howes, Sarah (DEQ); Wurfel, Brad (DEQ); Datema, Maggie (DEQ)
Cc: Prysby, Mike (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Rosenthal, Adam (DEQ)
Subject: Flint Drinking Water TTHM Standard Violation - 1st quarter 2015
Attachments: City of Flint VN - MCL TTHM 3-5-15.pdf
Importance: High

Attached is a copy of the Violation Notice and Public Notice Template being mailed to the City of Flint by the DEQ Office of Drinking Water and Municipal Assistance regarding an exceedance of the Maximum Contaminant Level (MCL) standard for Total Trihalomethanes at certain locations within the City's drinking water distribution system.

This violation notice is in response to updated monitoring completed in February 2015, which shows the locational running annual average for two of the City's eight compliance sampling locations continue to exceed MCL standard of 0.080 mg/L. It is however, important to note that all individual compliance sample results collected in February were well below the 0.080 mg/L levels.

You are being provided an electronic copy of this notice as exceedance of this drinking water standard is expected to generate inquiries from water system customers, news media, and the general public.

Sarah Howes will be informing members of the Michigan legislature.

If you have any questions or would like any additional information, you may contact Michael Prysby, District Engineer, DEQ-ODWMA at 517-290-8817, or you may contact me at the number below.

Stephen Busch, P.E.
Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance
MDEQ
517-643-2314



RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING DISTRICT OFFICE



DAN WYANT
DIRECTOR

March 5, 2015

Mr. Brent Wright, Operations Supervisor
City Of Flint - DPW
Flint Water Plant
4500 North Dort Highway
Flint, Michigan 48505

WSSN: 02310

Dear Mr. Wright:

SUBJECT: Violation Notice (VN) – Maximum Contaminant Level for Total
Trihalomethanes (TTHM)
Operational Evaluation – Total Trihalomethanes
1st Quarter 2015 Monitoring Period

The Department of Environmental Quality (DEQ), Office of Drinking Water and Municipal Assistance (ODWMA), records show that the city of Flint (City) is in violation of the Safe Drinking Water Act, 1976 PA 399, as amended (Act 399); R 325.10610, *Maximum contaminant levels for disinfection byproducts (MCLs)*, of the 1979 Administrative Code.

In accordance with R 325.10610, *MCLs*, of the 1979 Administrative Code, the MCL for disinfection byproduct TTHM is 0.080 milligrams per liter (mg/L) as a Locational Running Annual Average (LRAA) at each monitoring location. As listed in the table below, our records show that the City's highest TTHM locational running annual average (LRAA), based on the last four quarters, ending February 28, 2015, is 0.105 mg/L which exceeds the standard, and that two of the eight sample site locations exceed the standard of 0.080 mg/L.

Further, in accordance with R 325.10719I, *Disinfection byproducts: operational evaluation levels*, of the 1979 Administrative Code, when an operational evaluation level (OEL) at a monitoring location for TTHM exceeds 0.080 mg/L, a supply shall conduct an operational evaluation and submit a written report of the evaluation to the DEQ not later than 90 days after being notified of the analytical result that causes the supply to exceed the operational evaluation level. As listed in the table below, our records show that the TTHM OELs for the City exceed 0.080 mg/L at one of the City's eight sample site locations.

Mr. Brent Wright

2

March 5, 2015

TTHM Results (mg/L)	5/21/14	8/21/14	11/20/14	2/17/15	LRAA	OEL
DBP1 McDonalds 3719 Davison	0.162	0.145	0.059	0.0162	0.096	0.059
DBP2 Liquor Palace 3302 S. Dort Highway	0.112	0.127	0.033	0.0168	0.072	0.049
DBP3 North Flint Auto 6204 N. Saginaw St.	0.097	0.118	0.041	0.0149	0.068	0.047
DBP4 University Market 2501 Flushing Road	0.106	0.196	0.094	0.0245	0.105	0.085
DBP5 Taco Bell 3606 Corunna Road	0.079	0.181	0.034	0.0151	0.078	0.063
DBP6 Rite-Aid Pharmacy 5018 Clio Road	0.088	0.144	0.054	0.0192	0.076	0.059
DBP7 Salem Housing 3216 MLK Boulevard	0.082	0.112	0.050	0.0285	0.068	0.055
DBP8 BP Gas Station 822 S. Dort Highway	0.075	0.112	0.036	0.0199	0.061	0.047

Our investigation consisted of a review of ODWMA files for laboratory reports received for compliance monitoring. Our investigation is considered complete. This violation began on March 1, 2015, and will continue until TTHM LRAA is below the MCL at all sample sites.

We are encouraged by the results from the most recent round of compliance samples collected on February 17, 2015, which now show individual TTHM levels at less than half of the 0.080 mg/L standard at all locations throughout the City's system. Operational Evaluation Reports from December 2014, and February 2015, have identified possible causes and corrective measures for the previous elevated TTHM levels which we encourage the City to continue implementing. These modifications have likely contributed in part to the reduction in TTHM levels reported in the most recent quarter, and suggest the City may be able to achieve compliance with the TTHM standard at all sites by continuing these efforts.

Our office is currently reviewing the Operational Evaluation Report dated February 27, 2015, and will provide the City and their consultant with comments, as needed, to help address this MCL violation.

Water systems that exceed the OEL must complete and submit an Operational Evaluation in accordance with Administrative Rule 719I (R 325.10719I) within 90 days of being notified of the violation. **An updated Operational Evaluation report, which incorporates the most recent sample results, must now be completed and received by our office by no later than Friday, May 29, 2015.**

If you have any other factual information you would like us to consider regarding the violation identified in this VN, please provide them in a written response by March 19, 2015.

Mr. Brent Wright

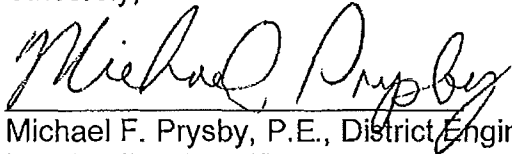
3

March 5, 2015

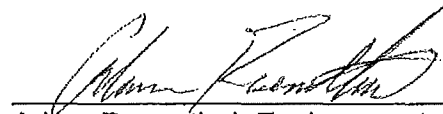
Administrative rule R 325.10403 of Act 399 requires that suppliers provide public notice (PN) as soon as practical, but no later than thirty (30) days after the supplier learns of this type of violation, by mail or direct delivery **and** by any other means reasonably calculated to reach customers not normally reached by mail. Enclosed is a sample PN which contains the minimum required language. The City is encouraged to include additional information regarding its response efforts to this violation. **Please notify your consumers by April 1, 2015, and send us a signed and dated copy of the notice that you issued within ten (10) days of distributing the public notice.** This violation must also be included in your 2015 Consumer Confidence Report, due by July 1, 2016. The PN must be repeated every quarter until you no longer exceed the TTHM standard. Failure to issue a PN for this violation will result in a fine of at least \$1,000 per event, with a maximum of \$5,000 per violation.

We anticipate and appreciate your continued cooperation in resolving this matter. If you have any questions regarding this VN, please contact us at the numbers below; at prysbym@michigan.gov; or rosenthala@michigan.gov; or at DEQ, P.O. Box 30242, Lansing, Michigan 48909-7742.

Sincerely,



Michael F. Prysby, P.E., District Engineer
Lansing District Office
Office of Drinking Water and Municipal
Assistance
517-290-8817



Adam Rosenthal, Environmental Quality
Analyst
Lansing District Office
Office of Drinking Water and Municipal
Assistance
517-284-6644

Enclosure

cc: Ms. Jennifer Crooks, U.S. Environmental Protection Agency, Region 5
Mr. Jerry Ambrose, Emergency Manager, City of Flint
Mr. Robert Bincsik, City of Flint
Mr. Howard Croft, City of Flint
Mr. Daughtry Johnson, City of Flint
Genesee County Health Department
Ms. Liane Shekter Smith, DEQ
Mr. Richard Benzie, DEQ
Mr. Stephen Busch, DEQ

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

City of Flint Did Not Meet Treatment Requirements

Our water system recently violated a drinking water standard. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Samples were collected for total trihalomethanes (TTHM) analysis from eight locations on a quarterly basis (May 21, August 21, November 20 of 2014, and February 17, 2015). The average of the results at **ANY** of the eight locations must not exceed the maximum contaminant level (MCL) for TTHMs, otherwise our water system exceeds the MCL. The standard for TTHMs is 80 micro grams per liter ($\mu\text{g/L}$). The location reporting the highest TTHM level was 105 $\mu\text{g/L}$; thus, our water system exceeds the TTHM MCL.

What should I do?

- There is nothing you need to do unless you have a severely compromised immune system, have an infant, or are elderly. These people may be at increased risk and should seek advice about drinking water from their health care providers.
- You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours.

What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.

People who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.

What is being done?

We are currently working on solutions to correct the problem. We anticipate resolving the problem in 2015. Our most recent individual sample results were all less than half the 80 $\mu\text{g/L}$ standard, however since compliance is calculated using a locational running annual average (LRAA) of the most recent four quarters, we are still out of compliance with the MCL at two of eight locations.

For more information, please contact Mr. Brent Wright at 517-787-6537, or the Flint Water Plant at 4500 North Dort Highway, Flint, Michigan 48505.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by the City of Flint.

CERTIFICATION:

WSSN: 02310

I certify that this water supply has fully complied with the public notification requirements in the Michigan Safe Drinking Water Act, 1976 PA 399, as amended, and the administrative rules.

_____ Signature	_____ Title	_____ Date Distributed
Reminder to water supplier: This notice/certification must be sent to the Department of Environmental Quality.		

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Monday, March 02, 2015 3:19 PM
To: Wurfel, Brad (DEQ); Howes, Sarah (DEQ); Shekter Smith, Liane (DEQ)
Cc: Datema, Maggie (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Rosenthal, Adam (DEQ)
Subject: Draft Flint TTHM Violation Notice for comment
Attachments: Flint DBP MCL 1Q15.doc

Importance: High

Attached is a draft violation notice to the City of Flint regarding the exceedance of the drinking water standard for total trihalomethanes (TTHM) based on the latest round of samples collected in February 2015.

As predicted, the levels from the latest round are all very low, but the annual average calculation for 2 sites remains above the maximum contaminant level standard.

We plan to get the letter out on Thursday so please provide any comments/concerns/questions by Wednesday 3/4. An electronic copy of the signed letter will be provided to Maggie/Sarah for forwarding to legislative members in the Flint area as was done with the last violation notice from December.

Again, if you have any questions, please contact me directly.

Stephen Busch, P.E.
Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance
MDEQ
517-643-2314

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Friday, February 27, 2015 2:11 PM
To: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Wurfel, Brad (DEQ)
Cc: Prysby, Mike (DEQ); Rosenthal, Adam (DEQ)
Subject: Updated Flint TTHM Results
Attachments: FLINT TTHM RESULTS.docx

Updated TTHM results from Flint are attached, and are as we expected.

The highest sample individual result from February 2015 was 28.5 ppb, less than half the standard of 80 ppb.

The same two sites still exceed the LRAA MCL standard of 80 ppb due to high results from last summer, but the other 6 comply with the LRAA.

(FYI, if we were still under Stage 1 this wouldn't have ever been a standard violation, the RAA would have calculated out to 78 ppb.)

We are in the process of preparing a violation notice to the City and will have a copy to review and distribute to legislative members and other departments early next week.

Stephen Busch, P.E.
Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance
MDEQ
517-643-2314

FLINT TTHM RESULTS

TTHM Results (mg/L)						
	5/21/14	8/21/14	11/20/14	2/17/15	LRAA	OEL
DBP1 McDonalds 3719 Davison	0.162	0.145	0.059	0.0162	0.096	0.059
DBP2 Liquor Palace 3302 S. Dort Highway	0.112	0.127	0.033	0.0168	0.072	0.049
DBP3 North Flint Auto 6204 N. Saginaw St.	0.097	0.118	0.041	0.0149	0.068	0.047
DBP4 University Market 2501 Flushing Road	0.106	0.196	0.094	0.0245	0.105	0.085
DBP5 Taco Bell 3606 Corunna Road	0.079	0.181	0.034	0.0151	0.078	0.063
DBP6 Rite-Aid Pharmacy 5018 Clio Road	0.088	0.144	0.054	0.0192	0.076	0.059
DBP7 Salem Housing 3216 MLK Boulevard	0.082	0.112	0.050	0.0285	0.068	0.055
DBP8 BP Gas Station 822 S. Dort Highway	0.075	0.112	0.036	0.0199	0.061	0.047

Shekter Smith, Liane (DEQ)

From: Benzie, Richard (DEQ)
Sent: Friday, February 06, 2015 10:38 AM
To: Dee, Rhiannon
Cc: Ostlund, Peter (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Crooks, Jennifer; Poy, Thomas
Subject: RE: (CWA - FY15-124819-3709-CV) Referred to Region - Michigan

I'm not sure what this complainant is alleging. Do you want Michigan to respond to the allegation that a "company or individual dumped millions of gallons of raw sewage into the city of Flint drinking water" or the allegation that "they(?) have dumped a potential cancer causing chemical into the city's drinking water" or the allegation that the city of Flint is flushing hydrants and charging customers double? The Office of Drinking Water and Municipal Assistance cannot address the issue surrounding the dumping of raw sewage and we don't interfere with water rates, but maybe an explanation of the issues that have confronted the city of Flint and their public water supply will help you understand the overall problem.

Last spring, the city of Flint decided to begin relying upon the Flint River as their source of drinking water using a treatment plant that was designed to do so. Last summer, they experienced difficulties with stagnation in some areas of the distribution system due to significantly reduced demands as a result of the loss of a significant percentage of their residential and industrial demands that accelerated over the last decade. During the summer of 2014, they also had a couple of monitoring periods where they detected total coliform at monitoring sites in these stagnant areas, and one time they detected E.coli present. The ensuing boil water advisories and public notification heightened customer concern about the quality of drinking water as a result of the switch from Detroit to the Flint River. Detroit supplied Flint with drinking water from Lake Huron, a much higher quality source than the Flint River. However, monitoring of the Flint water treatment plant tap has never indicated unacceptable water entering the distribution system. In response to these coliform detections and in an effort to prevent a recurrence, the city also increased flushing water mains in low flow areas and they have attempted to ensure the presence of a chlorine residual throughout the distribution system (is this the "potential cancer causing chemical" the complainant mentions?).

Compounding the problem of customer confidence was the initial monitoring for disinfection byproducts conducted by Flint under the Stage 2 DBR after their switch to the Flint River. The initial monitoring reported significantly elevated levels of total trihalomethane (TTHM) compounds throughout the city's distribution system. Our district office advised the city that they needed to immediately implement operational techniques at the treatment plant and in the distribution system to reduce the formation of these compounds. The steps the city of Flint has taken have been successful and have reduced TTHM concentrations to the point where the latest results are below the drinking water standard. However, the standard is calculated on a running annual average and it is likely to be another 3 to 6 months before the annual average at each monitoring station will (hopefully) meet the standard. Until then, the city has to continue to provide quarterly public notification, which will continue to concern residents despite the latest TTHM results.

The switch to the Flint River, the microbiological problems and the elevated TTHM concentrations experienced last year in Flint have caused a high level of customer dissatisfaction and distrust. The city is working diligently to restore that confidence, but it will not be accomplished easily or overnight. You should also know that the switch to the Flint River is an interim measure intended to last only until a 72-inch pipeline from Lake Huron to the Flint water treatment plant is completed. It is currently under construction and expected to be in operation in mid-2016. At that point, the city's drinking water should again be very similar in quality to what they were receiving from Detroit.

Although the subject(s) of this complaint are not clear to me, I suspect it is a result of the media coverage of the recent problems with the city's water supply. However, the information from your initial contact indicates a Grand Blanc, Michigan address, which is not in the city of Flint service area. As I mentioned, our Lansing district office has been dealing with city representatives on this issue. If you have further questions, feel free to

contact either Michael Prysby or Steve Busch. They are receiving this message so you have their contact information. You may also wish to communicate with your Region 5 counterparts in the Office of Drinking Water & Ground Water, Jennifer Crooks or Tom Poy, who have received similar complaints and with whom we have communicated regularly on these issues.

Please let us know if someone from EPA will respond to the complainant, or if you expect Michigan DEQ to do so.

Richard Benzie, P.E., Chief
Field Operations Section
Office of Drinking Water and Municipal Assistance, MDEQ
517-284-6512

From: Ostlund, Peter (DEQ)
Sent: Friday, February 06, 2015 6:55 AM
To: Dee, Rhiannon
Cc: Selden, Barry (DEQ); Benzie, Richard (DEQ); Bartley, Cheryl (DEQ)
Subject: RE: (CWA - FY15-124819-3709-CV) Referred to Region - Michigan

Rhiannon, this is a drinking water complaint, not an NPDES complaint. Flint does have SSOs, and reports those. That's not the cause of this complaint.

There are public concerns with Flint's drinking water system, which switch from the city of Detroit supply to their own supply. Detroit's source water is much better, so the public may be noticing some changes.

I've copied Richard Benzie, how is the Field Operations Chief in our division that handles drinking water. If you need more follow up, he can provide it.

Thanks, Pete

Peter Ostlund
Field Operations Section Chief
Water Resources Division
Michigan Dept. of Environmental Quality
P.O. Box 30458
Lansing, Michigan 48909-7958
517-898-5128 (iPhone)
ostlundp@michigan.gov

From: Dee, Rhiannon [<mailto:dee.Rhiannon@epa.gov>]
Sent: Thursday, February 05, 2015 5:11 PM
To: Ostlund, Peter (DEQ); Selden, Barry (DEQ)
Subject: FW: (CWA - FY15-124819-3709-CV) Referred to Region - Michigan

Hi there,

Hope all is well. We received this complaint a while back. Complainant is alleging discharges into Flint River.

Let me know if you have any questions or if I should forward this on to someone else.

Best,

Rhiannon Dee
Program Analyst
U.S. Environmental Protection Agency
Water Division, WC-15J
(312) 886-4882
dee.rhiannon@epa.gov

From: howard.donna@epa.gov [mailto:howard.donna@epa.gov]
Sent: Monday, January 12, 2015 11:21 AM
To: Dee, Rhiannon
Cc: Beese, Jennifer
Subject: FWD: (CWA - FY15-124819-3709-CV) Referred to Region - Michigan

01/12/2015

SUBJECT: FWD: (CWA - FY15-124819-3709-CV) Referred to Region - Michigan
FROM: howard.donna@epa.gov
TO: Dee.Rhiannon@epa.gov
CC: Beese.Jennifer@epa.gov

-----Original Message-----

1/11/2015 10:55 AM

HQ LEAD NUMBER: FY15-124819-3709-CV

SUBJECT: Referred to Region - Michigan

FROM: sargent

TO:

Name: marcia

Address: po box 277

City: grand blanc

State: Michigan

Zip: 48480

Phone: 8103368486

Alleged Violator's Name: city of flint michigan

Alleged Violator's Address: water department

Alleged Violator's City: flint

Alleged Violator's State: Michigan

Alleged Violator's Zip: 48503

Tip or Complaint: an individual or company dumped several million gallons of raw sewage into the city of flint Michigan drinking water and now they have dumped a potential cancer causing chemical into the water to cover up their negligent act. people are getting sick and skin rashes are becoming apparent, especially in the young and elderly. we will keep going until something is done to correct this "mistake"

Specific Directions: Flint river. runs right through the city of flint. they have been opening the hydrants and letting water pour out of them to "purge" the system, then charging consumers double for their mistake.

Violation Still Occurring? Yes

State DEP/DEQ/DEM Notified? Yes

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Monday, January 26, 2015 1:09 PM
To: Wurfel, Brad (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Datema, Maggie (DEQ); Tommasulo, Karen (DEQ)
Subject: FW: interview for article on Flint drinking water

FYI. Bridge Magazine request for information. See below. Note Letter to Governor office deferred to Governor's Office at this time.

Stephen Busch, P.E.
 Lansing and Jackson District Supervisor
 Office of Drinking Water and Municipal Assistance
 MDEQ
 517-643-2314

From: Busch, Stephen (DEQ)
Sent: Monday, January 26, 2015 1:07 PM
To: 'Chastity Pratt'
Subject: RE: interview for article on Flint drinking water

Ms. Pratt Please see responses to your questions below.

Stephen Busch, P.E.
 Lansing and Jackson District Supervisor
 Office of Drinking Water and Municipal Assistance
 MDEQ
 517-643-2314

From: Chastity Pratt [<mailto:cpratt@bridgemi.com>]
Sent: Monday, January 26, 2015 11:35 AM
To: Busch, Stephen (DEQ)
Subject: interview for article on Flint drinking water

Hi,
 I am a reporter for Bridge Magazine working on a deadline story about Flint's drinking water. My story will focus on state involvement and state policy.

My major questions:

1. Several agencies and officials are involved - can you clarify DEQ's role in the Flint water situation?

The City of Flint water system is one of over 1400 Community Water Systems in Michigan regulated under the Michigan Safe Drinking Water Act (1976 Public Act 399, as amended), which incorporates requirements of the federal Safe Drinking Water Act. The DEQ Office of Drinking Water and Municipal Assistance has been given authority for oversight of these regulations. DEQ regulatory oversight is mainly conducted through inspections, review of monitoring information (this includes sample results and operations data), issuance of construction permits for water systems, and planning (reliability, emergency response, capital improvement, operation and maintenance, etc.) As both community water systems and the DEQ desire the mutual goal of safe water, the DEQ works proactively in partnership with water systems to provide compliance assistance. This also includes activities such as source water protection and infrastructure funding.

2. What is the DEQ's response to the mayor's request for assistance?

As indicated by phone this letter was directed to the Governor's Office and should be followed up with that office for response at this point in time.

3. What on-going testing is DEQ doing with Flint water and how often?

The City is required to follow all state and federal monitoring requirements under Act 399. This includes sample analysis of over 90 contaminants with health based drinking water standards along with monitoring of its source, treatment, and distribution operations. Sample analysis frequency is based on the specific contaminant type, its level of detection if any, and its potential variability.

In regards to total coliform and e.coli bacteria compliance monitoring, the City is required to analyze at least 100 samples each monthly compliance period from its distribution system.

In regards to Total Trihalomethane (TTHM) compliance monitoring, the City is required to collect quarterly samples from 8 locations in its distribution system. The TTHM standard is based on a Running Annual Average for each of the 8 locations, rather than individual sample results. The location and timing of these samples is based on worst case conditions in the water system to identify the highest level of long term exposure.

4. So far, how many drinking water violations have occurred in Flint since the switch to Flint River water and what sanctions - if any - does the city face?

The City has had the following Maximum Contaminant Level (MCL) standard violations:

E.Coli Acute bacteria MCL violation, August 2014

Total Coliform bacteria MCL violation, September 2014

TTHM locational running annual average MCL violation, October-December quarter (2 of 8 sites)

There are generally two requirements in regards to the violations: Public Notification and corrective action

Public Notice for acute health threats like the e.coli MCL must be made within 24 hours of the violation.

Public Notice for non-acute health threats such as total coliform bacteria and TTHM must be made within 30 days of the violation.

Corrective action regarding bacteria detections generally involves taking steps to disinfect and repair the affected areas and sampling to obtain confirmation the bacteria source is has been addressed.

The City has remained in compliance with this standard for each of the monthly monitoring periods since September, including thus far in January

Corrective action for TTHM involves taking steps to reduce the amount of TTHM so that they are below the standard. The City is required to complete an Operational Evaluation report within 90 days of the violation. This report includes examination of treatment and distribution operational practices (source water quality, treatment changes, storage tank operations, excess storage capacity, distribution system flushing, treatment problems that contribute to TTHM formation. The City proactively completed an Operational Evaluation following sample results from August 2014, and is now completing another operational evaluation further evaluated based on information from the November monitoring. November monitoring showed individual sample results now below the standard at 7 of 8 locations. However, as noted compliance is determined based on a running annual average at each location.

5. What does DEQ tell Flint residents who call DEQ with concerns about discolored water?

Callers indicating discoloration or other aesthetic water quality issues are directed to contact the Flint DPW to allow the DPW staff to investigate the situation. Generally color, odor and taste are aesthetic water quality issues not related to any health based standards including total coliform bacteria, e.coli bacteria, and TTHM.

Treated water is monitored for color at the Water Treatment Plant as part of its operation, and has not been abnormal. The City of Flint has over 500 miles of distribution piping and conditions in some isolated sections of water main piping or private premise plumbing may cause changes to aesthetic conditions such as color, taste, or odor.

Those are my major questions. Could you please give me a call today?

--

Chastity Pratt Dawsey

Reporter

Bridge Magazine/The Center for Michigan

28 W. Adams Suite 330, Detroit, MI 48226

www.bridgemi.com

C: 313-310-7867

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Wednesday, January 21, 2015 10:50 AM
To: Shekter Smith, Liane (DEQ); Wurfel, Brad (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)
Cc: Datema, Maggie (DEQ); Howes, Sarah (DEQ); Sygo, Jim (DEQ)
Subject: RE: Flint Mayor request to Governor regarding Flint Water
Attachments: Flint Mayor Letter to Governor.pdf

Copy attached.

Stephen Busch, P.E.
 Lansing and Jackson District Supervisor
 Office of Drinking Water and Municipal Assistance
 MDEQ
 517-643-2314

From: Shekter Smith, Liane (DEQ)
Sent: Wednesday, January 21, 2015 10:41 AM
To: Wurfel, Brad (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)
Cc: Datema, Maggie (DEQ); Howes, Sarah (DEQ); Sygo, Jim (DEQ)
Subject: RE: Flint Mayor request to Governor regarding Flint Water

First I heard about the letter was on NPR this morning.

From: Wurfel, Brad (DEQ)
Sent: Wednesday, January 21, 2015 10:39 AM
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)
Cc: Datema, Maggie (DEQ); Howes, Sarah (DEQ); Sygo, Jim (DEQ)
Subject: RE: Flint Mayor request to Governor regarding Flint Water

Ooops. Thanks.

Need a copy of the letter if we have it. Want to make sure the Governor's office knows to send calls about this to us, and give them a quick briefing on the situation.

Thanks.

b

From: Shekter Smith, Liane (DEQ)
Sent: Wednesday, January 21, 2015 10:37 AM
To: Wurfel, Brad (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)
Cc: Datema, Maggie (DEQ); Howes, Sarah (DEQ); Sygo, Jim (DEQ)
Subject: RE: Flint Mayor request to Governor regarding Flint Water

That is the first option listed.

Changes made to date have reduced the formation of DBPs; but because of the way the standard is calculated the violation is anticipated to remain until at least late summer. However, it is difficult to predict whether the operational changes will be effective enough to address seasonal water quality changes that occur during the summer. It is possible

to have a spike in August that could cause the city additional problems. But for now, all indications are that DBP levels in the distribution system are within an acceptable range.

From: Wurfel, Brad (DEQ)
Sent: Wednesday, January 21, 2015 10:31 AM
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)
Cc: Datema, Maggie (DEQ); Howes, Sarah (DEQ); Sygo, Jim (DEQ)
Subject: RE: Flint Mayor request to Governor regarding Flint Water

Would a third option be to make adjustments to the plant that address the current water supply effectively?

From: Shekter Smith, Liane (DEQ)
Sent: Wednesday, January 21, 2015 10:26 AM
To: Busch, Stephen (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)
Cc: Datema, Maggie (DEQ); Howes, Sarah (DEQ); Wurfel, Brad (DEQ); Sygo, Jim (DEQ)
Subject: RE: Flint Mayor request to Governor regarding Flint Water

In light of the Mayor's letter, this could be quite uncomfortable for us tonight.

Our position has always been that we do not dictate which acceptable option(s) a water supply may choose. Our responsibility is to see that operations are managed properly, regulations are met, and safe water is delivered. For example, when Flint decided to leave Detroit and operate using the River, our role wasn't to tell them our opinion; only what steps would be necessary to make the switch.

Now that there is a violation of a drinking water standard, we have been treating Flint as we would any other supply. It is up to them to propose a solution/corrective action. Our role is to determine the reasonableness of that proposal. One option available to them is to continue to use the river until the KWA source is available as long as they implement operational changes to mitigate the formation of DBPs. Another acceptable option is to return to Detroit (GLWA) until the KWA source is available. And third option could certainly be returning to GLWA permanently.

The Mayor is saying that since there is an EM, the state (Governor) has responsibility for decisions being made (not our position). It will be very important for DEQ staff to limit our discussion to our role under the Safe Drinking Water Act. Hopefully, the EM will be prepared to respond if and when the conversation veers off into this other arena.

Liane J. Shekter Smith, P.E., Chief
 Office of Drinking Water and Municipal Assistance
 Michigan Department of Environmental Quality
 517-284-6543

From: Busch, Stephen (DEQ)
Sent: Wednesday, January 21, 2015 8:41 AM
To: Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)
Cc: Datema, Maggie (DEQ); Howes, Sarah (DEQ)
Subject: Flint Mayor request to Governor regarding Flint Water

FYI. Please see the link below. The mayor of Flint has requested the state provide assistance through a number of specific initiatives.

http://www.mlive.com/news/flint/index.ssf/2015/01/flint_mayor_asks_governor_for.html

As we are scheduled to participate in the meeting in Flint this evening please let me know if we need to further discuss these requests.

Stephen Busch, P.E.
Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance
MDEQ
517-643-2314



CITY OF FLINT

Dayne Walling
Mayor

January 18, 2015

The Honorable Rick Snyder
Governor, State of Michigan
P.O. Box 30013
Lansing, MI 48909

RE: Flint Water Improvement Plan

Dear Governor Snyder:

On behalf of the Flint community, I am writing to convey serious concerns about water quality and to request your support for my proposed Flint Water Improvement Plan. Access to safe and clean water is a basic human right, and, therefore, policy and budget decisions need to ensure that water is affordable and secure for everyone in Flint and all across Michigan. It is essential there is City, State and Federal cooperation to address the challenges here and to meet the needs of vulnerable populations.

The Flint Water Improvement Plan is focused in five areas: safety, quality, access, investment and education. The plan puts safety and quality first because this is fundamental. It is designed to be a sustainable solution for the City of Flint and the community as we move towards a new permanent water supply from Lake Huron through the Karegnondi Water Authority. My plan offers new ideas and also builds on successful models of utility, energy and assistance programs at the State and Federal levels.

Safety & Quality

- 100% Safety is the standard
- City of Flint reports testing data to the public to assure safety and expands testing sites and frequency
- Bring on experienced river water treatment operational management in the City of Flint

Access

- Announce an amnesty program for Flint water service turn-ons and reduce the turn-on fee
- Develop a revised affordable payment plan policy to encourage customers to return
- Design Federal and State partnership to establish new Drinking Water Emergency Assistance Fund for the elderly and vulnerable families

Investment

- Accelerate water system improvements outlined in the City of Flint Capital Improvement Plan through Federal and State Investments
 - State approves City of Flint's Distressed Cities Fund applications

- Federal and State support for replacement or forgiveness of payment to the Drinking Water Revolving Loan Fund due to Flint's status as a distressed community
 - Federal and State grants for infrastructure improvements in alignment with the Flint Master Plan
- City Water Department implements budgeted FY15 projects including leak detection, valve repairs, new pipes and meter replacements

Education

- Develop a community partnership with universities to provide household and business customers with information on testing and conservation
- Ongoing partnership with Michigan Department of Human Services, United Way, Salvation Army and community organizations to provide information and water assistance with the Keep the Water Flowing Fund and support services
- Expand youth energy initiative to assist households with conservation and efficiency (piloted in summer 2014 with Northwestern High School students, EcoWorks and Consumers Energy)

It is also critical to restore the public confidence in Flint Water. The implementation of this plan must be accompanied by extensive community engagement including local elected officials. My objective is to work with you and your appointed officials, State Senator Ananich, State Representatives Phelps and Neeley, Congressman Kildee, community groups, businesses, churches, foundations, the Flint City Council, and all of the City of Flint and government personnel.

It is imperative that we communicate better and provide residents more information. I understand representatives from the Michigan Department of Environmental Quality will be joining a public forum this week at City Hall. This engagement going forward is vital so thank you for supporting their efforts. I think this issue of transparency is important for communities all across the State. I recommend a review of the applicable laws and policies and, at a minimum, a new requirement that water testing data be reported publicly no less than quarterly by law in all Michigan communities in Flint's population category.

Thank you for the consideration Governor. There is nothing more important in Flint right now than fixing the water problems. We must work together to identify funds to repair and update the water treatment facilities and city-wide infrastructure and to help those persons without access to clean water so that the entire Flint community has sustainable, safe, secure and affordable water now and into the future. This is an important issue for the state of our State of Michigan and I urge you to work with us to implement solutions.

Sincerely,



Dayne Walling, Mayor
City of Flint

CC: Flint City Council President Joshua Freeman; Congressman Dan Kildee; State Senator Jim Ananich; State Representative Sheldon Neeley; State Representative Phil Phelps; Flint Emergency Manager Jerry Ambrose

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Tuesday, January 20, 2015 3:33 PM
To: Howard Croft; Prysby, Mike (DEQ)
Cc: Elizabeth Murphy; Gerald Ambrose; Flint Mayor; Shekter Smith, Liane (DEQ)
Subject: RE: Water Forum
Attachments: City of Flint_Public Forum (1).pdf

Howard,

Please revise the DEQ bullet points to as follows:

- Role of the DEQ
- Explanation of TTHM violation

Delete all others. Thanks.

Based on the calls we have been getting from your water customers, our Office strongly recommends someone from the City discuss the City's water rate structure and what the City's water rates are being used to support.

Stephen Busch, P.E.
 Lansing and Jackson District Supervisor
 Office of Drinking Water and Municipal Assistance
 MDEQ
 517-643-2314

From: Howard Croft [<mailto:hcroft@cityofflint.com>]
Sent: Tuesday, January 20, 2015 3:13 PM
To: Prysby, Mike (DEQ); Busch, Stephen (DEQ); Green, Warren; John O'Brien; djansen@gcdcwws.com; rosejo@msu.edu
Cc: Elizabeth Murphy; Gerald Ambrose; Flint Mayor
Subject: Water Forum

Here is the current agenda that I have assembled for our Wednesday night forum. I am looking for everyone to speak for about 10 minutes at the opening and then we will move to written questions. I have attempted to highlight each persons area of expertise as it relates to initial comments and I will moderate through the questions. We do not plan to have an open microphone.

Starting time is 7:00 in the Dome, I will be available in City Hall for those that arrive early.

Thank you all for participating,

--

Howard Croft
 Public Works Director
 City of Flint
 1101 S. Saginaw Street
 Flint, MI 48502
 PH# 810.766.7346 Ext.2043
hcroft@cityofflint.com

Shekter Smith, Liane (DEQ)

From: Benzie, Richard (DEQ)
Sent: Monday, January 12, 2015 1:02 PM
To: Prysby, Mike (DEQ); Wolf, Jennifer (DEQ); Doll, Jeanette (DTMB); Busch, Stephen (DEQ)
Cc: VanOtteren, Bruce (DNR); Shekter Smith, Liane (DEQ)
Subject: RE: Facility Notification: Flint State Office Building

I have several questions about this matter. Why does "public traffic" deserve a higher consideration than concern for state workers? How does that reasoning appear to state employees? A visitor may take one drink of water from this site in their lifetime. State workers (like any employees) may get half of the water they consume each day at their place of employment. Which group faces the greater health risk from drinking water in state occupied premises? Are other state owned/occupied facilities in Flint being provided with the same service? How about a Secretary of State's offices or the DHS facilities? Are there any state correctional facilities that receive drinking water from Flint?

What would DTMB have done if the problem had occurred in Lansing? Would the state of Michigan be providing bottled water or an alternate supply of drinking water to all of the state owned or state employee locations that receive Lansing drinking water and allow public access? Who would make that decision? Why wouldn't that decision maker seek the advice of the Office of Drinking Water and Municipal Assistance before deciding? Would it be building by building or one decision be made for state facilities?

How does this action by DTMB impact the answer when ODWMA district staff are asked by others in the media or from the general public about whether Flint residents should continue to consume Flint's drinking water with elevated disinfection byproducts? No doubt it will make it more difficult from a perception standpoint for ODWMA staff.

If this matter were about an acute health threat, such as E.coli or nitrates, then I would applaud the decision. But when we are dealing with a chronic health threat in a community water system, I think the appropriate action is to ensure public awareness and education, establish a reasonable compliance schedule, and allow individuals to make personal choices if they wish. And if someone like GM or the State of Michigan decides to implement such measures as supplying an alternate water supply for a chronic health threat that should be of a limited duration, fine, but it should be uniformly implemented.

If DTMB would like to meet to discuss this issue and procedures for communication and possible actions in future, similar events, we would be willing to participate.

Richard Benzie, P.E., Chief
 Field Operations Section
 Office of Drinking Water and Municipal Assistance, MDEQ
 517-284-6512

From: Prysby, Mike (DEQ)
Sent: Monday, January 12, 2015 10:22 AM
To: Wolf, Jennifer (DEQ)
Cc: VanOtteren, Bruce (DNR); Doll, Jeanette (DTMB); Busch, Stephen (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ)
Subject: RE: Facility Notification: Flint State Office Building

Jennifer,

I spoke with Jeanette this morning. She informed me....given that this state building has high public traffic (Flint citizens); it was felt prudent to offer an alternative supply of drinking water to citizens entering the building. Jeanette asked me what should be expected with the next round of samples (March time-frame). I explained to her how compliance with TTHMs is determined (based on a running annual average of 4 quarters) and the public notification requirements. The city's next round of samples will be collected around the 3rd week of Feb; however, regardless of sample results, compliance with the TTHM MCL will not be re-achieved due to the high levels detected last summer. Although the city will remain out of compliance, (primarily based on the previous results), the November sample results were substantially lower (7 of 8 locations below the MCL). We anticipate that most (if not all) locations will be in compliance with the February monitoring. The city; however, needs to make a diligent effort to convey TTHM status to their residents as soon as possible after new results become available (regardless of compliance status). Jeanette will pass this information on.

Michael Prysby, P.E.
District Engineer
Office of Drinking Water and Municipal Assistance
517 290-8817

From: Wolf, Jennifer (DEQ)
Sent: Friday, January 09, 2015 10:42 AM
To: Prysby, Mike (DEQ)
Cc: VanOtteren, Bruce (DNR); Doll, Jeanette (DTMB)
Subject: FW: Facility Notification: Flint State Office Building

Hi Mike!

Are you handling this one? If so are you able to address Jeanette's below?

SGT. JEN WOLF
MI DEPT. OF ENVIRONMENTAL QUALITY
MI DEPT. OF NATURAL RESOURCES
LAW ENFORCEMENT DIVISION
EMERGENCY MANAGEMENT
DESK: 517-284-6231
CELL: 517-719-0028

From: Doll, Jeanette (DTMB)
Sent: Friday, January 09, 2015 7:33 AM
To: VanOtteren, Bruce (DNR); Wolf, Jennifer (DEQ)
Subject: FW: Facility Notification: Flint State Office Building

Good morning!

My phone call was referencing the advisory our Real Estate Division received from the City of Flint. Just wanted to know if we would know sooner than March 1 on the TTHM levels.

Jeanette

From: DTMB Facilities [<mailto:dtmb@govsubscriptions.michigan.gov>]

Sent: Wednesday, January 07, 2015 11:49 AM

To: Doll, Jeanette (DTMB)

Subject: Facility Notification: Flint State Office Building

Facility Notification



DTMB Customer Service

(517) 373-6227

Flint Water Advisory

Date/Time:

Effective Wednesday, January 7, 2015

Details:

The City of Flint recently sent out the attached notice regarding violations to the drinking water standards. While the City of Flint states that corrective actions are not necessary, DTMB is in the process of providing a water cooler on each occupied floor, positioned near the water fountain, so you can choose which water to drink. The coolers will arrive today and will be provided as long as the public water does not meet treatment requirements.

- [Flint Water.pdf](#)

Contact:

DTMB Customer Service Center, DTMB-Customerservice@michigan.gov or (517) 373-6227



Since we spend about 40 hours a week at our workplaces, isn't the office the best place to try out some new energy-saving tricks? The Energy Information Administration estimates that if commercial and industrial buildings improved their energy efficiency by 10 percent, our economy could see yearly savings of nearly \$20 billion.

This email was sent to dolli@michigan.gov using GovDelivery, on behalf of DTMB · Lewis Cass Building · 320 South Walnut Street · Lansing, MI 48933 (517) 373-1004

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

City of Flint Did Not Meet Treatment Requirements

Our water system was recently found to be in violation of a drinking water standard. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Samples were collected for total trihalomethanes (TTHM) analysis from eight locations on a quarterly basis (May 21, August 21, and November 20 of 2014). The average of the results at ANY of the eight locations must not exceed the maximum contaminant level (MCL) for TTHMs, otherwise our water system exceeds the Maximum Contaminant Level (MCL). The standard for TTHMs is 80 µg/L. The location reporting the highest TTHM level was 99 µg/L, thus, our water system exceeds the TTHM MCL.

What should I do?

- There is nothing you need to do unless you have a severely compromised immune system, have an infant, or are elderly. In that case, you may be at increased risk and should seek advice about drinking water from your health care provider.
- You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours.

What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.

People who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.

What is being done?

We are currently working on solutions to correct the problem. We anticipate resolving the problem in 2015.

For more information, please contact Mr. Brent Wright or Mike Glasgow at 810-787-6537 or the Water Plant at 4500 North Dort Highway, Flint, MI 48505.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by the City of Flint.

CERTIFICATION: F1 S3

WSSN: 02310

I certify that this water supply has fully complied with the public notification requirements in the Michigan Safe Drinking Water Act, 1976 PA 399, as amended, and the administrative rules. Reminder to water supplier: This notice/certification must be sent to the DEQ.

Michael Glasgow

ASSISTANT SUPERVISOR

1/2/15

Signature

Title

Date Distributed

Shekter Smith, Liane (DEQ)

From: Howes, Sarah (DEQ)
Sent: Friday, January 09, 2015 2:36 PM
To: Benzie, Richard (DEQ); Busch, Stephen (DEQ)
Cc: Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ); Datema, Maggie (DEQ); DEQ-Legislative-Contact
Subject: RE: Flint Legislator Questions

Yes, Sen. Ananich and Rep. Phelps both received the advanced notice of the VN. I called Rep. Phelps and Rep. Neeley to let them know that DEQ was unable to attend or participate in the meeting earlier this week due to the short notice, but are happy to in the future.

I also left a message for Sen. Ananich saying that we can come over and brief him on the status and answer any questions. I haven't heard back yet.

Thanks you all for your work on this.
 Sarah

Sarah M. Howes | Legislative Liaison
 Department of Environmental Quality
 517.284.6707 O | C 517.282.9204

From: Benzie, Richard (DEQ)
Sent: Friday, January 09, 2015 10:34 AM
To: Busch, Stephen (DEQ); Howes, Sarah (DEQ)
Cc: Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)
Subject: RE: Flint Legislator Questions

Steve and Sarah,

I assume he received the advance notice of the violation with the other legislators. We could send him the summary that Mike had prepared and left with Representatives Neeley and Phelps on Tuesday, and offer to meet with him if he still has questions. But I think it would be appropriate for that information to be delivered from Sarah or Maggie unless they advise the district to provide it to Senator Ananich's office directly and just copy them.

Richard

Richard Benzie, P.E., Chief
 Field Operations Section
 Office of Drinking Water and Municipal Assistance, MDEQ
 517-284-6512

From: Busch, Stephen (DEQ)
Sent: Friday, January 09, 2015 8:24 AM
To: Howes, Sarah (DEQ)
Cc: Prysby, Mike (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ)
Subject: Flint Legislator Questions

Sarah,

I know Mike, Richard, and you met with Neeley and Phelps earlier this week, but we may want to check in with Senator Ananich's office, to see if they have any questions as well. See the article below.

http://www.mlive.com/news/flint/index.ssf/2015/01/legislators_from_flint_want_st.html#incart_river

Stephen Busch, P.E.
Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance
MDEQ
517-643-2314

Shekter Smith, Liane (DEQ)

From: Benzie, Richard (DEQ)
Sent: Wednesday, January 07, 2015 5:31 PM
To: Scherbarth, John (AG)
Cc: Shekter Smith, Liane (DEQ)
Subject: RE: Flint Water Supply System

John

No, I don't see any reason why it should not be shared. It was an attachment to a notice provided by our district staff to DEQ management to inform them about a media contact. It is certainly available under FOIA, but even if it wasn't, I don't see any reason not to share it.

I attended a meeting late yesterday at the newly elected Representative Sheldon Neeley's office with Representative Phil Phelps also present. The purpose was to explain the problem to them. Mike Prysby from our Lansing district office recapped what the city of Flint and we have been doing since this problem became evident last summer.

We also explained why the public notification requirements did not start until the city obtained sufficient data to determine that they were going to be in violation of the drinking water standard for these disinfection byproducts (it's a running annual average of quarterly results). Apparently some have questioned why it was so long between initially seeing results that were high and the public being notified of this fact. A single set of high results do not require public notification. However, they did trigger the requirement for the city to initiate an investigation and evaluate options to reduce these concentrations, which Flint has done admirably. In fact, the results were remarkably lower in the latest round. But even if they continue at these lower levels, it will take a while for the running average to be reduced below the standard. Until then, the violation notice will need to be repeated until the running annual average at all compliance monitoring points once again meets the standard.

Richard

Richard Benzie, P.E., Chief
 Field Operations Section
 Office of Drinking Water and Municipal Assistance, MDEQ
 517-284-6512

From: Scherbarth, John (AG)
Sent: Wednesday, January 07, 2015 4:02 PM
To: Benzie, Richard (DEQ)
Subject: FW: Flint Water Supply System

Richard

I shared the information that you provided to me with an attorney in my office impacted by the Flint water issue. She has asked me as you can see whether she can share the information that you provided to me with others. Since it is public knowledge, I see no reason why she cannot share it. Can you?

John C. Scherbarth

From: Miller, Jeanmarie (AG)
Sent: Wednesday, January 07, 2015 12:33 PM

To: Scherbarth, John (AG)
Subject: RE: Flint Water Supply System

Thanks John. Myself as well as most of my neighbors are particularly concerned about the situation as I am sure you can understand. Is this information I can share with others?

Jeanmarie

From: Scherbarth, John (AG)
Sent: Tuesday, January 06, 2015 3:06 PM
To: Miller, Jeanmarie (AG)
Cc: Manning, Peter (AG)
Subject: FW: Flint Water Supply System

Jeannmarie

The attached email I elicited from DEQ should provide you sufficient information in response to your query.

John C. Scherbarth

From: Benzie, Richard (DEQ)
Sent: Tuesday, January 06, 2015 2:52 PM
To: Scherbarth, John (AG)
Cc: Prysby, Mike (DEQ); Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ)
Subject: RE: Flint Water Supply System

John,

Michael Prysby is the district engineer that has been working with Flint for the past 25 years. Steve Busch is the District Supervisor who also has knowledge about this subject. Mike's telephone number is (517) 290-8817. Steve's number is (517) 643-2314.

I have also attached a summary of a recent media contact that Mike Prysby had earlier today that provides some background information and explains what is being done to address this issue.

In addition to the measures Mike describes in his media contact, you should know that the city of Flint is relying upon the Flint River temporarily until the pipeline from Lake Huron is completed, hopefully sometime in mid-2016. The lower organic content of Lake Huron water should significantly reduce the TTHM formation that occurs from disinfection of the Flint River, and TTHM levels should return to the levels experienced in Flint when they received Lake Huron water from the Detroit Water & Sewerage Department.

Richard Benzie, P.E., Chief
 Field Operations Section
 Office of Drinking Water and Municipal Assistance, MDEQ
 517-284-6512

From: Scherbarth, John (AG)
Sent: Tuesday, January 06, 2015 12:06 PM
To: Benzie, Richard (DEQ)
Subject: Flint Water Supply System

Richard

Who may I contact at DEQ to discuss the City of Flint water system which recently sent a notice to its citizens regarding an exceedance of TTHMs?

John C. Scherbarth
Environment, Natural Resources, and Agriculture Division
Michigan Department of Attorney General
P.O. Box 30755
Lansing, MI 48909

Telephone: 517-373-7540
Fax: 517-241-3473

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Wednesday, January 07, 2015 12:17 PM
To: Benzie, Richard (DEQ); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)
Subject: RE: Meeting w Legislator

Mike is going to call City management this afternoon to see what they are doing and have planned to restore confidence. If asked by the City and the setting is appropriate we may participate. If so, we would be sure to coordinate with Brad, Sarah, and both of you. We would also be very clear with the City and those involved that any participation would be in a supportive role and that it should not be construed as a DEQ meeting.

Stephen Busch, P.E.
 Lansing and Jackson District Supervisor
 Office of Drinking Water and Municipal Assistance
 MDEQ
 517-643-2314

From: Benzie, Richard (DEQ)
Sent: Wednesday, January 07, 2015 11:53 AM
To: Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)
Subject: RE: Meeting w Legislator

Mike's getting quite experienced at these types of meetings and handling them well.

Another question asked by Representative Neeley that I think we answered adequately was whether immunocompromised individuals and infants were more at risk from these contaminants. Mike explained that while we were not toxicologists or medical professionals, it was our understanding that those subgroups were more susceptible to microbial contaminants of an acute nature, and we were not aware of any increased risk from these chronic contaminants. We explained that these contaminants were in fact byproducts created by the thorough chlorination of the water to eliminate microbial contaminants.

In addition to Mike's summary, it also seemed that the Representatives were primarily concerned about whether Flint had the personnel to handle this situation, which I think Mike addressed. It was also made clear to us that the Representatives (or their constituents) would like more frequent monitoring. I tried to explain how any additional monitoring would be incorporated into the compliance determination – that additional sample results from the pre-established sampling sites would be averaged over each compliance period (quarter) before being averaged with previous quarterly results, and that samples from other locations would primarily be for operational considerations and public awareness, but not compliance.

Finally, they indicated that based on the number of calls they are receiving and the tenor of the callers, there appears to be a significant (I think they used the word complete) loss of public confidence in the drinking water quality in Flint. Mike indicated that we would be working with the city to try to restore that confidence. Steve and Mike may want to carry that message to the city and discuss how they can restore confidence by becoming more transparent about their monitoring and acknowledging any past oversights, like not recognizing the need to alter their pumping and storage practices from one of maintaining high volumes in the event of a pipeline break to one of frequent and complete cycling of the tank volumes to reduce stagnation and TTHM formation. It should be a brainstorming session and not one of assigning blame but how to move forward. Maybe there are some lessons to be learned from how the Lansing BWL is trying to recover from the loss of public confidence as a result of their response to the ice storm a year ago.

Richard

From: Prysby, Mike (DEQ)

Sent: Wednesday, January 07, 2015 11:02 AM

To: Datema, Maggie (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Shekter Smith, Liane (DEQ); Willard, Veronica (DEQ); Busch, Stephen (DEQ); Wurfel, Brad (DEQ)

Cc: Howes, Sarah (DEQ); Benzie, Richard (DEQ)

Subject: Meeting w Legislator

Richard Benzie, Sarah Howes, and I met with State Representatives Sheldon Neeley, 34th District and Phil Phelps, 48th District to discuss the TTHM violation in the city of Flint late yesterday afternoon . Attached is a summary of our discussion.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

Shekter Smith, Liane (DEQ)

From: Benzie, Richard (DEQ)
Sent: Tuesday, January 06, 2015 2:52 PM
To: Scherbarth, John (AG)
Cc: Prysby, Mike (DEQ); Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ)
Subject: RE: Flint Water Supply System
Attachments: TTHM NBC Interview Jan 5, 2015.doc

John,

Michael Prysby is the district engineer that has been working with Flint for the past 25 years. Steve Busch is the District Supervisor who also has knowledge about this subject. Mike's telephone number is (517) 290-8817. Steve's number is (517) 643-2314.

I have also attached a summary of a recent media contact that Mike Prysby had earlier today that provides some background information and explains what is being done to address this issue.

In addition to the measures Mike describes in his media contact, you should know that the city of Flint is relying upon the Flint River temporarily until the pipeline from Lake Huron is completed, hopefully sometime in mid-2016. The lower organic content of Lake Huron water should significantly reduce the TTHM formation that occurs from disinfection of the Flint River, and TTHM levels should return to the levels experienced in Flint when they received Lake Huron water from the Detroit Water & Sewerage Department.

Richard Benzie, P.E., Chief
Field Operations Section
Office of Drinking Water and Municipal Assistance, MDEQ
517-284-6512

From: Scherbarth, John (AG)
Sent: Tuesday, January 06, 2015 12:06 PM
To: Benzie, Richard (DEQ)
Subject: Flint Water Supply System

Richard

Who may I contact at DEQ to discuss the City of Flint water system which recently sent a notice to its citizens regarding an exceedance of TTHMs?

John C. Scherbarth
Environment, Natural Resources, and Agriculture Division
Michigan Department of Attorney General
P.O. Box 30755
Lansing, MI 48909

Telephone: 517-373-7540
Fax: 517-241-3473

Flint NBC 25 News Interview
Flint TTHMs
January 5, 2015

Walter-Smith Randolth, reporter, from Flint NBC 25 News conducted a telephone interview with me for broadcast on Flint local television concerning the TTHM violation in Flint's drinking water. I led the interview and provided Mr. Randolth an opportunity for follow-up questions. Below is a summary of topics that were presented.

TTHM violation – What does this mean for Flint residents? The TTHM violation notice to residents is not an immediate public health emergency since the health-effects posted in the notice require long-term exposure to TTHMs (over a significant portion of an individual's lifespan). TTHMs commonly occur in public water systems that disinfect with chorine due to the reaction between chlorine and naturally occurring organic compounds (total organic carbon) in the source water. Surface water sources, including the Flint River watershed, typically have higher levels of naturally occurring organic compounds.

What is the DEQ's Role? The DEQ is working in collaboration with the city to ensure long-term public health protection and to keep the public informed. We are working with the city to help identify improvements in treatment and operation of the distribution system to reduce the levels of TTHMs. We are assisting the city with public notice requirements (when to post/contents). With our assistance, the city has proceeded with an operational evaluation of the water system ahead of state and federal requirements.

DEQ's perspective of the situation: The Flint River source is more difficult to treat since it requires more disinfection to maintain bacteriological integrity. Increased disinfection; however, when combined with higher levels of naturally occurring organics results in elevated levels of TTHMs that form over time out in the distribution system. The TTHM concentrations that developed in the system were more than anticipated due to several reasons:

1. Flint did not immediately change their mode of distribution system operation after switching sources to account for higher TTHM formation potential of treated water from Flint's WTP.

I explained that TTHMs require time to form and are not fully developed in the treated water that enters the distribution system from the WTP. Water from Detroit; however, is several days old when it reaches Flint; thus the majority of the TTHMs are developed. TTHMs were also lower given the source water (Lake Huron). Flint's historically operated the distribution system in a manner that created conditions favorable for stagnation. This methodology of operation was not changed (initially) when switching to the Flint River; thus, this condition was one of several factors contributing to higher levels of TTHMs. Other factors included; higher TTHM formation potential in the Flint River (already explained above) and higher chlorine application rates at treatment plant to maintain bacteriological integrity.

I further explained that TTHM levels in the most recent quarter have dropped for two main reasons:

1. Action taken by the city including; improving dist. system operation to reduce stagnation, treatment changes (complete softening), reduced chlorination, system flushing, valving improvements
2. Seasonal fluctuation of organic compounds in the Flint River. Less organic loading in the winter months.

END of MY DISCUSSION

Mr. Smith-Randolf asked for my comment to the following questions/statements....Why this problem is occurring in Flint? Is there a problem with the water system? This was not an issue when Flint was on Detroit water.

I responded by summarizing some of the key points discussed above including:

- **Dist system operation (storage facilities and valving)**
- **TTHM formation potential in Flint River vs. Detroit and age of incoming water**
- **High chlorine dosages to maintain bacteriological integrity**
- **Treatment practices at WTP (partial by-pass of softening)**

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Tuesday, December 16, 2014 10:17 AM
To: Datema, Maggie (DEQ); Wurfel, Brad (DEQ)
Cc: Prysby, Mike (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Rosenthal, Adam (DEQ)
Subject: Flint Drinking Water TTHM Standard Violation
Attachments: City of Flint VN - MCL TTHM 12_16_14.pdf

Attached is a copy of the Violation Notice and Public Notice Template being mailed to the City of Flint by the DEQ Office of Drinking Water and Municipal Assistance regarding an exceedance of the Maximum Contaminant Level standard for Total Trihalomethanes at certain locations within the City's drinking water distribution system.

You are being provided an electronic copy of this notice as exceedance of this drinking water standard is expected to generate inquiries from water system customers, news media, and the general public.

Maggie Datema will be informing members of the Michigan legislature.

If you have any questions or would like any additional information, you may contact Michael Prysby, District Engineer, DEQ-ODWMA at 517-290-8817, or you may contact me at the number below.

Stephen Busch, P.E.
Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance
MDEQ
517-643-2314



RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING DISTRICT OFFICE



DAN WYANT
DIRECTOR

December 16, 2014

Mr. Brent Wright, Operation Supervisor
City Of Flint - DPW
Flint Water Plant
4500 North Dort Highway
Flint, MI 48505

WSSN: 02310

Dear Mr. Wright:

SUBJECT: Violation Notice – Maximum Contaminant Level for Total Trihalomethanes
Operational Evaluation – Total Trihalomethanes
4th Quarter 2014 Monitoring Period

The Department of Environmental Quality (DEQ), Office of Drinking Water and Municipal Assistance (ODWMA), records show that the City of Flint is in violation of the Safe Drinking Water Act, 1976 PA 399, as amended (Act 399); R 325.10610, *Maximum contaminant levels (MCL) for disinfection byproducts*, of the 1979 Administrative Code.

In accordance with R.325.10610, *MCLs for disinfection byproducts*, of the 1979 Administrative Code, the MCL for disinfection byproduct total trihalomethanes (TTHM) is 0.080 milligrams per liter (mg/L) as a Locational Running Annual Average (LRAA) at each monitoring location. As listed in the table below, our records show that the City of Flint's highest TTHM locational running annual average (LRAA), based on the last three quarters, ending November 30, 2014, is 0.099 mg/l which exceeds the standard, and that two of the eight sample site locations exceed the standard of 0.080 mg/L.

Further, in accordance with R325.10719I, *Disinfection byproducts: operational evaluation levels*, of the 1979 Administrative Code, when an operational evaluation level (OEL) at a monitoring location for TTHM exceeds 0.080 mg/L, a supply shall conduct an operational evaluation and submit a written report of the evaluation to the department not later than 90 days after being notified of the analytical result that causes the supply to exceed the operational evaluation level. As listed in the table below, our records show that TTHM operational evaluation levels for the City of Flint exceed 0.080 mg/L at four of the City's eight sample site locations.

TTHM Results (mg/L)					
	5/21/14	8/21/14	11/20/14	LRAA	OEL
DBP1 McDonalds 3719 Davison	0.162	0.145	0.059	0.092	0.106
DBP2 Liquor Palace 3302 S. Dort Highway	0.112	0.127	0.033	0.068	0.076
DBP3 North Flint Auto 6204 N. Saginaw St.	0.097	0.118	0.041	0.064	0.074
DBP4 University Market 2501 Flushing Road	0.106	0.196	0.094	0.099	0.122
DBP5 Taco Bell 3606 Corunna Road	0.079	0.181	0.034	0.074	0.082
DBP6 Rite-Aid Pharmacy 5018 Clio Road	0.088	0.144	0.054	0.072	0.085
DBP7 Salem Housing 3216 MLK Boulevard	0.082	0.112	0.050	0.061	0.074
DBP8 BP Gas Station 822 S. Dort Highway	0.075	0.112	0.036	0.056	0.065

Our investigation consisted of a review of ODWMA files for laboratory reports received for compliance monitoring. Our investigation is considered complete. This violation began on December 1, 2014, and will continue until TTHM LRAA is below the MCL at all sample sites.

We acknowledge and appreciate the city's cooperation with our recommendation to preemptively conduct an Operational Evaluation following the City's second quarterly round of monitoring in August. That Operational Evaluation report has identified possible causes and corrective measures for the elevated TTHM levels which we encourage the City continue implementing. These modifications have likely contributed in part to the reduction in TTHM levels reported in the most recent quarter, and suggest the City may be able to achieve compliance with the TTHM standard.

Our office is continuing to review the Operational Evaluation report that was submitted on December 1, 2014, and will provide the City and their consultant comments as needed to help address this MCL violation.

Water systems that exceed the OEL must complete and submit an Operational Evaluation in accordance with Administrative Rule 719I (R325.10719I) within 90 days of being notified of the violation. **An updated Operational Evaluation report, which incorporates the most recent sample results, must now be completed and received by our office by no later than March 1, 2015.**

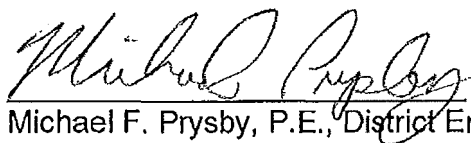
If you have any other factual information you would like us to consider regarding the violation identified in this Violation Notice (VN), please provide them in a written response by January 16, 2015.

Administrative rule R 325.10403 of Act 399 requires that suppliers provide public notice (PN) as soon as practical, but no later than thirty (30) days after the supplier learns of this type of violation, by mail or direct delivery and by any other means reasonably calculated to reach customers not normally reached by mail. Enclosed is a sample PN

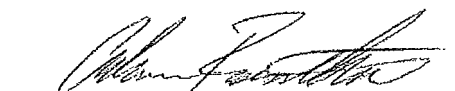
which contains the minimum required language. The City is encouraged to include additional information regarding its response to this violation. **Please notify your consumers by January 10, 2015, and send us a signed and dated copy of the notice that you issued within ten (10) days of distributing the public notice.** This violation must also be included in your 2014 Consumer Confidence Report (CCR), due by July 1, 2015. The PN must be repeated every quarter until you no longer exceed the TTHM standard. Failure to issue a PN for this violation will result in a fine of at least \$1,000 per event, with a maximum of \$5,000 per violation.

We anticipate and appreciate your continued cooperation in resolving this matter. If you have any questions regarding this VN, please contact us at the numbers below.

Sincerely,



Michael F. Prysby, P.E., District Engineer
Lansing District Office
Office of Drinking Water & Municipal
Assistance
517-290-8817



Adam Rosenthal, EQA
Lansing District Office
Office of Drinking Water & Municipal
Assistance
517-284-6644

mfp/ar/jlr
Enclosure

cc: Mr. Darnell Early, Emergency Manager, City of Flint
Mr. Daughtry Johnson, City of Flint
Mr. Howard Croft, City of Flint
Mr. Robert Bincsik, City of Flint
Ms. Jennifer Crooks, U.S. Environmental Protection Agency, Region 5
Genesee County Health Department
Ms. Liane Shekter Smith, P.E., DEQ
Mr. Richard Benzie, P.E., DEQ
Mr. Stephen Busch, P.E., DEQ

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

City of Flint Did Not Meet Treatment Requirements

Our water system recently violated a drinking water standard. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we are doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. Samples were collected for total trihalomethanes (TTHM) analysis from eight locations on a quarterly basis (May 21, August 21, and November 20 of 2014). The average of the results at ANY of the eight locations must not exceed the maximum contaminant level (MCL) for TTHMs, otherwise our water system exceeds the Maximum Contaminant Level (MCL). The standard for TTHMs is 80 µg/L. The location reporting the highest TTHM level was 99 µg/L; thus, our water system exceeds the TTHM MCL.

What should I do?

- There is nothing you need to do unless you have a severely compromised immune system, have an infant, or are elderly. These people may be at increased risk and should seek advice about drinking water from their health care providers.
- You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours.

What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.

People who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.

What is being done?

We are currently working on solutions to correct the problem. We anticipate resolving the problem by 2015.

For more information, please contact Mr. Brent Wright at 517-787-6537 or the Flint Water Plant at 4500 North Dort Highway, Flint, MI 48505.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by the City of Flint.

CERTIFICATION:

WSSN: 02310

I certify that this water supply has fully complied with the public notification requirements in the Michigan Safe Drinking Water Act, 1976 PA 399, as amended, and the administrative rules.

Signature

Title

Date Distributed

Reminder to water supplier: This notice / certification must be sent to the DEQ.

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Friday, December 12, 2014 3:34 PM
To: Datema, Maggie (DEQ); Wurfel, Brad (DEQ)
Cc: Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ); Sygo, Jim (DEQ); Benzie, Richard (DEQ)
Subject: Flint Drinking Water TTHM Standard Violation
Attachments: Flint DBP MCL 4Q14.doc

Maggie,

The final violation notice we plan to mail on Monday to Flint is attached.

The Director had asked us to work with you to notify impacted members of the State legislature and answer any questions they might have so that they will be informed and able to answer questions from their constituents.

Please let us know if you have any questions or need any additional assistance.

Thanks.

Stephen Busch, P.E.
Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance
MDEQ
517-643-2314

Shekter Smith, Liane (DEQ)

From: Byrne, Randall (Treasury)
Sent: Tuesday, December 09, 2014 10:53 AM
To: Shekter Smith, Liane (DEQ)
Subject: RE: Flint water update

Liane:

Thanks so much!

Randy,

From: Shekter Smith, Liane (DEQ)
Sent: Tuesday, December 09, 2014 10:24 AM
To: Byrne, Randall (Treasury)
Cc: Busch, Stephen (DEQ); Benzie, Richard (DEQ)
Subject: RE: Flint water update

Randy – I made a few suggested tweaks to your note. Hope this works for you:

- The DEQ met with Flint officials last month. The City prepared an operational plan to reduce the formation of disinfection by-products. They have exceeded the standard which is primarily the result of using water from a different source, namely the Flint River. This is anticipated to be mitigated once the City begins using Lake Huron water from the Karagondi pipeline. A DEQ violation notice will go out next week which will require the city to issue a public notice. The DEQ Director plans to notify legislative members from the Flint area. In conclusion, the City has seen a reduction in the numbers because of operational changes and the cooler weather. The violation is expected to continue for a while because it takes time to resolve this problem.

Liane

Liane J. Shekter Smith, P.E., Chief
 Office of Drinking Water and Municipal Assistance
 Michigan Department of Environmental Quality
 517-284-6543

From: Byrne, Randall (Treasury)
Sent: Tuesday, December 09, 2014 9:16 AM
To: Shekter Smith, Liane (DEQ)
Subject: Flint water update

Liane:

Please review this draft on the Flint water issue and make any changes that will clarify this statement:

- The DEQ met with Flint officials last month. The City prepared an operational plan to reduce the disinfection by-product. They have exceeded the standard which is a result of using water from a different source, namely

the Flint River. This will be gone once the City begins using Lake Huron water from the Karagondi pipeline. A DEQ violation notice will go out next week which will be a public notice. The DEQ Director will notify legislative members from the Flint area. In conclusion, the DEQ has seen a reduction in the numbers because of the cooler weather. The violation will continue for a while because it takes time to resolve this problem.

Thanks, once again for your assistance,
Randy,



Randall D. Byrne, Manager, Office of Fiscal Responsibility
State of Michigan 430 W. Allegan St. , Lansing, MI 48922
ByrneR1@michigan.gov (517) 335-2521



Think Green! Don't print this e-mail unless you need to.

CONFIDENTIALITY NOTICE: This e-mail, and any attachments, is for the sole use of the intended recipient(s) and may contain information that is confidential and protected from disclosure under the law. Any unauthorized review, use, disclosure, or distribution is prohibited. If you are not the intended recipient, please contact the sender by reply e-mail, and delete/destroy all copies of the original message and attachments. Thank you.

Shekter Smith, Liane (DEQ)

From: Thelen, Mary Beth (DEQ)
Sent: Monday, November 24, 2014 11:58 AM
To: Busch, Stephen (DEQ)
Cc: Shekter Smith, Liane (DEQ); Datema, Maggie (DEQ); Feuerstein, Heather (DEQ); Thelen, Mary Beth (DEQ)
Subject: RE: Hold Date for Flint Mtg. with Locals/Legislators?

Okay, I will find out from the Director. He is out today and tomorrow but will be checking his email.

His schedule is extremely tight Dec. 8-12 (AL Th/Fr) but I'll see what he wants to do.

I am also copying Maggie Datema – Maggie, please see note below.

Thanks.

Mary Beth

Mary Beth Thelen
 Management Assistant to Director Dan Wyant
 Department of Environmental Quality
 Constitution Hall, 6th Floor South
 Phone: 517-284-6712 or 284-6700 (new numbers)
 Fax: 517-241-7401
Thelenm2@michigan.gov

From: Busch, Stephen (DEQ)
Sent: Monday, November 24, 2014 11:54 AM
To: Thelen, Mary Beth (DEQ)
Cc: Shekter Smith, Liane (DEQ)
Subject: Hold Date for Flint Mtg. with Locals/Legislators?

Mary Beth,

Director Wyant had suggested a meeting with Flint area members of the state legislature and others to provide them information about a water standard violations which may occur.

My office anticipates receiving the applicable monitoring results for determining such a violation during the week of December 1-5.

If the Director would still like to hold such a meeting, it would be best to do so during the following week December 8-12. Can you let me know whether this will work so we can start the planning process?

Thanks.

Stephen Busch, P.E.
 Lansing and Jackson District Supervisor
 Office of Drinking Water and Municipal Assistance
 MDEQ
 517-643-2314

Shekter Smith, Liane (DEQ)

From: Prysby, Mike (DEQ)
Sent: Thursday, November 13, 2014 10:01 AM
To: Busch, Stephen (DEQ); Benzie, Richard (DEQ)
Cc: Shekter Smith, Liane (DEQ)
Subject: RE: Flint

My call to Tom Poy went as follows:

- **Duration of drinking water advisory has been ongoing for several months.**

Complainant may have misunderstood the 30-day TCR violation notices as a continuation of the contamination and BWA. The city issued two of these notices for the TCR violation that occurred in August and again in September.

- **Main breaks are repaired only after the pressure of media coverage.**

We could not confirm this; however, we maintain frequent contact the city Water Service Center (Dist OIC) concerning main breaks and valve repairs. Visible main breaks are repaired as soon as possible.

- **Animal mortality is associated with drinking Flint water.**

We could not confirm this.

- **Drinking water advisories were issued only at certain public schools.**

The BWA issued in September affected approx. one sixth of the city's land area; thus several public schools were likely impacted. The public schools outside of the affected area were not impacted by the BWA and precautionary measures were not required.

- **Water is trucked into City Hall.**

We are not aware of this. We are certain that city hall remains connected to Flint's distribution system and obtains water from the WTP. It is possible that city hall employees bring in their own bottled water (for personal preference) or a water dispenser may be utilized.

Michael Prysby, P.E.
 District Engineer
 Office of Drinking Water and Municipal Assistance

517 290-8817

From: Busch, Stephen (DEQ)
Sent: Thursday, November 13, 2014 9:16 AM
To: Benzie, Richard (DEQ)
Cc: Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)
Subject: RE: Flint

FYI.

Mike called Tom Poy yesterday and spoke to him regarding the complaint detailed below.

Stephen Busch, P.E.
Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance
MDEQ
517-643-2314

From: Poy, Thomas [<mailto:poy.thomas@epa.gov>]
Sent: Wednesday, November 12, 2014 2:38 PM
To: Benzie, Richard (DEQ); Crooks, Jennifer
Cc: Busch, Stephen (DEQ); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)
Subject: RE: Flint

Liane/Richard: FYI..Someone called the EPA Office of Inspector General's hotline with a complaint about Flint's drinking water. The OIG forwarded a log of the call with the name of the complainant redacted.

Complaint Details

Summary: Complainant calling regarding drinking water in Flint, Michigan.

Details: Complainant states the water in Flint, Michigan is not fit to drink. For several months they have been told by city officials not to drink, bathe or cook with the water. Complainant states a water scientist advised him that dogs have died and have been buried in the city water. Complainant states that some of the water mains have been broken for 2 – 3 months and only got fixed when the t.v. crews came and filmed it. Complainant states the Emergency Manager, Garnelle Early, and the city Mayor, Dane Walling stated the city was paying too much to get their water from Detroit and that they need get it from Parragondy Water Pipe Line. Complainant states the Mayor is President of the Parragondy Water Pipe Line. Complainant states the Mayor's children go to a public school and that their school has been advised not to drink the water and for the students to bring their own drinking water and the other public schools have not been told this. Also that water is trucked into city hall.

I know that you and your staff have been working with the Flint utility on their water quality and distribution system issues. Have you heard about one school being advised not to drink the water while the others have not? Or city hall getting alternate water?

Tom

Tom Poy
Chief, Ground Water and Drinking Water Branch
USEPA - Region 5
(312) 886-5991

From: Benzie, Richard (DEQ) [<mailto:BENZIER@michigan.gov>]
Sent: Thursday, November 06, 2014 9:10 AM
To: Poy, Thomas; Crooks, Jennifer
Cc: Busch, Stephen (DEQ); Prysby, Mike (DEQ); shекterl@michigan.gov
Subject: Flint

Tom and Jennifer,

I received a phone call from an unidentified individual who wanted to talk to someone responsible for clean drinking water in the city of Flint. I told him that Michigan has adopted the Safe Drinking Water Act and has primary enforcement responsibility for this program. I provided him with the names of the district supervisor and district engineer that oversee this system, but he didn't want their telephone numbers because he wasn't going to waste his time with them.

He really wanted to talk to someone in Washington. I told him the EPA Administrator was Gina McCarthy, but I did not have her number or any of the others at headquarters because we work with the Region 5 EPA office. He asked for contact information, so I provided him with Tom's telephone number. I'm letting you know so you will hopefully be prepared to deal with the fact that he doesn't want to discuss this matter with the state.

I just talked to him again, as he called the OEA saying the number I gave him (312-886-5991) was incorrect, but he may have had it wrong initially. I offered to give him Jennifer Crooks phone number, and he was adamant that he did not want to talk to her. I suspect he has called about this issue previously.

Good luck.

Richard

Shekter Smith, Liane (DEQ)

From: Thelen, Mary Beth (DEQ)
Sent: Wednesday, October 01, 2014 11:58 AM
To: Busch, Stephen (DEQ)
Cc: Shekter Smith, Liane (DEQ); Willard, Veronica (DEQ)
Subject: FW: CITY OF FLINT DRINKING WATER, GOVERNOR'S OFFICE BRIEFING PAPER
Attachments: Governor Briefing - City of Flint 10-1-14.docx; Governor Briefing - City of Flint 10-1-14.pdf; Flint Monthly Pumpage Comparison.pdf; ODWMA-399-022.pdf

Importance: High

Hi Stephen,

Here is the note and final version we sent to the Governor's office today.

Thanks Stephen for preparing! We just tweaked the briefing slightly before sending it out with headers, title, etc. You may want to replace your version with this one.

Mary Beth

Mary Beth Thelen
 Management Assistant to Director Dan Wyant
 Department of Environmental Quality
 Constitution Hall, 6th Floor South
 Phone: 517-284-6712 or 284-6700 (new numbers)
 Fax: 517-241-7401
Thelenm2@michigan.gov

From: Thelen, Mary Beth (DEQ)
Sent: Wednesday, October 01, 2014 11:19 AM
To: Scott, Allison (GOV); Muchmore, Dennis (GOV); Brader, Valerie (GOV)
Cc: Wurfel, Brad (DEQ); Wyant, Dan (DEQ); Datema, Maggie (DEQ); Sygo, Jim (DEQ); Wisniewski, Wendy (GOV); West, Samantha (GOV)
Subject: CITY OF FLINT DRINKING WATER, GOVERNOR'S OFFICE BRIEFING PAPER
Importance: High

Dear Governor, Dennis, and Val:

Per your request, the attached briefing paper is on the City of Flint drinking water situation. Director Dan Wyant has asked that I send this to you. A Word version as well as a pdf version is attached. We have also included a copy of the policy ODWMA-399-022 which specifically provides guidance regarding boil water advisory situations, and a chart showing the significant increase in the City of Flint's water demands following the extreme conditions experienced this past winter.

Allison, please forward to the Governor. Thank you.

If you have any questions or need further information, please let us know. Thank you.

Mary Beth

Mary Beth Thelen
 Management Assistant to Director Dan Wyant
 Department of Environmental Quality

Constitution Hall, 6th Floor South
Phone: 517-284-6712 or 284-6700 (new numbers)
Fax: 517-241-7401
Thelenm2@michigan.gov

Attachments

DEPARTMENT OF ENVIRONMENTAL QUALITY

GOVERNOR'S OFFICE BRIEFING PAPER CITY OF FLINT DRINKING WATER

What contributed to the Boil Water Advisories in the city of Flint?

A number of factors, not one specific cause, likely contributed to the Boil Water Advisories (BWAs) in the city of Flint during August and September 2014. While use of the Flint River has increased the amount of natural organic matter in the city's water, the Flint Water Treatment Plant (WTP) has performed well above treatment requirements for organic carbon removal. In addition, less than 20 percent of the water system was included in the advisory area. If treatment had been compromised, detections would have been widespread throughout the city, rather than in such a localized area.

The city's water distribution system has suffered from a lack of infrastructure investment and asset management. Most of the city's over 550 miles of water mains are now over 75 years old and constructed of cast iron piping. Cast iron pipe is subject to internal corrosion, called tuberculation, which causes buildup on the pipe interior, leading to water quality issues, reduced flow and pressures, and leakage. Tuberculation also encourages the development of biofilms, layers of bacteria that attach to the interior pipe wall. Biofilm growth is common in areas of piping with little or no disinfectant residual, and together with tuberculation can clog water lines to the point of insufficient water pressure.

The city has also experienced decades of a declining user base and water use associated with vacant homes, commercial businesses, and industrial property. Declining water use leads to excess residence time within the city's distribution pipes and water storage facilities, accelerating tuberculation, biofilm growth, and disinfectant residual degradation. While the city has recently seen an infusion of funding for blight removal, contractors completing this work have been improperly using fire hydrants, causing hydraulic disturbances that dislodged and suspended settled debris, which may have contributed to the bacterial contamination.

The winter of 2014 was also one of the coldest experienced by the water system. The city, which historically has unaccounted water losses of over 30 percent, has seen even greater losses since February 2014 due to an increase in cold weather-related water main breaks and leaks. The city lacks a formal maintenance program for its over 7,250 valves, which would normally be used to limit impacts during break repairs. Two valves on the transmission line used to supply the area of the BWAs were found to be closed during the city's investigation, causing longer residence time, reduced disinfectant residual, reduced flow, and reduced pressure. One of these valves has remained broken.

Governor's Office Briefing Paper
City of Flint Drinking Water
Page 2

The BWAs also occurred during the warmest and, for 2014, relatively wet periods of August and September. Warm weather conditions are not only more conducive to bacterial growth but also degrade the water's disinfectant residual carried out from the WTP more quickly. Longer residence times, biofilms, and tuberculation also contribute to disinfectant residual degradation. Warm wet weather conditions also allow water contaminated with bacteria to pool around piping with leaks and breaks.

Process for Issuance and Cancelation of a Boil Water Advisory

There are a number of conditions that can trigger BWAs. This includes the following:

- Bacteria Monitoring Detections
- Bacteria Standards Violations
- Treatment System Failures
- Waterborne Disease Outbreaks
- Loss of System Pressure
- Water Main Breaks
- Other Interruptions in Service

The Department of Environmental Quality (DEQ) has developed a policy and procedure regarding BWAs to help guide staff, provide consistency, and maintain public health. A PDF of Policy and Procedure No. ODWMA-399-022 is being forwarded with this briefing paper.

BWAs may be self-initiated by the water system, issued collaboratively in consultation with the DEQ, or when necessary mandated by the DEQ. Requesting customers to boil the water when bacterial contamination has occurred provides an added barrier of public health protection.

The BWAs that recently occurred in the city of Flint were associated with bacteria monitoring detections and violations of bacteria standards. These advisories were issued by the city of Flint collaboratively in consultation with the DEQ.

Current regulations regarding monitoring and standards for bacteria in water distribution systems were developed by the U.S. Environmental Protection Agency, have been in effect since 1990, and were incorporated into the Michigan Safe Drinking Water Act, 1976 PA 399, as amended. There are a variety of bacteria, parasites, and viruses that can potentially cause health problems if humans ingest them in drinking water. Testing water for each of these potential pathogens would be difficult and expensive. Instead, water systems test for total coliform and *E.coli*. Total coliform bacteria react to water treatment in a manner similar to many pathogens. Therefore, the presence of total coliform in drinking water indicates there may be a pathway for pathogens or other contaminants to enter the system. The absence of total coliforms in the distribution system minimizes the likelihood that pathogens are present. *E.coli* is itself a pathogen, and its detection would be direct evidence of a health risk.

Governor's Office Briefing Paper
City of Flint Drinking Water
Page 3

Once a BWA has been issued, time is needed to investigate potential causes and implement corrective measures. The larger the water system, the more time this may take. Once corrective measures have been taken, samples must be collected and analyzed to confirm that bacteria are no longer present. Using the most common analytical method, samples must be incubated for a period of 24 hours before results can be obtained. In situations where the bacterial contamination has been confirmed, two consecutive rounds of safe samples collected at least 24 hours apart are normally obtained before canceling a BWA. Adding each of these steps together, a normal response period to cancel a BWA under these circumstances would be expected to take at least 3 to 4 days.

Recent History of the City of Flint Water System

Historically, the city of Flint had been a customer of the Detroit Water and Sewerage Department (DWSD) while simultaneously maintaining the Flint WTP to provide emergency backup service using the Flint River. The WTP performed quarterly test operations to maintain readiness and was utilized twice in 2009, supplying water once for 2 days and the other for 3 days.

In April 2013 the city of Flint notified the DWSD that it would be terminating service in the future and contracting for raw water service from the Karegnondi Water Authority (KWA). Work on the KWA pipeline from Lake Huron broke ground in June 2013 and is expected to be completed with connection in late 2016.

In August 2013 Rowe Professional Services Company completed an engineering proposal for improvements to the Flint WTP that would allow continuous operation of the WTP utilizing the Flint River in lieu of continuing service from the DWSD until completion of the KWA pipeline. In March 2014 the city of Flint entered into a Consent Agreement with the DEQ regarding the Flint WTP's lime sludge facility. In April 2014 the DEQ issued a construction permit for improvements to the Flint WTP. On April 25, 2014, the city of Flint began continuous operation of the WTP, using water from the Flint River and discontinued the purchase of water from the DWSD.

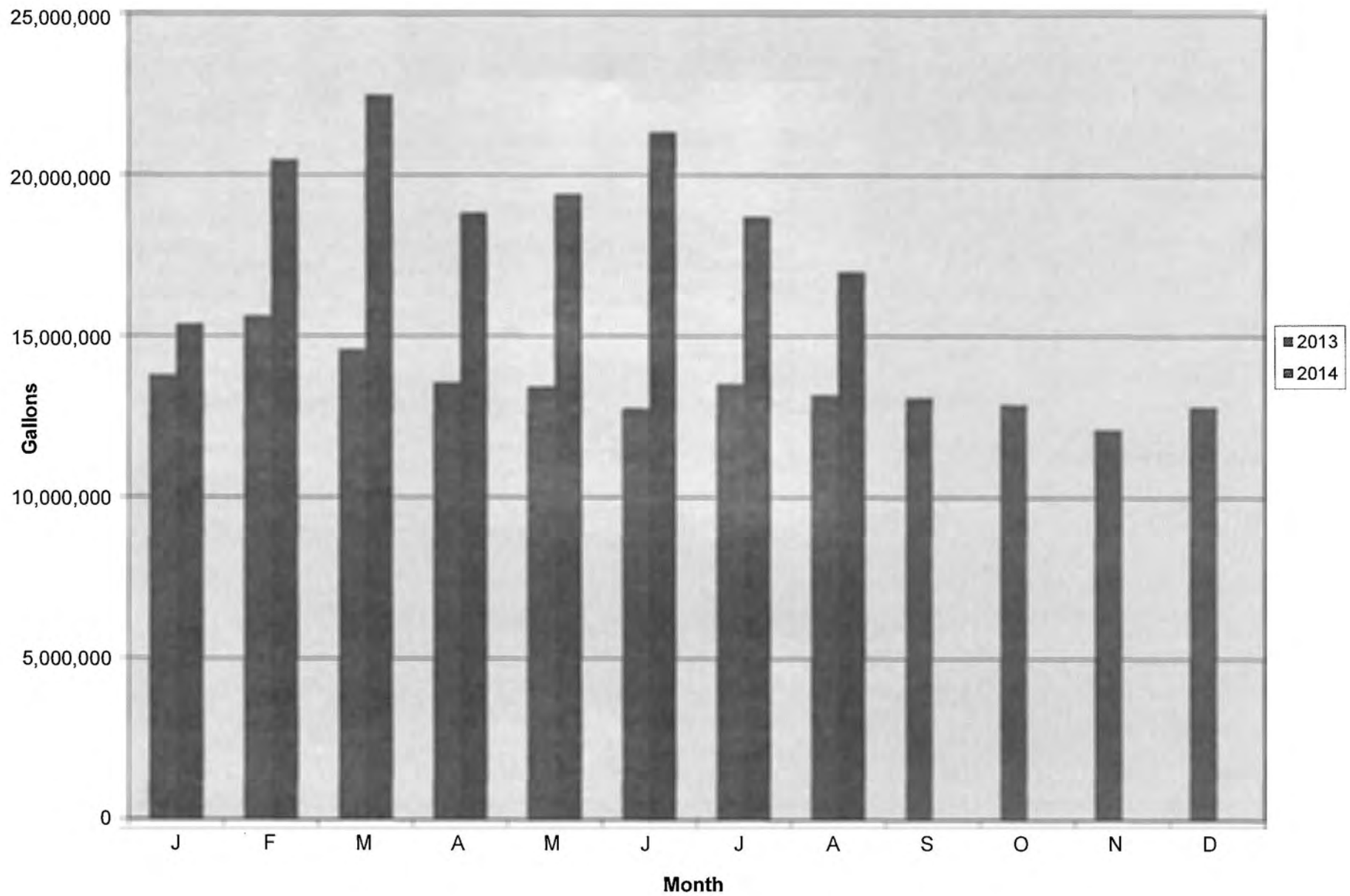
A BWA was issued for August 15-20, 2014, for a portion of the city of Flint due to localized detections of total coliform and *E.coli* bacteria. Another BWA was issued for September 5-9, 2014, due to localized detections of total coliform bacteria in the same and adjacent portions of the city of Flint. The advisory covered an area of approximately six square miles. The city of Flint has a total land area of just over 34 square miles.

Governor's Office Briefing Paper
City of Flint Drinking Water
Page 4

While many of the BWA contributing factors listed above require long-term solutions, the city has taken operational steps to limit the potential for a BWA to reoccur. The city has increased flushing of water mains to limit residence time, maintain disinfectant residual, and help remove buildup and deposits within the piping. The city is boosting chlorine disinfectant residual at locations in the distribution system as needed. The city continues to investigate water leaks and water main breaks and the status and condition of system valves.

Prepared by: Stephen Busch, P.E.
Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance
Department of Environmental Quality
October 1, 2014

City of Flint Monthly Averages



	OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE POLICY AND PROCEDURE		DEPARTMENT OF ENVIRONMENTAL QUALITY
Original Effective Date: October 12, 2007 Revised Date:	Subject: Guidelines for Issuing Boil Water Advisories to Address Potential Microbial Contamination of Community Water Supplies Division/Office and Program Names: ODWMA-Public Water System Supervision Program		Category: ☐ Internal/Administrative ☐ External/Noninterpretive ☒ External/Interpretive
Reformatted Date: January 24, 2013	Number: ODWMA-399-022	Page: 1 of 10	

A Department of Environmental Quality (DEQ) Policy and Procedure cannot establish regulatory requirements for parties outside of the DEQ. This document provides direction to DEQ staff regarding the implementation of rules and laws administered by the DEQ. It is merely explanatory; does not affect the rights of, or procedures and practices available to, the public; and does not have the force and effect of law.

INTRODUCTION, PURPOSE, OR ISSUE:

Community water systems are expected to provide customers with a continuous supply of water that meets both federal and state drinking water standards. However, there may be circumstances when the public must be notified that the water may not be safe. In these circumstances, a boil water advisory may be issued to prevent illness from known or suspected microbiological contamination. This policy is to provide guidance to Office of Drinking Water and Municipal Assistance (ODWMA) drinking water program staff on advising community water system personnel when to issue and rescind a boil water advisory, the appropriate content, and the manner and method of delivery.

AUTHORITY:

Administrative rule R 325.10401a promulgated under the Safe Drinking Water Act, 1976 PA 399, as amended (Act 399), being Michigan Compiled Law 325.1001 *et seq.*, requires public notification for violations of maximum contaminant levels and treatment techniques plus other situations as determined by the DEQ. Each public notice is required to state what actions consumers should take during a violation, which may include a statement recommending water customers boil all water used for consumption until further notice.

In addition, R 325.11207 allows the DEQ to require the supplier of water to provide notice to customers or users that include any precautionary measures deemed necessary when an interruption in water service occurs, which could include low, zero, or negative pressure events.

Furthermore, R 325.12303 requires a supplier of water to include in their contingency planning a description of precautions or measures to be taken to protect the health of those customers or users that may be affected by an emergency. R 325.12304 also requires a supplier of water to notify the DEQ when an emergency is discovered and how the supply will notify its customers or users. While the content of this notification to customers or users may vary depending upon individual circumstances, each notification to customers or users must state what actions or precautions they should take, which may include a statement to boil all water used for consumption until further notice.

**OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
POLICY AND PROCEDURE**

Number: ODWMA-399-022

Subject: Guidelines for Issuing Boil Water Advisories to
Address Potential Microbial Contamination of
Community Water Supplies

Page 2 of 10

STAKEHOLDER INVOLVEMENT:

DEQ staff met with Municipal Utilities Directors to seek input on issues that were subsequently addressed in this policy and procedure.

DEFINITIONS:

"Boil Water Advisory (BWA)" – A written or verbal advisory issued by the community water system or DEQ notifying the users of the water system that the water is or may be contaminated and advising them to boil the water prior to using it for drinking or cooking.

"Community Water Supply (CWS)" – A public water supply (PWS) that provides year-round service to not fewer than 15 living units, or that regularly provides year-round service to not fewer than 25 residents. Examples include municipalities, such as cities, villages, and townships; apartment complexes; manufactured housing communities; condominiums; and nursing homes.

"Complete Loss of Pressure" – Sustained negative pressures or pressure below five psi in any portion of a distribution system. It does not include instantaneous low or negative pressure occurring from pressure surges caused by pump cycling, valve operation, or other water hammer events.

"Maximum Contaminant Level (MCL)" – The maximum permissible level of a contaminant in water that is delivered to any user of a PWS.

"Repeat Sample" – A sample that is collected and analyzed in response to a previous coliform-positive sample.

"Routine Sample" – A water sample that is collected and analyzed to meet the monitoring requirements for total coliform, as outlined in the written sampling plan.

"Tier 1 Public Notice" – A public notice required to be provided as soon as practical but not later than 24 hours after the supplier learns of a violation or situation that has significant potential to have serious adverse effects on human health as a result of short-term exposure. A Tier 1 Public Notice also requires the supplier to initiate consultation with the DEQ as soon as practical but not later than 24 hours after the supplier learns of the violation or situation. Examples of these violations or situations include:

1. A violation of the Total Coliform MCL when fecal or *E.coli* are present in the distribution system;
2. A violation of the treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit;
3. An occurrence of a waterborne disease outbreak;
4. A failure or significant interruption in key water treatment processes;
5. A disruption of the water supply or distribution system; and

**OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
POLICY AND PROCEDURE**

Number: ODWMA-399-022

Subject: Guidelines for Issuing Boil Water Advisories to
Address Potential Microbial Contamination of
Community Water Supplies

Page 3 of 10

6. Other violations or situations as determined by the DEQ on a case-by-case basis. A violation or situation that requires a Tier 1 Public Notice also requires the supplier to consult with the DEQ to determine additional public notice requirements, including the timing, form, manner, frequency and content of the notice designed to reach all persons served, and any repeat notices or directions. At a minimum, one or more of the following forms of delivery must be used:
- a. Appropriate broadcast media;
 - b. Posting of the notice in conspicuous locations throughout the area served by the system;
 - c. Hand delivery of the notice to persons served by the system; or
 - d. Another delivery method approved by the DEQ.

Within 10 days of completing the Tier 1 Public Notice, the supplier shall submit to the DEQ a certification that it fully complied with the public notification requirements, including a representative copy of the type of notice distributed to persons served by the system and to the media.

"Tier 2 Public Notice" – A public notice required to be provided as soon as practical but not later than 30 days after the supplier learns of a violation or situation that has the potential to have serious adverse effects on human health. Examples of these violations or situations include:

1. All violations of MCL, maximum residual disinfectant level, and treatment technique requirements except where the DEQ determines a Tier 1 notice is required.
2. Violations of monitoring and testing procedure requirements, taking into account potential health impacts and persistence of the violation; and
3. Failure to comply with a variance or exemption.

For a Tier 2 Public Notice, the DEQ may, on a case-by-case basis, grant extensions in writing for up to three months from the date the supplier learns of the violation or situation, for reasons such as coordinating with billing cycles or if the violation or situation was quickly resolved and no longer poses any risk to the persons served. A Tier 2 Public Notice shall be repeated every three months as long as the violation or situation exists. A Tier 2 Public Notice and any repeat notices shall be in a form and issued in a manner that is reasonably calculated to reach persons served in the required time period. At a minimum, the notice shall be provided:

1. By mail or direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the supplier, and
2. By other methods reasonably calculated to reach other persons not receiving a bill, such as apartment dwellers, university students, nursing home patients and prison inmates. Other methods may include:
 - a. Publication in a local newspaper
 - b. Delivery of multiple copies to apartment complexes and manufactured housing communities
 - c. Posting in public places or on the Internet
 - d. Delivery to community organizations

OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
POLICY AND PROCEDURE

Number: ODWMA-399-022

Subject: Guidelines for Issuing Boil Water Advisories to
Address Potential Microbial Contamination of
Community Water Supplies

Page 4 of 10

"Treatment Technique (TT)" – Minimum treatment requirement or a necessary methodology or technology that is employed by a supplier of water for the control of the chemical, physical, biological, or radiological characteristics of a PWS.

POLICY:

A BWA may be issued for a variety of reasons when microbial contamination is known or suspected. Total Coliform Rule (TCR) MCL violations, surface water TT violations, low or loss of pressure events, and waterborne disease outbreaks are circumstances when a BWA may be issued. Each of these situations is discussed in detail below. However, these situations are not the only times a BWA can or should be issued. Each incident must be handled on a case-by-case basis, using professional judgment to evaluate the circumstances in each situation.

Finally, there may be situations when water systems experience contamination that is not microbial, but chemical due to a chemical spill or backflow due to a cross connection. In these cases, a notice to customers could include "Do Not Use" language since boiling the water may not remove the contamination.

Types of Incidents:

1. Violation of a Drinking Water Standard

a. TCR MCL Violations

An acute TCR MCL violation occurs when monitoring indicates the presence of coliform organisms in both a routine and a follow-up repeat sample in the same monitoring period, and either analysis (routine or repeat) is also positive for fecal or *E.coli*. Because this MCL violation confirms the presence of a more direct connection to contamination, these violations warrant issuance of a BWA, unless there are unique circumstances.

A non-acute TCR MCL violation occurs when monitoring indicates the presence of coliform bacteria in 2 or more samples in the same monitoring period for a supplier collecting less than 40 samples per month, or in more than 5 percent of the samples for a supplier collecting 40 or more samples per month, and the criteria for an acute violation did not occur, i.e., fecal coliform or *E.coli* were NOT detected present in either a routine or repeat sample. For example, a system that collects 5 samples per week for a total of 20 per month may have 1 sample report positive for total coliform or fecal/*E.coli* during the first week, but all repeat samples report negative for coliform. If another sample in a subsequent week also reports total or fecal/*E.coli* positive, but again, all repeat samples are coliform-negative, then a non-acute TCR MCL violation has occurred because 2 or more samples reported positive for coliform, but no fecal coliform or *E.coli* were detected in both a routine and a repeat sample.

OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
POLICY AND PROCEDURE

Number: ODWMA-399-022

Subject: Guidelines for Issuing Boil Water Advisories to
Address Potential Microbial Contamination of
Community Water Supplies

Page 5 of 10

When a non-acute violation occurs, staff should evaluate possible sources of contamination. If a source is identified that is considered likely to contribute disease causing organisms or result in water of questionable quality still being distributed, a BWA should be instituted. Examples of contaminant sources that would elevate the public health risk include, but are not limited to:

- flooding of the wells
- failure of the treatment system
- recent construction activity in the distribution system
- vermin (birds, rodents, etc.) activity in storage tanks
- system-wide or extensive pressure loss in the distribution system

Even if the source of contamination is not easily identified, a BWA may be appropriate for a non-acute TCR violation if the violation is widespread or ongoing. A BWA shall be instituted if monitoring indicates *E. coli* or fecal coliform contamination unless unusual circumstances warrant consideration, such as the absence of any coliform in repeat samples, or when staff are assured that the contamination has been eliminated before confirmation results are available.

However, not every TCR MCL violation must result in a BWA. There may be a few exceptions when there is a TCR MCL violation but a BWA is not needed. For example, a violation may be declared in situations where samples collected on different days from widely dispersed locations report coliform present even though repeat samples do not show positive results. In this case, the sampling results may constitute a MCL violation, but a BWA may not be necessary.

If a BWA is deemed necessary by the ODWMA, it should be issued as soon as possible but no later than 24 hours after the system learns of the violation. Because violation of an MCL results in required public notification (PN) per the PN Rule, the water supply may issue the PN and BWA simultaneously in one document (highly recommended) and must meet all the requirements of a Tier 1 PN and include BWA language.

After measures have been taken to eliminate the source(s) of contamination, such as initiating or increasing chlorine feed rates and system flushing, additional sampling must be conducted. Raw water bacteriological sampling is also encouraged to eliminate the raw water as the possible source of contamination. For MCL violations, the BWA can be rescinded after the analyses of two sets of samples collected 24 hours apart report the absence of coliform bacteria. The number of samples in each set should be a minimum of five samples, but can be decreased or increased based on system size or the extent of the affected area. Systems are encouraged to use routine sample sites if available and to use extra care if routine sites are not available.

**OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
POLICY AND PROCEDURE**

Subject: Guidelines for Issuing Boil Water Advisories to
Address Potential Microbial Contamination of
Community Water Supplies

Number: ODWMA-399-022

Page 6 of 10

b. Surface Water Treatment Rule (SWTR) TT Violations

SWTR TT violations include:

- exceedance of turbidity standards at filter confluence point
- failure to meet disinfection contact time requirements (C*T)
- failure to meet disinfection residual standards

Upon determination of an SWTR TT violation, ODWMA staff must determine if the violation poses a threat to public health. For example, if the turbidity levels at the filter confluence point were found to have exceeded 0.3 nephelometric turbidity units (NTUs) in 95 percent of the samples in a two-month period, an SWTR TT violation has occurred. Based upon a review of plant performance and consultation with program managers, staff may determine that no significant health risk was posed and no BWA is necessary. However, the water supply must still issue a Tier 2 PN within 30 days of the violation. On the other hand, a BWA is likely to be necessary for a treatment plant that gets overwhelmed by excessive runoff and reports a turbidity level in excess of 1.0 NTU at the filter confluence point for a four-hour period.

If the TT violation is ongoing or prolonged, or the ODWMA determines a significant public health risk is posed, ODWMA staff may elevate the PN to Tier 1 status, which must be issued within 24 hours and include BWA language. After appropriate measures have been taken to reduce or eliminate any health risk, additional monitoring must be conducted. Appropriate measures may include increasing coagulant dose, increasing chlorine residuals through the treatment plant, backwashing filters more often and flushing key system components. In this case, a BWA can be rescinded after analyses of two sets of samples collected 24 hours apart report the absence of coliform bacteria. The number of samples in each set should be a minimum of five samples, but can be decreased or increased based on type and severity of the TT violation.

Surface water plants utilizing conventional or direct filtration must add a primary coagulant under R 325.11008. Failure to add a primary coagulant is a violation of Act 399, and may also contribute to a TT violation under R 325.10611 (Filtration and Disinfection) which requires 3-log inactivation of giardia and 4-log inactivation of viruses. In these cases, ODWMA staff will have to determine if the violation poses a threat to public health and whether other actions are necessary, such as requiring a BWA. Factors to consider if a BWA is necessary would include chlorine residual concentrations throughout the treatment plant, raw water quality, C*T compliance, plus individual filter effluent and combined filter effluent turbidity levels.

2. Waterborne Disease Outbreaks

Waterborne disease outbreaks can be declared by the Centers for Disease Control and Prevention, the Department of Community Health, a local health department, or other public

**OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
POLICY AND PROCEDURE**

Number: ODWMA-399-022

Subject: Guidelines for Issuing Boil Water Advisories to
Address Potential Microbial Contamination of
Community Water Supplies

Page 7 of 10

health institutions. If an outbreak is declared, the ODWMA will work with the declaring agency to ensure affected community public water supplies take appropriate measures to mitigate public exposure. These measures will include appropriate public notification, including instructions to boil water if appropriate. The ODWMA will allow the water supply to rescind the notification when the agency declaring the outbreak indicates it is safe to do so as the result of additional monitoring.

3. Interruptions in Service

a. Negative or Complete Loss of Pressure

A complete loss of pressure or negative pressure in the distribution system must result in a BWA being issued to all water customers in the impacted area. After pressure is restored and the system recovers (tanks are filling and enough sources are operating to ensure pressures do not drop again), the affected area should be thoroughly flushed and coliform samples must be taken throughout the area to determine if the distribution system remains free of coliform contamination. The number of samples will vary depending on the size of the system and the extent of the area impacted. For very small systems that experience a power failure that results in a complete loss of pressure throughout the distribution system, a minimum of three samples should be collected. If applicable, chlorine residual measurements should be taken to ensure that an adequate disinfectant residual is present. If possible, chlorine dosages and residuals should be increased by 1 to 2 parts per million during this period as a corrective and preventive measure. If the first round of sampling does not detect coliform bacteria, the advisory may be rescinded. However, if the first round of sampling detects coliform bacteria, additional flushing should be conducted in the area where the positive coliform samples were collected and a second round of coliform samples collected from the area. The BWA should remain in effect until safe coliform sample results are obtained.

b. Low Pressure Events

Low pressure events might not result in a BWA. Low pressure is considered a drop in pressure below 20 psi but greater than 5 psi. A drop in water pressure in a distribution system could allow contamination to enter the water system through backflow by backpressure or backsiphonage. The decision to issue a BWA should be made on a case-by-case basis and be based upon professional judgment of all available data that may indicate the extent of the problem, such as:

- Geographical extent of the pressure loss
- Nature of the service area (residential vs. commercial/industrial)
- Duration of the low pressure condition
- Disinfection practices of the water system
- Relative elevation differences in the service area
- Status of the local cross connection control program

**OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
POLICY AND PROCEDURE**

Number: ODWMA-399-022

Subject: Guidelines for Issuing Boil Water Advisories to
Address Potential Microbial Contamination of
Community Water Supplies

Page 8 of 10

- Age and condition of the underground piping
- Amount of underground piping located in areas of a high groundwater table
- Ability and willingness of the operators to rapidly apply chlorine to the system or distribute an increased chlorine residual throughout the affected area

After normal pressure is restored, the impacted area should be thoroughly flushed and coliform samples taken throughout the area to determine if the distribution system is free of any bacteriological contamination. The collection of coliform samples after low pressure events is not absolutely required, but may be recommended based on the factors above.

c. Water Main Breaks or Repairs

A BWA may be issued during water main breaks and after the break has been repaired. Whether or not to issue a BWA will depend on the location and severity of the break and, more importantly, a decision based on sound engineering judgment that the integrity of the water system has been maintained. If at all possible, repairs should be performed under reduced or low pressure by closing the closest valves on each side of the break just enough to reduce the flow so the repairs can be made under pressure while the water flowing from the break is diverted away from the excavation to maintain clean sanitary conditions. If the water main can be repaired under pressure, and no nonpotable water, soil, or other potential contaminants entered the main during the break and repair process, then a BWA is not necessary. If the water main that was removed from service is flushed, disinfected, and sampled in accordance with AWWA Standard C651 before being placed back into service, a BWA does not need to be issued.

If a water main break results in a complete loss of pressure before, during, or after the repair is made, a BWA must be issued to all customers in the affected area. The BWA should remain in effect until the area is flushed, chlorine residuals are reestablished (if applicable), and sample results do not detect coliform bacteria.

Content and Delivery of a BWA

If the ODWMA determines a BWA is necessary, the water supply must issue the advisory as soon as practical, but not later than 24 hours after being advised to do so. The supply must make a good faith attempt to notify all customers in the affected area. Appropriate methods of distribution are situation specific, but may include radio or television broadcasts, hand delivery, and/or posting in conspicuous locations throughout the area. Delivery requirements as detailed in the PN Rule should be used to determine appropriate delivery methods.

Although there are content requirements for public notification under the PN Rule, there are no requirements specific to boil water language. To ensure all appropriate information is transmitted to the customers, a BWA should include the same content elements as required for

**OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
POLICY AND PROCEDURE**

Subject: Guidelines for Issuing Boil Water Advisories to
Address Potential Microbial Contamination of
Community Water Supplies

Number: ODWMA-399-022

Page 9 of 10

public notification under the PN Rule. If a BWA is issued as the result of an MCL violation and the water supply issues the BWA in conjunction with the required PN (highly recommended), the content **MUST** meet all PN Rule content, delivery, and reporting requirements.

The ODWMA boil water language is consistent with the U.S. Environmental Protection Agency policy that requires water be brought to a boil and allowed to boil for one minute before use. The language also suggests the use of bottled water as an alternative to boiling and describes the circumstances under which boiled or bottled water should be used.

Staff should notify the appropriate local health department and the Department of Agriculture and Rural Development, Food and Dairy Division, whenever a BWA is issued or rescinded. These agencies may receive calls from concerned customers or be involved in oversight of facilities impacted by the boil advisory and, therefore, need to be aware of the situation.

Several BWA templates have been created and are available to ODWMA staff on the DEQ Intranet. To ensure consistency and inclusion of all necessary content, these templates should be used as the basis for PNs and/or a BWA. Available templates include, but are not limited to:

- Advisory for a TCR MCL.
- Advisory for a low/no pressure event.
- Notification for cancellation of a BWA.

PROCEDURES:

WHO	DOES WHAT
Public Water Supply	Notify DEQ of results in a timely manner as required by law and follow through with appropriate actions.
District Staff	Respond to all TCR and TT violations plus complete loss of pressure events in a timely manner and determine whether a BWA needs to be issued. • If needed, assist supply in drafting BWA and determining most appropriate method of delivery with approval from the District Supervisor. • If needed, assist the supply in determining actions to remove the possible contamination including steps needed to rescind the BWA.
District Staff	Provide <u>on-site</u> technical assistance for acute TCR MCL violations and other boil water situations as appropriate.
District Supervisors	Assist District Staff in the all matters pertaining to issuing a BWA.

OFFICE OF DRINKING WATER AND MUNICIPAL ASSISTANCE
POLICY AND PROCEDURE

Subject: Guidelines for Issuing Boil Water Advisories to
Address Potential Microbial Contamination of
Community Water Supplies

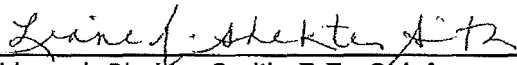
Number: ODWMA-399-022

Page 10 of 10

REFERENCES:

Safe Drinking Water Act, 1976 PA 399, as amended, being Michigan Compiled Law 325.1001 *et seq.*, and the administrative rules promulgated thereunder, being R 325.10101 *et seq.* of the Michigan Administrative Code.

OFFICE CHIEF APPROVAL:



Liane J. Shekter Smith, P.E., Chief
Office of Drinking Water and Municipal Assistance

1/18/2013

Date

DEPUTY DIRECTOR APPROVAL:



Jim Sygo, Deputy Director

1/24/2013

Date

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Tuesday, September 09, 2014 10:23 AM
To: Shekter Smith, Liane (DEQ)
Subject: FW: Citizen complaint call from man who lives in Flint, MI

FYI. My response to Jennifer is below.

Stephen Busch, P.E.
 Lansing and Jackson District Supervisor
 Office of Drinking Water and Municipal Assistance
 MDEQ
 517-643-2314

From: Busch, Stephen (DEQ)
Sent: Tuesday, September 09, 2014 10:19 AM
To: 'Crooks, Jennifer'; Prysby, Mike (DEQ)
Cc: Poy, Thomas; Benzie, Richard (DEQ)
Subject: RE: Citizen complaint call from man who lives in Flint, MI

Jennifer,

The City has found two transmission valves that were closed (36 inch and 24 inch) which transport water to that section of the system. This likely contributed to more stagnant water conditions and lower chlorine residuals in that area. The 36 inch valve has been opened but the 24 inch is inoperable and will need to be repaired or replaced.

Given these valve issues, I have inquired whether low pressure conditions less than 35 psi, would be present in this portion of the system? If low pressure conditions exist, a cross connection or siphon condition where leaks or breaks are present may be occurring. While longer transmission times may contribute to lower chlorine residual, the presence of coliform bacteria suggests contaminants have entered the system and their regrowth and resurgence could be assisted by the presence of a biofilm or tuberculation on the pipe walls.

They are continuing to investigate to identify and address any such issues.

All 6 samples collected Saturday came back ND on Sunday, but we had 1 of 6 sites come back TC positive yesterday (collected Sunday) and they collected the normal full distribution set (10+1 samples) Monday which we expect results early this afternoon. If all results are ND today the BWA could be lifted.

Stephen Busch, P.E.
 Lansing and Jackson District Supervisor
 Office of Drinking Water and Municipal Assistance
 MDEQ
 517-643-2314

From: Crooks, Jennifer [<mailto:crooks.jennifer@epa.gov>]
Sent: Tuesday, September 09, 2014 10:00 AM
To: Prysby, Mike (DEQ); Busch, Stephen (DEQ)
Cc: Poy, Thomas; Benzie, Richard (DEQ)
Subject: Citizen complaint call from man who lives in Flint, MI

Hi, Steve and Mike. We heard about the boil water advisory for Flint for 9/3 last week. Tom Poy also had several calls from Lathan Jefferson yesterday, re-iterating his past calls/claims that the Flint water is unfit to drink.

Any update as to the source of positive bacti? I heard no E.coli, which is good.

Thank you for your time

From: Murphy, Thomas

Sent: Monday, September 08, 2014 1:48 PM

To: Poy, Thomas

Cc: Shoven, Heather; Crooks, Jennifer

Subject: Citizen complaint call from man who lives in Flint, MI

I checked Flint's website and found the attached 9/3/2014 Boil Water Notice (affected area expanded on 9/5/2014) for an apparent monthly total coliform bacteria MCL violation.

Shekter Smith, Liane (DEQ)

From: Prysby, Mike (DEQ)
Sent: Monday, September 08, 2014 10:00 AM
To: Wurfel, Brad (DEQ); Feuerstein, Heather (DEQ); Shekter Smith, Liane (DEQ); Willard, Veronica (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ)
Cc: Philip, Kris (DEQ)
Subject: City of Flint BWA Media Inquiry

Mr. Ron Fonger from the Flint Journal called me this morning concerning the BWA issued for the western portion of the Flint water distribution system. I confirmed Ron's statement that the advisory was issued on Friday Sept 5th for a localized area and was expanded on Sat Sept 6th after samples from an additional routine sampling location tested positive for total coliform bacteria. I confirmed with Ron that none of the samples detected fecal coliform. Ron asked if there was a cause to the most recent contamination. I responded that the city has not identified a specific cause; however, (as I discussed with Ron in the August 20th inquiry - first BWA episode in Flint), potential causes including mainbreaks, unprotected cross connections, unauthorized connections, loss of pressure, etc. will need to be investigated by the city. Low chlorine residuals in this area may also be a contributing factor and could be the result of localized stagnation. The city will need to review distribution system operation, determine whether stagnation is occurring, and modify operation as needed to alleviate this problem. Next, Ron asked if the problem was attributed to the Flint WTP treating water from the Flint River. I informed Ron that treated water from the WTP continues to meet the drinking water standard for total and fecal coliform bacteria and that there have been no detects for these contaminants leaving the WTP. Ron also acknowledged that there has been significant water loss from the water system and asked if that could be a potential cause. I explained to Ron that the loss of water of the magnitude that Flint has been experiencing points to large mainbreaks. Some of these breaks have been repaired; however, the work involved in repairing a broken watermain may or may not introduce contamination into the water system. Critical factors include the extent of the area that may have been taken out of service to complete the repair, how well the trench area is kept clean and de-watered, chlorination at the site, and flushing after the repair. Repair records needs to be reviewed to determine if any major repairs were recently completed in or near the affected area.

Ron's last question pertained to the number of BWAs issued on a state-wide basis. I did not have that information available to Ron; however, upon further discussion with Steve, I will provide Ron with a history of total coliform MCL violations (state-wide basis) as soon as I have the information available.

We do

Michael Prysby, P.E.
 District Engineer

Office of Drinking Water and Municipal Assistance
517 290-8817

Shekter Smith, Liane (DEQ)

From: Howes, Sarah (DEQ)
Sent: Thursday, March 05, 2015 5:12 PM
To: Busch, Stephen (DEQ); Wurfel, Brad (DEQ); Datema, Maggie (DEQ)
Cc: Prysby, Mike (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Rosenthal, Adam (DEQ)
Subject: RE: Flint Drinking Water TTHM Standard Violation - 1st quarter 2015

I sent it to Reps Neeley and Phelps and Senator Ananich.

From: Busch, Stephen (DEQ)
Sent: Thursday, March 05, 2015 1:59 PM
To: Howes, Sarah (DEQ); Wurfel, Brad (DEQ); Datema, Maggie (DEQ)
Cc: Prysby, Mike (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Rosenthal, Adam (DEQ)
Subject: Flint Drinking Water TTHM Standard Violation - 1st quarter 2015
Importance: High

Attached is a copy of the Violation Notice and Public Notice Template being mailed to the City of Flint by the DEQ Office of Drinking Water and Municipal Assistance regarding an exceedance of the Maximum Contaminant Level (MCL) standard for Total Trihalomethanes at certain locations within the City's drinking water distribution system.

This violation notice is in response to updated monitoring completed in February 2015, which shows the locational running annual average for two of the City's eight compliance sampling locations continue to exceed MCL standard of 0.080 mg/L. It is however, important to note that all individual compliance sample results collected in February were well below the 0.080 mg/L levels.

You are being provided an electronic copy of this notice as exceedance of this drinking water standard is expected to generate inquiries from water system customers, news media, and the general public.

Sarah Howes will be informing members of the Michigan legislature.

If you have any questions or would like any additional information, you may contact Michael Prysby, District Engineer, DEQ-ODWMA at 517-290-8817, or you may contact me at the number below.

Stephen Busch, P.E.
 Lansing and Jackson District Supervisor
 Office of Drinking Water and Municipal Assistance
 MDEQ
 517-643-2314

Shekter Smith, Liane (DEQ)

From: Prysby, Mike (DEQ)
Sent: Wednesday, January 07, 2015 11:02 AM
To: Datema, Maggie (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Shekter Smith, Liane (DEQ); Willard, Veronica (DEQ); Busch, Stephen (DEQ); Wurfel, Brad (DEQ)
Cc: Howes, Sarah (DEQ); Benzie, Richard (DEQ)
Subject: Meeting w Legislator
Attachments: TTHM Rep. Neeley Interview Jan 6, 2015.doc

Richard Benzie, Sarah Howes, and I met with State Representatives Sheldon Neeley, 34th District and Phil Phelps, 48th District to discuss the TTHM violation in the city of Flint late yesterday afternoon . Attached is a summary of our discussion.

Michael Prysby, P.E.
District Engineer
Office of Drinking Water and Municipal Assistance
517 290-8817

**Meeting with Rep. Neeley and Rep. Phelps
Flint TTHMs
January 6, 2015**

Richard Benzie, Sarah Howes, and I met with State Representatives Sheldon Neeley, 34th District and Phil Phelps 49th District to discuss the TTHM violation in Flint's drinking water. Several follow-up questions were asked during and after our discussion. Information provided to Mr. Neeley and Mr. Phelps was in a format similar to that provided in the NBC-25 News interview. We focused on:

What does the TTHM violation mean for Flint residents?

The violation does not pose an immediate public health threat since the health-effects requires long-term exposure to TTHMs (over a significant portion of an individual's lifespan).

TTHMs commonly occur in public water systems that disinfect with chlorine due to the reaction between chlorine and naturally occurring organic compounds (total organic carbon) in the source water.

Reason(s) for the violation:

The Flint River source is more difficult to treat since it requires more disinfection to maintain bacteriological integrity; however, this leads to more TTHM formation.

Flint did not immediately change their mode of distribution system operation after switching sources to account for higher TTHM formation potential of treated water from Flint's WTP. Historically, their mode of operation created areas of stagnation in the distribution system which then contributed to the higher levels of TTHMs.

Ongoing Efforts:

The city is working in collaboration with the DEQ towards identifying improvements in treatment to remove TTHM precursors and optimize distribution system operation. The city has already taken action on some of these measures including: complete softening to reduce chlorine dosage and increased turnover of water in the distribution system storage reservoirs to

reduce stagnation. The city is also correcting valving deficiencies to further reduce stagnation.

The city has received scrutiny on the perceived delay to inform residents of the high TTHM levels; however, we stressed that the city has met the state and federal requirements for public notification of this particular contaminant. We explained the rationale for determining compliance with the TTHM standard and how this correlates to the public notification requirements. We also informed Mr. Neeley and Mr. Phelps, that TTHM compliance is determined on a RAA (based on 4 quarters); thus, the city will likely remain in violation even with one or two subsequent quarters producing results that are below the MCL.

We also suggested, in addition to meeting our public notification requirements, it may be helpful for the city to explain to their residents how compliance with TTHMs is determined and, more importantly, keep them informed (snapshot in time) of each quarter's results (regardless of compliance status).

Result of On-going Efforts

Efforts taken by the city resulted in a significant reduction of TTHMs in the November 2014 quarter. Seasonal fluctuation of organic loading in the Flint River watershed (less loading in the winter months) also contributed to lower TTHMs.

Questions that were asked:

Can the State become involved with additional TTHM monitoring (third party monitoring)? How would the cost be covered?

The city may elect to conduct additional TTHM monitoring; however, this would be at the city's expense. DEQ staff, depending on availability, may be able to assist in the monitoring. Additional monitoring could be eligible as part of future compliance calculations; however, the monitoring protocol must be approved by the DEQ.

Are the operators at the Flint WTP properly certified?

Yes. The city has an F-1 operator, Mike Glasgow who oversees treatment

operation and is the designated OIC. There are also several F-2 operators including Brent Wright (WTP Supt.). The city has also hired additional operators for full-time plant operation. Many of these operators acquired their F-4 certification last fall.

Shekter Smith, Liane (DEQ)

From: Prysby, Mike (DEQ)
Sent: Monday, January 26, 2015 4:17 PM
To: Shekter Smith, Liane (DEQ); Wurfel, Brad (DEQ)
Cc: Busch, Stephen (DEQ); Benzie, Richard (DEQ)
Subject: RE: Wrong phone number.

I completed the phone interview with Gino Vicci (WNEM CH 5). Main topics covered included the safety of the drinking water for Flint residents and what the TTHM violation means, DEQ's role in working with the city, how TTHMs form and its standard, condition of the distribution system and how it is affecting the overall WQ, and the direction the city is taking to resolve the TTHM contamination.

Michael Prysby, P.E.
 District Engineer
 Office of Drinking Water and Municipal Assistance
 517 290-8817

-----Original Message-----

From: Shekter Smith, Liane (DEQ)
 Sent: Monday, January 26, 2015 1:01 PM
 To: Wurfel, Brad (DEQ)
 Cc: Busch, Stephen (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ)
 Subject: FW: Wrong phone number.
 Importance: High

Brad - did you have a chance to respond to Steve/Mike on this?

Are you available for an interview?

-----Original Message-----

From: Busch, Stephen (DEQ)
 Sent: Monday, January 26, 2015 10:38 AM
 To: Shekter Smith, Liane (DEQ); Wurfel, Brad (DEQ); Prysby, Mike (DEQ)
 Cc: Benzie, Richard (DEQ)
 Subject: RE: Wrong phone number.
 Importance: High

Mike called Mr. Wyatt.

WNEM 5 (CBS) would like to come to Lansing today to do a camera interview about the situation in Flint. Mike and I are not prepared to do this today and have other obligations. Please let me know how you would like to proceed.

We could do an interview on another day.

Stephen Busch, P.E.

Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance MDEQ
517-643-2314

-----Original Message-----

From: Shekter Smith, Liane (DEQ)
Sent: Monday, January 26, 2015 10:18 AM
To: Wurfel, Brad (DEQ); Prysby, Mike (DEQ); Busch, Stephen (DEQ)
Subject: RE: Wrong phone number.

Who is Jim Wyatt? Should I know this?

-----Original Message-----

From: Wurfel, Brad (DEQ)
Sent: Monday, January 26, 2015 10:16 AM
To: Prysby, Mike (DEQ); Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ)
Subject: Wrong phone number.

989-758-2044

Sent from my iPhone

Shekter Smith, Liane (DEQ)

From: Prysby, Mike (DEQ)
Sent: Monday, January 05, 2015 4:47 PM
To: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ); Wurfel, Brad (DEQ); Feuerstein, Heather (DEQ); Willard, Veronica (DEQ)
Subject: Media Inquiry - City of Flint
Attachments: TTHM Media Inquirey Jan 5, 2015.doc

Ron Fonger from the Flint Journal contacted me today with questions pertaining to the Flint TTHM violation notice. Attached is a summary of the inquiry.

I will also provide a write-up tomorrow morning concerning the phone interview with NBC 25...

Michael Prysby, P.E.
District Engineer
Office of Drinking Water and Municipal Assistance
517 290-8817

**TTHM Media Inquiry
January 5, 2015**

I received a media inquiry from Ron Fonger of the Flint Journal concerning the TTHM MCL violation in the city of Flint. Ron was provided with a copy of our December 16, 2014 Violation Notice letter to the city of Flint concerning the TTHM violation. Ron was also provided with a draft press release on Jan 4th concerning measures being taken by the city to address the TTHM violation. Below is a summary of the questions asked by Ron and my response.

- How common are TTHMS in Michigan and are there other systems in violation?**

TTHMs are found in systems that disinfect with CL2 due to the reaction between CL2 and naturally occurring organic compounds (total organic carbon - TOC) in the raw water. There is one other system (customer supply of Saginaw) that has exceeded the TTHM standard. Since this is outside of my district, I do not know the details of the violation.

- How widespread are the high TTHM levels in Flint?**

TTHM is monitored at 8 locations throughout the city. Compliance is based on a Locational Running Annual Average (LRAA) meaning that any one location will put the city out of compliance with the TTHM standard if that location fails to meet the standard based on the running annual average (RAA) of 4 quarters of monitoring. The LRAA was exceeded in just 3 quarters at two of the eight locations due to high TTHM concentrations at these locations(May and August quarters).

- What level of concern should city residents have?**

TTHMs are a health concern associated with long-term (chronic) exposure as opposed to other contaminants such as pathogenic organisms (fecal coliform, giardia, crypto, etc.) which are short-term concerns...ie...immediate impact to public health. The potential health effects provided in the notice are possible with

long term exposure over a significant portion of the person's lifespan. Consumption of drinking water with TTHMs at this concentration does not pose an immediate threat to public health.

- The most recent test results (November) appear much better; what do residents need to know for the future?

The decline in TTHMS is two-fold. First, the decline is the result of the city taking pro-active measures in collaboration with the DEQ to address the TTHM concentrations that includes: optimizing current treatment, shortening residence time in water storage reservoirs, optimizing ozone treatment, and improving operation of the distribution system (flushing, repairing valves, and opening valves to eliminate areas of stagnation).

Next, seasonal variation also contributed to the reduction in TTHM levels as the TOC loading from the Flint River watershed diminishes during the winter months. T

The city is also pursuing additional treatment options (enhanced coagulation) to help remove TOC and filter cleaning to reduce CL2 demand. Hydraulic modeling of the distribution system will also be performed to further optimize operation of the system reservoirs and pumping stations aimed at reducing stagnation. These efforts combined with steps already taken are expected to dampen higher TTHM levels during the 2015 summer months.

- There has been some criticism regarding the timing of the notice...ie...why weren't residents notified during earlier when high TTHM results were being obtained?

The city was not in the position to provide a notice since the results obtained last summer did not place the city into a violation status. Also, since TTHMs pose a health concern with term-term exposureand in anticipation of exceeding the standard by the end of 2014, the city elected to pursue a proactive approach towards reducing TTHMs (treatment & distribution operation). The city also worked with the DEQ in this effort along with preparation and distribution of the mandatory public notice within 30 days of the start of the violation (December 1, 2014). I

also explained how the LRAA is calculated and why the first two quarters did not constitute a violation.

- What triggers the TTHM violation?**

As mentioned above, if exceedance of the LRAA (based on 4 quarters of results) occurs at ANY of the eight sampling locations the city is in violation. The LRAA can also be exceeded in less than four quarters (based on a 4-quarter calculation) if the concentration is high enough.

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Thursday, March 27, 2014 12:09 PM
To: Wurfel, Brad (DEQ); Feuerstein, Heather (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Willard, Veronica (DEQ)
Cc: Prysby, Mike (DEQ)
Subject: RE: Media Contact FW: questions about Flint River

I just had a follow up phone conversation with Mr. Adams, Flint Journal/Mlive.

He had been informed by the City that they had provided all construction information to the Department for review.

I reiterated to Mr. Adams that we have received preliminary engineering plans and specifications regarding this proposed project that we have provided the City comment on, but that we have not received the construction permit application form, which lays out the scope of the project, some of the entities involved, and other considerations related to the construction site.

Mr. Adams again asked for clarification regarding the review process.

I indicated that while a permit application of this complexity would normally require 30-45 days for a complete response, since the City has approached us with these preliminary designs allowing us to address most issues prior to their application, it will likely reduce our response time, and that we have a meeting scheduled with the City on Monday that will in part address some of these remaining design issues. However, staff would still need to review the plans and specifications submitted with a permit application to ensure they are complete and this will take some time prior to issuing the permit.

Mr. Adams asked about inspection of the project, and I indicated that the applicant identifies who will provide inspection of construction work, usually an engineering consultant, or City staff engineer. Mr. Adams asked whether the DEQ does any inspection. I informed him that for this type of project we will do an inspection prior to startup to ensure that the City will be able to comply with the operating requirements of the Safe Drinking Water Act.

Mr. Adams asked about the City proceeding prior to a permit, and I explained that if the City hired a contractor prior for the proposed work prior to obtaining a permit, any revisions to the project for permitting would need to be addressed as part of the contract signed with the construction company.

I will let you know if there is any additional follow up from Mr. Adams, but he did not appear to have any additional questions.

Stephen Busch, P.E.
 Lansing and Jackson District Supervisor
 Office of Drinking Water and Municipal Assistance
 MDEQ
 517-643-2314

From: Busch, Stephen (DEQ)
Sent: Tuesday, March 25, 2014 2:16 PM
To: Wurfel, Brad (DEQ); Feuerstein, Heather (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Willard, Veronica (DEQ)
Cc: prysbym@michigan.gov
Subject: Media Contact FW: questions about Flint River

I received the email below from Mr. Dominic Adams with Mlive and the Flint Journal.

I called Mr. Adams back and we discussed the following:

Process for switching from DWSD to Flint River

Water provided by DWSD is treated. The City's of Flint's existing WTP was designed for emergency use of the Flint River in the event of a failure in the DWSD system. So the WTP is already capable of the switchover, they would just close the line from DWSD and start pumps from the intake. The DEQ would need to be notified prior to the switchover in source water as there are regulatory requirements under the Safe Drinking Water Act. Failure to meet regulatory requirements would result in violations, and both the City and DEQ, would prefer to prevent that from occurring if possible.

(He asked about fines and I provided a link to the administrative fines information on our website)

Is time needed for the Detroit line

Other water systems utilize the pipeline from Detroit and will continue to do so without interruption.

Why is the City upgrading the WTP and what is being done

The City WTP is designed for short term emergency operation, these improvements would give them the ability to better operate the plant on a continuous basis. You should be able to obtain the full project scope from the City, but it includes additional chemical storage, modification to the disinfection system, electrical modifications, and pump modifications.

How is the DEQ involved in the project

The City is required to obtain construction permits from the DEQ Office of Drinking Water and Municipal Assistance prior to making modifications to its water system. The City has provided preliminary design information regarding the WTP improvements which we have commented on, but we have not received a formal permit application at this time.

(FYI they already held a groundbreaking which was reported)

http://www.mlive.com/news/flint/index.ssf/2014/03/flint_residents_should_be_drin.html

How long will a permit take?

For a permit of this complexity, we are normally able to respond to an applicant 30-45 days after receiving a permit application.

Does the DEQ have to inspect the system.

The DEQ conducts routine inspection visits of public water systems, we conduct at least 4 inspection visits with the City of Flint (its treatment and distribution systems) each year and a full inspection of the system is required once every 3 years. The last full inspection report was completed in 2013. When the City operates its water treatment plant, they need to conduct daily monitoring and report those results to the DEQ. So we are constantly reviewing their treatment operations.

The City has set a date of April 17 to switchover, is that achievable?

I believe this is a tentative date based on a one year deadline set when the contract between Flint and DWSD was terminated. You would need to contact the City regarding their timeline for completing construction work upon obtaining a permit.

I indicated it would be good to contact the City about what residents should expect regarding water service when the change is made.

I tried to get a better idea from Mr. Adams about his article. He indicated he didn't feel the City was fully disclosing everything that is involved in completing this changeover.

PS, Mr. Adams claimed to have my info wrong or dialed a wrong number, my voicemail is not full and has been working fine. I provided him with my current info.

Stephen Busch, P.E.
Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance
MDEQ
517-643-2314

From: Adams, Dominic [<mailto:DADAMS5@mlive.com>]
Sent: Tuesday, March 25, 2014 12:20 PM
To: Busch, Stephen (DEQ)
Subject: questions about Flint River

Steve:

My name is Dominic Adams and I am a reporter with The Flint Journal. We spoke in July about the city using the Flint River as a primary drinking water source until the Karegnondi Water Authority is complete. Here is a link to that story: http://www.mlive.com/news/flint/index.ssf/2013/07/flint_to_spend_171000_for_engi.html

The city says it is going to start using the Flint River and cut off from Detroit by April 17. I'd like to speak to you about the technical aspect about what that means. I tried leaving you a voicemail, but it says your voicemail is full.

Please give me a call at 810-241-8803 as soon as possible so we can discuss this.

If you are not the person I need to speak to about this, please give the name and contact information for the person I should talk to.

Thanks a lot and have a great day.

Dominic Adams | metro reporter | [The Flint Journal](#) | 810-241-8803 | dadams5@mlive.com |
[On Twitter](#) | [On Facebook](#) |

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Tuesday, March 25, 2014 2:16 PM
To: Wurfel, Brad (DEQ); Feuerstein, Heather (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Willard, Veronica (DEQ)
Cc: Prysby, Mike (DEQ)
Subject: Media Contact FW: questions about Flint River

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I called Mr. Adams back and we discussed the following:

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(He asked about fines and I provided a link to the administrative fines information on our website)

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Other water systems utilize the pipeline from Detroit and will continue to do so without interruption.

Why is the City upgrading the WTP and what is being done

The City WTP is designed for short term emergency operation, these improvements would give them the ability to better operate the plant on a continuous basis. You should be able to obtain the full project scope from the City, but it includes additional chemical storage, modification to the disinfection system, electrical modifications, and pump modifications.

How is the DEQ involved in the project

The City is required to obtain construction permits from the DEQ Office of Drinking Water and Municipal Assistance prior to making modifications to its water system. The City has provided preliminary design information regarding the WTP improvements which we have commented on, but we have not received a formal permit application at this time.

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When the City operates its water treatment plant, they need to conduct daily monitoring and report those results to the DEQ. So we are constantly reviewing their treatment operations.

The City has set a date of April 17 to switchover, is that achievable?

I believe this is a tentative date based on a one year deadline set when the contract between Flint and DWSD was terminated. You would need to contact the City regarding their timeline for completing construction work upon obtaining a permit.

I indicated it would be good to contact the City about what residents should expect regarding water service when the change is made.

I tried to get a better idea from Mr. Adams about his article. He indicated he didn't feel the City was fully disclosing everything that is involved in completing this changeover.

PS, Mr. Adams claimed to have my info wrong or dialed a wrong number, my voicemail is not full and has been working fine. I provided him with my current info.

Stephen Busch, P.E.
Lansing and Jackson District Supervisor
Office of Drinking Water and Municipal Assistance
MDEQ
517-643-2314

From: Adams, Dominic [mailto:DADAMS5@mlive.com]
Sent: Tuesday, March 25, 2014 12:20 PM
To: Busch, Stephen (DEQ)
Subject: questions about Flint River

Steve:

My name is Dominic Adams and I am a reporter with The Flint Journal. We spoke in July about the city using the Flint River as a primary drinking water source until the Karegnondi Water Authority is complete. Here is a link to that story: http://www.mlive.com/news/flint/index.ssf/2013/07/flint_to_spend_171000_for_engi.html

The city says it is going to start using the Flint River and cut off from Detroit by April 17. I'd like to speak to you about the technical aspect about what that means. I tried leaving you a voicemail, but it says your voicemail is full.

Please give me a call at 810-241-8803 as soon as possible so we can discuss this.

If you are not the person I need to speak to about this, please give the name and contact information for the person I should talk to.

Thanks a lot and have a great day.

Dominic Adams | metro reporter | [The Flint Journal](#) | 810-241-8803 | dadams5@mlive.com |
[On Twitter](#) | [On Facebook](#) |

Shekter Smith, Liane (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Friday, June 12, 2015 1:55 PM
To: 'DEQ-ODWMA-All'
Subject: Notes for the week ending June 12th

All –

Hope you're enjoying the beginning of summer. It's starting to be warm enough to call it summer.

Last week the Web ReDesign for the Water tab/category was launched. In the past, many DEQ web pages were difficult to maneuver and not very intuitive to use. We hope that this effort fixes some of those problems. While not perfect, staff tried to anticipate the many ways that people might be searching for information. You'll see that there are now multiple paths to get to the same endpoint. If you have suggestions for further improvements, we'd love to hear them. This continues to be a work in progress.

Monday, I attended the Director's visit at the Jackson district office (JDO). This was the first of the Director's new format for district visits and it went really well. Mitch Adelman, along with the JDO supervisors, invited a diverse group of stakeholders to meet with the Director and share their thoughts, issues and concerns as part of a roundtable discussion. All had favorable things to say about the department and the staff that they work with. Revolving Loan staff were mentioned several times as being particularly helpful! After lunch, I had the opportunity to meet with our Jackson office staff one-on-one. I appreciated the chance to hear directly from each one.

Tuesday, the DEQ's Office of the Great Lakes released a draft water strategy built around a 30-year vision for ensuring Michigan's water resources support healthy ecosystems, residents, communities and economies. The draft Strategy was developed in collaboration with a steering committee consisting of the Departments of Environmental Quality and Natural Resources, Michigan Department of Agriculture and Rural Development, and Michigan Economic Development Corporation. ODWMA participated in development of the draft strategy. You'll see discussion regarding drinking water, source water protection, on-site wastewater systems, and infrastructure in general. I encourage everyone to read the document. The water strategy is not directed solely to the state, but will require participation from a wide array of individuals and organizations including business, industry, academia, private philanthropy, environment and conservation organizations, tribal and local governments, the legislature and others to be successfully implemented. Everyone will have a role as this moves forward. A brown bag lunch is planned for July 10th.

Meetings with the Office of Auditor General continued this week. The auditors met with staff in the contamination investigation program and the on-site wastewater program as part of their preliminary information gathering.

We participated in a semi-annual call with U.S. EPA Region 5's public water supply program this week. Conversation focused on commitments and disinvestments for the upcoming fiscal year. Most of the discussion focused on lead and copper sampling, notification, and reporting particularly as it relates to the Noncommunity water supply program. In some cases, we were able to reach agreement regarding changes; in some we agree to disagree for now. Steve Busch and Mike Prysby were on hand to provide an update on the city of Flint. Lansing District Office sent out a violation notice this week to Flint for a continued violation of the LRAA (locational running annual average) for TTHM (total trihalomethanes). The good news is that all of the eight samples this quarter were below the 80 ppb standard. Unfortunately, one location continues to exceed the LRAA for TTHM because of high results last August. Staff continue to work with the city to resolve the problem.

We had an interesting campground program issue this week. At the request of one of our county health departments, we recently sent correspondence to an unlicensed campground that has been recalcitrant for more than 15 years. They hold a large event each year over the labor day weekend, but have done so without either a permanent or a temporary

campground license. Unfortunately, the campground does not have an approved water supply. ODWMA staff met with the campground owners, along with the Director and the legislator that they contacted. It appears that they now understand that they need to provide an approved water source and be properly licensed for the event. Success!

Have a good weekend.

Liane

Shekter Smith, Liane (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Tuesday, January 13, 2015 10:18 AM
To: Thelen, Mary Beth (DEQ); Barr, Carrie (DEQ)
Cc: Willard, Veronica (DEQ)
Subject: RE: SMT Draft paragraphs for Highlights

ODWMA has recently spent a significant amount of time responding to inquiries about a violation of the drinking water standard for disinfection byproducts (total trihalomethane, TTHM) in the city of Flint. Lansing District Office staff (Mike Prysby, Adam Rosenthal, and Steve Busch) have been working with city management, responding to citizen inquiries, as well as answering media and legislative inquiries. It should be noted that operational changes made by the city before they exceeded the maximum contaminant level (MCL) but after elevated quarterly results were available last summer have reduced the TTHM levels significantly in the latest round of monitoring. Because of the way this standard is calculated, however, it is anticipated that will take multiple rounds of monitoring to return the running annual average to compliance.

From: Thelen, Mary Beth (DEQ)
Sent: Monday, January 12, 2015 12:09 PM
To: DEQ-EXE-MGMT-TEAM; DEQ-District-Coordiators
Cc: DEQ-EXE-MGMT-TEAM-Secretaries
Subject: SMT Draft paragraphs for Highlights

Please prepare your SMT paragraphs and send to Carrie Barr and me by Tuesday, January 13, 4:00. Thank you.

Mary Beth

Mary Beth Thelen
 Management Assistant to Director Dan Wyant
 Department of Environmental Quality
 Constitution Hall, 6th Floor South
 Phone: 517-284-6712 or 284-6700 (new numbers)
 Fax: 517-241-7401
Thelenm2@michigan.gov

Shekter Smith, Liane (DEQ)

From: Marquardt, Steve <marquardt.steve@epa.gov>
Sent: Wednesday, April 08, 2015 3:07 PM
To: Shekter Smith, Liane (DEQ)
Subject: FW: FYI - new Flint forgiveness article from an hour ago.

Steve Marquardt
USEPA Region 5
77 West Jackson Blvd
Chicago, Illinois 60604
(312)353-3214

From: Marquardt, Steve
Sent: Wednesday, April 08, 2015 1:55 PM
To: 'Butler, Sonya (DEQ)'
Subject: FW: FYI - new Flint forgiveness article from an hour ago.

Steve Marquardt
USEPA Region 5
77 West Jackson Blvd
Chicago, Illinois 60604
(312)353-3214



Rep. Kildee asks EPA about clearing Flint's \$22-million water loans

Ron Fonger | rfonger1@mlive.com By **Ron Fonger | rfonger1@mlive.com** The Flint Journal

on April 08, 2015 at 2:01 PM

Dan Kildee

FLINT, MI -- U.S. Rep. Dan Kildee says the state may have the authority to forgive Flint's \$22 million in remaining water loans, potentially freeing up that money for "immediate water infrastructure improvements."

"We don't know if the state would grant relief, (but) we don't want to be in a position where they think they don't have the authority," Kildee said today, April 8.

The congressman asked U.S. Environmental Protection Agency Administrator Gina McCarthy for clarification on whether the debt can be forgiven, citing two provisions in federal law that could allow Gov. Rick Snyder to take action because of Flint's status as a disadvantaged community.

Kildee said he made the request in a March 26 letter to the EPA.

MLive-The Flint Journal could not immediately reach an agency representative for comment.

Dave Murray, a spokesman for Snyder, said in an email that Snyder "doesn't believe it is appropriate to answer hypothetical questions."

Murray said last month that the state Treasury Department "doesn't have the legal authority to forgive loans, and this has been shared with Flint city leaders."

His email today said the loans are a mix of federal and state dollars and said treasury officials do "not believe there is any pathway in federal law that would allow for loan forgiveness."

"Gov. Snyder and the state continue to offer assistance to city leaders in their efforts to address long-standing water infrastructure issues in Flint," the statement says.

Kildee said he believes it's more than likely that Snyder has the authority to act, based in part on a legal opinion from the Congressional Research Service.

Kildee's request comes less than a month after Flint Mayor Dayne Walling renewed his request to Snyder to forgive the water loans because of the city's continuing financial emergency.

Snyder declared Flint was in a financial emergency in 2011 after a review team issued a report, and since then the city has been run by a succession of four state-appointed emergency managers.

Emergency manager Jerry Ambrose authorized the restructuring of Flint's four outstanding Drinking Water Revolving Fund bonds on March 19, postponing current principal payments and freeing up \$2.2 million to help fix water safety and quality in the city.

Murray said the state allowed that action so that the loan repayments can be used for expenses tied to "maintaining safety and improving the quality of Flint water."

The city's water bonds are currently financed at a rate of 2.5 percent, and delaying the principal payment will increase the cost of the borrowing by approximately 2 percent -- or \$228,000 -- over the 20-year life of the issues, the city has said.

The city has been struggling with the quality of its drinking water since it started using the Flint River as a water source in April 2014.

Flint was found to be in violation of the federal Safe Drinking Water Act because the annual average level of total trihalomethanes (TTHM) at two testing locations in the city since April 2014 was too high.

TTHM is a byproduct of chlorinating water and warnings issued by the city say the contaminant in high levels could increase the risk of cancer if consumed over many years.

The most recent tests have shown that each of eight sampling locations in the city had acceptable levels of TTHM, but residents and City Council members have continued to complain about water quality issues like discoloration and odor.

City officials have said the water meets safety standards for drinking, and that those quality issues are tied to Flint's aging water infrastructure, which includes distribution pipes that are breaking at a rate of nearly one per day and which are too large for the current population.

Kildee said Flint is among older cities in Michigan that are struggling with population loss and maintaining infrastructure that was built decades ago when more people lived here to support it.

"It makes it harder for the city to dig itself out of a hole (now)," Kildee said. "I think it does create a unique circumstance for cities like Flint ... trying to go from the old to the new economy."

Many of the water problems here have come to light since the city began using the Flint River as its water source one year ago.

Although the city and Genesee County are currently building a new water pipeline to Lake Huron, it's not expected to be completed until some point in 2016.

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Shekter Smith, Liane (DEQ)

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Monday, June 08, 2015 11:19 AM
To: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Philip, Kris (DEQ); Cook, Pat (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); DeBruyn, Dana (DEQ); Monosmith, Carrie (DEQ); Dettweiler, Dan (DEQ)
Cc: Poy, Thomas; Bair, Rita; Damato, Nicholas; Shoven, Heather; Murphy, Thomas; Porter, Andrea; Deltoral, Miguel; Kuefler, Janet; McElhinney, Cary; Noureldin, Mostafa
Subject: Agenda for MI Semi-Annual Call on Wed 6/10 at 10am EST; 9am CST
Importance: High

Good morning! Below is the Agenda I came up with for our semi-annual call this Wed morning. Please let me know if you would like to add additional items for us to discuss. Please note that I have invited Steve Busch, Mike Prysby and Pat Cook to discuss item no. 3 regarding Flint.

Jennifer

Agenda Topics for Michigan Semi-Annual Call on Wednesday June 10, 9am CST

Call-in no: 877-226-9607

Code: 1896350612

1. Changes in Lead Disinvestments and Commitments for FY 2016 ARDP—for discussion: Due to our extreme focus on lead in drinking water, this is the consensus here.
 - a. Consumer notification of tap results at NTNCWSs:
 (Suggested wording) The NCWS program commits to full implementation of the lead consumer notification of tap results requirement, to begin in CY 2016. Region 5 will assist in a notification outreach effort in late FY 2015 to remaining 698 NTNCWSs that are not schools/daycares, to begin providing lead consumer notice in CY 2016. NCWS program commits to include information on providing lead consumer notice in the annual monitoring letter sent to all NTNCWSs for CY 2016.
 - b. Collection of Lead samples at NTNCWSs during June – September 2016 timeframe
 (Suggested wording) NCWS program commits to including information in the applicable NTNCWS annual monitoring letters of the requirement to collect their annual/triennial lead sample between June and September only, during CY 2016. The MDEQ currently does not have the capability to track lead sampling compliance within this specific timeframe.
 - c. Follow-up Actions for NTNCWSs that sample outside of June-September 2015 timeframe
 (From 5/5/15 call notes w/EPA) MDEQ commits to providing Region 5 with all CY 2015 lead (and copper?) sample data for all NTNCWSs by March 2016 so that EPA can analyze how many PWSs monitored outside the June through October timeframe. EPA commits to follow-up with MDEQ to discuss follow-up actions.
 - d. Submittal of the lead and copper reporting form
 (Suggested wording) MDEQ commits to requiring CWSs and NTNCWSs to submit the lead and copper reporting form via the annual monitoring letters to each system, tracking CWSs and NTNCWSs submittal of the lead and copper reporting form, and commits to issuing violations for failure to submit the lead and copper reporting form. The reporting form provides the address of the sample site, designates sampling site selection criteria, and explanation(s) for any changes in sampling sites.
2. Enforcement Update with Heather
NTNCWSs under Bottled Water agreements due to Arsenic MCL violations:

Per discussions with Region 5 and the February 2014 EPA/OECA memo, MDEQ has closed the old Arsenic open-ended MCL violations; however, no further quarterly monitoring is being conducted at the (± 27) systems that are still under bottled water agreements. Thus, no more arsenic MCL violations will be reported for these systems and these systems will not become priority systems (ETT score of 11 or more) since only one arsenic MCL violation will be reported (5 points) even though they have a longstanding issue with arsenic noncompliance. The Region would like to discuss the pros and cons of placing these PWSs with arsenic MCL violations on quarterly monitoring as required under 40 CFR Section 141.23(c)(7); and brainstorm possible solutions.

3. Status of Flint

a. TTHM levels for May—Due to MDEQ district engineer June 10

b. Lead in Flint

Our discussions with MDEQ indicate that no phosphates/corrosion control has been added to the system since April 2014 when the source of drinking water changed to the Flint River. We understand that the City is just finishing up its second set of 6-month initial monitoring for lead; where the results will probably warrant a Corrosion Control Study to be conducted. Since Flint has lead service lines, we understand some citizen-requested lead sampling is exceeding the Action Level, and the source of drinking water will be changing again in 2016, so to start a Corrosion Control Study now doesn't make sense. The idea to ask Flint to simply add phosphate may be premature; there are many other issues and factors that must be taken into account which would require a comprehensive look at the water quality and the system before any treatment recommendations can/should be made. Miguel is recommending MDEQ and EPA? approach Flint about formally requesting EPA's Office of Research and Development in Cincinnati support on the lead in Flint drinking water issue, and request that Mike Schock, ORD, and possibly Darren Lytle, ORD, to participate in Flint's drinking water advisory committee so that a comprehensive evaluation on how to proceed can be discussed.

4. Update on WaterTrack to SDWIS-State: The migration of WaterTrack data to SDWIS-State was number 39 on the Dept of Technology Management and Budget's (DTMB) project list last year; this year it is number 30. It doesn't appear this project has a high priority. Does the State have any new information on the progress of this project?

5. Consequences of cutting the State drinking water program to a "minimal program"

Jennifer had a discussion with Richard Benzie regarding the possibility of the Michigan State Legislature looking to have just a minimal drinking water program, meaning only a program with activities that are required by the Federal SDWA. Jennifer ultimately discussed this internally with Tom Poy. The minimal program suggested would cut out Operator Certification, Capacity Development, Plan Review, Cross Connection Control, Source Water Protection, among other programs that are State required. Operator Certification and Capacity Development, while not required by the Federal regulations, do have financial strings attached. And Plan review/construction permits are required by the SRF program for a loan. Any recent communication with the State Legislature that they might proceed and make this possibility a reality?

6. EPA's Resource Message at the LHD Workshop in April

From the 2014 analysis of Shared Goals 2013 data, which is compliance data, for noncommunity systems, there are increasing trends of nitrate M/R violations for both NTNCWSs and TNCWSs. We discussed this on the last semi-annual call. Analysis of the 2015 Shared Goals 2014 data (April 2015) shows an improvement—that of decreasing numbers of bacti/nitrate M/R violations.

However, in light of the upcoming implementation of RTRC in 2016, the question raised here in the Region is: Does the State have a plan with the LHDs as to what activities must be prioritized, and what will fall off the plate? Not all LHDs will need to disinvest based upon each LHD's resources, but some poorly funded LHDs may have to disinvest in some activities/drop activities that have no risk to public health.

Jennifer

Shekter Smith, Liane (DEQ)

From: Hyde, Tinka <hyde.tinka@epa.gov>
Sent: Tuesday, July 21, 2015 9:07 AM
To: Shekter Smith, Liane (DEQ)
Cc: Poy, Thomas; Bair, Rita; Damato, Nicholas
Subject: AGENDA for Today's Call on Flint
Attachments: Agenda for MDEQ Call on Flint 7-21-15.docx

Hi Liane – In preparation for our call today we've prepared an agenda (attached) with some background and discussion points. Please let me know if you have other items you wish to discuss. Thanks

Tinka G. Hyde
Water Division Director
USEPA W-15J
77 W. Jackson Blvd
Chicago, IL 60604

Office: 312-886-9296
Cell: 312-735-9428

Briefing Paper for Call with MDEQ on July 21, 2015

MDEQ Implementation of LCR Rule and Flint Issues

Issue #1: Is there a public health concern regarding lead in Flint or other regulatory requirements?

- Under State policy ODWMA-399-027, the wholesale system is responsible for corrosion control treatment. Detroit, as the wholesale system, was providing this for Flint. When Flint changed to no longer be a consecutive system, and instead using the Flint River as its water source, it did not begin its own corrosion control program and is not currently practicing corrosion control treatment at the Water Treatment Plant.
- Prior to the change from being a consecutive public water system to the Detroit Water and Sewerage Department (DWSD) system and associated switch in source water, the City of Flint was conducting LCR sampling every three years. Due to the switch in water sources, the Michigan Department of Environmental Management (MDEQ) required the City of Flint to increase the number of monitoring sites from 50 to 100 sites for two consecutive rounds of monitoring (July through December 2014 and January through June 2015).
- The first round of samples after switch-over from DWSD (July 1, 2014 – Dec 31, 2014) had 90th percentiles of 6 ppb for Lead and 110 ppb for Copper.
- As of June 30, 2015, we believe MDEQ received all 100 sample results from the second round of monitoring and is incorporating citizen-requested sample results that meet the Tier 1 criteria.
- HQ confirmed, per the Water Supply Guidance #174 that citizen-requested sample results should be included in the 90th percentile calculations.
- We believe that the results of the two rounds of sampling will support an exceedance of 5 ug/l. This will result in the need for a corrosion control study, but not public education.
- Flint plans to switch to another source in 2016 making the corrosion control study timing complicated.
- Compliance with other regulatory requirements: Appears to be doing fine with Stage 2 DBP rule and re-characterizing the distribution system based on the new source of water, but not sure about LT2 compliance for first round monitoring for cryptosporidium. We'd want to ask if Flint had existing data on Crypto for the Flint River (they would be allowed to grandfather data for the 1st round of sampling). If not, they'd need to start sampling as soon as possible to get 1st round crypto results). If they did have old data, they'd still be expected to start a 2nd round of Crypto monitoring already (April 2015 – since Flint's population is still above 100,000).

Discussion Items:

- **Discuss most recent 2 rounds of 6-months monitoring results and 90th percentile calculations and inclusion of the citizen-requested samples.**
- **Based on results, what are the next steps?**
- **Set the stage for why we are concerned about lead levels – since Flint is not feeding phosphate and the lead, phosphate, and cadmium are tracking, the phosphate is likely coming off the pipes.**
- **Is there anything we should do now to reduce the exposure risk to lead?**
- **Discuss possibly accelerating a corrosion control study for Flint. However, this should be done with a comprehensive look at all rule requirements and treatment needs. EPA/ORD expert are available to assist.**
- **How is Flint doing with meeting all the other regulatory requirements? Are they meeting LT2 requirements for crypto monitoring?**

Criteria for large systems (serving >50,000 persons) to install/maintain corrosion control treatment:	Action Level (AL) Exceedance: If exceed Pb AL of 0.015 mg/L expressed as 90 th percentile level based on samples at tap:
If 90 th percentile tap lead value minus source water lead value greater than or equal to 0.005 mg/L	• Corrosion control treatment steps • Source water treatment steps • Public education • Lead service line replacement (if continue to exceed Pb AL after installing treatment)

Issue #2: Discuss optimal corrosion control requirements

- The federal regulations governing lead and copper in drinking water, which all States are required to adopt, require all large public water systems (those serving greater than 50,000 persons (Flint's population is 99,002 (2014)) to install and maintain optimal corrosion control. The federal citation (requirement) requiring optimal corrosion control treatment can be found at Title 40 Code of Federal Regulations (CFR), Subpart I, Section 141.80, paragraph (d), as follows:
 - "(d) Corrosion control treatment requirements.
 - (1) All water systems shall install and operate optimal corrosion control treatment as defined in 141.2.
 - (2) Any water system that complies with the applicable corrosion control treatment requirements specified by the State under 141.81 and 141.82 shall be deemed in compliance with the treatment requirement contained in paragraph (d)(1) of this section."
- Paragraph (1) above requires systems to have installed treatment unless they have low lead levels (defined in other parts of the rule), but based on the Flint's current 90th percentile lead level, they would not meet that criteria and must have optimal corrosion control in place. Title 40 CFR Section 141.2 defines optimal corrosion control treatment as follows:
 - "Optimal corrosion control treatment, for the purpose of subpart I of this part only, means the corrosion control treatment that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any national primary drinking water regulations."
- HQ memorandum of January 10, 1992 titled, "Consecutive Systems Regulated under the National Primary Drinking Water Regulations for Lead and Copper" reinforces the position that "optimal corrosion control treatment is properly installed and maintained". Further, the LCR Short-term Revisions (2007) Preamble (starting on page 57788) states, "State notification and approval of long-term treatment changes is important because these changes could adversely impact optimal corrosion control. As EPA noted in the proposed rule, this approach allows the State to evaluate the change prior to implementation and, if needed, to design a monitoring program to ensure that optimal corrosion control is maintained after the change..... EPA will provide guidance to help systems identify source water changes (such as changing the mixture) that could impact optimal corrosion control."
- MDEQ's Policy also describes under 5.c. Change in Treatment or Addition of a New Source that "Field staff may require the water supply to conduct additional monitoring or take other actions to ensure that CCT (corrosion control treatment) remains optimized".

Discussion Items:

- MDEQ made decision that Flint would be treated as a "new system" rather than an existing system changing their source of water. Discuss EPA (Region & HQ) interpretation of regulations that systems need to "maintain" corrosion control.
- Are there any other communities that may leave the Detroit system for other sources like Lake Huron that would be viewed as new systems or should be doing something about now to collect needed information to maintain corrosion control?

Issue #3: Discuss Pre-flushing (as time allows)

- Lead compliance sampling procedures in the state of Michigan comply with Federal SDWA requirements which calls for a minimum of 6 hours during which there is no water used from the tap the sample is taken from. While pre-flushing may fall within a strict legal interpretation of the regulations, we believe that it goes against the intent of the monitoring protocol, since it changes the normal water use of the homeowner in the sample.
- Michigan is the only Region 5 State that requires pre-flushing.
- Attachment 1 provides a brief description of pre-flushing.

Pre-flushing

The issue of pre-flushing came up regarding compliance sampling protocol used in Washington DC and was addressed by Cynthia Dougherty/OGWDW(see below/attached docs) in a letter to a resident in DC. It was not addressed in the Grumbles memo as the pre-flushing was discovered after the Grumbles memo had been written. To date, it has not been addressed on a national basis but it is one of the issues being discussed as part of the LCR Long-term revisions.

"The purpose of the monitoring protocol is to determine if corrosion control is effective in reducing lead and copper leaching at times and locations where we would expect levels to be greatest under normal conitions. Therefore, we believe that homeowners collecting samples should use their water as they would normally, with the exception that the regulations require the water to stagnate for a minimum of six hours prior to collection of the sample."

"We do not understand why DC WASA believes it should be necessary to request flushing only in households participating in the sampling. While this may fall within a strict legal interpretation of the regulations, we believe that it goes against the intent of the monitoring protocol, since it changes the normal water use of the homeowner in the sample. We will discuss this matter with their water quality manager to determine if there is a rationale that we should consider as we evaluate this issue. We also want to make sure that you are aware that we are considering additional actions we can take to further reduce lead and copper in drinking water and will be holding a stakeholder meeting on October 14-15 to initiate the effort."

Shekter Smith, Liane (DEQ)

From: Poy, Thomas <poy.thomas@epa.gov>
Sent: Monday, September 28, 2015 9:55 AM
To: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ)
Subject: FW: ACTION: MDEQ request for technical assistance

Liane/Richard: Dan Wyant and Susan Hedman spoke yesterday and Dan asked that ORD be put in contact with MDEQ. Mike Schock and Darren Lytle are already on the Technical Advisory Committee along with Mike Pryzby. But it looks like they want the technical experts to talk. Should it just be Mike, Darren and Mike? Or should Steve Busch and others be included too? I will provide Mike and Darren with contact info and ask that they talk prior to the TAC meeting on Oct 7th.

Tom

Tom Poy
 Chief, Ground Water and Drinking Water Branch USEPA - Region 5
 (312) 886-5991

-----Original Message-----

From: Hyde, Tinka
Sent: Monday, September 28, 2015 8:37 AM
To: Poy, Thomas
Subject: ACTION: MDEQ request for technical assistance

Tom - Please arrange with ORD experts to work directly with MDEQ and provide Tim & I a status update by 3:00 pm today. Thanks

-----Original Message-----

From: Hedman, Susan
Sent: Sunday, September 27, 2015 3:29 PM
To: Hyde, Tinka; Henry, Timothy
Cc: Williams, Felicia
Subject: MDEQ request for technical assistance

I had a conversation with Dan Wyant today about the situation in Flint. We talked about the need for expedited implementation of corrosion control and making sure that appropriate testing protocols are used. He asked that EPA provide technical assistance to MDEQ to do this. Would you please arrange for the ORD people on the Flint Technical Advisory Committee to reach out to provide direct assistance to MDEQ, as well?

Also -- please work with Felicia to find a time at the end of the day tomorrow to check in on Flint.

Thanks.

Sent from my iPhone

Shekter Smith, Liane (DEQ)

From: Thelen, Mary Beth (DEQ)
Sent: Friday, October 16, 2015 5:40 PM
To: Krisztian, George (DEQ); Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)
Cc: Shaler, Karen (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: FW: EPA Establishes Safe Drinking Water Task Force to Provide Expertise to MDEQ and City of Flint

FYI.

From: Josh Singer [<mailto:noreply-subscriptions@epa.gov>]
Sent: Friday, October 16, 2015 12:18 PM
To: Olszewski, Rosemarie (DEQ)
Subject: EPA Establishes Safe Drinking Water Task Force to Provide Expertise to MDEQ and City of Flint

Contact Information: Anne Rowan, rowan.anne@epa.gov 312-353-9391

For Immediate Release No. 15-OPA160

EPA Establishes Safe Drinking Water Task Force to Provide Technical Expertise to MDEQ and City of Flint

Task Force providing technical assistance on reconnecting the Flint drinking water system to a new source

CHICAGO (October 16, 2015) - Today U.S. Environmental Protection Agency Region 5 Administrator Susan Hedman established the Flint Safe Drinking Water Task Force to provide the Agency's technical expertise through regular conversations with designated officials from Michigan Department of Environmental Quality (MDEQ) and the City of Flint. The Task Force will be led by the Region 5 Deputy Regional Administrator and will assist with developing and implementing a plan to secure water quality, including measures to optimize corrosion control. Task Force members will be available to consult with MDEQ and the City of Flint on site in Flint. The Task Force will also coordinate as necessary with federal, state and local public health agencies to assist with protection of public health.

Specifically, the Task Force will provide technical assistance to the MDEQ and the City of Flint to reconnect the Flint system to a new source of drinking water (to be supplied by the Great Lakes Water Authority) and to optimize corrosion control for the Flint system, starting in October 2015. The Task Force will also provide technical assistance to the MDEQ and the City of Flint, as needed, in advance of and following connection of the Flint water system to a new source of drinking water (to be supplied by the Karegnondi Water Authority) and to optimize corrosion control for the Flint system, starting in 2016.

"EPA is committed to working with our state and local partners to ensure a safe and reliable drinking water supply for the residents of Flint, Michigan," Hedman said. "The formation of this task force continues our commitment to providing technical assistance to the City of Flint and the State of Michigan."

The Task Force will be comprised of scientists and technical experts from the EPA Region 5 office in Chicago, the National Risk Management Research Lab in Cincinnati and the EPA drinking water program. In addition, EPA will ask the Governor to designate a MDEQ official and the Mayor of Flint to designate a city official, to serve as points of contact for the Task Force.

If you would rather not receive future communications from Environmental Protection Agency, let us know by clicking [here](#).
Environmental Protection Agency, 77 West Jackson Boulevard, Chicago, IL 60604-3507 United States

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Wednesday, September 30, 2015 9:12 AM
To: Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Sygo, Jim (DEQ)
Cc: Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Tommasulo, Karen (DEQ); Feuerstein, Heather (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ)
Subject: Draft Briefing to Governor
Attachments: Flint Briefing - Draft 9-30-2015.dotx.docx
Importance: High

Attached is the draft briefing memo for the Governor. We did our best to keep it to one page, but let us know if you have other content needs.

Stephen Busch, P.E.
MDEQ Lansing District Coordinator
Office of Drinking Water and Municipal Assistance
Lansing and Jackson District Supervisor
517-643-2314
buschs@michigan.gov

Meeting/ Policy Briefing Template

Policy or Meeting Topic

City of Flint and Lead Concerns in Customer Tap Water

Staff Lead**Purpose of Meeting/ Policy Paper****Decision Points****Recommendation****Key Stakeholders Positions**

EO:

Dept:

Legislature:

Outside Interest:

Current Press/ Communications**Executive Summary****Background/ Attachments**

Lead can pose health risks to anyone, but there are heightened risks for pregnant women, infants, and children. Lead in drinking water is regulated under the Safe Drinking Water Act. As there is no safe level of exposure to lead, EPA has established a non-enforceable goal of zero for lead concentrations in drinking water. For most contaminants, EPA sets an enforceable regulation, a maximum contaminant level (MCL), based on this goal. However for lead, EPA instead established a treatment technique rather than an MCL because the source of lead contamination in drinking water is most often a result from corrosion of plumbing materials belonging to water system customers and not under the ownership or control of the public water system.

This is also the case in the City of Flint. Water from the City of Flint Water Treatment Plant using the Flint River has been analyzed and shown to contain no detectable level of lead. However, in a 2011 EPA survey, the City of Flint reported that approximately 18,000 out of 33,000 total active service connections used lead service line materials. As more than half of the City's 550 miles of water mains are more than 75 years old, the use of lead material in service connections was common at that time. The City owns a small portion of each service connection from the public water main to a curb stop valve at the edge of the Right-of-Way. The remaining portion is owned by, and the responsibility of each individual water customer.

Therefore, the treatment technique regulation for lead, the Lead and Copper rule (LCR), requires water systems to control the corrosivity of their water. The regulation also requires systems to collect tap samples from sites served by the system that are more likely to have plumbing materials containing lead. If more than 10% of tap water samples exceed the lead action level (AL) of 15 parts per billion (ppb), then water systems are required to take additional actions which can include:

- Taking further steps to optimize their corrosion control treatment (for water systems serving 50,000 people that have not fully optimized their corrosion control).

Meeting/ Policy Briefing Template

- Educating the public about lead in drinking water and actions consumers can take to reduce their exposure to lead.
- Replacing the portions of lead service lines under the water system's control if ongoing lead AL exceedance occurs following implementation of optimized corrosion control treatment (OCCT).

The City of Flint has conducted lead monitoring at customer taps since 1992 and has never exceeded the 15 ppb lead AL, either as a customer of the Detroit Water and Sewerage Department (DWSD), or while operating the Flint Water Treatment Plant (WTP) using the Flint River. Following this May 2014 change from DWSD to the Flint WTP using the Flint River, the City conducted two six month periods of expanded lead monitoring at customer taps to demonstrate their lime softening treatment process optimized corrosion control. This sampling concluded on June 30, 2015. While both periods continued to comply with the lead AL, lead levels did not demonstrate OCCT, and the City must now install additional treatment to meet this optimization requirement.

Under LCR requirements, the City could take up to 4 years to study, recommend, install, and implement treatment. However, the City has committed to an accelerated schedule in order to implement treatment as soon as possible. The Flint WTP is expected to start using a new water source, Lake Huron from the Karegnondi Water Authority, in late 2016. When this occurs the Flint WTP will continue to provide OCCT, and again conduct two six month periods of expanded monitoring in compliance with LCR requirements.

OCCT will help minimize, but cannot eliminate lead exposure from customer tap water. Removal of lead materials is the only means to eliminate such exposure. However, replacement is a shared responsibility between the City and its customers, as research has shown that partial lead service line replacement can increase rather than decrease lead exposure. At an estimated average cost of \$4,000 to replace each service line, the total cost to complete such work could easily exceed \$60 million and would likely take many years to complete. At this time any effort by the City of Flint to replace lead service lines would be voluntary since the City continues to comply with the LCR lead AL.

In addition, it is widely recognized that drinking water is not a primary source of lead exposure and poisoning. Recent health studies show no direct correlation between water sampling results and blood lead level concentrations measured in children.

EPA promulgated the LCR in 1991 and revised the regulation in 2000 and 2007. A long term revision to the LCR is currently underway. A national workgroup in August provided a report with recommendations for revisions to the LCR. It is worth noting that this report's recommendations did not include changes to existing LCR sample collection protocols, despite concerns by some organizations that these protocols do not capture representative exposure levels. EPA must now consider whether to promulgate any of these recommended changes into law.

Shekter Smith, Liane (DEQ)

From: Benzie, Richard (DEQ)
Sent: Tuesday, September 29, 2015 3:20 PM
To: Dykema, Linda D. (DCH)
Cc: Busch, Stephen (DEQ); Philip, Kris (DEQ); Cook, Pat (DEQ); Shekter, Jean (DEQ); Shekter Smith, Liane (DEQ)
Subject: Lead Sampling Issues
Attachments: Preamble and Guidance on Excessive Stagnation.pdf; Lansing BWL briefing on invalidation for excessive stagnation.pdf

Linda,

Steve Busch asked me to provide you with any information that explains how and why the ODWMA arrived at our recommendations for sampling for lead at consumer taps as required by the Lead, Copper, Corrosion Control regulations (LCR).

Attached to this message are a couple of documents that were prepared over a decade ago that discuss excessive stagnation and sample invalidation under the LCR. They were prepared in response to questions from the Washington Post and other news media about invalidation of some samples collected in the Lansing Board of Water Light service area.

The first document is an internal memo that identifies language in the federal preamble to and in EPA guidance for the LCR that discuss the need to collect samples from homes that have experienced ***"typical residential water use during the day before the compliance sample is collected."***

The second document is a report prepared to explain why we "invalidated" samples for excessive stagnation in Lansing. It was in the aftermath of this event when EPA eliminated the ability of state programs to invalidate sample results based on excessive stagnation that led the Michigan Public Water Supply Program to develop a recommendation that communities advise residents participating in their compliance monitoring to flush the designated sampling tap 6 to 8 hours before sample collection (the night before in most cases) to ensure that this tap was not experiencing excessive periods of stagnation. We did not want subsequent regulatory requirements to be imposed based on water quality information that did not accurately reflect the regulatory intent. This briefing report also discusses the fact that the regulatory monitoring scheme was not intended to represent human intake, but was based upon sampling a statistically significant number of residences containing leaded plumbing materials ***as a measure of successful water treatment efficacy.***

If you have any questions, please contact me.

Richard

Richard Benzie, P.E., Chief
 Field Operations Section
 Office of Drinking Water and Municipal Assistance, MDEQ
 517-284-6512

From: Jean Shekter
To: Kpm1177@aol.com; Kristen Philip; Pat Cook; Richard Benzie
Date: 10/6/2004 10:13:00 AM
Subject: Re: Maximum residence time

Summary

The EPA does not give specific guidance on standing times, but mentions it in the preamble of the 1991 rule and in their 1991 guidance manual. The **PREAMBLE** discusses a proposed 8-18 hour standing time and the controversy surrounding the 8 hours. The EPA settled on 6 hours, but did not discuss the upper limit further.

The **GUIDANCE MANUAL** states that water use during the previous day should be typical of daily use when occupied. It also mentions 12 hours as excessively long in a parenthetical statement. Details below.

Details

Preamble: The preamble of the original lead and copper rule (56 FR 26460 dated June 7, 1991) states, "The 1988 proposal would have required systems to collect ...sample at a consumer's tap that has been standing in the interior plumbing for 8 to 18 hours and was collected without prior flushing" (page 26518, column 3, under 2. Sample Collection). However, "numerous commenters were critical of the 8 to 18 hour standing time requirement" (page 26520, column 1 under ii. Standing Time). The EPA responded with reducing the minimum standing time to 6 hours, but no longer addressed the maximum standing time. Later in the preamble, under the public notification and system reporting and recordkeeping requirements section, the EPA notes that the final rule settled on requiring systems to certify that the first draw sample stood motionless for least 6 hours with no further mention of the 18 hours (page 26531, column 1, under a. Tap Monitoring.)

Guidance Manual: The EPA mentions excessive standing times in their guidance manual. "First Draw Tap Samples: Samples can be collected any time as long as the water has stood undisturbed in the pipes for at least 6 hours. Water use during the day before sample collection should have been typical of its daily use when occupied. PWSs should request home owners to indicate when water had last been used in the house prior to sampling and the time that the sample was collected. Estimating the stagnation period may assist PWSs in data interpretation, especially when excessively long stagnation periods are encountered (more than 12 hours)." There is no further mention of excessively long stagnation period (page 4-14 of the Lead and Copper Rule Guidance Manual, Volume I: Monitoring, dated September 1991, Drinking Water Technology Branch, Drinking Water Standards Division, Office of Ground Water and Drinking Water.)

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Friday, September 25, 2015 12:45 PM
To: Wurfel, Brad (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ)
Subject: FW: Technical Advisory Meeting
Attachments: GCHD Lead in Water Fact Sheet.pdf; Information Plan.pdf; Lead Advisory Release.pdf

FYI.

Stephen Busch, P.E.
 MDEQ Lansing District Coordinator
 Office of Drinking Water and Municipal Assistance
 Lansing and Jackson District Supervisor
 517-643-2314
buschs@michigan.gov

From: Howard Croft [<mailto:hcroft@cityofflint.com>]
Sent: Friday, September 25, 2015 12:42 PM
To: Brent Wright; Dayne Walling; donna. cole; edwardsm; Gerald (Jed) Natzke; Howard Croft; James Henry; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Michael Glasgow; Michael Wright; Mike Lane; Prysby, Mike (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; schock.michael@epa.gov; Sean Kammer; Warren Green; Busch, Stephen (DEQ); lytle.darren@epa.gov; James Gaskin; Amy Hovey; Andy Leavitt
Subject: Re: Technical Advisory Meeting

Technical Advisory Team,

Today the City of Flint along side of the Genesee County Health Department issued a lead advisory at a well attended press conference. The press conference lasted over an hour and a half with both the Health Department and the City answering numerous questions. I have included the documents that were released at the news conference and will continue to provide everyone with additional information as it becomes available. We will be coordinating closely with the health department to provide consistent information to the public and intend to increase our awareness campaign.

There is growing anticipation of our next Technical Advisory Meeting on October 7th and we are working to determine the best possible venue based on the attention that we expect. Jamie Gaskin, the United Way CEO has joined the team and I have also included Andy Leavitt of State Senator Ananich's office along with Amy Hovey from U.S. Congressman Kildee's team. We are developing a quarterly mailer that we will distribute to all water customers that will look a lot like our annual consumer confidence report and we intend to have input from the TAC team meeting to be included in the report. The mailer will go to the printer within days following our meeting.

Please look for location and agenda items to come next week, please feel free to email the group or me directly if there are any questions,

Thank you,

On Wed, Sep 23, 2015 at 3:52 PM, Howard Croft <hcroft@cityofflint.com> wrote:

Technical Advisory Team,

I am writing to inform everyone that we have scheduled the next Technical Advisory Committee meeting to be Wednesday October 7th 2015 from 2:00 – 4:30 pm. We are extending invitations to Marc Edwards of Virginia Tech along with two lead experts from the EPA (Darren Lytle & Michael Schock) to become a part of the technical team and we are hopeful that they will all be present at the upcoming meeting.

At the meeting we will discuss an overview of the City water system, compliance with the Safe Drinking Water Act, lead concerns, corrosion control, water testing, public education, capital improvement plans, the KWA pipeline, and next steps.

I will forward a specific location and agenda in the near future but we are firmly committing to the time and date. As with previous meetings we look forward to this group having positive dialogue that will benefit the community.

Thank you,

--

Howard Croft

Public Works Director
City of Flint
1101 S. Saginaw Street
Flint, MI 48502
PH# 810.766.7135 Ext.2043
hcroft@cityofflint.com

--

Howard Croft

Public Works Director
City of Flint
1101 S. Saginaw Street
Flint, MI 48502
PH# 810.766.7135 Ext.2043
hcroft@cityofflint.com

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Tuesday, September 15, 2015 7:21 PM
To: Wyant, Dan (DEQ); Shekter Smith, Liane (DEQ)
Cc: Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Benzie, Richard (DEQ)
Subject: RE: Questions for Director Wyant
Attachments: NDWAC LCR Work Group Report Final 08 24 2015.pdf

See my responses below in red.

Stephen Busch, P.E.
 MDEQ Lansing District Coordinator
 Office of Drinking Water and Municipal Assistance
 Lansing and Jackson District Supervisor
 517-643-2314
buschs@michigan.gov

From: Wyant, Dan (DEQ)
Sent: Tuesday, September 15, 2015 6:19 PM
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)
Cc: Pallone, Maggie (DEQ); Wurfel, Brad (DEQ)
Subject: Fwd: Questions for Director Wyant

I will need to respond to this.

Sent from my iPhone

Begin forwarded message:

From: "Thelen, Mary Beth (DEQ)" <THELENM2@michigan.gov>
Date: September 11, 2015 at 7:14:12 PM EDT
To: "Wyant, Dan (DEQ)" <WyantD@michigan.gov>
Subject: FW: Questions for Director Wyant

I will also print for you – see below.

From: Jumana Vasi [<mailto:JVasi@mott.org>]
Sent: Friday, September 11, 2015 5:29 PM
To: Thelen, Mary Beth (DEQ)
Subject: Questions for Director Wyant

Hi Mary Beth –

Thank you for arranging my call with the Director. He's asked me to send my follow-up questions in writing, so here they are below. Could you please forward them to him?

Thank you,
 Jumana

Dan –

Thank you so very much for your time this afternoon. Here are the questions we've got concerning Flint drinking water.

The Lead and Copper Rule requires water systems to obtain prior approval from the State to add a new source of water or make any long-term change in water treatment process prior to implementation. Did the DEQ have any concerns related to the switch from Detroit water to Flint River water in terms of potential increases in corrosion?

Prior to becoming a customer of Detroit in the 1960's, the City of Flint operated its water treatment plant and obtained water from the Flint River. As Detroit was unable to provide a secondary feed to Flint, the City of Flint choose to keep its water treatment plant as an emergency backup. In 2014 service from Detroit was terminated and the City of Flint began using its water treatment plant again. Differences in water quality have long been recognized between treated Lake Huron water obtained from Detroit and Flint's treatment of Flint River water. Whenever community water systems make changes in source water or treatment that could impact corrosion they are required to return to full scale lead and copper monitoring for two six month rounds to demonstrate continued compliance with the action levels. The City of Flint has just completed this monitoring and met the action level.

The corrosivity of Flint's drinking water seems to be the main contributor to lead levels from residential faucets*. Does the state offer recommendations (treatment options, consumer use guidelines, etc.) for dealing with water that is considered to be "highly corrosive"?

As a water system that serves a population of 50,000 or more, the City of Flint is also required to demonstrate optimized corrosion control in accordance with the lead and copper rule requirements. The City is in the process of installing additional corrosion control treatment measures. Should the City's compliance monitoring exceed the action level in future additional steps would be required following the lead and copper rule requirements.

Customers that participate in the City's lead monitoring are provided a copy of their result and information regarding actions they can take to help limit exposure see page 4 of the linked guidance

http://www.michigan.gov/documents/deq/deq-wb-dwehs-cws-LeadCopperRptConsNotice_294665_7.pdf

Information regarding lead is also included in the City's Annual Consumer Confidence Report (aka Water Quality Report). Below is a link to the City's report covering May – December 2014.

<https://www.cityofflint.com/wp-content/uploads/CCR-2014.pdf>

Are other Michigan cities using similarly corrosive water? What steps are they taking to protect residents from lead leaching from their home plumbing systems?

The DEQ Office of Drinking Water of Municipal Assistance oversees more than 1,400 community water systems and nearly 10,000 non-community water systems across Michigan. This oversight includes Lead and Copper Rule requirements as part of the Michigan Safe Drinking Water Act. Systems that exceed action level requirements are required to take action in accordance with lead and copper rule requirements as established by EPA and under the primacy granted to MDEQ for this regulation.

Is Flint conducting compliance monitoring under the Lead and Copper Rule? If so, why have their test results differed from the Virginia Tech findings?

Flint has certified that it is following the requirements of the Lead and Copper Rule. Flint provides customers bottles and instructions for sampling in accordance with these requirements and obtains a signed statement from customers that these instructions were followed (see link below). Samples are analyzed at a certified lab.

http://www.michigan.gov/documents/deq/Lead_Copper_Sampling_Instructions_329915_7.pdf

Virginia Tech has not provided any information to the DEQ regarding its sampling protocols and whether they have followed all requirements of the lead and copper rule.

What could the city be doing to better educate and protect its residents

The City is already following requirements of the lead and copper rule. However reduction of exposure to lead in drinking water cannot be achieved by regulation alone. Effective elimination of leaded materials in contact with water is a shared responsibility. While the City could undertake a lead service line replacement program, partial lead service line replacement has been shown to exacerbate lead exposure, and many Flint residents are unable to afford replacement of their privately owned portion of the service line.

The DEQ is currently working with the Michigan Department of Health and Human Services to develop a more robust consumer awareness campaign regarding lead exposure through drinking water. We hope the City of Flint will partner with our agencies in this endeavor.

The August "Report of the Lead and Copper Rule Working Group To the National Drinking Water Advisory Council" (attached) discusses a number of other recommendations regarding public education.

Thank you for all of your help. We are really looking forward to having you here next week.

Jumana

[*http://flintwaterstudy.org/2015/08/why-is-it-possible-that-flint-river-water-cannot-be-treated-to-meet-federal-standards/](http://flintwaterstudy.org/2015/08/why-is-it-possible-that-flint-river-water-cannot-be-treated-to-meet-federal-standards/)

Jumana Vasi
Program Officer, Environment Program
C.S. Mott Foundation
503 S. Saginaw Street
Flint, MI 48503
(810) 766-1714

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Friday, September 11, 2015 1:45 PM
To: Wurfel, Brad (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ)
Subject: RE: mayor walling's comment
Attachments: City of Flint PbCu15 8_17_15.pdf

The City has not sent us their recommendation at this time. Per our 8/17 letter (attached), we recommended they select phosphate treatment which was previously provided by DWSD. They have until the end of the year to make a recommendation, but they are planning to have the treatment in place by January 2016. Their engineering consultant is working on this. Howard Croft noted this in his September 3 email to members of the technical advisory team the City formed.

Stephen Busch, P.E.
 MDEQ Lansing District Coordinator
 Office of Drinking Water and Municipal Assistance
 Lansing and Jackson District Supervisor
 517-643-2314
buschs@michigan.gov

From: Wurfel, Brad (DEQ)
Sent: Friday, September 11, 2015 1:18 PM
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ)
Subject: FW: mayor walling's comment

Help?

From: Ronald Fonger [<mailto:RFONGER1@mlive.com>]
Sent: Friday, September 11, 2015 1:03 PM
To: Wurfel, Brad (DEQ)
Subject: mayor walling's comment

Brad:
 On his campaign Web site, Mayor Walling addresses a lot of water issues and states, "The City will be continuing to optimize its water treatment process including planning to use a corrosion inhibitor now that it is being allowed by the MDEQ."
 Do you have any information on what the corrosion inhibitor is and whether DEQ has approved its use?
 Thanks,

Ron Fonger
 MLive Media Group
 Reporter

mobile 810.347.9963
 email rfonger1@mlive.com
 address 540 S. Saginaw St. #101, Flint MI 48502



RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING DISTRICT OFFICE



DAN WYANT
DIRECTOR

August 17, 2015

Mr. Brent Wright
City of Flint - DPW
Flint Water Plant
4500 North Dort Highway
Flint, Michigan 48505

Dear Mr. Wright:

SUBJECT: Flint, City of WSSN: 02310
Lead and Copper Monitoring of Drinking Water Taps

The Department of Environmental Quality (DEQ), Office of Drinking Water and Municipal Assistance (ODWMA), received your report for the monitoring period January 1, 2015, through June 30, 2015.

Action Levels	Results this monitoring period			
	90th Percentile	# of Samples Above Action Level	# of Samples Required	# of Samples Collected
Lead 15 parts per billion (ppb)	11 ppb	6	60	69
Copper 1.3 parts per million (ppm)	0.16 ppm	0	60	69

Ninety percent or more of the sites you tested are within action levels under the administrative rules promulgated under the Michigan Safe Drinking Water Act, 1976 PA 399, as amended (Act 399). These results must be reported on your 2015 Consumer Confidence Report (CCR) due to our office, your customers, and the local health department, by July 1, 2016. Also include the following statement in the CCR, regardless of the lead and copper levels:

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. The City of Flint 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 at 1-800-426-4791 or at <http://www.water.epa.gov/drink/info/lead>.

Mr. Brent Wright

2

August 17, 2015

Recent changes to the Lead and Copper Rule (LCR) require the water supply to provide individual lead tap results to people who receive water from sites that were sampled, even if lead was not detected, within 30 days of learning of results. You must also send us a certification that you met all the delivery requirements along with a sample copy of your customer notice by three months after the end of the monitoring period. To download the *Lead and Copper Report and Consumer Notice of Lead Result Certificate* in Microsoft Word or PDF format, visit <http://www.michigan.gov/deq>. Click on Water, Drinking Water, Community Water Supply, and Reporting Forms under the Manuals, Forms and Brochures heading. Water supplies that fail to distribute the Consumer Notice of Lead Results must include the following statement in their CCR, "During the year, we failed to provide lead results to persons served at the sites that were tested as required by the Lead and Copper Rule."

While the City's LCR compliance monitoring has continued to meet action level requirements, the LCR also requires all large systems (those serving over 50,000 people) to optimize corrosion control regardless of their 90th percentile lead concentration. One way to demonstrate fully optimized corrosion control treatment is through two consecutive six month rounds of LCR compliance monitoring in which the difference between the 90th percentile level and the highest source water lead concentration is less than the Practical Quantitative Level for lead (0.005 milligrams per liter). Since the City did not meet these criteria in both the July – December 2014, and January – June 2015, sampling periods, the City must now recommend a treatment to fully optimize corrosion control treatment within six months in accordance with requirements under Act 399, Administrative Rule 604f (R 325.10604f). **This recommendation must be provided to our office as soon as possible, but no later than January 1, 2016.**

However, given the past use of phosphate treatment by the Detroit Water and Sewerage Department (DWSD) to fully optimize corrosion control treatment when the City was a wholesale customer of DWSD, the ODWMA recommends the City select this as its recommended treatment option, and begin implementation as soon as possible to address ongoing concerns by customers regarding lead levels within their premise plumbing systems. Under the second step of this Rule, the DEQ can specify optimal corrosion control treatment.

Our office will inform you when monitoring needs to be conducted as part of the optimization of the implemented corrosion control treatment. Customer requested samples for lead shall continue to be collected and analyzed. Please make every attempt to select the same sites used in the previous monitoring period, giving Tier 1 sites first priority. If original sites are unavailable, select replacement sites based on the Tier 1, 2, and 3 criteria.

Please contact me at 517-284-6644 or rosenthala@michigan.gov at your earliest convenience to discuss how the City will be complying with the above requirements.

Sincerely,



Adam Rosenthal, Environmental Quality Analyst
Lansing District Office
Office of Drinking Water and Municipal Assistance

cc: Mr. Michael Glasgow, City of Flint

Shekter Smith, Liane (DEQ)

From: Benzie, Richard (DEQ)
Sent: Wednesday, September 09, 2015 6:36 PM
To: Wurfel, Brad (DEQ); Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ)
Cc: Cook, Pat (DEQ)
Subject: RE: june 24 memorandum

Sorry this reply is so long. I didn't plan to do so, but I wanted to provide you with some information in case you feel the need to reply in part today.

Brad,

Mike Prysby is on annual leave for a couple of weeks, Steve Busch was in his Jackson office today and probably on his way home now, Liane took this afternoon off to attend to personal business in Marshall, and Pat Cook is gone for the day. Do you need an answer today?

Since this memo is based on the unofficial draft report, do we want to comment? We should probably meet to discuss before anyone responds.

As you know, we have agreed to disagree with EPA on a couple of the issues raised by this memo covering an unofficial EPA report.

To begin, when the lead and copper rules (LCR) were first implemented, large systems were allowed to collect two sets of lead and copper samples in consecutive 6 month monitoring periods and if their 90th percentile lead level was within 5 milligrams per liter of the lead level in their source water, they did not have to further "optimize" corrosion control treatment. When Flint changed water sources from the Great Lakes to an inland river and employed water treatment that was significantly different (precipitative softening vs. direct filtration) than that supplied by Detroit, we granted Flint as a "new supply" the same consideration to determine if their treatment already provided optimal corrosion control.

As you know, their first 6 month monitoring results complied with the Action Level for lead and were close to demonstrating optimal corrosion control treatment (OCCT). Since the city would be averaging results from the two consecutive monitoring periods for the purposes of OCCT determination, we awaited their second set of results to see what they would reveal. After getting the second set, it was determined that Flint was again in compliance with the lead and copper Action Level but they did not qualify as already practicing OCCT.

Under the original regulatory schedule for implementing OCCT, a community serving more than 50,000 people was given a year to conduct treatment studies and submit them to DEQ. We then have 6 months to review their studies and designate their OCCT. They then have 2 years to install that treatment. During all that time, no monitoring is required. Our response to the concerns raised in that memo but also more significantly, in formal discussions with Region 5 EPA Managers, was to encourage Flint to not take the time we believe they were entitled to have for this process but to move as quickly as possible to implement some OCCT.

Second, we continue to disagree with EPA on sampling protocols. We have attempted to ensure compliance with EPA guidance (I believe it was provided in the preamble to their lead and copper regulations) that said that household use should be "typical" for a residential customer on the day before sample collection for lead and copper. Early in the implementation of the LCR, we had encountered too many situations where compliance samples had been collected from kitchen and bathroom taps that had not been used in days and in some cases, even weeks, resulting in excessively stagnated water and correspondingly high lead levels that did not represent typical exposure expected after overnight stagnation. Further complicating this issue was the media spectacle that was arising over EPA's direct implementation of the LCR in Washington, D.C.,

where lead results were not always being included in compliance calculations and subsequently, invalidation of samples was becoming more difficult. In order to avoid that complicated process, we devised our current recommendations for ensuring appropriate but not excessive stagnation for LCR monitoring.

We continue to believe it is appropriate to flush these taps the day before sample collection to simulate and/or ensure typical household use before the tap is allowed to sit overnight to achieve the expected stagnation time the regulation stipulates (~8 hours) prior to collecting the first draw sample. The LCR does not say the result should represent the "absolute worst case" condition – it talks about sampling the highest risk locations (lead plumbing, lead service lines, high lead content solder piping, etc.) after overnight stagnation and then collecting a first draw sample so as not to flush elevated lead from that tap at that point in time. Until EPA changes this rule, we are satisfied with our sampling protocol.

I am leaving now, so you can use this information as you see fit, or wait until tomorrow to discuss with Steve, Liane, Pat and me. We have an all-day ODWMA managers meeting starting at 9 AM Thursday, although Liane is also attending a meeting first thing in the morning with Jim Sygo, Bob Wagner and Jon Allen.

Richard

From: Wurfel, Brad (DEQ)
Sent: Wednesday, September 09, 2015 4:52 PM
To: Busch, Stephen (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ)
Subject: FW: june 24 memorandum

Heads up
b

From: Ronald Fonger [<mailto:RFONGER1@mlive.com>]
Sent: Wednesday, September 09, 2015 1:28 PM
To: Wurfel, Brad (DEQ)
Subject: june 24 memorandum

Brad:

I know you said the state would not comment on unofficial draft reports from U.S. EPA staff, but since the attached June 24 memorandum was sent to four DEQ staff members, can you comment about what – if anything – the state has done in response?

Was the city of Flint notified of the issues raised in the memorandum directly by DEQ?

Was there a written response from DEQ to U.S. EPA to the memo?

Thanks, we are looking further into some of the issues raised in this document.

Ron Fonger
MLive Media Group
Reporter

mobile 810.347.9963
email rfonger1@mlive.com
address 540 S. Saginaw St. #101, Flint MI 48502

Shekter Smith, Liane (DEQ)

From: Benzie, Richard (DEQ)
Sent: Thursday, September 03, 2015 2:20 PM
To: Poy, Thomas (poy.thomas@epa.gov)
Cc: Crooks, Jennifer
Subject: FW: Flint Water

Tom,

The message below from Mike Prysby provides additional information about the city's plans to install optimal corrosion control. The last sentence indicates that Flint is going to invite additional EPA experts to join their TAC.

Richard

From: Prysby, Mike (DEQ)
Sent: Thursday, September 03, 2015 1:22 PM
To: Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)
Subject: FW: Flint Water

Below is a note from Howard Croft to our TAC team concerning the return to compliance for TTHMs. Howard also briefly discusses the lead issue and the city's plans to install optimal corrosion control.

Michael Prysby, P.E.
 District Engineer
 Office of Drinking Water and Municipal Assistance
 517 290-8817

From: Howard Croft [<mailto:hcroft@cityofflint.com>]
Sent: Thursday, September 03, 2015 12:28 PM
To: Brent Wright; Dayne Walling; donna. cole; Gerald (Jed) Natzke; Gerald Ambrose; Howard Croft; James Henry; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Michael Glasgow; Michael Wright; Mike Lane; Prysby, Mike (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; Warren Green
Subject: Flint Water

Technical Advisory Team,

I am pleased to report that the City of Flint has officially returned to compliance with the Michigan Safe Drinking Water Act and we have received confirming documentation from the DEQ today. The GAC filtering was installed on time and was instrumental in our ability to maintain an average level under the MCL. We anticipate that we will have no further notices going out.

Recent testing has raised questions regarding the amount of lead that is being found in the water and I wanted to report to you our current status.

At the onset of our plant design, optimization for lead was addressed and discussed with the engineering firm and with the DEQ. It was determined that having more data was advisable prior to the commitment of a specific optimization method. Most chemicals used in this process are phosphate based and phosphate can be a "food" for bacteria. We have performed over one hundred and sixty lead tests throughout the city since switching over to the Flint River and remain within the EPA standards.

We are currently designing an optimization plan with the engineering firm that will be presented to the DEQ and upon approval we expect to have it implemented by January 2016. It is worthwhile to note that the DEQ has reported that other cities have taken years to complete an optimization plan and we anticipate having a plan in place over the next four months.

It is also worth noting to this group that there are different lead testing methods used within industry and the city remains consistent with the most recent EPA approved testing method which can produce different results than other methods.

We hope to schedule another TAC team meeting for late September or early October, I will attempt to keep everyone informed and look for the best dates. We are inviting additional EPA experts to become a part of this committee.

Thank you,

--

Howard Croft

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7135 Ext.2043

hcroft@cityofflint.com

Shekter Smith, Liane (DEQ)

From: Poy, Thomas <poy.thomas@epa.gov>
Sent: Thursday, September 03, 2015 1:02 PM
To: Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Cc: Hyde, Tinka; Henry, Timothy; Bair, Rita; Damato, Nicholas; Crooks, Jennifer
Subject: RE: Flint Meeting

Thanks for the email.

I hope that Flint will utilize the expertise of MDEQ field staff and ORD distribution system staff to help them identify water quality and pipe conditions that need to be considered in the effective implementation of phosphate treatment.

Tom Poy
 Chief, Ground Water and Drinking Water Branch
 USEPA - Region 5
 (312) 886-5991

From: Benzie, Richard (DEQ) [<mailto:BENZIER@michigan.gov>]
Sent: Thursday, September 03, 2015 9:21 AM
To: Poy, Thomas
Cc: shekterl@michigan.gov
Subject: FW: Flint Meeting

FYI

From: Prysby, Mike (DEQ)
Sent: Thursday, September 03, 2015 9:06 AM
To: Benzie, Richard (DEQ)
Cc: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)
Subject: RE: Flint Meeting

Richard,

I spoke this morning with Mike Glasgow (Utility Administrator) and Brent Wight (WTP Supt) to see what came out of their meeting with LAN and the city. The meeting's main focus was over the lawsuit and financial issues; however, corrosion control treatment was also discussed. City administration told Mike and Brent that there will be no funding restrictions to install corrosion control. The capital cost to install treatment (P04 feed system) is not expected to be high since the WTP has existing feed lines and equip in place; however, new properly sized pumps will be needed. Mike expects LAN to have a proposal for us to review and approve for issuance of an Act 399 construction permit within the next one to two months.

Michael Prysby, P.E.

District Engineer
Office of Drinking Water and Municipal Assistance
517 290-8817

From: Benzie, Richard (DEQ)
Sent: Wednesday, September 02, 2015 5:13 PM
To: Prysby, Mike (DEQ)
Cc: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)
Subject: FW: Flint Meeting

Do we know how this meeting concluded?

From: Poy, Thomas [<mailto:poy.thomas@epa.gov>]
Sent: Wednesday, September 02, 2015 4:23 PM
To: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ)
Subject: Flint Meeting

Liane/Richard:
How did Flint's meeting with their consultant go? Did they decide to implement treatment?

Tom

Tom Poy
Chief, Ground Water and Drinking Water Branch
USEPA - Region 5
(312) 886-5991

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Monday, August 31, 2015 11:55 AM
To: Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ)
Cc: Benzie, Richard (DEQ)
Subject: RE: Flint

Mike spoke with some staff from Flint earlier today. They are still having internal discussions regarding corrosion control treatment.

Stephen Busch, P.E.
MDEQ Lansing District Coordinator
Office of Drinking Water and Municipal Assistance
Lansing and Jackson District Supervisor
517-643-2314
buschs@michigan.gov

From: Shekter Smith, Liane (DEQ)
Sent: Friday, August 28, 2015 3:33 PM
To: Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Cc: Benzie, Richard (DEQ)
Subject: FW: Flint

Any word?

From: Poy, Thomas [<mailto:poy.thomas@epa.gov>]
Sent: Friday, August 28, 2015 3:29 PM
To: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ)
Subject: Flint

Liane/Richard: Has Flint replied yet on how they plan to comply with the corrosion control requirements of the 8/17 letter? Susan Hedman will be at a Brownfields meeting next week along with the Flint mayor and the subject of lead will likely come up.

Tom

Tom Poy
Chief, Ground Water and Drinking Water Branch
USEPA - Region 5
(312) 886-5991

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Monday, August 17, 2015 2:36 PM
To: Wurfel, Brad (DEQ)
Cc: Sygo, Jim (DEQ); Benzie, Richard (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ); Rosenthal, Adam (DEQ); Pallone, Maggie (DEQ); Shekter Smith, Liane (DEQ)
Subject: Flint Lead Monitoring Letter
Attachments: City of Flint PbCu15 8_17_15.pdf

Brad,

As there has been much interest regarding lead related to Flint drinking water, I have attached our latest letter which covers the most recent January – June 2015 monitoring period. The City is in compliance with the 15 part per billion action level for lead. Yet based on these results, the treatment cannot be deemed to provide fully optimized corrosion control treatment, and the City will need to recommend additional treatment to achieve this optimization under the Lead and Copper Rule requirements established under the Michigan Safe Drinking Water Act. This is all spelled out in the attached letter.

If you have any questions or would like any additional information you may contact me at the number below.

Stephen Busch, P.E.
MDEQ Lansing District Coordinator
Office of Drinking Water and Municipal Assistance
Lansing and Jackson District Supervisor
517-643-2314
buschs@michigan.gov

Shekter Smith, Liane (DEQ)

From: Poy, Thomas <poy.thomas@epa.gov>
Sent: Friday, August 14, 2015 3:43 PM
To: Benzie, Richard (DEQ)
Cc: Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ); Devereaux, Tracy Jo (DEQ); Henry, Timothy; Hyde, Tinka; Glowacki, Joanna; Crooks, Jennifer
Subject: RE: Draft 90th percentile letter
Attachments: Flint PbCu15-draft tpedit.doc

Liane/Richard/Steve: Thank you for the opportunity to provide input on the LCR letter to Flint. Attached are our suggested edits. I conferred with ORC and we believe that the Federal and Michigan rules allow the State to require specific treatment in lieu of a corrosion control study. Pat Cook asked about this during our last call. Flint would still have to do some monitoring as part of tweaking the treatment in order to optimize it.

Please let me know if you have questions about our comments/suggestions.

Tom

Tom Poy
 Chief, Ground Water and Drinking Water Branch
 USEPA - Region 5
 (312) 886-5991

From: Benzie, Richard (DEQ) [mailto:BENZIER@michigan.gov]
Sent: Wednesday, August 12, 2015 5:13 PM
To: Poy, Thomas; Hyde, Tinka
Cc: Busch, Stephen (DEQ); shekterl@michigan.gov; Devereaux, Tracy Jo (DEQ)
Subject: FW: Draft 90th percentile letter

Attached is our draft letter to Flint regarding their lead and copper monitoring results and 90th percentile determination for their initial 2 six-month LCR monitoring periods after the city converted from Detroit's conventional treatment of Lake Huron to softening of the Flint River. This letter includes our directions for the ensuing steps and our recommendations as far as corrosion control optimization.

Please provide any comments you may have by the close of business on Friday, August 14th. We realize this response time is short, but we intend to deliver this letter to the city on Monday, August 17th.

Thanks,
 Richard

Richard Benzie, P.E., Chief
 Field Operations Section
 Office of Drinking Water and Municipal Assistance, MDEQ
 517-284-6512

From: Busch, Stephen (DEQ)
Sent: Wednesday, August 12, 2015 11:06 AM
To: Benzie, Richard (DEQ)

Cc: Rosenthal, Adam (DEQ); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ); Cook, Pat (DEQ)

Subject: Draft 90th percentile letter

Richard,

Attached is our draft 90th percentile Pb/Cu letter for the City of Flint. Could you please forward this to Tinka Hyde and/or Tom Poy at EPA region V. We request any comments back by the close of business on Friday August 17. Thanks.

Stephen Busch, P.E.

MDEQ Lansing District Coordinator

Office of Drinking Water and Municipal Assistance

Lansing and Jackson District Supervisor

517-643-2314

buschs@michigan.gov

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Monday, August 10, 2015 1:27 PM
To: Wurfel, Brad (DEQ)
Cc: Shekter Smith, Liane (DEQ)
Subject: RE: Response to Questions from 8/4 Meeting on Flint

Sorry, last quarter WQP pH monitoring numbers are now added in.

Stephen Busch, P.E.
 MDEQ Lansing District Coordinator
 Office of Drinking Water and Municipal Assistance
 Lansing and Jackson District Supervisor
 517-643-2314
buschs@michigan.gov

From: Busch, Stephen (DEQ)
Sent: Monday, August 10, 2015 1:24 PM
To: 'Wurfel, Brad (DEQ) (WurfelB@michigan.gov)'
Cc: Shekter Smith, Liane (DEQ) (SHEKTERL@michigan.gov)
Subject: Response to Questions from 8/4 Meeting on Flint

Brad,

Here is what I have been able to gather in response to the questions from our meeting with members of the Flint community at the Governor's Office on Tuesday August 4th.

Why Are There Different 2014 Consumer Confidence Reports for City of Flint Water System?

The City of Flint issued two separate Consumer Confidence Reports (CCR's) in 2015 covering the water quality data from 2014.

One report for the period of January – April 2014 when the City was obtaining water from Detroit (DWSD).
 A second report for the period April – December 2014 when the City was using the Flint River and its own Water Treatment Plant.

The CCR for DWSD water was mailed to customers in June. The Flint River based CCR was mailed to customers in mid-July, delayed due to issues with the printing contractor. We will work with the City to ensure both reports are posted to the City's website and both are made available when requested by customers. Should the City choose to create separate CCR's during the year that the City of Flint connects to the Karegnondi Water Authority we will work with the City to provide more clarity and try to have all material included in a single mailing.

The DWSD based CCR is the one community members had at the meeting, while the DEQ had brought a copy of the Flint River based CCR. As separate sampling was done under each source, this explains the discrepancy in the values and monitoring periods being reported in the respective CCR's.

Why Were Some Samples Not Included In The Flint Lead and Copper Monitoring January – June 2015 Period, and Are Sampled Customers Being Provided Their Results?

The City has confirmed that all lead and copper samples collected through the City, whether routine sites or customer requests, were sent to the State of Michigan lab for analysis. Individual sample results are provided to the property

owner within 30 days of receiving the lab results in accordance with the Michigan Safe Drinking Water Act (Public Act 399, 1976 Administrative Rule 410(5)).

Results of any lead and copper samples collected by EPA staff were not provided to the City of Flint or Michigan Department of Environmental Quality. It is also unclear whether any such samples would meet the sample site and collection protocol requirements of the Safe Drinking Water Act to be used for compliance determination during this monitoring period.

The lead 90th percentile calculation of 11 parts per billion is based on 69 samples that met the appropriate sampling location site criteria, and met the sample collection site and collection protocol requirements of the Safe Drinking Water Act for this monitoring period. A minimum of 60 samples were required for this monitoring period. As indicated during the meeting, the City's sampling for lead complies with the Action Level standard of 15 parts per billion, but based on the population served the City and these results, the City will need to make a recommendation to the MDEQ on how they will fully optimize their corrosion control treatment. These next steps continue to follow the requirements of the Lead and Copper Rule.

Why Was Sampling From 212 Browning Avenue For Lead and Copper Not Included For Compliance?

The residence at 212 Browning Avenue utilizes a whole home filter. As stated in the Michigan Safe Drinking Water Act (Public Act 399, 1976 Administrative Rule 710a, Lead and Copper in tap water; monitoring requirements) "Sampling sites may not include faucets that have point of use or point of entry treatment devices designed to remove inorganic contaminants." Such treatment alters the water chemistry and water quality such that it is no longer representative of public water from the City's distribution system. Therefore, it cannot be used to determine public water system compliance with the action level standard.

An additional concern regarding water quality conditions at this residence is that the City of Flint has no record of a plumbing permit being obtained when the home was fully re-plumbed. Thus any plumbing work completed was not inspected and cannot be determined to comply with requirements of the Michigan Plumbing Code and Michigan Residential Code. As a result there may be conditions within the household that are contributing to some of the water quality issues experienced by the owner.

What Are The pH Conditions In The City's Water? Concerns over low, 4-5 pH values

Since late April 2014 – June 2015, the following pH conditions have been reported by the City.

Water Treatment Plant – Finished Water plant tap pH range = 7.07 minimum to 9.9 maximum, overall average 7.7, measured daily. The 9.9 is a one- time anomaly from softening treatment.

Distribution System – Water Quality Parameters 25 sample sites location throughout monitored quarterly

July – Sept. 2014 pH 7.71 average, range 7.56 – 7.86

Oct. – Dec. 2014 pH 7.88 average, range 7.62 – 8.10

Jan. – March 2015 pH 7.81 average, range 7.60 – 7.99

April – June 2015 pH 7.63 Average, range 7.48 – 7.80

I believe this addresses questions from the meeting directed to the MDEQ.

I did want to add that the DEQ Office of Drinking Water and Municipal Assistance has been in contact with the Department of Health and Human Services, Environmental Health Division, Healthy Homes Section and had some preliminary discussions about a public education and assistance campaign regarding household lead issues, guidance and abatement.

Please let me know if I missed something or if any additional information is needed.

Stephen Busch, P.E.
MDEQ Lansing District Coordinator
Office of Drinking Water and Municipal Assistance
Lansing and Jackson District Supervisor
517-643-2314
buschs@michigan.gov

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Friday, July 24, 2015 3:46 PM
To: Wurfel, Brad (DEQ)
Cc: Shekter Smith, Liane (DEQ); Wyant, Dan (DEQ); Pallone, Maggie (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)
Subject: RE: Need update on lead / copper tests for Flint
Attachments: DWSD-CorrosionControlStudy.pdf; Flint lead history.pdf; DWSD-Flint-1993-Lead-Letter.pdf

Brad,

As we discussed, the City has completed the last round of monitoring (Jan 1 – June 30, 2015). The last samples came in about a week ago. We have made the compliance determination that the 90th percentile level is 11 parts per billion, which is below the Action Level Standard of 15 parts per billion (there is no Lead maximum contaminant level standard). The federal rule requires measuring lead levels in water from household plumbing materials to determine the corrosivity of the City's water in order to limit exposure.

I have provided a summary of Flint's lead compliance monitoring from the last 20+ years since this regulation started in 1991. The City of Flint itself has never had a 90th percentile level exceed the 15 part per billion action level. Sampling requirements look at the worst case plumbing materials. Samples must be collected in accordance with the regulatory requirements and criteria in order to be used for compliance determinations.

Because the City of Flint serves a population of over 50,000 they are required to have Fully Optimized Corrosion Control. While it is possible to meet the fully optimized requirement without additional treatment, based on their two rounds of sampling since switching to the Flint River, we have determined they did not meet the eligibility for this per the regulation. They now have to complete a study (within 18 months) and are then allowed a period of additional time (2 additional years) to install the selected treatment for Fully Optimized Corrosion Control in accordance with the regulatory requirements. This is what DWSD was required to do back in 1993 – 1997 (see attached letter and study). We are planning to suggest the City directly submit a treatment process to shorten the timeline to achieve full optimization. This letter is currently being drafted but won't be ready to mail out for another week.

Liane and I had a conference call with EPA region V in Chicago on Tuesday to go over all of this and they are in support of these next steps with the City.

The matter will be potentially further complicated when the City switches over to water from the Karegnondi Water Authority next year to re-evaluate the continuing requirement to fully optimize corrosion control.

The DEQ recognizes that there is has been no level of lead exposure determined to be safe, but again the regulation was developed to optimize water corrosivity to limit exposure and the City is following the regulatory requirements.

Lead is not coming from the Flint River or the City's Water Treatment Plant or the public distribution system. It is from lead service lines into homes and from plumbing materials and fixtures within the private property of the household.

As watermains are replaced within the City lead services associated with that section of watermain would be replaced in order to reconnect to City water. This would also place burden on the homeowner to pay for having the service line re-plumbed. However, since 2000 only 16 miles of the City's 500 miles of watermain have been replaced as they did not have the financial means to do so.

Let us know if there are questions or you need any additional information.

Stephen Busch, P.E.

MDEQ Lansing District Coordinator
Office of Drinking Water and Municipal Assistance
Lansing and Jackson District Supervisor
517-643-2314
buschs@michigan.gov

From: Wurfel, Brad (DEQ)
Sent: Friday, July 24, 2015 12:09 PM
To: Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Cc: Shekter Smith, Liane (DEQ); Wyant, Dan (DEQ); Pallone, Maggie (DEQ)
Subject: Need upate on lead / copper tests for Flint

Guys, the Flint Ministers met with the Governor's office again last week. They also brought along some folks from the community – a college prof and a GM engineer – who imparted that 80 water tests in Flint have shown high lead levels.

Could use an upate on the January / june testing results, as well as recap of the December testing numbers, and any overview you can offer to edify this conversation.

Call me or email today if possible. Thanks!

b

Brad Wurfel
Communications Director
Michigan Department of Environmental Quality
517-284-6713
517-230-8006 cell



CITY OF DETROIT
WATER AND SEWERAGE DEPARTMENT
WATER BOARD BUILDING

735 RANDOLPH STREET
DETROIT, MICHIGAN 48226-2830
PHONE 313 • 224 • 4800/224 • 4801
FAX 313 • 224 • 6067

June 10, 1994

To: DWSD Wholesale Customers

RE: EXECUTIVE SUMMARY OF DETROIT'S CORROSION CONTROL STUDY

Enclosed is a copy of the Executive Summary prepared by our consultant, Tucker, Young, Jackson & Hull, detailing work to date on the Corrosion Control Study performed for Detroit and Detroit's wholesale customers.

The EPA required large utilities to test water samples in highest risk homes for lead and copper content in 1992 to determine if the action levels of 15 micrograms per liter and 1.3 milligrams per liter respectively were exceeded. Detroit complied with this requirement and determined that the action level for lead was exceeded in many communities. Therefore, DWSD conducted and continues to conduct a public education program designed to inform consumers how to reduce their exposure to lead.

The EPA further required large water suppliers to determine if their lead could be less corrosive and, if so, the utility was mandated by the Lead and Copper Rule to determine ways the water could be made less corrosive and report their recommendations to the primary agency. For DWSD, the primary agency is the Michigan Department of Public Health (MDPH).

After several years of study, DWSD is forwarding the complete study findings to the MDPH for their consideration. It was concluded that DWSD could reduce the corrosivity of the water in the most cost effective and efficient manner by the addition of ortho-phosphate, specifically in the form of phosphoric acid. The Executive Summary of these findings is being forwarded to you for your information. The MDPH has until the end of December 1994 to consider DWSD's recommendation. In the interim, DWSD plans on conducting a demonstration test of the corrosion control treatment in our distribution system to further assist the MDPH and to further safeguard public health.

Very truly yours,

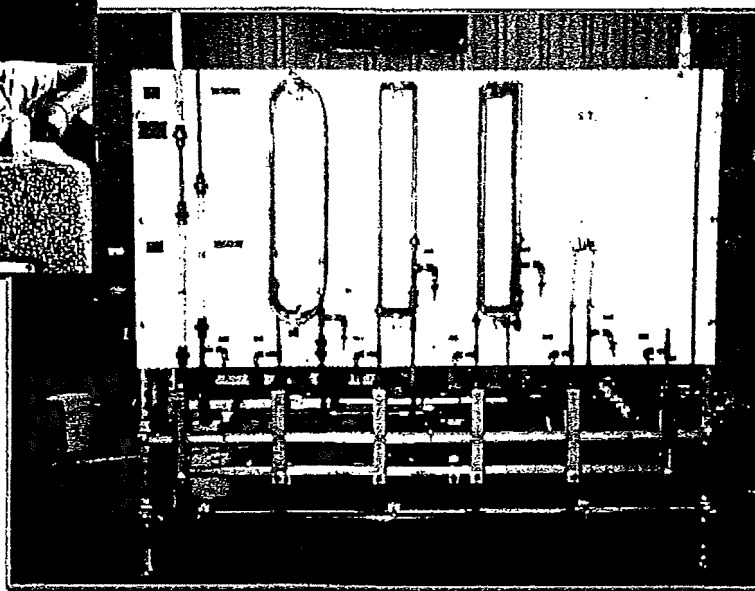
Judith Huddleston
Irving M. Schuraytz, P.E.
Assistant Director, Water Supply Operations
Kathleen Leavey
Kathleen Leavey
Deputy Director

KL/IMS/JH/cs

DENNIS W. ARCHER, MAYOR

Executive Summary

Lead and Copper Corrosion Control Optimization Study



prepared by

Tucker, Young, Jackson, Tull, Inc., in association with
CH2M HILL, INC., and Economic and Engineering Services, Inc.

May 1994



Detroit Water and Sewerage Department

Introduction

As a result of the Safe Drinking Water Act (SDWA) Amendments of 1986, the U.S. Environmental Protection Agency (EPA) published final drinking water regulations for lead and copper in the June 7, 1991, *Federal Register*. Those regulations, known as the Lead and Copper Rule (LCR), require:

- Tap water monitoring, which is a new approach for water utilities
- Treatment optimization for lead and copper corrosion control
- Public education and lead service line removal if utilities exceed preset lead or copper levels

Large utilities, serving populations greater than 50,000, are required to conduct corrosion control studies to demonstrate that they are either already providing optimal treatment or to determine optimal treatment for their system.

DWSD made necessary public notices and embarked on studies to develop optimal treatment solutions.

In response to the regulations, the Detroit Water and Sewerage Department (DWSD) conducted two rounds of monitoring at home water taps for lead and copper and throughout the distribution systems for other water quality parameters. Monitoring was a cooperative effort between the DWSD, wholesale water customers, and the Michigan Department of Public Health (MDPH). Copper levels were well below EPA limits. Lead levels, however, exceeded EPA action levels

(ALs) and DWSD made necessary public notices and embarked on studies to develop optimal treatment solutions.

Lead exposure sources for humans include air, food, dust, paint, and drinking water. Elevated lead levels in blood have been associated with adverse health effects in humans. Federal health authorities have many programs to reduce lead exposure including low-lead gasoline and reduced lead content in paint. Although drinking water may not be the major source of lead, reducing lead levels in drinking water will have a positive health benefit. An additional benefit of corrosion control is prolonged life for water distribution pipes and home plumbing. This results in lower costs for water utilities and their customers.

In March 1992, the DWSD contracted with Tucker, Young, Jackson, Tull, Inc. (TYJT), in association with CH2M HILL, INC., and Economic and Engineering Services, Inc. (EES), to perform a lead and copper corrosion control study. The purpose of the study was to determine the optimal approach for reducing lead and copper concentrations in DWSD drinking water without adversely affecting other water quality characteristics. Major tasks in this study were to:

- Evaluate existing water quality data, existing distribution system pipe materials and the results of lead and copper sampling
- Identify and analyze feasible and practical treatment methods to reduce lead and copper corrosion (desktop analysis)
- Design and construct a pipe-loop testing apparatus to evaluate treatment alternatives identified in the desktop analysis

- Operate the pipe loops for 1 year to evaluate selected corrosion control treatments on different pipe materials
- Evaluate the effectiveness and feasibility of the tested treatment alternatives in reducing lead and copper concentrations
- Recommend an optimum lead corrosion control treatment
- Develop an implementation plan for full-scale corrosion control facilities

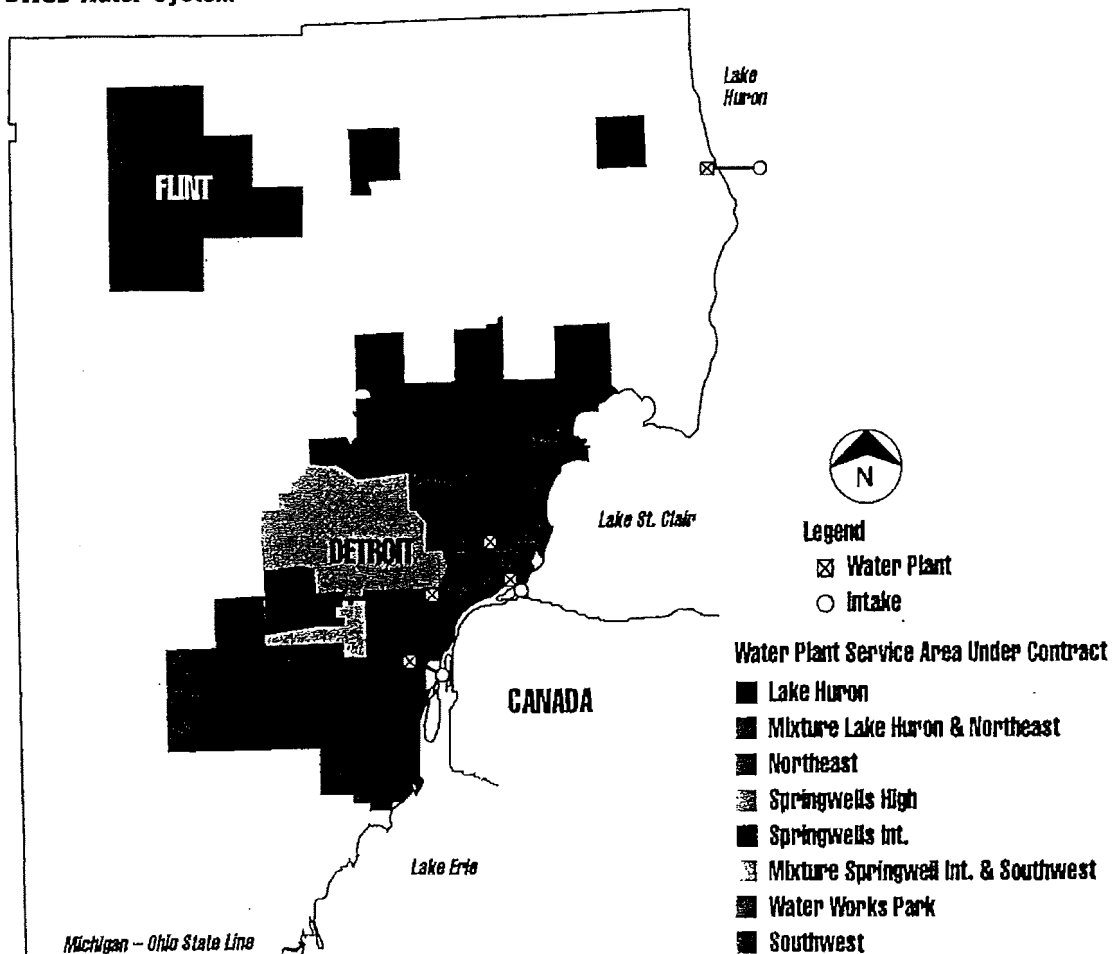
This report presents the results of the DWSD Lead and Copper Corrosion Control Optimization Study.

Existing Conditions

The DWSD obtains water from three intakes. Two of these, the Belle Isle and the Fighting Island Intakes, take water from the Detroit River. The third intake is on Lake Huron. Water is treated at five water treatment plants (WTPs) including the Water Works Park, Southwest, Springwells, Northeast, and Lake Huron WTPs. The water system is shown in Figure ES-1. Treated water from the 5 WTPs is distributed to the City of Detroit and 119 wholesale water customer systems. The DWSD water system serves about 4 million people.

Water leaving the WTPs is of good quality and considered moderately

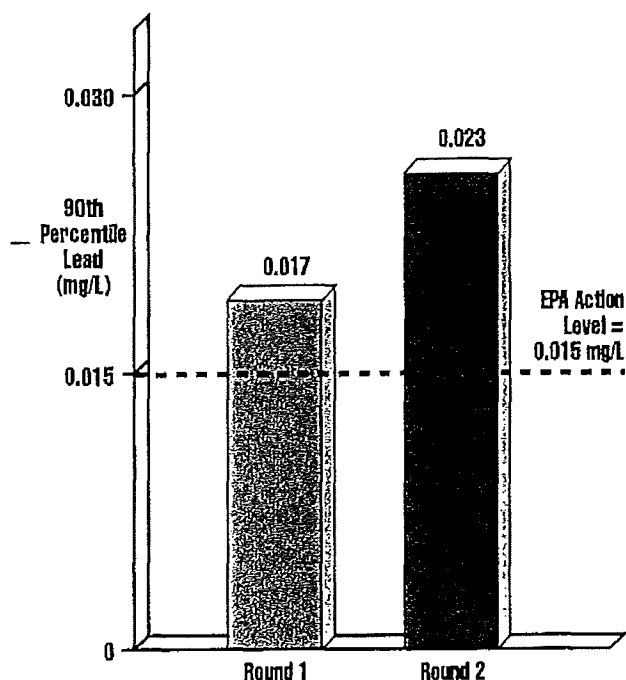
Figure ES-1
DWSD Water System



corrosive. For example, pH from the five WTPs averages 7.4, alkalinity averages 76 mg/L (CaCO_3), and hardness averages 100 mg/L (CaCO_3). Nevertheless, some increase in lead and copper is resulting from the corrosive action of the water, primarily on service pipe and household plumbing. The main sources of lead are 50:50 lead/tin solder, brass containing lead used in faucets, and lead service lines and plumbing.

The regulation lead AL is 0.015 mg/L at the 90th percentile in home water taps. During the LCR Compliance Monitoring conducted in 1992, DWSD's 90th percentile lead concentration was 0.017 mg/L in the first round and 0.023 mg/L in the second round of sampling (Figure ES-2). Looking at the data in a slightly different manner, 35 to 37 percent of the 119 purveyor water systems exceeded the AL for lead.

Figure ES-2
LCR Compliance Monitoring Results for Lead



For copper, the 90th percentile concentrations were 0.34 and 0.19 mg/L for two rounds of sampling—well below the copper AL of 1.3 mg/L (Figure ES-3). Lead uptake, therefore, is the major concern within the DWSD water system.

Determining the optimal lead control treatment is essential; it is the objective of conducting this corrosion control study. Further, there are an estimated 200,000 lead service lines (LSLs) in DWSD's direct service area and possibly more in areas served by wholesale customers. After corrosion treatment is optimized, the possibility exists that lead ALs may still be over 0.015 mg/L at the 90th percentile. Should this occur, the DWSD would need to embark on a removal program for LSLs, which could cost between \$300 and \$800 million.

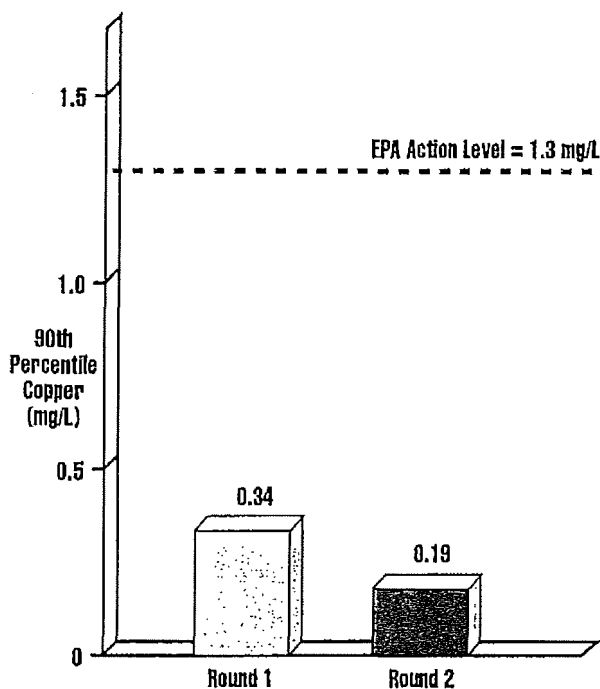
Desktop Analysis

To reduce the number of chemicals for long-term testing, a screening analysis was performed using desktop techniques recommended by U.S. EPA. Lead corrosion control treatment methods examined for their applicability to DWSD are as follows:

- Polyphosphates
- Orthophosphates
- Zinc orthophosphate
- Polyphosphate/orthophosphate blends
- Silicates
- pH adjustment
- Alkalinity adjustment
- Calcium adjustment

The main criteria for selecting a lead corrosion control method is performance for lead uptake reduction. Lead corrosion control methods were also evaluated

Figure ES-3
LCR Compliance Monitoring Results for Copper



based on effects on other drinking water regulations, industrial water users, wastewater treatment, water quality, water treatment operations, consecutive water systems, and multiple sources of supply and treatment.

Based on this evaluation, the following chemical treatments were eliminated from consideration for pipe-loop testing.

- **Polyphosphates.** These products are primarily used to sequester iron, calcium, and manganese and may actually do more to promote lead corrosion than to prevent it.
- **Polyphosphate/Orthophosphate Blends.** These products have not been proven to be more effective than orthophosphates alone for lead reduction, and their proprietary chemical composition makes selection of the optimum product difficult.

- **Silicates.** Sodium silicate inhibitors require a high dosage for lead control and, based on a survey of major industries, would have significant adverse effects on industrial water users.
- **Alkalinity Adjustment.** This technique would have marginal performance for lead reduction based on DWSD water quality and would be impractical for a system the size of DWSD.
- **Calcium Adjustment to Deposit a Calcium Carbonate Layer.** This technique is not a proven method for lead reduction, and would be difficult to produce a uniform layer throughout a distribution system the size of DWSD. Calcium carbonate deposition, however, can occur when pH is raised for lead reduction. This situation is addressed under the pH adjustment alternative.

Lead corrosion control treatment methods applicable for DWSD water are as follows:

- **Orthophosphates.** These products have been shown to be an effective means of lead reduction for water similar to that of the DWSD.
- **Zinc Orthophosphate.** These products are also a proven method of lead reduction, although there is concern about zinc in industrial water and wastewater.
- **pH adjustment.** This technique is also a proven method of reducing lead solubility, although higher pHs affect some industrial users and can increase calcium carbonate deposition.

A survey of 16 Great Lakes area water utilities using water of similar quality to that of DWSD demonstrated the effectiveness of orthophosphate, zinc orthophosphate, and pH adjustment in reducing lead concentrations at the consumers' taps. Those treatment methods, therefore, were retained for further testing in the pipe-loop apparatus.

Pipe-Loop Testing

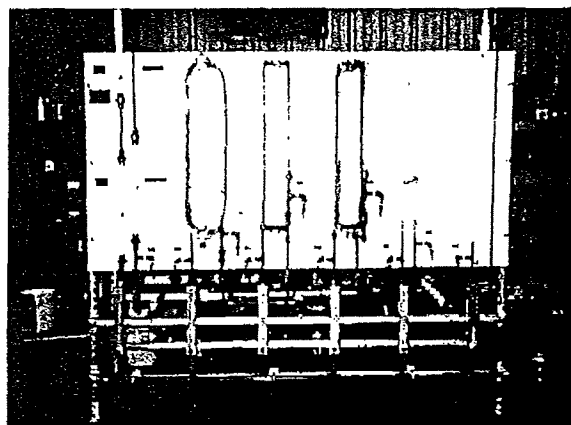
Based on the desktop analysis, it was concluded that the following treatments would be tested in the pipe loops:

- Adjusting pH to 8.1 using sodium hydroxide
- Adjusting pH to 8.7 using sodium hydroxide
- Adding zinc orthophosphate at doses of 0.4 mg/L for zinc and phosphorous (as P)
- Adding orthophosphate using phosphoric acid at a dose of 0.4 mg/L as P

Pipe-loop testing produces information on the corrosion control treatment most likely to effectively reduce lead levels.

It is important to understand that pipe-loop testing is conducted to provide information on the **relative effectiveness** of corrosion control treatments. The results cannot be used to predict actual lead levels that may occur at customers' taps in the water system. Pipe-loop testing, however, produces information on the corrosion control treatment most likely to effectively reduce lead levels and is an approved optimization technique.

Figure ES-4
Typical Testing Apparatus



A pilot-scale testing apparatus was designed and constructed to test each of the treatment techniques on different pipe materials. Five pipe-loop racks were constructed: one for each of the four methods and another for control (no treatment provided). Each pipe-loop rack included one new lead pipe loop, two identical copper pipe loops with lead soldered joints, one brass tester, and one section of old lead pipe. Three weight loss testers were also included for measuring corrosion rates of steel, galvanized steel, and copper. A typical testing apparatus is shown in Figure ES-4.

The pipe-loop facility was installed in the lower level of the Water Works Park High Service Pump Station and operated from January to November, 1993. After an initial period of passivation, water samples were collected on a weekly basis and analyzed for lead, copper, and zinc. The 1-liter water samples were taken after the water had been in contact with the pipe loop materials for 8 hours. This was done to represent the first-draw sampling required by the LCR. Additional sampling included daily monitoring for pH, chemical doses, and temperature. Disinfection

by-products (DBPs) and pipe insert weight loss were done quarterly. Flavor profile analyses to assess any changes in tastes or odors were run monthly.

Results of pilot testing indicated:

- The inhibitor treatments, zinc orthophosphate, and phosphoric acid are statistically better than the untreated control for both old and new lead piping (Figure ES-5).
- For lead solder and copper piping, the median lead levels were lowest in the water with inhibitors (zinc

orthophosphate and phosphoric acid), but only the phosphoric acid results were statistically better than the other loops (Figure ES-6).

- For brass, the results indicated that the treatments were no better than the control; however, lead levels were near the detection limit in the brass testers (Figure ES-6).
- Zinc orthophosphate and phosphoric acid were also found to be the most effective treatments in reducing copper (Figure ES-7).

Figure ES-5
Relative Lead Levels from Lead Pipe

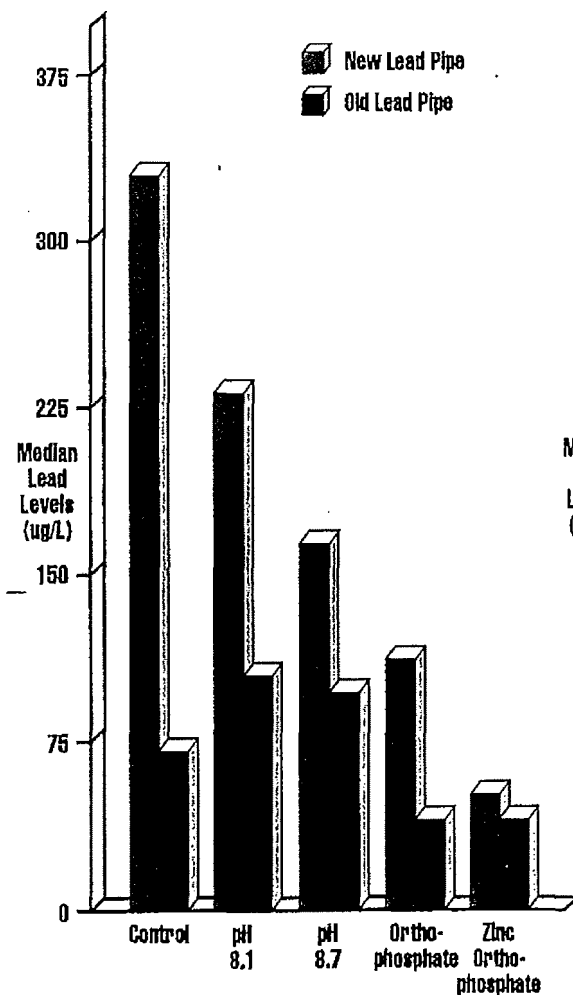


Figure ES-6
Relative Lead Levels from Soldered Copper and Brass

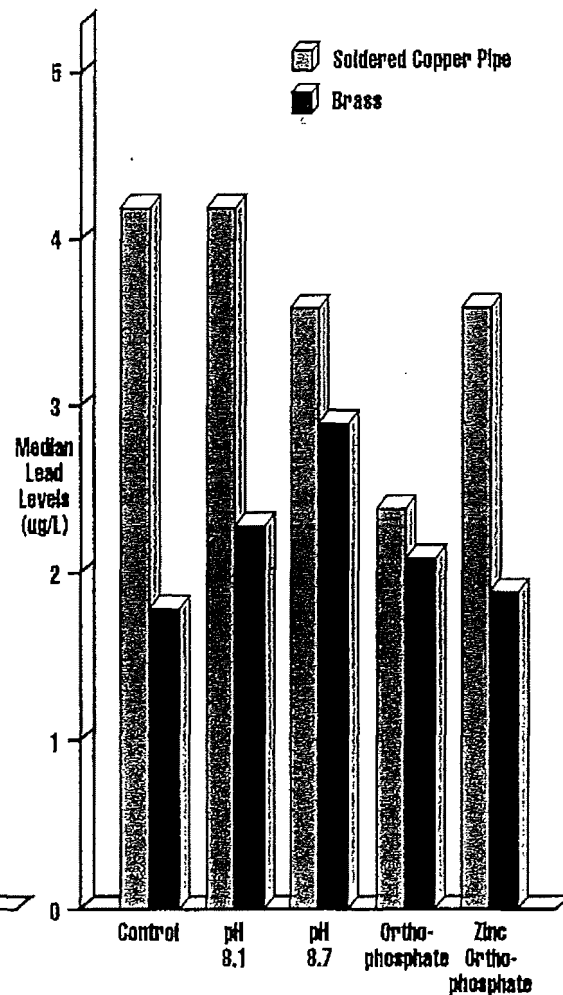
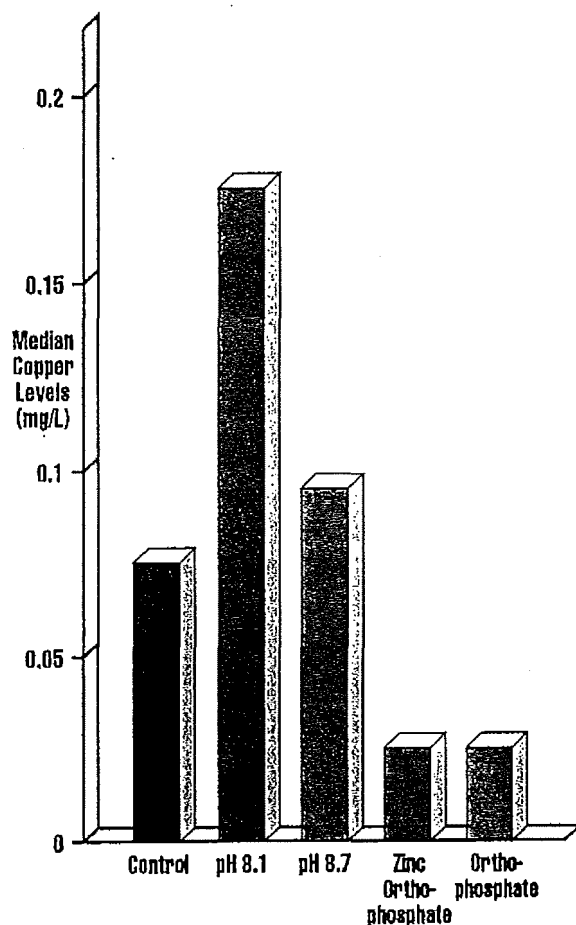


Figure ES-7
Relative Copper Levels from Copper Pipe



- DPBs were increased for the pH adjustment treatments as expected. The DPBs formed as a result of this increase, however, did not exceed EPA-proposed limits. The orthophosphate and zinc orthophosphate did not increase DBPs.
- None of the corrosion control treatments had an adverse effect on the taste and odor of the water produced.

Evaluating Corrosion Control Treatment

The four corrosion control treatments tested in the pipe loops were evaluated based on the following criteria:

- Performance for lead uptake reduction
- Feasibility of implementation within regulatory and functional constraints
- Reliability in terms of operational consistency and continuous corrosion control protection
- Cost

Pipe-loop data analyses indicated orthophosphate and zinc orthophosphate are most likely to yield the best results for lead reduction. pH adjustment was not as effective for lead control. Orthophosphate and zinc orthophosphate were effective at reducing copper levels.

A feasibility analysis indicated that industrial water users would be affected adversely by zinc or a higher water pH. Wastewater operations would be adversely affected by zinc and orthophosphates loadings. There were no major effects of corrosion control treatment on drinking water regulations. pH adjustment could, however, decrease disinfection effectiveness and increase DBP formation.

The reliability of zinc orthophosphate and sodium hydroxide chemicals is less than would be expected for orthophosphates. Zinc orthophosphate is a proprietary chemical with price and supply constraints. Sodium hydroxide availability and price depend on market conditions. Orthophosphate (phosphoric acid) is available as a generic chemical and is commonly used in the food and beverage

age industry; therefore, price and availability are more stable. From a WTP-operations standpoint, pH adjustment is less reliable because pH can change with raw water quality and treatment conditions.

The chemical cost of each treatment alternative is shown in Figure ES-8. Phosphoric acid addition is less than half the cost of pH adjustment to 8.1, the next lowest chemical cost. This represents an

average cost savings of about \$2,400 per day. Phosphoric acid could save the DWSD about \$10 million in present worth in the next 20 years compared to the next lowest cost alternative.

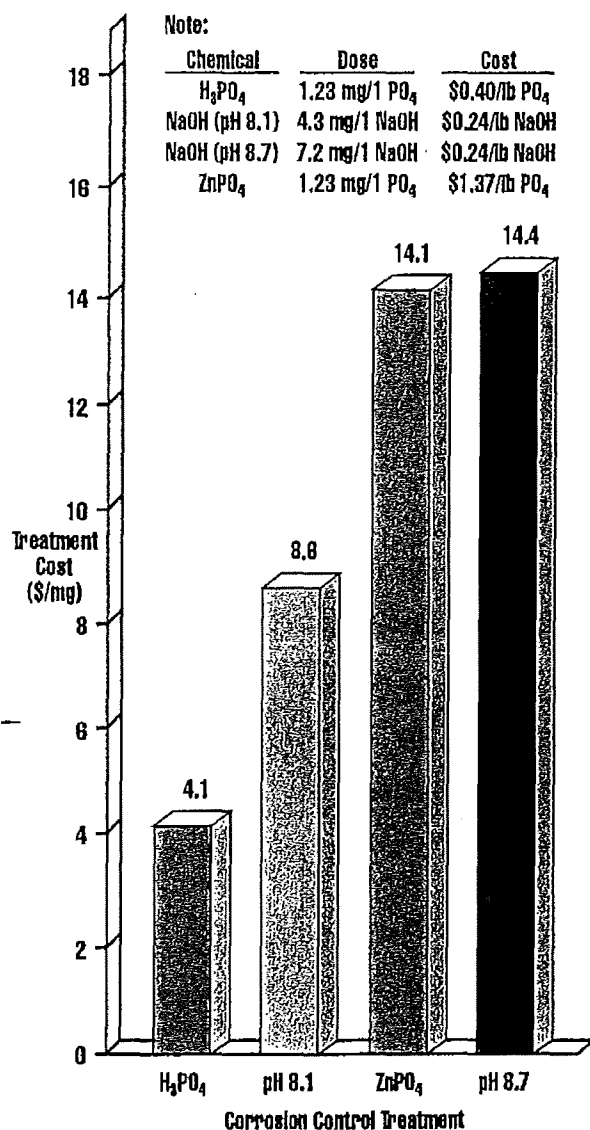


Selecting Corrosion Control Treatment

The relative ranking of alternatives for the four criteria (performance, feasibility, reliability, cost) is summarized in Figure ES-9. Values of 1 through 4 were assigned for each treatment alternative in each criteria category (1 was best; 4 worst). Because performance for lead reduction was the main criteria, it was given a weight of 2. Each of the other criteria was given a weight of 1.

Orthophosphates were ranked highest overall. Zinc orthophosphate was second, mainly because of its adverse effects on industry, wastewater plant operations, and higher costs. pH adjustment was ranked lowest because it is less effective for lead reduction, less reliable, and demonstrates more adverse effects on industry and drinking water regulatory compliance.

Figure ES-8
Treatment Alternatives Costs



Orthophosphates were selected as the optimal treatment alternative for full-scale lead corrosion control.

Based on corrosion control theory, comparison with analogous water systems, and the extensive pilot plant studies, orthophosphates were selected as the optimal treatment alternative for full-scale lead corrosion control.

Figure ES-9
Alternatives Ranking
by Criteria

Treatment	Evaluation Criteria				Weighted
	Performance wt.= 2	Feasibility wt.= 1	Reliability wt.= 1	Cost wt.= 1	
Phosphoric Acid	2	1	1	1	7
Zinc Orthophosphate	1	4	2	3	11
pH 8.1	4	2	3	2	15
pH 8.7	3	3	4	4	17

Legend: 1 = Best; 4 = Worst

Phosphoric acid is the recommended form of adding orthophosphate. It is a generic chemical and can be bid competitively. It does not add sodium to the water and costs less than any other form of orthophosphate. In addition, the finished water pH is already in the optimal range for lead solubility reduction by phosphates, so pH adjustment is not required.

The recommended dose of phosphoric acid is 1.2 mg/L as P for initial passivation and a sustained dose of 0.4 mg/L as P for maintaining control of lead uptake. Values may be adjusted based on full-scale results.

Full-Scale Implementation

The LCR requires optimal corrosion control treatment installation by January 1, 1997. To meet this deadline, the implementation schedule in Figure ES-10 is proposed. The first element of implementation is to conduct full-scale demonstration testing in the distribution system served

by one of the WTPs before installing chemical feed facilities in the other four plants. Operation of lead corrosion control facilities at all plants is planned for May 1996. This will provide additional time to optimize the system before lead monitoring is required in 1997.

The chemical equipment required for each WTP is summarized in Table ES-1. A schematic of a typical liquid chemical system is shown in Figure ES-11.

The cost of lead corrosion control chemicals is estimated to be about \$0.87 per year per household.

The estimated capital cost for corrosion control facilities at the five WTPs is \$3,740,000. The estimated cost of chemicals is \$868,000 per year. The cost of lead corrosion control chemicals is estimated to be about \$0.87 per year per household.

A monitoring program will be established before and after corrosion control treatment is implemented to determine performance for lead reduction and effects on other water quality parameters. If lead is reduced to below the EPA AL of 0.015 mg/L for two consecutive 6-month monitoring periods, other methods

of lead reduction, such as removing lead service lines, will not be required.

If the lead AL is still exceeded after optimization and stabilization, a program for lead service line removal should be developed in addition to an ongoing public education program.

Operation of lead corrosion control facilities at all plants is planned for May 1996.

**Figure ES-10
Implementation Schedule**

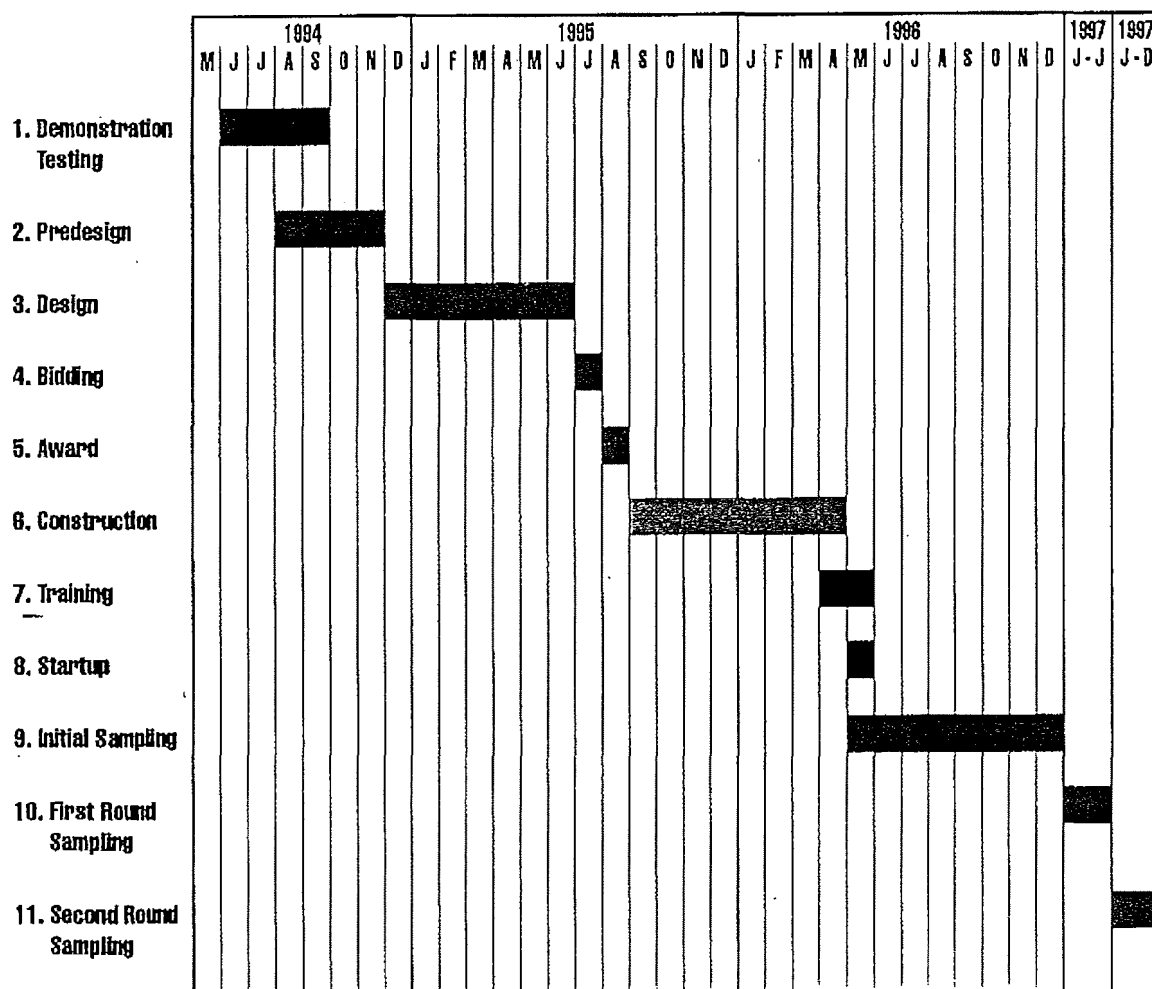
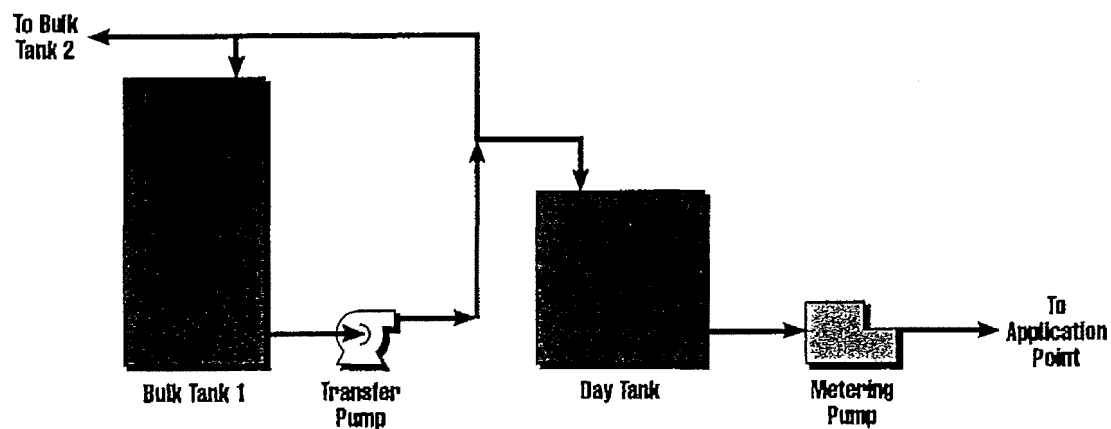


Table ES-1
Chemical Equipment Summary

	Southwest Water Plant	Water Works Park Water Plant	Northeast Water Plant	Springwells Water Plant	Lake Huron Water Plant
Number of bulk tanks	2	2	2	2	2
Bulk tank capacity, each (gal)	4,000	4,000	4,000	6,000	4,000
Number of day tanks	1	1	1	1	1
Day tank capacity (gal)	200	200	200	400	200
Number of feeders	3	3	3	3	3
Feeder capacity, each (gpd)	1 @ 200 2 @ 650	1 @ 300 2 @ 650	1 @ 250 2 @ 800	1 @ 600 2 @ 1,500	1 @ 350 2 @ 650
Number of transfer pumps	2	2	2	2	2
Transfer pump capacity each (gpm)	15	15	15	30	15

Figure ES-11
Liquid Chemical System Schematic



City of Flint Lead and Copper Rule Monitoring History					
Monitoring Period	90th Percentile (parts per billion)	Number of Samples above 15 ppb	Samples Required	Samples Collected	Required Frequency
Jan. - June 2015	11 ppb	6	60	68	*Unofficial
July - Dec. 2014	6 ppb	2	100	100	6 months
New Source and Treatment - Flint River and Flint WTP					
June - Sept. 2011	0 ppb	0	23	23	3 years
June - Sept. 2008	0 ppb	0	33	33	3 years
June - Sept. 2005	1.4 ppb	0	33	33	3 years
June - Sept. 2002	4 ppb	1	33	33	3 years
June - Sept. 2001	4.4 ppb	0	33	33	1 year
June - Sept. 2000	7 ppb	2	33	33	1 year
Jan. - June 1999	5 ppb	0	33	33	1 year
July - Dec. 1998	7.4 ppb	1	33	33	6 months
July - Dec. 1997	5 ppb	1	33	33	6 months
Jan. - June 1997	4.5 ppb	1	33	33	6 months
DWSD Study and OCC Treatment					
July -Dec. 1992	14.4 ppb	3	33	33	6 months
Jan. - June 1992	15 ppb	4	33	33	6 months

STATE OF MICHIGAN



JOHN ENGLER, GOVERNOR

DEPARTMENT OF PUBLIC HEALTH

3423 N. LOGAN/MARTIN L. KING JR., BLVD.

P.O. BOX 30195, LANSING, MICHIGAN 48909

Vernice Davis Anthony, Director

March 15, 1993

City of Flint
1101 South Saginaw Street
Flint, Michigan 48502

WSSN: 2310 ✓

Attention: Mr. Charles Smith, Utilities Superintendent

Subject: Lead/Copper Monitoring

Gentlemen:

We have reviewed the results of the second round of the lead and copper monitoring completed for your water supply for the period of July 1, 1992, through December 31, 1992. The samples were collected and analyzed to comply with the U.S. Environmental Protection Agency's Lead and Copper Regulation. The action levels specified in the regulation require that the 90th percentile results from the distribution system samples for lead and copper not exceed 15 and 1300 ug/l, respectively.

Since the 90th percentile lead level for your water system is 14.4 ug/l, the lead action level of 15 ug/l has not been exceeded. Also, the 90th percentile copper level was significantly below the copper action level of 1300 ug/l. This means that your water system has met both action levels for the first two monitoring periods.

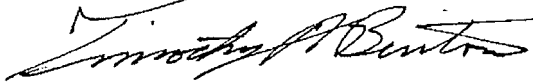
Although many of the Detroit Water and Sewerage Department (DWSD) customers have met the action levels, DWSD is required to conduct a study to determine whether their water treatment processes can be improved to further reduce corrosion. The study is to be completed by July 1, 1994, and any recommended treatment modifications must be in place by January 1, 1997.

City of Flint
Page 2
March 15, 1993

Further monitoring of your water system for lead and copper will not be required until the DWSD study is complete and any additional corrosion control treatment has begun. We will inform you when monitoring is again required. This may be as late as January 1997.

If you have any questions, please call me at (517) 335-8309.

Sincerely,

A handwritten signature in dark ink, appearing to read "Timothy A. Benton". The signature is fluid and cursive, with a large initial "T" and "B".

Timothy A. Benton, P.E.
District Engineer
Division of Water Supply
Bureau of Environmental and
Occupational Health

TAB:im

cc: John Weisenberger, Water Plant Supervisor
cc: Genesee County Health Department

Shekter Smith, Liane (DEQ)

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Tuesday, June 02, 2015 8:28 AM
To: Busch, Stephen (DEQ); Prysby, Mike (DEQ); Cook, Pat (DEQ)
Cc: Benzie, Richard (DEQ); Philip, Kris (DEQ); Shekter Smith, Liane (DEQ)
Subject: April 27 Flint Sampling Update from Miguel

Mea culpa.... I totally missed this email. Just saw it today. You already know the general information, but here is directly from Miguel.

Jennifer

From: Deltoral, Miguel
Sent: Monday, April 27, 2015 6:53 AM
To: Poy, Thomas
Cc: Porter, Andrea; Bair, Rita; Crooks, Jennifer
Subject: Flint Sampling Update

Good morning, Tom

Just an update on the Flint sampling so folks know what's going on. As we had initially discussed, the only way to really see what the lead levels are throughout and where the lead is actually coming from at Ms. Walters' place is to do sequential sampling prior to the removal of the LSL. I spoke to Ms. Walters and she said that the water was shut off inside her home, so it can actually be turned back on, so Jennifer and I picked up sample bottles from the R5 office and we will be dropping them off at Ms. Walters place today on the way home from the MDEQ RTCR meeting. Pat Cook has confirmed that following the disconnection from Detroit, Flint has not been operating any corrosion control treatment, which is very concerning given the likelihood of LSLs in the city. We do not know how many LSLs there are in Flint and according to Ms. Walters, neither does the city. She said that they do not know where any LSLs are, based on their records, so other than what appears to be a very long one at Ms. Walters' place, we don't have confirmation of any others at this point. Since they were used extensively here in R5, it is likely there are more. No idea how many, though.

Marc Edwards (from Virginia Tech) was kind enough to offer to analyze this round of samples so she will shipping the samples to Marc for analysis. I asked that he measure phosphate as well, so that we have some data on that. As we discussed, R5 will send an additional set of bottles to Ms. Walters for the follow-up monitoring once the LSL is removed. I spoke to Mike Prysby on Friday and he said that the city was going to remove the LSL fully this Wednesday. I also brought a camera with me and will take some pictures while we are at Ms. Walters place as well.

Apparently, according to Ms. Walters, the water director appears to be telling residents that the high lead from Ms. Walters residence is from the internal plumbing and that a reporter she was talking to, as well as others, has confirmed that this is what residents are being told. Ms. Walters indicated that the line coming into the home appears to be galvanized pipe. If this is true, it is possible that her portion of the service line, from the home to the property line, is not lead and that the city-owned portion of the service line is the only source of lead here. The sample results should help to clarify where the lead is coming from.

Call me on the cell if you need to: 312.659.5827

Miguel A. Del Toral

Regulations Manager
U.S. EPA R5 GWDWB
77 West Jackson Blvd, (WG-15J)
Chicago, IL 60604
Phone: (312) 886-5253

Shekter Smith, Liane (DEQ)

From: Benzie, Richard (DEQ)
Sent: Saturday, May 02, 2015 10:35 AM
To: Shekter Smith, Liane (DEQ)
Subject: Fw: Flint Corrosion Control?

FYI

From: Cook, Pat (DEQ)
Sent: Friday, May 1, 2015 11:38 AM
To: Deltoral, Miguel
Cc: Porter, Andrea; Crooks, Jennifer; Poy, Thomas; Benzie, Richard (DEQ); Busch, Stephen (DEQ)
Subject: RE: Flint Corrosion Control?

Hi Miguel - sorry, I should have been more specific in my previous email. The rules you stated below allow large systems to be considered having optimal corrosion control if they have data from two consecutive 6 month monitoring periods that meet specific criteria. DEQ-ODWMA has not made a formal decision as to whether or not the City of Flint meets the exemption criteria or will be required to do a corrosion control study since Flint has only completed one round of 6 month monitoring. The City of Flint's second round of monitoring will be completed by June 30, 2015, and we will make a formal decision at that time. If my memory is correct, this is consistent with the process followed in the early 1990's for large systems when the Pb/Cu rule was first implemented. The Department waits until large systems complete both rounds of full scale, 6 month monitoring before making a decision about optimal corrosion control. If it is determined that Flint has to install corrosion control treatment, the rule allows up to 2 years to complete a study and 2 additional years to install the treatment unless we set a shorter time frame.

As Flint will be switching raw water sources in a just over one year from now, raw water quality will be completely different than what they currently use. Requiring a study at the current time will be of little to no value in the long term control of these chronic contaminants.

Finally, the City of Flint's sampling protocols for lead and copper monitoring comply with all current state and federal requirements. Any required modifications will be implemented at the time when such future regulatory requirements take effect.

Patrick Cook, P.E.
 Community Drinking Water Unit
 Office of Drinking Water & Municipal Assistance
 Michigan Department of Environmental Quality
 Phone: (517) 284-6514
cookp@michigan.gov

From: Deltoral, Miguel [<mailto:deltoral.miguel@epa.gov>]
Sent: Saturday, April 25, 2015 10:11 AM
To: Cook, Pat (DEQ)
Cc: Porter, Andrea; Crooks, Jennifer; Poy, Thomas
Subject: Re: Flint Corrosion Control?

Hi Pat,

I'll be heading out to MI for RTCR tomorrow and won't see email until next Tuesday, but I wanted to follow up on this because Flint has essentially not been using any corrosion control treatment since April 30, 2014 and they have LSLs. Given the very high lead levels found at one home and the pre-flushing happening at Flint, I'm worried that the whole town may have much higher lead levels than the compliance results indicated, since they are using pre-flushing ahead of their compliance sampling.

If the source water lead is non-detect (zero), then according to 141.89(a)(3) they should use zero for that source water value:

"All lead and copper levels measured between the PQL and MDL must be either reported as measured or they can be reported as one-half the PQL specified for lead and copper in paragraph (a)(1)(ii) of this section. All levels below the lead and copper MDLs must be reported as zero."

As far as the treatment determination, there are only two scenarios for a large system to be deemed to have optimized corrosion control without treatment and Flint does not appear to meet either:

The first is at 141.81(b)(3)

Any water system is deemed to have optimized corrosion control if it submits results of tap water monitoring conducted in accordance with § 141.86 and source water monitoring conducted in accordance with § 141.88 that demonstrates for two consecutive 6-month monitoring periods that the difference between the 90th percentile tap water lead level computed under § 141.80(c)(3), and the highest source water lead concentration is less than the Practical Quantitation Level for lead specified in § 141.89(a)(1)(ii).

If Flint's highest source water lead was zero, and their 90th percentile was 0.006, then Flint does not meet this criteria, because the difference must be LESS THAN the PQL (i.e., 0.004 or less). $0.006 - 0 = 0.006$.

The second is at 141.81(b)(3)(i):

Those systems whose highest source water lead level is below the Method Detection Limit may also be deemed to have optimized corrosion control under this paragraph if the 90th percentile tap water lead level is less than or equal to the Practical Quantitation Level for lead for two consecutive 6-month monitoring periods.

Although Flint's source water lead was non-detect (zero), the 90th percentile lead level is 0.006 which is above the PQL of 0.005, so Flint would not meet this criteria either.

Am I missing something?

Miguel A. Del Toral
Regulations Manager
U.S. EPA R5 GWDWB
77 West Jackson Blvd, (WG-15J)
Chicago, IL 60604
Phone: (312) 886-5253

From: Cook, Pat (DEQ) <COOKP@michigan.gov>

Sent: Friday, April 24, 2015 12:45 PM

To: Deltoral, Miguel

Subject: RE: Flint Corrosion Control?

Total Lead collected from the plant tap on 5/22/14 was zero.

pat

From: Deltoral, Miguel [<mailto:deltoral.miguel@epa.gov>]
Sent: Friday, April 24, 2015 11:59 AM
To: Cook, Pat (DEQ)
Cc: Poy, Thomas; Porter, Andrea
Subject: Re: Flint Corrosion Control?

What was the source water lead level?

Miguel A. Del Toral
 Regulations Manager
 U.S. EPA R5 GWDWB
 77 West Jackson Blvd, (WG-15J)
 Chicago, IL 60604
 Phone: (312) 886-5253

From: Cook, Pat (DEQ) <COOKP@michigan.gov>
Sent: Friday, April 24, 2015 10:43 AM
To: Deltoral, Miguel
Cc: Poy, Thomas; Porter, Andrea
Subject: RE: Flint Corrosion Control?

Hi Miguel - Flint is currently not practicing corrosion control treatment at the WTP. When they started treating water at their WTP last spring, we placed them on full chart (100 sites) Pb/Cu monitoring for two consecutive 6 month periods. WQ monitoring is also being conducted. The first round of samples after switch-over from DWSD (July 1, 2014 – Dec 31, 2014) had 90th percentiles of 6 ppb for Lead and 110 ppb for Copper. The second round of samples (Jan 1, 2015 – June 30, 2015) is underway with approximately 20 of the 100 sample site results in. The highest lead result out of the 20 received thus far is 13 ppb.

Based on the matrix of recommended corrosion control study components for Large PWS's for both Lead and Copper, there are no additional requirements for the City of Flint based on the levels of lead and copper in the current source water and the results of the lead and copper distribution monitoring. The only provision of the Lead & Copper Rule which classifies the existing treatment of large PWSs as optimized for corrosion control is when the difference between the 90% Pb-TAP and Pb-POE is less than the lead practical quantitative level (PQL) for each six-month period of the initial monitoring program. By definition, the PQL for lead is 0.005 mg/L; and the lead value for the source water used in this determination is the highest source water lead concentration. If this condition is met, then no study or testing is required. We believe this condition has been met for Flint. However, we will re-evaluate this after the 2nd round of 6 month sampling is completed.

If you have any further questions, please contact the Lansing District Supervisor, Steve Busch at (517) 643-2314 or at buschs@michigan.gov.

Have a good (and hopefully warm) weekend!

Patrick Cook, P.E.
 Community Drinking Water Unit
 Office of Drinking Water & Municipal Assistance
 Michigan Department of Environmental Quality
 Phone: (517) 284-6514
cookp@michigan.gov

From: Deltoral, Miguel [<mailto:deltoral.miguel@epa.gov>]
Sent: Thursday, April 23, 2015 12:33 PM
To: Cook, Pat (DEQ)
Cc: Poy, Thomas; Porter, Andrea
Subject: Flint Corrosion Control?

Hi Pat,

What's Flint doing now (post Detroit) for corrosion control treatment?

Miguel A. Del Toral
Regulations Manager
Ground Water and Drinking Water Branch
77 West Jackson Blvd (WG-15J)
Chicago, IL 60604
Phone: (312) 886-5253

Shekter Smith, Liane (DEQ)

From: Busch, Stephen (DEQ)
Sent: Tuesday, March 17, 2015 2:02 PM
To: Howard Croft (hcroft@cityofflint.com); Brent Wright (bwright@cityofflint.com); mglasgow@cityofflint.com; Daugherty Johnson (djohnson@cityofflint.com)
Cc: Gerald Ambrose (gambrose@cityofflint.com); nhenderson@cityofflint.com; Prysby, Mike (DEQ)
Subject: Water Quality Optimization Strategy

Howard,

As Mike Prysby and I mentioned during our phone call earlier today, the City should be taking action to optimize water quality in the City's distribution system which will in turn provide the City's water customers with water quality that helps limit the potential for legionella occurrence in premise plumbing. It is recognized that contraction of Legionnaires' Disease is not from ingestion of potable water and not regulated under Safe Drinking Water Act requirements. Further, there is currently no direct evidence of legionella in the City's public water system. However, actions by the City of Flint water system can help minimize the potential for an outbreak in customer plumbing systems.

These actions include the following:

- Water main pigging and flushing to remove biofilm, tuberculation, and sediment throughout the distribution system. Failure to remove such material will limit the effectiveness of any disinfectant. Pigging is the preferred process and equipment can be obtained at minimal cost. As the growth range for legionella starts at 68 degrees F, conducting this work as soon as possible in the spring and early summer with cooler temperatures would help reduce the potential for formation under warmer water conditions.
- Maintain pH levels of 7.2-7.8 in finished water and distribution system when possible to maximize the disinfection and oxidation potential of the hypochlorous acid residual (versus the less potent hypochlorite ion). Any optimized corrosion control plan practices regarding pH levels must be taken into consideration.
- Maintain a minimum free chlorine residual of 0.5 mg/L throughout the distribution system when possible. Continuous residual at this level has been shown to be effective in control of legionella. (This will need to be balanced with requirements to limit TTHM formation and comply with the TTHM standard.)
- Continuous operation and optimization of the ozone treatment equipment to treat raw source water. Ozone is highly effective in the destruction of legionella bacteria.
- Conduct routine monitoring for legionella bacteria at the water treatment plant tap and at locations in the distribution system. Note: sample locations must take water directly off the main and not be from premise plumbing systems. Distribution locations could include storage tank inlets or pumping stations. Monitoring at the WTP plant tap would demonstrate removal of any legionella present in raw source water. A private laboratory that specializes in water sample analysis for legionella would need to be used.
- Optimize water treatment plant operation for pathogen reduction under surface water treatment rule requirements. Optimizing the removal for similar pathogens can help reduce the potential for legionella.

A conference call with City staff would probably be best to facilitate further discussions of these actions in more detail. Mike and I can make ourselves available this week to discuss and answer any questions.

Stephen Busch, P.E.
 Lansing and Jackson District Supervisor

Office of Drinking Water and Municipal Assistance
MDEQ
517-643-2314

Shekter Smith, Liane (DEQ)

From: Wurfel, Brad (DEQ)
Sent: Monday, October 05, 2015 10:11 AM
To: Pallone, Maggie (DEQ); Tommasulo, Karen (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)
Subject: Fwd: comment for Michigan Radio story?

Sent from my iPhone

Begin forwarded message:

From: Rebecca Williams <rmwillia@umich.edu>
Date: October 5, 2015 at 9:54:11 AM EDT
To: "Brad (DEQ) Wurfel" <WurfelB@michigan.gov>
Subject: comment for Michigan Radio story?

Hey Brad,

Would anyone from DEQ want to comment on this blog post from Dr. Marc Edwards that's out this morning?:

<http://flintwaterstudy.org/2015/10/investigation-of-mdeqs-new-corrosion-control-claim-reveals-more-deception-and-incompetence-where-is-the-epa/>

Our deadline for the Environment Report segment is 2pm today. Lindsey is also producing news spots for this afternoon. Both stories focus on corrosion control.

thanks,

Rebecca Williams
Senior Reporter
Michigan Radio
(734) 647-3497 desk
(734) 355-7215 cell

Shekter Smith, Liane (DEQ)

From: Shekter Smith, Liane (DEQ)
Sent: Friday, September 11, 2015 1:47 PM
To: Busch, Stephen (DEQ); Wurfel, Brad (DEQ); Benzie, Richard (DEQ)
Subject: RE: mayor walling's comment

It should be noted that the city does need to obtain a construction permit to install treatment. They have not yet applied for such a permit. So I'm not sure what the mayor means about us finally allowing them to proceed. The ball's in their court.

Liane J. Shekter Smith, P.E., Chief
 Office of Drinking Water and Municipal Assistance
 Michigan Department of Environmental Quality
 517-284-6543

From: Busch, Stephen (DEQ)
Sent: Friday, September 11, 2015 1:45 PM
To: Wurfel, Brad (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ)
Subject: RE: mayor walling's comment

The City has not sent us their recommendation at this time. Per our 8/17 letter (attached), we recommended they select phosphate treatment which was previously provided by DWSD. They have until the end of the year to make a recommendation, but they are planning to have the treatment in place by January 2016. Their engineering consultant is working on this. Howard Croft noted this in his September 3 email to members of the technical advisory team the City formed.

Stephen Busch, P.E.
 MDEQ Lansing District Coordinator
 Office of Drinking Water and Municipal Assistance
 Lansing and Jackson District Supervisor
 517-643-2314
buschs@michigan.gov

From: Wurfel, Brad (DEQ)
Sent: Friday, September 11, 2015 1:18 PM
To: Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ)
Subject: FW: mayor walling's comment

Help?

From: Ronald Fonger [<mailto:RFONGER1@mlive.com>]
Sent: Friday, September 11, 2015 1:03 PM
To: Wurfel, Brad (DEQ)
Subject: mayor walling's comment

Brad:
 On his campaign Web site, Mayor Walling addresses a lot of water issues and states, "The City will be continuing to

optimize its water treatment process including planning to use a corrosion inhibitor now that it is being allowed by the MDEQ.”

Do you have any information on what the corrosion inhibitor is and whether DEQ has approved its use?

Thanks,

Ron Fonger

MLive Media Group

Reporter

mobile 810.347.9963

email rfonger1@mlive.com

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