
From: Wurfel, Brad (DEQ)
Sent: Tuesday, February 03, 2015 1:43 PM
To: Fonger, Ronald (RFONGER1@mlive.com)
Subject: On Background

Hey, Ron. Some of this you may know. Some you may not. It's from a briefing I prepared for our internal use here. Just FYI. Hope to see you at 3 p.m.

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DEQ backgrounder on Flint water

Following the formal approval of Flint into the KWA in 2012, DWSD sent Flint a letter saying their contract was thereby terminated (by early 2013).

Genesee County has been using DWSD water without a contract since May 2014. But Flint took the letter to imply a water cutoff, and promptly turned to DEQ with a proposal to use the Flint River (their historic backup system).

This proposed shift was pitched primarily as a money saver. But it put the city in the business of water production, where they historically had been in the business of water transmission. DEQ approved the use of the river as a source, based on the treatment plant's past performance as a standby facility and the improvements we outlined prior to a switchover.

Several municipalities around the state use surface water supplies (rivers): Blissfield near Monroe, Manistique, and Alma to name a few.

The city completed the upgrades at the water plant the facility and DEQ approved it April 2014.

There were some initial hiccups. Last summer, there were a couple of 'boil water' notices issued. One for a water test that showed e. coli, one for a break in the water main.

The challenge to using the Flint River as a source is that the condition of the water is variable and changes with season and weather. It has substantially more organic matter than deep lake sources like Lake Huron. This organic matter is mobilized by high water events, and warm weather also can account for more organic material in the water.

The treatment of the organic matter is done with chlorine. One might conclude that the continual answer is just to use more chlorine to achieve water safety. However, at some point on the continuum, the chlorine and organic matter create TTHM – total trihalomethanes – as a byproduct. When the standard for those is exceeded over several consecutive quarters of testing, the supply is required by law to issue public notice and submit an approved plan for addressing the situation.

You'll note that this regulatory approach means TTHM testing is done quarterly. That means people who use the system are exposed to TTHM for several months before the public notice is required. It's because TTHM is a chronic health threat. Over the long term (measured in decades), continued exposure can contribute to some known health problems. If this were an immediate health threat, customers would receive immediate notification to boil their water or not use it.

Put in context, the EPA (which established the standard and the rule) estimates the existence of the TTHM standard prevents an estimated 280 bladder cancer cases each year ... out of more than 330 million people who use public water supplies around the country.

It's not "nothing." State and federal law requires quarterly testing for TTHM and that the public be informed of it when the annual average of four quarters' worth of consecutive testing shows TTHM levels exceeding 80 parts per billion. Flint's results managed to exceed the annual average in three quarters, and they must develop a plan to address it.

But it's not like an eminent threat to public health. Unlike an e. Coli or even total coliform bacteria maximum contaminant level, which require immediate public notification and response and are part of daily / hourly testing of public water supplies, TTHMs pose a public health concern with chronic, long-term exposure.

It's clear the nature of the threat was communicated poorly. It's also clear that folks in Flint are concerned about other aspects of their water – taste, smell and color being among the top complaints.

The Safe Drinking Water Act requires public water supplies be tested for more than 90 regulated contaminants, including microbial contaminants. The act, and the program here in Michigan, work to ensure that water is safe to drink. The act does not regulate aesthetic values of water. Here are some factors affecting the aesthetics of water in Flint.

1. It's the Flint River. The water supplied by DWSD historically came from Lake Huron. It's softer. With hard water, you get a different flavor and feel. It's why General Motors suspended use of Flint Water – it was rusting their parts. Also, there's the 'organics' factor (discussed previously).
2. The system is old. Flint has more than 500 miles of water pipes. More than half of those pipe miles are more than 75 years old. Much of it is cast iron. Hard water can react with cast iron and exacerbates the rusty factor, which creates that brown water that angry residents were holding up in jugs for the media cameras last week. Valve failure has also been a key challenge. The system has an estimated 7,500+ valves. When they stick open or stick shut, it affects the hydraulics of the system and increase areas of stagnation. The city has a backlog of valves that need to be addressed. They've done half a dozen or so since November.
3. Flint is old. Many of the homes served by the system are old. Brown water complaints may also be attributable to cast iron pipes in customers' service connection to the city lines. The DEQ has been encouraging people with water coloration concerns to contact the city and see whether it is the service line or the City's line causing the issue. Again, discoloration is not an indicator of water quality or water safety, but we recognize that nobody likes it.

In summary, the City of Flint has tremendous need to address its water delivery system. We are not aware that they have any capital improvement funds for preventative maintenance in place, much less line replacement project monies that will require hundreds of millions.

The City was approved for a Revolving Fund loan in 2008 or 2009. As a Distressed Community, they qualified for flexible terms and 2 percent interest rate Revolving Fund Loan. After they were notified they were approved for the loan, they declined it. Previous SRF loans from the state to Flint bear an outstanding balance of \$20.7 million today.

The DEQ continues working with the city to address the TTHM issue. They can take interim steps – from scrubbing the insides of transmission lines to carefully monitoring the hydraulic challenges in their system – to address customers' aesthetic concerns. Their TTHM numbers already are showing dramatic improvement; the November testing showed only one of seven sample points exceeding the standard.

The key now is that the standard is an average of three quarters' worth of results. It will be some time before they are officially "not in violation." However, depending on weather in 2015, it's not unforeseeable that we will be having this conversation again by next Christmas.

The key to the conversation is that TTHM is not a top health concern. That's key because residents need to understand TTHM in context, realizing it is separate from the color and odor issues.

Another key thing to remember is that once the city connects to the new KWA system in 2016, the TTHM issue will fade in the rearview.

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