

**Rennaker, Joanne (DEQ)**

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**From:** Cook, Pat (DEQ)  
**Sent:** Monday, April 27, 2015 9:35 AM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Prysby, Mike (DEQ)  
**Subject:** RE: Flint Corrosion Control?

Hi Steve – I agree, the constant second guessing of how we interpret and implement our rules is getting tiresome. I think what Miguel is saying is that since Flint did not comply with “optimal” criteria stated below (Rule 604(f)(2)(b)(D)(iii) in Act 399) in the first 6 month monitoring period, they cannot meet it for two consecutive 6 month periods that is required. However, we have always waited for 2 rounds of results before making that decision.

Any ways, when you have a minute please give me a call so we can figure out how to respond to Miguel.

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](mailto:cookp@michigan.gov)

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**From:** Busch, Stephen (DEQ)  
**Sent:** Monday, April 27, 2015 8:27 AM  
**To:** Cook, Pat (DEQ)  
**Cc:** Prysby, Mike (DEQ)  
**Subject:** RE: Flint Corrosion Control?

He continues to base his concern on a single location which has/had a lead service line and “pre-flushing” concerns which are not part of the current regulations.

Flint is now below the criteria for a large system. Technically they don’t have to do any of this.

Flint has also only been through one round of lead copper sample not the two rounds needed to make the determination he lists below.

If he continues to persist we may need Liane or Director Wyant to make a call to EPA to help address his over-reaches.

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

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**From:** Cook, Pat (DEQ)  
**Sent:** Monday, April 27, 2015 7:59 AM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Prysby, Mike (DEQ)  
**Subject:** FW: Flint Corrosion Control?

Hi Steve and Mike - I knew this was going to happen. Miguel is questioning that Flint is in compliance with optimal corrosion control. Please read the below email and let me know what you think. While it's not a big hurry at this time since Miguel is out till next week, we eventually will have to respond to him.

pat

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**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 90<sup>th</sup> 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

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**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

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**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

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**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 2<sup>nd</sup> 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](mailto: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](mailto:cookp@michigan.gov)

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**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

**Rennaker, Joanne (DEQ)**

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**From:** Rosenthal, Adam (DEQ)  
**Sent:** Thursday, April 30, 2015 1:14 PM  
**To:** Cook, Pat (DEQ)  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** RE: Flint Corrosion Control?

According to the lab report, it is 0.001 mg/L.

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**From:** Cook, Pat (DEQ)  
**Sent:** Thursday, April 30, 2015 12:15 PM  
**To:** Rosenthal, Adam (DEQ)  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** FW: Flint Corrosion Control?

Hi Adam - what is the reporting/detection limit for lead on the CMET2 scan?

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**From:** Cook, Pat (DEQ) <[COOKP@michigan.gov](mailto:COOKP@michigan.gov)>

**Sent:** Friday, April 24, 2015 12:45 PM  
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Miguel A. Del Toral  
 Regulations Manager  
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If you have any further questions, please contact the Lansing District Supervisor, Steve Busch at (517) 643-2314 or at [buschs@michigan.gov](mailto: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](mailto:cookp@michigan.gov)

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**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,

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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

**Rennaker, Joanne (DEQ)**

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**From:** Wurfel, Brad (DEQ)  
**Sent:** Wednesday, December 17, 2014 9:02 PM  
**To:** Busch, Stephen (DEQ)  
**Subject:** Re: Flint Drinking Water Actions

Thanks Steve. This is helpful!

Sent from my iPhone

On Dec 17, 2014, at 4:29 PM, "Busch, Stephen (DEQ)" <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)> wrote:

Brad,

Here are some of the actions Flint has been taking to address the TTHM levels.

1. Removed the 20 Million Gallon Dort storage reservoir from service to prevent stagnant water conditions.
2. Softening 100% of water instead of partial softening to reduce amount of chlorine needed
3. Modified operation of water storage tanks to increase turn over and reduce stagnant water volumes.
4. Increased frequency of water main flushing to reduce detention time and stagnant water conditions.
5. Repair transmission water mains and valves to allow direct flow patterns and reduce detention time.

The City is also working on these additional items:

1. Further optimization of the enhanced coagulation process, possible use of polymer chemicals
2. Optimization of the ozone treatment process
3. Enhanced cleaning of filters to help reduce amounts of chlorine needed for disinfection

Mike Prysby can provide additional information as needed.

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

**Rennaker, Joanne (DEQ)**

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**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Tuesday, March 17, 2015 1:22 PM  
**To:** Howes, Sarah (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Cc:** Tommasulo, Karen (DEQ); Benzie, Richard (DEQ); Rosenthal, Adam (DEQ)  
**Subject:** RE: Flint Drinking Water Letter?

Sarah –

I just checked with Steve, and we are not aware of any letter being issued from our Office tomorrow or in the near future.

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

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**From:** Howes, Sarah (DEQ)  
**Sent:** Tuesday, March 17, 2015 12:38 PM  
**To:** Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Cc:** Tommasulo, Karen (DEQ)  
**Subject:** Flint Drinking Water Letter?

Hi all---

I just got a call from Rep. Neeley's office and it's their understanding that DEQ will be issuing a letter on Flint Drinking Water tomorrow. Is this true? If so, could you please PDF me a copy and I'll distribute to the legislative offices that have asked for updates when appropriate.

Thanks,  
Sarah

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

**Rennaker, Joanne (DEQ)**

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**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.

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**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

**Rennaker, Joanne (DEQ)**

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**From:** Prysby, Mike (DEQ)  
**Sent:** Tuesday, July 28, 2015 12:37 PM  
**To:** Scherbarth, John (AG)  
**Cc:** Rosenthal, Adam (DEQ); Busch, Stephen (DEQ)  
**Subject:** RE: Flint Drinking Water TTHM Standard Violation - 2nd quarter 2015

John,

The update accurately states that the results from all eight location were below the maximum contaminate level (MCL) in February's monitoring; however, it re-iterates that the annual quarterly average is still above the state's allowable level – MCL.

I would re-word the last sentence of the narrative to read: The city of Flint will return to compliance with the TTHM MCL after the Locational Running Annual Average (LRAA) no longer exceeds the 80 ug/L MCL at all eight locations. The LRAA is the running annual average of samples collected quarterly at each location.

I will need to confirm with the city as to whether both documents were sent out at the same time.

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

---

**From:** Scherbarth, John (AG)  
**Sent:** Tuesday, July 28, 2015 12:12 PM  
**To:** Prysby, Mike (DEQ)  
**Subject:** RE: Flint Drinking Water TTHM Standard Violation - 2nd quarter 2015

Were these both sent out at the same time?

And, isn't the Water Quality Update inaccurate since the City is not in compliance until the averages for a year are below MCLs?

I want to be certain that the following narrative is correct:

"During February, the detected level has been in an acceptable range at all eight sampling locations. Another sampling occurred during the month of May, and, again, the detected level was found to be in the acceptable range at all sampling locations. However, before the City of Flint can be considered to be in compliance, it must meet the compliance levels for a full year."

John C. Scherbarth

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**From:** Prysby, Mike (DEQ)  
**Sent:** Tuesday, July 28, 2015 12:02 PM  
**To:** Scherbarth, John (AG)  
**Cc:** Rosenthal, Adam (DEQ)  
**Subject:** RE: Flint Drinking Water TTHM Standard Violation - 2nd quarter 2015

John,  
Attached is a copy of the 2<sup>nd</sup> quarter TTH PN that was distributed to Flint city residents around April 1, 2015. Also, included with the PN is further discussion of the TTHM levels and the trend in concentration.

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

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**From:** Scherbarth, John (AG)  
**Sent:** Tuesday, July 28, 2015 11:26 AM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Rosenthal, Adam (DEQ)  
**Subject:** FW: Flint Drinking Water TTHM Standard Violation - 2nd quarter 2015

Mike

Can you please send me a PDF version of the notice that the City of Flint sent on or about April 1?

John C. Scherbarth

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**From:** Rosenthal, Adam (DEQ)  
**Sent:** Tuesday, July 28, 2015 11:14 AM  
**To:** Scherbarth, John (AG)  
**Cc:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** FW: Flint Drinking Water TTHM Standard Violation - 2nd quarter 2015

John, the April 3<sup>rd</sup> letter was for a different rule and not a violation letter. The attached is the latest violation notice regarding the disinfection byproduct MCL.

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](mailto:DEQ-DWMA-Lansing@michigan.gov)

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**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

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

**Rennaker, Joanne (DEQ)**

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**From:** Prysby, Mike (DEQ)  
**Sent:** Tuesday, June 16, 2015 2:24 PM  
**To:** Hansen, Jeff  
**Cc:** Busch, Stephen (DEQ); Cook, Pat (DEQ)  
**Subject:** RE: Flint GAC 2 of 2

Jeff,

I have reviewed the preliminary plans for the GAC addition for the Flint WTP filters. I do not have any major concerns with the preliminary plans. I did note the tap off the existing chlorine solution line immediately west of Filter No. 6 that will convey liquid chlorine to the new feed point within the first bay of the weir chamber. In our review of the intermediate chlorination feedpoint (March 2104), we called for an anti-syphon valve to be installed on the feedline prior to the application point in the trough (just prior to filtration). Since this proposed tap is upstream of the anti-syphon device, an additional anti-syphon device will need to be provided on the proposed chlorine solution line prior to injection within the proposed drop-pipe. If the device is to be located within the first weir chamber, it will need to be above the high water level.

I will be out on extended medical leave beginning tomorrow. I could be back as early as sometime next week or as late as early July. For timely permit issuance, the final submittal should be directed to Steve Busch.

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

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**From:** Hansen, Jeff [<mailto:jrhansen@lan-inc.com>]  
**Sent:** Saturday, June 13, 2015 12:52 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Busch, Stephen (DEQ); Cook, Pat (DEQ); Matta, Samir; Green, Warren; Brent Wright ([bwright@cityofflint.com](mailto:bwright@cityofflint.com)); [mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com)  
**Subject:** Flint GAC 2 of 2

Preliminary plans.

**Jeffrey R. Hansen**  
 Senior Project Manager

 **Lockwood, Andrews  
& Newnam, Inc.**  
 A LEO A DALY COMPANY  
 1311 South Linden Road, Suite B • Flint, MI 48532

T 810.820.2682    C 810.333.3201  
[www.lan-inc.com](http://www.lan-inc.com) • [JRHansen@lan-inc.com](mailto:JRHansen@lan-inc.com)

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**Rennaker, Joanne (DEQ)**

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, May 02, 2013 8:18 AM  
**To:** Busch, Stephen (DEQ)  
**Subject:** RE: Flint KWA Information

Thanks. I will also share with Sygo and Wurfel. I have printed for the Director.

MBT

Mary Beth Thelen  
 Executive Management Assistant to the Director  
 Department of Environmental Quality  
[Thelenm2@michigan.gov](mailto:Thelenm2@michigan.gov)  
 517-373-7917 or 517-241-7390

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, May 02, 2013 8:11 AM  
**To:** Thelen, Mary Beth (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ); Bloemker, Jon (DEQ)  
**Subject:** FW: Flint KWA Information

FYI.

I'm not sure who all the attached was distributed to so I am forwarding it just in case.

Also, below are the linked articles from Mlive.

[http://www.mlive.com/news/flint/index.ssf/2013/05/flint\\_emergency\\_manager\\_says\\_n.html](http://www.mlive.com/news/flint/index.ssf/2013/05/flint_emergency_manager_says_n.html)

[http://www.mlive.com/news/flint/index.ssf/2013/04/spokesman\\_for\\_gov\\_rick\\_snyder.html?utm\\_source=feedburner&utm\\_medium=feed&utm\\_campaign=Feed%3A+flint\\_journal\\_news+\(Flint+Journal+News+-+MLive.co](http://www.mlive.com/news/flint/index.ssf/2013/04/spokesman_for_gov_rick_snyder.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+flint_journal_news+(Flint+Journal+News+-+MLive.co)

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

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**From:** Kevin Sylvester [[mailto:K\\_SYLVESTER@gcdcwws.com](mailto:K_SYLVESTER@gcdcwws.com)]  
**Sent:** Wednesday, May 01, 2013 3:58 PM  
**To:** Kevin Sylvester  
**Subject:** Flint KWA Information

For those not able to attend the press conference today, attached is some information regarding Flint's decision to reject DWSD's final offer and instead partner with KWA.

If you need further information or have any questions please let me know.

Regards,

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Kevin A. Sylvester  
Communications Director  
Genesee County Drain Commissioner's Office  
[ksylvester@gcdcwws.com](mailto:ksylvester@gcdcwws.com)  
810-701-6514 - Mobile

**Rennaker, Joanne (DEQ)**

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**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](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

**Rennaker, Joanne (DEQ)**

---

**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](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

**Rennaker, Joanne (DEQ)**

---

**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](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

**Rennaker, Joanne (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](mailto: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

**Rennaker, Joanne (DEQ)**

---

**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

**Rennaker, Joanne (DEQ)**

---

**From:** Cook, Pat (DEQ)  
**Sent:** Thursday, June 12, 2014 9:19 AM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Cc:** Rosenthal, Adam (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Flint MOR and Test Results

Will do. I tried to call him this morning to give him Ms. McCarthy's phone number. His voice mail was full so I was unable to leave a message. I'll try again later today.

pat

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, June 12, 2014 9:04 AM  
**To:** Cook, Pat (DEQ); Prysby, Mike (DEQ)  
**Cc:** Rosenthal, Adam (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Flint MOR and Test Results

Pat,

I appreciate your efforts to try and assist Mr. Jefferson, but I think at this point any further correspondence with him needs to be directed back to either Mike or I. If there are specific treatment questions we are unable to answer or need confirmation on we will let you know.

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

---

**From:** Cook, Pat (DEQ)  
**Sent:** Thursday, June 12, 2014 8:05 AM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ)  
**Subject:** RE: Flint MOR and Test Results

Thanks Mike. Mr. Jefferson left me a message yesterday wanting the phone number of the "clean drinking water administrator of the US". That would be EPA Administrator, Gina McCarthy. I'll call him back and give him Ms. McCarthy's phone number and the latest lab results. However, he has told me that he does not trust the city or the state since Gov. Snyder placed an emergency manager in the city.

pat

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Thursday, June 12, 2014 7:56 AM  
**To:** Cook, Pat (DEQ)  
**Subject:** FW: Flint MOR and Test Results

Pat,

This is the Flint WTP info (April MOR and May's Unit 37 sample results) that was sent EPA late last week. I have tried to contact Mr. Jefferson, his voicemail is full and won't accept messages.

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

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, June 06, 2014 3:06 PM  
**To:** [poy.thomas@epa.gov](mailto:poy.thomas@epa.gov)  
**Cc:** [Crooks.Jennifer@epamail.epa.gov](mailto:Crooks.Jennifer@epamail.epa.gov); Prysby, Mike (DEQ)  
**Subject:** Flint MOR and Test Results

Tom,

The April MOR you requested is attached along with the following test results sampled in May.

- TOC
- Metals
- VOC
- SOC (all 3 categories)
- Partial Chemistry

As the WTP only operated for the last few days in April the MOR results provide limited information. The Bacteriological Portion of the May Operating Period will be due next Tuesday 6/10, but the operational monitoring won't be reported until 6/30.

If you have any other questions, just let us know.

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

**Rennaker, Joanne (DEQ)**

---

**From:** Matta, Samir <SFMatta@lan-inc.com>  
**Sent:** Wednesday, April 09, 2014 12:26 AM  
**To:** Rennaker, Joanne (DEQ)  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** RE: Flint Plan DropOff  
**Attachments:** Flint WTP Phase II-Segment I and III MDEQ Permit App Pg2.pdf

Hi Joanne,

I was looking at my copy of the package I dropped for Steve's review and I noticed that I have 2 copies of the attached Page 2 of the permit form for the Plant work so I am not sure if you have this copy in your package.

Would you please add this page to the package you have and it will go with the replacement page 2 for the other permit form for the Bray Road work?

Thanks a lot.

**Samir F. Matta**  
Senior Project Manager



**Lockwood, Andrews  
& Newnam, Inc.**

A LEO A DALY COMPANY

D 517.819.2367 C 517.819.2367  
[www.lan-inc.com](http://www.lan-inc.com) • [sfmatta@lan-inc.com](mailto:sfmatta@lan-inc.com)

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## MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## Permit Application for Water Systems (Continued)

6. **Facilities Description** – In the space below provide a detailed description of the proposed project. Applications without adequate facilities descriptions will be returned. SEE EXAMPLES BELOW. Use additional sheets if needed.

Improvements to the City of Flint WTP to enable treatment of Flint River water on an interim basis until the KWA Lake Huron Water Supply is available for connection and use by the City of Flint:

**PHASE II, SEGMENT I - INITIAL WATERMAIN CUT-IN / REHABILITATION (@WTP):**

- \* Replace existing 25 MGD HSP #1 at Pump Station No. 4 with a new 700 HP, vertically mounted, split-case centrifugal pump rated for 15 MGD at 185' TDH. New pump suction and discharge piping, valves and supports will also be provided.
- \* Construction of new ozone system LOX/LIN storage facility to provide system redundancy and a minimum of 30 days chemical storage. A new concrete containment structure will be constructed adjacent to the existing LOX/LIN storage facility. The new LOX and LIN tanks will have nominal capacities of 9000 gal. and 525 gal., respectively.
- \* Installation of Midpoint Chlorination. A 3"x6" dual walled chlorine solution line, approx. 665 LF, will be installed from the existing chlorine room at Pump Station No. 4 to a diffuser in the filter influent channel at Plant 2. The chlorine gas feed system shall consist of four 500 ppd feed systems (total 2000 ppd) to be installed by City personnel. Each 500 ppd system consists of a ton cylinder mounted vacuum regulator, control panel, ejector, and misc. piping, tubing & valves.
- \* Approx. 850 LF 42" raw watermain connection from existing 48" and 36" mains that feed the plant to convey KWA raw water to the Ozone Building. Work includes a 54x48 cross to make the initial connection at the Ozone Building, buried yard butterfly valves, access and air release manholes, and cathodic protection test stations.

**PHASE II, SEGMENT III - ELECTRICAL IMPROVEMENTS (@WTP):**

- \* Plant substation improvements, including two new 2500 kW transformers and switchgear. The substation switchgear has been fabricated with two utility main breakers, one generator breaker and two tie breakers. So provisions are in place for a future permanent generator. If a temporary generator is needed in the event of an outage to both independent utility services, provisions are in place to temporary cable a large portable generator through a manhole, duct bank and cable tray system to the generator breaker in the substation switchgear.
- \* Plant 2 electrical improvements, including two new 500 kW transformers and switchgear.
- \* Pump Station No. 4 improvements, including new switchgear and VFD for HSP #1.

**EXAMPLES – EXAMPLES – EXAMPLES – EXAMPLES – EXAMPLES – EXAMPLES**

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water Mains           | 500 feet of 8-inch water main in First Street from Main Street north to State Street.<br><b>OR</b><br>250 feet of 12-inch water main in Clark Road from an existing 8-inch main in Third Avenue north to a hydrant.                                                                                                                                                                                                                                                               |
| Booster Stations      | A booster station located at the southwest corner of Third Avenue and Main Street, and equipped with two, 15 Hp pumps each rated 150 gpm @ 200 feet TDH. Station includes backup power and all other equipment as required for proper operation.                                                                                                                                                                                                                                  |
| Elevated Storage Tank | A 300,000 gallon elevated storage tank located in City Park. The proposed tank shall be spherical, all welded construction and supported on a single pedestal. The tank shall be 150 feet in height, 40 feet in diameter with a normal operating range of 130 – 145 feet. The interior coating system shall be ANSI/NSF Standard 61 approved or equivalent. The tank will be equipped with a cathodic protection system, and includes a tank level control system with telemetry. |
| Chemical Feed         | A positive displacement chemical feed pump, rated at 24 gpd @ 110 psi to apply a chlorine solution for Well No. 1. Chlorine is 12.5% NaOCL, ANSI/NSF Standard 60 approved and will be applied at a rate of 1.0 mg/l of actual chlorine.                                                                                                                                                                                                                                           |
| Water Supply Well     | Well No. 3, a 200 foot deep well with 170 feet of 8-inch casing and 30 feet of 8-inch, 10 slot screen. The well will be equipped with a 20 Hp submersible pump and motor rated 200 gpm @ 225 feet TDH, set at 160 feet below land surface.                                                                                                                                                                                                                                        |
| Treatment Facilities  | A 5 million gpd water treatment plant located at the north end of Second Avenue. The facility will include 6 low service pumps, 2 rapid mix basins, 4 flocculation/sedimentation basins, 8 dual media filters, 3 million gallon water storage reservoir and 6 high service pumps. Also included are chemical feed pumps and related appurtenances for the addition of alum, fluoride, phosphate and chlorine.                                                                     |

**Rennaker, Joanne (DEQ)**

---

**From:** Howard Croft <hcroft@cityofflint.com>  
**Sent:** Thursday, October 08, 2015 3:58 PM  
**To:** Henry, James  
**Cc:** Busch, Stephen (DEQ); Hallwood, Dawn  
**Subject:** Re: Flint Restaurants and Retail Food Stores

Jim,

Let me look into the best location to handle that, we have been storing bottles at City Hall as well and could distribute from the DPW building.

On Thu, Oct 8, 2015 at 3:13 PM, Henry, James <[jhenry@gchd.us](mailto:jhenry@gchd.us)> wrote:

Howard,

GCHD met with the state, MDEQ and MDA,(Agriculture)today regarding recommendations for restaurants and retail food stores that use Flint water. One recommendation will be to sample water and respond appropriately. There's approximately 400 locations (½ are licensed by the state) This will be a recommendation and we do not anticipate that all will sample.

Would it be ok for them to pick up a bottle at the water plant and return the sample w/payment to MDEQ lab back to the water plant? The water plant would then ship them off for analysis with the others.

GCHD and state wants to send out the recommendations asap. I'll copy you with the final draft of the recommendations.

Jim Henry RS, MBA  
Environmental Health Supervisor  
Genesee County Health Department [www.gchd.us](http://www.gchd.us)  
630 S. Saginaw St., Suite 4  
Flint, MI 48502-1540  
Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)



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For a copy of the Health Department's Notice of Information Practices, contact the Health Department or visit the Health Department's website at <http://www.gchd.us/>

**From:** Howard Croft [<mailto:hcroft@cityofflint.com>]

**Sent:** Thursday, October 8, 2015 5:41 AM

**To:** Amy Hovey; Andy Leavitt; Brent Wright; Darren Lytle; Dayne Walling; donna. cole; edwardsm; Gerald (Jed) Natzke; Howard Croft; Henry, James; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; [larry.koehler@mcc.edu](mailto:larry.koehler@mcc.edu); Laura Sullivan; Lawrence Reynolds; Lawrence Reynolds; Michael Glasgow; Michael Wright; Mike Lane; Mike Prysby (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; [rosejo@msu.edu](mailto:rosejo@msu.edu); Russell Hudson; Samir Matta; [schock.michael@epa.gov](mailto:schock.michael@epa.gov); Sean Kammer; Stephen Busch (DEQ); Warren Green; John Monsees; Kevin Keane

**Subject:** Re: TAC Team Summary 10\_7\_15

All,

Please find attached, the summary of Wednesday's meeting.

Thank you,

On Wed, Oct 7, 2015 at 9:42 PM, Howard Croft <[hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)> wrote:

All,

I want to personally thank everyone for participating in today's meeting, it is encouraging to see the commitment that exists to address the concerns around health. I apologize for the poor phone reception we experienced today, I will have that corrected at the next meeting.

I am sending a summary of today's meeting and have attempted to chronicle the highlights or major points that we discussed. I have also included an electronic version of Marc Edwards presentation and will forward any other documents that are requested.

Please look for continued communication from me as we work to move forward as fast as possible. I expect to have November and December dates selected very soon and will maintain the stream of information to this team as it becomes available.

Please do not hesitate to email or call me with any questions or requests.

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](mailto: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](mailto: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](mailto:hcroft@cityofflint.com)

**Rennaker, Joanne (DEQ)**

---

**From:** Alexander, Michael (DEQ)  
**Sent:** Tuesday, March 26, 2013 3:20 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Alexander, Christine (DEQ); Creal, William (DEQ)  
**Subject:** RE: Flint River Intake Location

Hi Steve,

Based on the listing from Michigan's 2012 Integrated Report, the Flint River from just upstream of the City of Flint to the upstream end of the Holloway Reservoir is not meeting its designated uses for;

Fish consumption due to PCB in fish tissue and water column  
 Total and partial body contact due to E. coli in water column  
 Other indigenous aquatic life due to nutrients and phosphorus in the water column

These are just the major categories for the designated uses currently not being met within this subject stretch of the Flint River. If you would like the complete lists or any additional information regarding these listing please let me know.

Mike

Michael Alexander, Chief  
 Lakes Erie, Huron and Superior Unit  
 Surface Water Assessment Section  
 Water Resources Division  
 Department of Environmental Quality  
 Office Phone 517-335-4189  
[alexanderm2@michigan.gov](mailto:alexanderm2@michigan.gov)

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, March 26, 2013 12:08 PM  
**To:** Alexander, Christine (DEQ); Alexander, Michael (DEQ)  
**Subject:** Flint River Intake Location

Mike and Chris,

Sorry, I forgot to hit send. See red dot on attached picture.

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

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, March 22, 2013 12:36 PM  
**To:** Busch, Stephen (DEQ)  
**Subject:** RE: Flint Scenarios

Yes, and as I indicated in my forwarded info containing Rowe's report, I will review the information and provide my comments to Steve. I also maintain my availability to participate, as needed, in the meeting with the Director next Thurs and/or any internal meeting prior the Thurs meeting.

Michael Prysby, P.E.  
 District Engineer  
 Office of Drinking Water and Municipal Assistance  
 517 335-6122

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, March 22, 2013 12:10 PM  
**To:** Shekter Smith, Liane (DEQ); Donaldson, Kristina (DEQ); Prysby, Mike (DEQ)  
**Cc:** Bloemker, Jon (DEQ); Benzie, Richard (DEQ); Butler, Sonya (DEQ); Willard, Veronica (DEQ)  
**Subject:** RE: Flint Scenarios

Upon further discussions with Richard, I will take the point position to coordinate this effort. For the most part my schedule is open next week so I can accommodate the executive office's needs.

I fully anticipate meeting the Wednesday Morning deadline, if not Tuesday afternoon.

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:** Friday, March 22, 2013 8:41 AM  
**To:** Donaldson, Kristina (DEQ); Prysby, Mike (DEQ)  
**Cc:** Bloemker, Jon (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ); Butler, Sonya (DEQ); Willard, Veronica (DEQ)  
**Subject:** FW: Flint Scenarios  
**Importance:** High

Kris and Mike –

Note the assignment below, due next Wednesday morning at the latest.

I'll need a point person to coordinate this. Any volunteers – Steve? Richard?

Sonya – I cc'd you as an FYI (thought you'd find the assessment interesting).

Liane J. Shekter Smith, P.E., Chief  
 Office of Drinking Water and Municipal Assistance  
 Michigan Department of Environmental Quality  
 517-373-9523

---

**From:** Sygo, Jim (DEQ)  
**Sent:** Thursday, March 21, 2013 6:07 PM  
**To:** Shekter Smith, Liane (DEQ); Creal, William (DEQ)  
**Cc:** Willard, Veronica (DEQ); Smith, Laura (DEQ)  
**Subject:** FW: Flint Scenarios  
**Importance:** High

Bill and Liane,

Please have the attached documents reviewed and comments provided relative to the City of Flint water supply needs and relative to the impacts that are possible to the Detroit System.

Treasury needs an assessment as to the need for the alternative water supply and it's impacts so they can provide input to the financial managers.

We need comments by next week and will likely meet with the Director on Thursday.

Bring in whatever staff you need for the review and please try to have your assessments by Wednesday morning.

Sorry for the tight time frame but this one is out of my hands. I will also be looking at the report.

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Thursday, March 21, 2013 5:10 PM  
**To:** Sygo, Jim (DEQ)  
**Cc:** Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ)  
**Subject:** FW: Flint Scenarios  
**Importance:** High

Jim,

Director asked that you review and coordinate this with with Liane Shekter Smith and/or Bill Creal and their appropriate staff. Director also asked that I schedule an internal meeting with you and staff on this for next week. After your review, please let me know who you want in the meeting. It needs to happen on Tuesday, Wednesday or Thursday of next week.

Thank you.

Mary Beth

---

**From:** Stibitz, Brom (Treasury)  
**Sent:** Thursday, March 21, 2013 5:00 PM  
**To:** Wyant, Dan (DEQ)  
**Cc:** Dillon, Andy (Treasury)  
**Subject:** FW: Flint Scenarios

Andy asked that I pass this information along to you.

**Rennaker, Joanne (DEQ)**

---

**From:** Donaldson, Kristina (DEQ)  
**Sent:** Sunday, March 24, 2013 8:00 PM  
**To:** Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ)  
**Cc:** Bloemker, Jon (DEQ); Benzie, Richard (DEQ); Butler, Sonya (DEQ); Willard, Veronica (DEQ)  
**Subject:** RE: Flint Scenarios

I will review the docs and try to have my comments in by Tuesday afternoon as well.

Thanks,  
 Kris

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, March 22, 2013 12:09 PM  
**To:** Shekter Smith, Liane (DEQ); Donaldson, Kristina (DEQ); Prysby, Mike (DEQ)  
**Cc:** Bloemker, Jon (DEQ); Benzie, Richard (DEQ); Butler, Sonya (DEQ); Willard, Veronica (DEQ)  
**Subject:** RE: Flint Scenarios

Upon further discussions with Richard, I will take the point position to coordinate this effort. For the most part my schedule is open next week so I can accommodate the executive office's needs.

I fully anticipate meeting the Wednesday Morning deadline, if not Tuesday afternoon.

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:** Friday, March 22, 2013 8:41 AM  
**To:** Donaldson, Kristina (DEQ); Prysby, Mike (DEQ)  
**Cc:** Bloemker, Jon (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ); Butler, Sonya (DEQ); Willard, Veronica (DEQ)  
**Subject:** FW: Flint Scenarios  
**Importance:** High

Kris and Mike –

Note the assignment below, due next Wednesday morning at the latest.

I'll need a point person to coordinate this. Any volunteers – Steve? Richard?

Sonya – I cc'd you as an FYI (thought you'd find the assessment interesting).

Liane J. Shekter Smith, P.E., Chief  
 Office of Drinking Water and Municipal Assistance Michigan Department of Environmental Quality  
 517-373-9523

From: Sygo, Jim (DEQ)  
 Sent: Thursday, March 21, 2013 6:07 PM  
 To: Shekter Smith, Liane (DEQ); Creal, William (DEQ)  
 Cc: Willard, Veronica (DEQ); Smith, Laura (DEQ)  
 Subject: FW: Flint Scenarios  
 Importance: High

Bill and Liane,

Please have the attached documents reviewed and comments provided relative to the City of Flint water supply needs and relative to the impacts that are possible to the Detroit System.

Treasury needs an assessment as to the need for the alternative water supply and it's impacts so they can provide input to the financial managers.

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From: Wyant, Dan (DEQ)  
 Sent: Thursday, March 21, 2013 5:10 PM  
 To: Sygo, Jim (DEQ)  
 Cc: Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ)  
 Subject: FW: Flint Scenarios  
 Importance: High

Jim,

Director asked that you review and coordinate this with Liane Shekter Smith and/or Bill Creal and their appropriate staff. Director also asked that I schedule an internal meeting with you and staff on this for next week. After your review, please let me know who you want in the meeting. It needs to happen on Tuesday, Wednesday or Thursday of next week.

Thank you.

Mary Beth

From: Stibitz, Brom (Treasury)  
 Sent: Thursday, March 21, 2013 5:00 PM  
 To: Wyant, Dan (DEQ)  
 Cc: Dillon, Andy (Treasury)  
 Subject: FW: Flint Scenarios

Andy asked that I pass this information along to you.

**Rennaker, Joanne (DEQ)**

---

**From:** Donaldson, Kristina (DEQ)  
**Sent:** Monday, March 25, 2013 3:12 PM  
**To:** Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ)  
**Cc:** Bloemker, Jon (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ); Butler, Sonya (DEQ); Willard, Veronica (DEQ)  
**Subject:** RE: Flint Scenarios

Here are my comments on the attached documents:

- Currently Flint receives water from DWSD and uses their water treatment plant as a back-up. Flint is currently in compliance with the SDWA as they stand with regard to reliability/redundancy. There is no regulatory reason for leaving the DWSD system. The issue of KWA vs. DWSD is mainly a question of cost.
- The February 2013 TYJT report indicates that there are economically viable options that would allow Flint to continue to receive water from DWSD. There is conflicting information on costs depending on the source, and I really don't know which cost estimates are most correct. If there is a cost effective option for Flint to stay on the DWSD system, it should be pursued.
  - o If Flint leaves the DWSD system, there will be ~30 miles of unused water infrastructure. The cost of maintaining excess water infrastructure and capacity in the DWSD system will be the burden of the customers that remain on the DWSD system.
  - o The DWSD system has already undergone a significant reduction in water demand that continues to hurt their bottom line. The loss of an additional customer will only exacerbate the problem.
- Small water systems that receive water from the DWSD on the Imlay to Flint transmission line will likely be left to build their own water system (Imlay, Mayfield, Greater Lapeer Utilities Authority).

With regard to Flint's representation/decision making authority:

- For the last 10 years, DWSD has implemented a customer outreach program open to all customers known as the Technical Advisory Committee (TAC). TAC has developed Partnering agreements to work together on decisions regarding the DWSD system. The TAC has worked with DWSD to develop the latest rate structure, capital improvements program, etc. Historically, Flint has chosen not to participate on the TAC, but could do so going forward to make sure they have a say in the decisions relating to the DWSD system.
- DWSD is currently working on converting to a water authority. This new structure could allow for a seat on the Board of Water Commissioners.

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**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Friday, March 22, 2013 8:41 AM  
**To:** Donaldson, Kristina (DEQ); Prysby, Mike (DEQ)  
**Cc:** Bloemker, Jon (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ); Butler, Sonya (DEQ); Willard, Veronica (DEQ)  
**Subject:** FW: Flint Scenarios  
**Importance:** High

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Note the assignment below, due next Wednesday morning at the latest.

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Sonya – I cc'd you as an FYI (thought you'd find the assessment interesting).

Liane J. Shekter Smith, P.E., Chief  
Office of Drinking Water and Municipal Assistance  
Michigan Department of Environmental Quality  
517-373-9523

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**Sent:** Thursday, March 21, 2013 6:07 PM  
**To:** Shekter Smith, Liane (DEQ); Creal, William (DEQ)  
**Cc:** Willard, Veronica (DEQ); Smith, Laura (DEQ)  
**Subject:** FW: Flint Scenarios  
**Importance:** High

Bill and Liane,

Please have the attached documents reviewed and comments provided relative to the City of Flint water supply needs and relative to the impacts that are possible to the Detroit System.

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**From:** Wyant, Dan (DEQ)  
**Sent:** Thursday, March 21, 2013 5:10 PM  
**To:** Sygo, Jim (DEQ)  
**Cc:** Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ)  
**Subject:** FW: Flint Scenarios  
**Importance:** High

Jim,

Director asked that you review and coordinate this with Liane Shekter Smith and/or Bill Creal and their appropriate staff. Director also asked that I schedule an internal meeting with you and staff on this for next week. After your review, please let me know who you want in the meeting. It needs to happen on Tuesday, Wednesday or Thursday of next week.

Thank you.

Mary Beth

---

**From:** Stibitz, Brom (Treasury)  
**Sent:** Thursday, March 21, 2013 5:00 PM

**To:** Wyant, Dan (DEQ)  
**Cc:** Dillon, Andy (Treasury)  
**Subject:** FW: Flint Scenarios

Andy asked that I pass this information along to you.

**Rennaker, Joanne (DEQ)**

---

**From:** Renteria, Sylvia (DEQ)  
**Sent:** Wednesday, September 30, 2015 1:45 PM  
**To:** Krisztian, George (DEQ); Busch, Stephen (DEQ)  
**Cc:** Epkey, Amy (DEQ)  
**Subject:** RE: Flint Schools Water Testing

Thank you George and Steve! I'll hold \$1,800 in our budget for the tests.

Sylvia Renteria  
 Financial Specialist  
 Michigan Department of Environmental Quality  
 6<sup>th</sup> Floor Constitution Hall  
 T: 517-284-5006  
 F: 517-241-7428

---

**From:** Krisztian, George (DEQ)  
**Sent:** Wednesday, September 30, 2015 12:49 PM  
**To:** Busch, Stephen (DEQ); Renteria, Sylvia (DEQ)  
**Cc:** Epkey, Amy (DEQ)  
**Subject:** RE: Flint Schools Water Testing

Thank you Steve!

You are correct Lead and Copper is \$26 and \$1500 covers 57 tests. My understanding is that we are simply talking about the 50 that are being picked up today, if that is the case then we are in good shape. The cost for 50 tests is \$1300.

George

George L. Krisztian  
 Laboratory Director  
 Michigan Department of Environmental Quality  
 (517) 335-8812

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**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, September 30, 2015 12:46 PM  
**To:** Krisztian, George (DEQ); Renteria, Sylvia (DEQ)  
**Cc:** Epkey, Amy (DEQ)  
**Subject:** RE: Flint Schools Water Testing

These are the 1 liter lead and copper corrosion control tests which I think are \$26 each.

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](mailto:buschs@michigan.gov)

---

**From:** Krisztian, George (DEQ)  
**Sent:** Wednesday, September 30, 2015 12:45 PM  
**To:** Renteria, Sylvia (DEQ)  
**Cc:** Busch, Stephen (DEQ); Epkey, Amy (DEQ)  
**Subject:** RE: Flint Schools Water Testing

Hi Sylvia,

The Lab charges \$18.00 per lead test. That would mean that \$1500 would cover 83 lead tests. Please let me know if that is an issue.

Thank you  
George

George L. Krisztian  
Laboratory Director  
Michigan Department of Environmental Quality  
(517) 335-8812

---

**From:** Renteria, Sylvia (DEQ)  
**Sent:** Wednesday, September 30, 2015 11:39 AM  
**To:** Krisztian, George (DEQ)  
**Cc:** Busch, Stephen (DEQ); Epkey, Amy (DEQ)  
**Subject:** Flint Schools Water Testing

Hello George!

For the testing of the water supply at the Flint schools please use the following coding for the costs:

Index: 26000  
PCA: 11602  
AOBJ: 6895

Also, can you please confirm that the cost for the testing will be about \$1,500?

Thank you,  
Sylvia

**Sylvia Renteria**  
**Financial Specialist**  
**Michigan Department of Environmental Quality**  
**6<sup>th</sup> Floor Constitution Hall**  
**T: 517-284-5006**  
**F: 517-241-7428**

**Rennaker, Joanne (DEQ)**

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**From:** Prysby, Mike (DEQ)  
**Sent:** Wednesday, January 14, 2015 7:48 AM  
**To:** Hansen, Jeff  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** RE: Flint THM Operational Evaluation Report Draft

Jeff,

I reviewed the draft OEL report and, in general, we concur with what is presented in the report. I noted some comments (nothing too critical) and intend to prepare a summary; however, I will call you today to go over them...we should also plan to meet and discuss the city's schedule to implement the activities discussed in the report.

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

---

**From:** Hansen, Jeff [<mailto:jrhansen@lan-inc.com>]  
**Sent:** Tuesday, January 13, 2015 3:22 PM  
**To:** Prysby, Mike (DEQ)  
**Subject:** FW: Flint THM Operational Evaluation Report Draft

Hi Mike,

I figured it was about time to follow up and see if you had put together any review comments on the draft report for Flint?

**Jeffrey R. Hansen**  
 Senior Project Manager

---

**From:** Hansen, Jeff  
**Sent:** Monday, December 01, 2014 4:18 PM  
**To:** Mike Prysby; 'buschs@michigan.gov'; 'cookp@michigan.gov'  
**Cc:** Brent Wright ([bwright@cityofflint.com](mailto:bwright@cityofflint.com)); Daugherty Johnson ([djohnson@cityofflint.com](mailto:djohnson@cityofflint.com)); [hcroft@cityofflint.com](mailto:hcroft@cityofflint.com); [jwgreen@lan-inc.com](mailto:jwgreen@lan-inc.com); Matta, Samir; [mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com)  
**Subject:** Flint THM Operational Evaluation Report Draft

Mike,

In response to your letter dated 9/10/14 and our meeting on 11/07/14 please find attached a draft of the OER for your review and comment.

**Jeffrey R. Hansen**  
 Senior Project Manager



**Lockwood, Andrews  
& Newnam, Inc.**

A LEO A DALY COMPANY

1311 South Linden Road, Suite B • Flint, MI 48532

T 810.820.2682 C 810.333.3201

[www.lan-inc.com](http://www.lan-inc.com) • [JRHansen@lan-inc.com](mailto:JRHansen@lan-inc.com)

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**Rennaker, Joanne (DEQ)**

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**From:** Rosenthal, Adam (DEQ)  
**Sent:** Friday, November 07, 2014 10:45 AM  
**To:** Busch, Stephen (DEQ)  
**Subject:** RE: Flint tthm lab results  
**Attachments:** FlintDBP.pdf

here's everything.

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

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, November 07, 2014 10:02 AM  
**To:** Rosenthal, Adam (DEQ)  
**Subject:** Flint tthm lab results

Adam can you email me the PDFs of flint results from may 21 and August 21. Thanks. I need the full results that break down all compounds not just the total

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

Sent from my iPhone



## Michigan Department of Environmental Quality

***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

Owner/Location Information:

MCDONALDS

3719 DAVISON RD.

FLINT MI

Sample Number: LLF19422

Sample/Collection Information:

WSSN: 02310

County: Genesee

Township:

Section:

Well #:

Collection Date: 5/21/2014 9:28:00 AM

Arrival Date: 5/22/2014 1:18:47 PM

Site Code: DBP1

Water Source: Public Community Water Supply

Sample Reason: Routine Monitoring

Sample Point: Treated Public Distribution System

Point Description: SINK

Collector: Public Water Supply Operator

Collected By: MICHAEL GLASGOW

| <u>CasNo</u> | <u>Analyte</u>               | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u>   |
|--------------|------------------------------|---------------|---------------|--------------|-----------------|
| 79-08-3      | BROMOACETIC ACID             | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 5589-96-3    | BROMOCHLOROACETIC ACID       | 0.016         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-11-8      | CHLOROACETIC ACID            | ND            | 0.002         | mg/L         | EPA 552.1/552.2 |
| 75-99-0      | DALAPON                      | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 631-64-1     | DIBROMOACETIC ACID           | 0.005         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-43-6      | DICHLOROACETIC ACID          | 0.036         | 0.001         | mg/L         | EPA 552.1/552.2 |
| THA-00-C     | TOTAL HALOACETIC ACID (FIVE) | 0.064         | NA            | mg/L         | EPA 552.1/552.2 |
| 76-03-9      | TRICHLOROACETIC ACID         | 0.023         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 75-25-2      | BROMOFORM                    | 0.0014        | 0.0005        | mg/L         | EPA 524.2       |
| 124-48-1     | CHLORODIBROMOMETHANE         | 0.019         | 0.0005        | mg/L         | EPA 524.2       |
| 67-68-3      | CHLOROFORM                   | 0.097         | 0.0005        | mg/L         | EPA 524.2       |
| 75-27-4      | DICHLOROBROMOMETHANE         | 0.045         | 0.0005        | mg/L         | EPA 524.2       |
| TTHM-00-C    | TOTAL TRIHALOMETHANES        | 0.1624        | 0.0005        | mg/L         | EPA 524.2       |

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:36:09 EST 2014



## Michigan Department of Environmental Quality

**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

Owner/Location Information:

LIQUOR PALACE  
3302 S DORT HWY  
FLINT MI 48507

Sample Number: LLF19423

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 5/21/2014 11:06:00 AM  
Arrival Date: 5/22/2014 1:18:47 PM

Site Code: DBP2  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: SINK  
Collector: Public Water Supply Operator  
Collected By: NICOLE ALEXANDER

| <u>CasNo</u> | <u>Analyte</u>               | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u>   |
|--------------|------------------------------|---------------|---------------|--------------|-----------------|
| 79-08-3      | BROMOACETIC ACID             | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 6589-96-3    | BROMOCHLOROACETIC ACID       | 0.012         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-11-8      | CHLOROACETIC ACID            | ND            | 0.002         | mg/L         | EPA 552.1/552.2 |
| 75-99-0      | DALAPON                      | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 631-64-1     | DIBROMOACETIC ACID           | 0.003         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-43-6      | DICHLOROACETIC ACID          | 0.028         | 0.001         | mg/L         | EPA 552.1/552.2 |
| THA-00-C     | TOTAL HALOACETIC ACID (FIVE) | 0.052         | NA            | mg/L         | EPA 552.1/552.2 |
| 76-03-9      | TRICHLOROACETIC ACID         | 0.023         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 75-25-2      | BROMOFORM                    | 0.0016        | 0.0005        | mg/L         | EPA 524.2       |
| 124-48-1     | CHLORODIBROMOMETHANE         | 0.019         | 0.0005        | mg/L         | EPA 524.2       |
| 67-66-3      | CHLOROFORM                   | 0.055         | 0.0005        | mg/L         | EPA 524.2       |
| 75-27-4      | DICHLOROBROMOMETHANE         | 0.036         | 0.0005        | mg/L         | EPA 524.2       |
| TTHM-00-C    | TOTAL TRIHALOMETHANES        | 0.1116        | 0.0005        | mg/L         | EPA 524.2       |

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:36:22 EST 2014



## Michigan Department of Environmental Quality

***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

Owner/Location Information:

NORTH FLINT AUTOMOTIVE  
6204 N SAGINAW ST  
FLINT MI 48505

Sample Number: LLF19424

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 5/21/2014 12:16:00 PM  
Arrival Date: 5/22/2014 1:18:48 PM

Site Code: DBP3  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: SINK  
Collector: Public Water Supply Operator  
Collected By: NICOLE ALEXANDER

| <u>CasNo</u> | <u>Analyte</u>               | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u>   |
|--------------|------------------------------|---------------|---------------|--------------|-----------------|
| 79-08-3      | BROMOACETIC ACID             | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 5589-96-3    | BROMOCHLOROACETIC ACID       | 0.012         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-11-8      | CHLOROACETIC ACID            | ND            | 0.002         | mg/L         | EPA 552.1/552.2 |
| 75-99-0      | DALAPON                      | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 631-64-1     | DIBROMOACETIC ACID           | 0.004         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-43-6      | DICHLOROACETIC ACID          | 0.023         | 0.001         | mg/L         | EPA 552.1/552.2 |
| THA-00-C     | TOTAL HALOACETIC ACID (FIVE) | 0.048         | NA            | mg/L         | EPA 552.1/552.2 |
| 76-03-9      | TRICHLOROACETIC ACID         | 0.021         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 75-25-2      | BROMOFORM                    | 0.0015        | 0.0005        | mg/L         | EPA 524.2       |
| 124-48-1     | CHLORODIBROMOMETHANE         | 0.018         | 0.0005        | mg/L         | EPA 524.2       |
| 67-66-3      | CHLOROFORM                   | 0.044         | 0.0005        | mg/L         | EPA 524.2       |
| 75-27-4      | DICHLOROBROMOMETHANE         | 0.033         | 0.0005        | mg/L         | EPA 524.2       |
| TTHM-00-C    | TOTAL TRIHALOMETHANES        | 0.0965        | 0.0005        | mg/L         | EPA 524.2       |

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:36:32 EST 2014



## Michigan Department of Environmental Quality

**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

Owner/Location Information:

UNIVERSITY MARKET  
2501 FLUSHING RD  
FLINT MI 48504

Sample Number: LLF19425

Sample/Collection Information:

WSSN: 02310

Site Code: DBP4

County: Genesee

Water Source: Public Community Water Supply

Township:

Sample Reason: Routine Monitoring

Section:

Sample Point: Treated Public Distribution System

Well #:

Point Description: SINK

Collection Date: 5/21/2014 11:37:00 AM

Collector: Public Water Supply Operator

Arrival Date: 5/22/2014 1:18:48 PM

Collected By: NICOLE ALEXANDER

| <u>CasNo</u> | <u>Analyte</u>               | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u>   |
|--------------|------------------------------|---------------|---------------|--------------|-----------------|
| 79-08-3      | BROMOACETIC ACID             | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 5589-96-3    | BROMOCHLOROACETIC ACID       | 0.013         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-11-8      | CHLOROACETIC ACID            | ND            | 0.002         | mg/L         | EPA 552.1/552.2 |
| 75-99-0      | DALAPON                      | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 631-64-1     | DIBROMOACETIC ACID           | 0.004         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-43-6      | DICHLOROACETIC ACID          | 0.026         | 0.001         | mg/L         | EPA 552.1/552.2 |
| THA-00-C     | TOTAL HALOACETIC ACID (FIVE) | 0.055         | NA            | mg/L         | EPA 552.1/552.2 |
| 76-03-9      | TRICHLOROACETIC ACID         | 0.025         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 75-25-2      | BROMOFORM                    | 0.0014        | 0.0005        | mg/L         | EPA 524.2       |
| 124-48-1     | CHLORODIBROMOMETHANE         | 0.017         | 0.0005        | mg/L         | EPA 524.2       |
| 67-86-3      | CHLOROFORM                   | 0.053         | 0.0005        | mg/L         | EPA 524.2       |
| 75-27-4      | DICHLOROBROMOMETHANE         | 0.035         | 0.0005        | mg/L         | EPA 524.2       |
| TTHM-00-C    | TOTAL TRIHALOMETHANES        | 0.1064        | 0.0005        | mg/L         | EPA 524.2       |

## Laboratory Comments:

By authority of PA 368 of 1976 as amended.

Print Date: Fri Nov 7 10:36:41 EST 2014



## Michigan Department of Environmental Quality

***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

Owner/Location Information:

B & P GAS STATION  
822 S DORT HWY  
FLINT MI 48503

Sample Number: LLF19426

Sample/Collection Information:

WSSN: 02310

County: Genesee

Township:

Section:

Well #:

Collection Date: 5/21/2014 10:56:00 AM

Arrival Date: 5/22/2014 1:18:48 PM

Site Code: DBP5

Water Source: Public Community Water Supply

Sample Reason: Routine Monitoring

Sample Point: Treated Public Distribution System

Point Description: SINK

Collector: Public Water Supply Operator

Collected By: NICOLE ALEXANDER

| <u>CasNo</u> | <u>Analyte</u>               | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u>   |
|--------------|------------------------------|---------------|---------------|--------------|-----------------|
| 79-08-3      | BROMOACETIC ACID             | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 5589-96-3    | BROMOCHLOROACETIC ACID       | 0.010         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-11-8      | CHLOROACETIC ACID            | ND            | 0.002         | mg/L         | EPA 552.1/552.2 |
| 75-99-0      | DALAPON                      | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 631-64-1     | DIBROMOACETIC ACID           | 0.003         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-43-6      | DICHLOROACETIC ACID          | 0.018         | 0.001         | mg/L         | EPA 552.1/552.2 |
| THA-00-C     | TOTAL HALOACETIC ACID (FIVE) | 0.038         | NA            | mg/L         | EPA 552.1/552.2 |
| 76-03-0      | TRICHLOROACETIC ACID         | 0.017         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 75-25-2      | BROMOFORM                    | 0.0011        | 0.0005        | mg/L         | EPA 524.2       |
| 124-48-1     | CHLORODIBROMOMETHANE         | 0.014         | 0.0005        | mg/L         | EPA 524.2       |
| 67-66-3      | CHLOROFORM                   | 0.033         | 0.0005        | mg/L         | EPA 524.2       |
| 75-27-4      | DICHLOROBROMOMETHANE         | 0.027         | 0.0005        | mg/L         | EPA 524.2       |
| TTHM-00-C    | TOTAL TRIHALOMETHANES        | 0.0751        | 0.0005        | mg/L         | EPA 524.2       |

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:36:50 EST 2014



## Michigan Department of Environmental Quality

**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

Owner/Location Information:

SALEM HOUSING  
3216 MLK BLVD  
FLINT MI 48505

Sample Number: LLF19427

Sample/Collection Information:

WSSN: 02310

County: Genesee

Township:

Section:

Well #:

Collection Date: 5/21/2014 11:52:00 AM

Arrival Date: 5/22/2014 1:18:49 PM

Site Code: DBP6

Water Source: Public Community Water Supply

Sample Reason: Routine Monitoring

Sample Point: Treated Public Distribution System

Point Description: SINK

Collector: Public Water Supply Operator

Collected By: NICOLE ALEXANDER

| CasNo     | Analyte                      | Result | Detect | Units | Method          |
|-----------|------------------------------|--------|--------|-------|-----------------|
| 79-08-3   | BROMOACETIC ACID             | ND     | 0.001  | mg/L  | EPA 552.1/552.2 |
| 5589-96-3 | BROMOCHLOROACETIC ACID       | 0.011  | 0.001  | mg/L  | EPA 552.1/552.2 |
| 79-11-8   | CHLOROACETIC ACID            | ND     | 0.002  | mg/L  | EPA 552.1/552.2 |
| 75-99-0   | DALAPON                      | ND     | 0.001  | mg/L  | EPA 552.1/552.2 |
| 631-64-1  | DIBROMOACETIC ACID           | 0.003  | 0.001  | mg/L  | EPA 552.1/552.2 |
| 79-43-6   | DICHLOROACETIC ACID          | 0.020  | 0.001  | mg/L  | EPA 552.1/552.2 |
| THA-00-C  | TOTAL HALOACETIC ACID (FIVE) | 0.041  | NA     | mg/L  | EPA 552.1/552.2 |
| 76-03-9   | TRICHLOROACETIC ACID         | 0.018  | 0.001  | mg/L  | EPA 552.1/552.2 |
| 75-25-2   | BROMOFORM                    | 0.0012 | 0.0005 | mg/L  | EPA 524.2       |
| 124-48-1  | CHLORODIBROMOMETHANE         | 0.015  | 0.0005 | mg/L  | EPA 524.2       |
| 67-66-3   | CHLOROFORM                   | 0.039  | 0.0005 | mg/L  | EPA 524.2       |
| 75-27-4   | DICHLOROBROMOMETHANE         | 0.027  | 0.0005 | mg/L  | EPA 524.2       |
| TTHM-00-C | TOTAL TRIHALOMETHANES        | 0.0822 | 0.0005 | mg/L  | EPA 524.2       |

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:36:58 EST 2014



# Michigan Department of Environmental Quality

## Replicate Laboratory Report for Lansing Drinking Water Laboratory

### Owner/Location Information:

KROGER  
5018 CLIO RD  
FLINT MI 48504

Sample Number: LLF19428

### Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 5/21/2014 12:04:00 PM  
Arrival Date: 5/22/2014 1:18:49 PM

Site Code: DBP7  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: SINK  
Collector: Public Water Supply Operator  
Collected By: NICOLE ALEXANDER

| CasNo     | Analyte                      | Result | Detect | Units | Method          |
|-----------|------------------------------|--------|--------|-------|-----------------|
| 79-08-3   | BROMOACETIC ACID             | ND     | 0.001  | mg/L  | EPA 552.1/552.2 |
| 5589-96-3 | BROMOCHLOROACETIC ACID       | 0.012  | 0.001  | mg/L  | EPA 552.1/552.2 |
| 79-11-8   | CHLOROACETIC ACID            | ND     | 0.002  | mg/L  | EPA 552.1/552.2 |
| 75-99-0   | DALAPON                      | ND     | 0.001  | mg/L  | EPA 552.1/552.2 |
| 631-64-1  | DIBROMOACETIC ACID           | 0.004  | 0.001  | mg/L  | EPA 552.1/552.2 |
| 79-43-8   | DICHLOROACETIC ACID          | 0.024  | 0.001  | mg/L  | EPA 552.1/552.2 |
| THA-00-C  | TOTAL HALOACETIC ACID (FIVE) | 0.049  | NA     | mg/L  | EPA 552.1/552.2 |
| 76-03-9   | TRICHLOROACETIC ACID         | 0.021  | 0.001  | mg/L  | EPA 552.1/552.2 |
| 75-25-2   | BROMOFORM                    | 0.0012 | 0.0005 | mg/L  | EPA 524.2       |
| 124-48-1  | CHLORODIBROMOMETHANE         | 0.015  | 0.0005 | mg/L  | EPA 524.2       |
| 67-66-3   | CHLOROFORM                   | 0.042  | 0.0005 | mg/L  | EPA 524.2       |
| 75-27-4   | DICHLOROBROMOMETHANE         | 0.030  | 0.0005 | mg/L  | EPA 524.2       |
| TTHM-00-C | TOTAL TRIHALOMETHANES        | 0.0882 | 0.0005 | mg/L  | EPA 524.2       |

### Laboratory Comments:

By authority of PA 388 of 1978 as amended.

Print Date: Fri Nov 7 10:37:06 EST 2014



## Michigan Department of Environmental Quality

**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

**Owner/Location Information:**

TACO BELL  
3606 CORUNNA RD  
FLINT MI 48532

Sample Number: LLF19429

**Sample/Collection Information:**

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 5/21/2014 11:25:00 AM  
Arrival Date: 5/22/2014 1:18:49 PM

Site Code: DBP8  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: SINK  
Collector: Public Water Supply Operator  
Collected By: NICOLE ALEXANDER

| CasNo     | Analyte                      | Result | Detect | Units | Method          |
|-----------|------------------------------|--------|--------|-------|-----------------|
| 79-08-3   | BROMOACETIC ACID             | ND     | 0.001  | mg/L  | EPA 552.1/552.2 |
| 5589-96-3 | BROMOCHLOROACETIC ACID       | 0.014  | 0.001  | mg/L  | EPA 552.1/552.2 |
| 79-11-8   | CHLOROACETIC ACID            | ND     | 0.002  | mg/L  | EPA 552.1/552.2 |
| 75-99-0   | DALAPON                      | ND     | 0.001  | mg/L  | EPA 552.1/552.2 |
| 631-64-1  | DIBROMOACETIC ACID           | 0.004  | 0.001  | mg/L  | EPA 552.1/552.2 |
| 79-43-6   | DICHLOROACETIC ACID          | 0.024  | 0.001  | mg/L  | EPA 552.1/552.2 |
| THA-00-C  | TOTAL HALOACETIC ACID (FIVE) | 0.050  | NA     | mg/L  | EPA 552.1/552.2 |
| 76-03-9   | TRICHLOROACETIC ACID         | 0.022  | 0.001  | mg/L  | EPA 552.1/552.2 |
| 75-25-2   | BROMOFORM                    | 0.0012 | 0.0005 | mg/L  | EPA 524.2       |
| 124-48-1  | CHLORODIBROMOMETHANE         | 0.015  | 0.0005 | mg/L  | EPA 524.2       |
| 67-66-3   | CHLOROFORM                   | 0.036  | 0.0005 | mg/L  | EPA 524.2       |
| 75-27-4   | DICHLOROBROMOMETHANE         | 0.027  | 0.0005 | mg/L  | EPA 524.2       |
| TTHM-00-C | TOTAL TRIHALOMETHANES        | 0.0792 | 0.0005 | mg/L  | EPA 524.2       |

**Laboratory Comments:**

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:37:20 EST 2014



## Michigan Department of Environmental Quality

**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

Owner/Location Information:

CITY OF FLINT -WATER PLANT  
4500 N DORT HWY  
FLINT MI 48505

Sample Number: LLF19430

Sample/Collection Information:

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 5/22/2014 8:30:00 AM  
Arrival Date: 5/22/2014 1:19:53 PM

Site Code: LAB TAP  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: PLANT LAB  
Collector: Public Water Supply Operator  
Collected By: MICHAEL GLASGOW

| <u>CasNo</u> | <u>Analyte</u>                           | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u> |
|--------------|------------------------------------------|---------------|---------------|--------------|---------------|
| 16984-48-8   | FLUORIDE (AUTOMATED)                     | 0.16          | 0.1           | mg/L         | SM 4500 FC    |
| 7439-89-6    | IRON                                     | ND            | 0.1           | mg/L         | SM 3500 FeB   |
| HARD-00-C    | HARDNESS AS CaCO <sub>3</sub>            | 209           | 20            | mg/L         | SM 2340 C     |
| 7440-23-5    | SODIUM                                   | 15            | 5             | mg/L         | SM 3500 NaB   |
| 7440-38-2    | ARSENIC (TOTAL)                          | ND            | 0.002         | mg/L         | EPA 200.8     |
| 7440-39-3    | BARIUM                                   | 0.03          | 0.01          | mg/L         | EPA 200.8     |
| 7440-41-7    | BERYLLIUM                                | ND            | 0.0004        | mg/L         | EPA 200.8     |
| 57-12-5      | CYANIDE                                  | ND            | 0.02          | mg/L         | OIA-1677      |
| 7440-43-9    | CADMIUM (TOTAL)                          | ND            | 0.0003        | mg/L         | EPA 200.8     |
| 7647-14-6    | CHLORIDE (AUTOMATED)                     | 79            | 4             | mg/L         | SM 4500-Cl E  |
| 7440-47-3    | CHROMIUM (TOTAL)                         | ND            | 0.01          | mg/L         | EPA 200.8     |
| 93-76-5      | 2,4,5-T                                  | ND            | 0.002         | mg/L         | EPA 515.4     |
| 93-72-1      | 2,4,5-TP (SILVEX)                        | ND            | 0.0003        | mg/L         | EPA 515.4     |
| 94-75-7      | 2,4-D                                    | ND            | 0.002         | mg/L         | EPA 515.4     |
| 50594-66-6   | ACIFLUORFEN                              | ND            | 0.004         | mg/L         | EPA 515.4     |
| 25057-89-0   | BENTAZON                                 | ND            | 0.002         | mg/L         | EPA 515.4     |
| 1918-00-9    | DICAMBA                                  | ND            | 0.002         | mg/L         | EPA 515.4     |
| 88-85-7      | DINOSEB                                  | ND            | 0.0003        | mg/L         | EPA 515.4     |
| 87-86-5      | PENTACHLOROPHENOL                        | ND            | 0.00006       | mg/L         | EPA 515.4     |
| 1918-02-1    | PICLORAM                                 | ND            | 0.001         | mg/L         | EPA 515.4     |
| 1861-32-1    | TOTAL DCPA, MONO & DI-ACID<br>DEGRADATES | ND            | 0.001         | mg/L         | EPA 515.4     |
| 116-06-3     | ALDICARB                                 | ND            | 0.0005        | mg/L         | EPA 531.2     |
| 1648-88-4    | ALDICARB SULFONE                         | ND            | 0.0005        | mg/L         | EPA 531.2     |
| 1646-87-3    | ALDICARB SULFOXIDE                       | ND            | 0.0005        | mg/L         | EPA 531.2     |
| 63-25-2      | CARBARYL                                 | ND            | 0.001         | mg/L         | EPA 531.2     |
| 1563-66-2    | CARBOFURAN                               | ND            | 0.0005        | mg/L         | EPA 531.2     |
| 16655-82-6   | HYDROXYCARBOFURAN,3-                     | ND            | 0.001         | mg/L         | EPA 531.2     |
| 2032-65-7    | METHIOCARB                               | ND            | 0.001         | mg/L         | EPA 531.2     |
| 16752-77-5   | METHOMYL                                 | ND            | 0.001         | mg/L         | EPA 531.2     |
| 23135-22-0   | OXAMYL                                   | ND            | 0.001         | mg/L         | EPA 531.2     |
| 114-26-1     | PROPOXUR (BAYGON)                        | ND            | 0.001         | mg/L         | EPA 531.2     |
| 34256-82-1   | ACETOCHLOR                               | ND            | 0.001         | mg/L         | EPA 525.2     |

## Laboratory Sample Report

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|            |                                   |        |        |      |           |
|------------|-----------------------------------|--------|--------|------|-----------|
| 15972-60-8 | ALACHLOR                          | ND     | 0.0002 | mg/L | EPA 525.2 |
| 309-00-2   | ALDRIN                            | ND     | 0.0004 | mg/L | EPA 525.2 |
| 1912-24-9  | ATRAZINE                          | ND     | 0.0002 | mg/L | EPA 525.2 |
| 5103-71-9  | CHLORDANE, ALPHA-                 | ND     | 0.0002 | mg/L | EPA 525.2 |
| 5103-74-2  | CHLORDANE, GAMMA-                 | ND     | 0.0002 | mg/L | EPA 525.2 |
| 72-54-8    | DDD,4,4'-                         | ND     | 0.001  | mg/L | EPA 525.2 |
| 72-55-9    | DDE,4,4'-                         | ND     | 0.001  | mg/L | EPA 525.2 |
| 50-29-3    | DDT,4,4'-                         | ND     | 0.0005 | mg/L | EPA 525.2 |
| 60-57-1    | DIELDRIN                          | ND     | 0.0005 | mg/L | EPA 525.2 |
| 72-20-8    | ENDRIN                            | ND     | 0.0001 | mg/L | EPA 525.2 |
| 7421-93-4  | ENDRIN ALDEHYDE                   | ND     | 0.001  | mg/L | EPA 525.2 |
| 76-44-8    | HEPTACHLOR                        | ND     | 0.0002 | mg/L | EPA 525.2 |
| 1024-57-3  | HEPTACHLOR EPOXIDE                | ND     | 0.0001 | mg/L | EPA 525.2 |
| 118-74-1   | HEXACHLOROBENZENE                 | ND     | 0.0001 | mg/L | EPA 525.2 |
| 319-84-6   | HEXACHLOROCYCLOHEXANE (ALPHA-BHC) | ND     | 0.001  | mg/L | EPA 525.2 |
| 319-85-7   | HEXACHLOROCYCLOHEXANE (BETA-BHC)  | ND     | 0.001  | mg/L | EPA 525.2 |
| 319-86-8   | HEXACHLOROCYCLOHEXANE (DELTA-BHC) | ND     | 0.001  | mg/L | EPA 525.2 |
| 77-47-4    | HEXACHLOROCYCLOPENTADIENE         | ND     | 0.0005 | mg/L | EPA 525.2 |
| 58-89-9    | LINDANE (GAMMA-BHC)               | ND     | 0.0001 | mg/L | EPA 525.2 |
| 72-43-5    | METHOXYCHLOR                      | ND     | 0.0001 | mg/L | EPA 525.2 |
| 51218-45-2 | METOLACHLOR                       | ND     | 0.001  | mg/L | EPA 525.2 |
| 21087-64-9 | METRIBUZIN                        | ND     | 0.001  | mg/L | EPA 525.2 |
| 2212-67-1  | MOLINATE                          | ND     | 0.0005 | mg/L | EPA 525.2 |
| 12674-11-2 | PCB (AROCOR 1016)                 | ND     | 0.0001 | mg/L | EPA 525.2 |
| 11104-28-2 | PCB (AROCOR 1221)                 | ND     | 0.0001 | mg/L | EPA 525.2 |
| 11141-16-5 | PCB (AROCOR 1232)                 | ND     | 0.0001 | mg/L | EPA 525.2 |
| 53469-21-9 | PCB (AROCOR 1242)                 | ND     | 0.0001 | mg/L | EPA 525.2 |
| 12672-29-6 | PCB (AROCOR 1248)                 | ND     | 0.0001 | mg/L | EPA 525.2 |
| 11097-69-1 | PCB (AROCOR 1254)                 | ND     | 0.0001 | mg/L | EPA 525.2 |
| 11096-82-5 | PCB (AROCOR 1260)                 | ND     | 0.0001 | mg/L | EPA 525.2 |
| 58536-65-1 | POLYBROMINATED BIPHENYLS          | ND     | 0.0001 | mg/L | EPA 525.2 |
| 122-34-9   | SIMAZINE                          | ND     | 0.0002 | mg/L | EPA 525.2 |
| 8001-35-2  | TOXAPHENE                         | ND     | 0.001  | mg/L | EPA 525.2 |
| 71-43-2    | BENZENE                           | ND     | 0.0005 | mg/L | EPA 524.2 |
| 108-86-1   | BROMOBENZENE                      | ND     | 0.0005 | mg/L | EPA 524.2 |
| 74-97-5    | BROMOCHLOROMETHANE                | ND     | 0.0005 | mg/L | EPA 524.2 |
| 75-25-2    | BROMOFORM                         | 0.0010 | 0.0005 | mg/L | EPA 524.2 |
| 74-83-9    | BROMOMETHANE                      | ND     | 0.001  | mg/L | EPA 524.2 |
| 104-51-8   | BUTYLBENZENE,NORMAL-              | ND     | 0.0005 | mg/L | EPA 524.2 |
| 135-98-8   | BUTYLBENZENE,SEC-                 | ND     | 0.0005 | mg/L | EPA 524.2 |
| 98-06-6    | BUTYLBENZENE,TERT-                | ND     | 0.0005 | mg/L | EPA 524.2 |
| 56-23-5    | CARBON TETRACHLORIDE              | ND     | 0.0005 | mg/L | EPA 524.2 |
| 108-90-7   | CHLOROBENZENE                     | ND     | 0.0005 | mg/L | EPA 524.2 |
| 124-40-1   | CHLORODIBROMOMETHANE              | 0.013  | 0.0005 | mg/L | EPA 524.2 |
| 75-00-3    | CHLOROETHANE                      | ND     | 0.0005 | mg/L | EPA 524.2 |
| 67-66-3    | CHLOROFORM                        | 0.022  | 0.0005 | mg/L | EPA 524.2 |
| 74-87-3    | CHLOROMETHANE                     | ND     | 0.0005 | mg/L | EPA 524.2 |
| 95-49-8    | CHLOROTOLUENE,2-                  | ND     | 0.0005 | mg/L | EPA 524.2 |
| 106-43-4   | CHLOROTOLUENE,4-                  | ND     | 0.0005 | mg/L | EPA 524.2 |
| 74-95-3    | DIBROMOMETHANE                    | ND     | 0.0005 | mg/L | EPA 524.2 |
| 95-50-1    | DICHLOROBENZENE,1,2-              | ND     | 0.0005 | mg/L | EPA 524.2 |
| 541-73-1   | DICHLOROBENZENE,1,3-              | ND     | 0.0005 | mg/L | EPA 524.2 |
| 106-46-7   | DICHLOROBENZENE,1,4-              | ND     | 0.0005 | mg/L | EPA 524.2 |
| 75-27-4    | DICHLOROBROMOMETHANE              | 0.020  | 0.0005 | mg/L | EPA 524.2 |
| 75-71-8    | DICHLORODIFLUOROMETHANE           | ND     | 0.001  | mg/L | EPA 524.2 |
| 75-34-3    | DICHLOROETHANE,1,1-               | ND     | 0.0005 | mg/L | EPA 524.2 |
| 107-06-2   | DICHLOROETHANE,1,2-               | ND     | 0.0005 | mg/L | EPA 524.2 |

## Laboratory Sample Report

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|            |                            |       |        |      |               |
|------------|----------------------------|-------|--------|------|---------------|
|            | DICHLOROETHYLENE,1,1-      | ND    | 0.0005 | mg/L | EPA 524.2     |
| 156-59-2   | DICHLOROETHYLENE,1,2-CIS   | ND    | 0.0005 | mg/L | EPA 524.2     |
| 156-60-5   | DICHLOROETHYLENE,1,2-TRANS | ND    | 0.0005 | mg/L | EPA 524.2     |
| 78-87-5    | DICHLOROPROPANE,1,2-       | ND    | 0.0005 | mg/L | EPA 524.2     |
| 142-28-9   | DICHLOROPROPANE,1,3-       | ND    | 0.0005 | mg/L | EPA 524.2     |
| 594-20-7   | DICHLOROPROPANE,2,2-       | ND    | 0.0005 | mg/L | EPA 524.2     |
| 563-58-6   | DICHLOROPROPENE,1,1-       | ND    | 0.0005 | mg/L | EPA 524.2     |
| 10061-01-5 | DICHLOROPROPENE,1,3-CIS    | ND    | 0.0005 | mg/L | EPA 524.2     |
| 10061-02-6 | DICHLOROPROPENE,1,3-TRANS  | ND    | 0.0005 | mg/L | EPA 524.2     |
| 100-41-4   | ETHYLBENZENE               | ND    | 0.0005 | mg/L | EPA 524.2     |
| 75-69-4    | FLUOROTRICHLOROMETHANE     | ND    | 0.001  | mg/L | EPA 524.2     |
| 87-68-3    | HEXACHLOROBUTADIENE        | ND    | 0.0005 | mg/L | EPA 524.2     |
| 98-82-8    | ISOPROPYL BENZENE          | ND    | 0.0005 | mg/L | EPA 524.2     |
| 99-87-6    | ISOPROPYL TOLUENE, PARA-   | ND    | 0.0005 | mg/L | EPA 524.2     |
| 78-93-3    | METHYL ETHYL KETONE        | ND    | 0.005  | mg/L | EPA 524.2     |
| 108-10-1   | METHYL ISOBUTYL KETONE     | ND    | 0.005  | mg/L | EPA 524.2     |
| 1634-04-4  | METHYL TERT-BUTYL ETHER    | ND    | 0.001  | mg/L | EPA 524.2     |
| 75-09-2    | METHYLENE CHLORIDE         | ND    | 0.0006 | mg/L | EPA 524.2     |
| 91-20-3    | NAPHTHALENE                | ND    | 0.0005 | mg/L | EPA 524.2     |
| 98-95-3    | NITROBENZENE               | ND    | 0.01   | mg/L | EPA 524.2     |
| 103-66-1   | PROPYLBENZENE, NORMAL-     | ND    | 0.0005 | mg/L | EPA 524.2     |
| 100-42-5   | STYRENE                    | ND    | 0.0005 | mg/L | EPA 524.2     |
| 630-20-6   | TETRACHLOROETHANE,1,1,1,2- | ND    | 0.0005 | mg/L | EPA 524.2     |
| 79-34-5    | TETRACHLOROETHANE,1,1,2,2- | ND    | 0.0005 | mg/L | EPA 524.2     |
| 127-18-4   | TETRACHLOROETHYLENE        | ND    | 0.0006 | mg/L | EPA 524.2     |
| 109-99-9   | TETRAHYDROFURAN            | ND    | 0.005  | mg/L | EPA 524.2     |
| 108-88-3   | TOLUENE                    | ND    | 0.0005 | mg/L | EPA 524.2     |
| TTHM-00-C  | TOTAL TRIHALOMETHANES      | 0.056 | NA     | mg/L | EPA 524.2     |
| 87-61-6    | TRICHLOROBENZENE,1,2,3-    | ND    | 0.0005 | mg/L | EPA 524.2     |
| 120-82-1   | TRICHLOROBENZENE,1,2,4-    | ND    | 0.0005 | mg/L | EPA 524.2     |
| 71-56-6    | TRICHLOROETHANE,1,1,1-     | ND    | 0.0005 | mg/L | EPA 524.2     |
| 79-00-5    | TRICHLOROETHANE,1,1,2-     | ND    | 0.0005 | mg/L | EPA 524.2     |
| 79-01-6    | TRICHLOROETHYLENE          | ND    | 0.0005 | mg/L | EPA 524.2     |
| 96-18-4    | TRICHLOROPROPANE,1,2,3-    | ND    | 0.0005 | mg/L | EPA 524.2     |
| 95-63-6    | TRIMETHYLBENZENE,1,2,4-    | ND    | 0.0005 | mg/L | EPA 524.2     |
| 108-67-8   | TRIMETHYLBENZENE,1,3,5-    | ND    | 0.0005 | mg/L | EPA 524.2     |
| 75-01-4    | VINYL CHLORIDE             | ND    | 0.0004 | mg/L | EPA 524.2     |
| XYLMP-00-C | XYLENE,META-&PARA-         | ND    | 0.0005 | mg/L | EPA 524.2     |
| 95-47-6    | XYLENE,ORTHO-              | ND    | 0.0005 | mg/L | EPA 524.2     |
| 1330-20-7  | XYLENES (TOTAL)            | ND    | NA     | mg/L | EPA 524.2     |
| 7439-97-6  | MERCURY                    | ND    | 0.0001 | mg/L | EPA 200.8     |
| 7440-02-0  | NICKEL                     | ND    | 0.01   | mg/L | EPA 200.8     |
| 14797-85-0 | NITRITE AS N (AUTOMATED)   | ND    | 0.06   | mg/L | 10-107-04-2-B |
| 14797-55-8 | NITRATE AS N (AUTOMATED)   | 0.4   | 0.4    | mg/L | 10-107-04-2-B |
| 7439-92-1  | LEAD (TOTAL)               | ND    | 0.001  | mg/L | EPA 200.8     |
| 7440-36-0  | ANTIMONY                   | ND    | 0.0006 | mg/L | EPA 200.8     |
| 7782-49-2  | SELENIUM (TOTAL)           | ND    | 0.001  | mg/L | EPA 200.8     |
| 14808-79-8 | SULFATE (AUTOMATED)        | 25    | 10     | mg/L | SM 4500 SO4E  |
| 7440-28-0  | THALLIUM                   | ND    | 0.0002 | mg/L | EPA 200.8     |

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:37:35 EST 2014



## Michigan Department of Environmental Quality

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*Replicate Laboratory Report for  
Lansing Drinking Water Laboratory*

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Owner/Location Information:

CITY OF FLINT  
DORT WELL  
FLINT MI 48505

Sample Number: LLF27719

Sample/Collection Information:

WSSN: 02310

County: Genesee

Township:

Section:

Well #:

Collection Date: 7/15/2014 2:09:00 PM

Arrival Date: 7/17/2014 8:24:09 AM

Site Code:

Water Source: Public Community Water Supply

Sample Reason: Routine Monitoring

Sample Point: Public System Surface Water

Point Description: SAMPLE SIN

Collector: Public Water Supply Operator

Collected By: MICHAEL GLASGOW

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| <u>CasNo</u> | <u>Analyte</u>        | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u> |
|--------------|-----------------------|---------------|---------------|--------------|---------------|
| 75-25-2      | BROMOFORM             | 0.0033        | 0.0005        | mg/L         | EPA 524.2     |
| 124-48-1     | CHLORODIBROMOMETHANE  | 0.026         | 0.0005        | mg/L         | EPA 524.2     |
| 67-66-3      | CHLOROFORM            | 0.078         | 0.0005        | mg/L         | EPA 524.2     |
| 75-27-4      | DICHLOROBROMOMETHANE  | 0.046         | 0.0005        | mg/L         | EPA 524.2     |
| TTHM-00-C    | TOTAL TRIHALOMETHANES | 0.1533        | 0.0005        | mg/L         | EPA 524.2     |

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:38:11 EST 2014



## Michigan Department of Environmental Quality

**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

Owner/Location Information:

CITY OF FLINT  
822 S DORT HWY  
FLINT MI 48503

Sample Number: LLF34165

Sample/Collection Information:

WSSN: 02310

County: Genesee

Township:

Section:

Well #:

Collection Date: 8/21/2014 10:45:00 AM

Arrival Date: 8/21/2014 3:03:50 PM

Site Code: SITE #2 - DBP #2

Water Source: Public Community Water Supply

Sample Reason: Routine Monitoring

Sample Point: Treated Public Distribution System

Point Description: BATHROOM S

Collector: Public Water Supply Operator

Collected By: CHRIS BEATENHEAD

| CasNo     | Analyte                      | Result | Detect | Units | Method          |
|-----------|------------------------------|--------|--------|-------|-----------------|
| 79-08-3   | BROMOACETIC ACID             | ND     | 0.001  | mg/L  | EPA 552.1/552.2 |
| 5589-96-3 | BROMOCHLOROACETIC ACID       | 0.008  | 0.001  | mg/L  | EPA 552.1/552.2 |
| 79-11-8   | CHLOROACETIC ACID            | 0.007  | 0.002  | mg/L  | EPA 552.1/552.2 |
| 75-99-0   | DALAPON                      | 0.001  | 0.001  | mg/L  | EPA 552.1/552.2 |
| 631-64-1  | DIBROMOACETIC ACID           | 0.003  | 0.001  | mg/L  | EPA 552.1/552.2 |
| 79-43-6   | DICHLOROACETIC ACID          | 0.016  | 0.001  | mg/L  | EPA 552.1/552.2 |
| THA-00-C  | TOTAL HALOACETIC ACID (FIVE) | 0.040  | NA     | mg/L  | EPA 552.1/552.2 |
| 76-03-9   | TRICHLOROACETIC ACID         | 0.014  | 0.001  | mg/L  | EPA 552.1/552.2 |
| 75-25-2   | BROMOFORM                    | 0.0020 | 0.0005 | mg/L  | EPA 524.2       |
| 124-48-1  | CHLORODIBROMOMETHANE         | 0.016  | 0.0005 | mg/L  | EPA 524.2       |
| 67-66-3   | CHLOROFORM                   | 0.063  | 0.0005 | mg/L  | EPA 524.2       |
| 75-27-4   | DICHLOROBROMOMETHANE         | 0.031  | 0.0005 | mg/L  | EPA 524.2       |
| TTHM-00-C | TOTAL TRIHALOMETHANES        | 0.1120 | 0.0005 | mg/L  | EPA 524.2       |

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:38:28 EST 2014



## Michigan Department of Environmental Quality

**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

**Owner/Location Information:**

CITY OF FLINT  
3719 DAVISON RD  
FLINT MI 48506

Sample Number: LLF34166

**Sample/Collection Information:**

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 8/21/2014 9:53:00 AM  
Arrival Date: 8/21/2014 3:03:51 PM

Site Code: SITE #1 - DBP #1  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN SI  
Collector: Public Water Supply Operator  
Collected By: CHRIS BEATENHEAD

| <u>CasNo</u> | <u>Analyte</u>               | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u>   |
|--------------|------------------------------|---------------|---------------|--------------|-----------------|
| 79-08-3      | BROMOACETIC ACID             | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 5589-96-3    | BROMOCHLOROACETIC ACID       | 0.006         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-11-8      | CHLOROACETIC ACID            | 0.007         | 0.002         | mg/L         | EPA 552.1/552.2 |
| 75-99-0      | DALAPON                      | 0.002         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 631-64-1     | DIBROMOACETIC ACID           | 0.002         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-43-6      | DICHLOROACETIC ACID          | 0.013         | 0.001         | mg/L         | EPA 552.1/552.2 |
| THA-00-C     | TOTAL HALOACETIC ACID (FIVE) | 0.043         | NA            | mg/L         | EPA 552.1/552.2 |
| 76-03-9      | TRICHLOROACETIC ACID         | 0.021         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 75-25-2      | BROMOFORM                    | 0.0023        | 0.0005        | mg/L         | EPA 524.2       |
| 124-48-1     | CHLORODIBROMOMETHANE         | 0.020         | 0.0005        | mg/L         | EPA 524.2       |
| 67-66-3      | CHLOROFORM                   | 0.084         | 0.0005        | mg/L         | EPA 524.2       |
| 75-27-4      | DICHLOROBROMOMETHANE         | 0.039         | 0.0005        | mg/L         | EPA 524.2       |
| TTHM-00-C    | TOTAL TRIHALOMETHANES        | 0.1453        | 0.0005        | mg/L         | EPA 524.2       |

**Laboratory Comments:**

Additional volatile organic compound(s) were detected. For quantitation and confirmation request analysis for CXVO.

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:38:35 EST 2014



## Michigan Department of Environmental Quality

***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

**Owner/Location Information:**

CITY OF FLINT  
2501 FLUSHING RD  
FLINT MI 48504

Sample Number: LLF34167

**Sample/Collection Information:**

WSSN: 02310  
County: Genesee  
Township:  
Section:  
Well #:  
Collection Date: 8/21/2014 11:33:00 AM  
Arrival Date: 8/21/2014 3:03:51 PM

Site Code: SITE #5 - DBP #5  
Water Source: Public Community Water Supply  
Sample Reason: Routine Monitoring  
Sample Point: Treated Public Distribution System  
Point Description: KITCHEN SI  
Collector: Public Water Supply Operator  
Collected By: KEVIN MC LEOD

| <u>CasNo</u> | <u>Analyte</u>               | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u>   |
|--------------|------------------------------|---------------|---------------|--------------|-----------------|
| 79-08-3      | BROMOACETIC ACID             | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 5589-96-3    | BROMOCHLOROACETIC ACID       | 0.001         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-11-8      | CHLOROACETIC ACID            | ND            | 0.002         | mg/L         | EPA 552.1/552.2 |
| 75-99-0      | DALAPON                      | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 831-64-1     | DIBROMOACETIC ACID           | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-43-6      | DICHLOROACETIC ACID          | 0.006         | 0.001         | mg/L         | EPA 552.1/552.2 |
| THA-00-C     | TOTAL HALOACETIC ACID (FIVE) | 0.017         | NA            | mg/L         | EPA 552.1/552.2 |
| 76-03-9      | TRICHLOROACETIC ACID         | 0.011         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 75-25-2      | BROMOFORM                    | 0.0032        | 0.0005        | mg/L         | EPA 524.2       |
| 124-48-1     | CHLORODIBROMOMETHANE         | 0.027         | 0.0005        | mg/L         | EPA 524.2       |
| 67-66-3      | CHLOROFORM                   | 0.111         | 0.0005        | mg/L         | EPA 524.2       |
| 75-27-4      | DICHLOROBROMOMETHANE         | 0.055         | 0.0005        | mg/L         | EPA 524.2       |
| TTHM-00-C    | TOTAL TRIHALOMETHANES        | 0.1962        | 0.0005        | mg/L         | EPA 524.2       |

**Laboratory Comments:**

Quality control results were outside allowed limits due to matrix interferences.

By authority of PA 388 of 1978 as amended.

Print Date: Fri Nov 7 10:38:41 EST 2014



## Michigan Department of Environmental Quality

**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

Owner/Location Information:

CITY OF FLINT  
3606 CORUNNA RD  
FLINT MI 48532

Sample Number: LLF34168

Sample/Collection Information:

WSSN: 02310

County: Genesee

Township:

Section:

Well #:

Collection Date: 8/21/2014 12:13:00 PM

Arrival Date: 8/21/2014 3:03:52 PM

Site Code: SITE 34 - DBP #4

Water Source: Public Community Water Supply

Sample Reason: Routine Monitoring

Sample Point: Treated Public Distribution System

Point Description: BATHROOM S

Collector: Public Water Supply Operator

Collected By: CHRIS BEATENHEAD

| <u>CasNo</u> | <u>Analyte</u>               | <u>Result</u> | <u>Defect</u> | <u>Units</u> | <u>Method</u>   |
|--------------|------------------------------|---------------|---------------|--------------|-----------------|
| 79-08-3      | BROMOACETIC ACID             | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 5589-96-3    | BROMOCHLOROACETIC ACID       | 0.002         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-11-8      | CHLOROACETIC ACID            | 0.006         | 0.002         | mg/L         | EPA 552.1/552.2 |
| 75-99-0      | DALAPON                      | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 631-64-1     | DIBROMOACETIC ACID           | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-43-6      | DICHLOROACETIC ACID          | 0.007         | 0.001         | mg/L         | EPA 552.1/552.2 |
| THA-00-C     | TOTAL HALOACETIC ACID (FIVE) | 0.024         | NA            | mg/L         | EPA 552.1/552.2 |
| 76-03-9      | TRICHLOROACETIC ACID         | 0.011         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 75-25-2      | BROMOFORM                    | 0.0033        | 0.0005        | mg/L         | EPA 524.2       |
| 124-40-1     | CHLORODIBROMOMETHANE         | 0.026         | 0.0005        | mg/L         | EPA 524.2       |
| 67-66-3      | CHLOROFORM                   | 0.094         | 0.0005        | mg/L         | EPA 524.2       |
| 75-27-4      | DICHLOROBROMOMETHANE         | 0.058         | 0.0005        | mg/L         | EPA 524.2       |
| TTHM-00-C    | TOTAL TRIHALOMETHANES        | 0.1813        | 0.0005        | mg/L         | EPA 524.2       |

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:38:47 EST 2014



## Michigan Department of Environmental Quality

**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

Owner/Location Information:

CITY OF FLINT  
6204 N SAGINAW ST  
FLINT MI 48505

Sample Number: LLF34169

Sample/Collection Information:

WSSN: 02310

County: Genesee

Township:

Section:

Well #:

Collection Date: 8/21/2014 10:25:00 AM

Arrival Date: 8/21/2014 3:03:52 PM

Site Code: SITE #8 - DBP #8

Water Source: Public Community Water Supply

Sample Reason: Routine Monitoring

Sample Point: Treated Public Distribution System

Point Description: BATHROOM S

Collector: Public Water Supply Operator

Collected By: KEVIN MC LEOD

| <u>CasNo</u> | <u>Analyte</u>               | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u>   |
|--------------|------------------------------|---------------|---------------|--------------|-----------------|
| 79-08-3      | BROMOACETIC ACID             | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 5589-96-3    | BROMOCHLOROACETIC ACID       | 0.009         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-11-8      | CHLOROACETIC ACID            | 0.006         | 0.002         | mg/L         | EPA 552.1/552.2 |
| 75-99-0      | DALAPON                      | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 631-64-1     | DIBROMOACETIC ACID           | 0.004         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-43-6      | DICHLOROACETIC ACID          | 0.018         | 0.001         | mg/L         | EPA 552.1/552.2 |
| THA-00-C     | TOTAL HALOACETIC ACID (FIVE) | 0.037         | NA            | mg/L         | EPA 552.1/552.2 |
| 76-03-9      | TRICHLOROACETIC ACID         | 0.009         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 75-25-2      | BROMOFORM                    | 0.0023        | 0.0005        | mg/L         | EPA 524.2       |
| 124-48-1     | CHLORODIBROMOMETHANE         | 0.016         | 0.0005        | mg/L         | EPA 524.2       |
| 67-68-3      | CHLOROFORM                   | 0.064         | 0.0005        | mg/L         | EPA 524.2       |
| 75-27-4      | DICHLOROBROMOMETHANE         | 0.036         | 0.0005        | mg/L         | EPA 524.2       |
| TTHM-00-C    | TOTAL TRIHALOMETHANES        | 0.1183        | 0.0005        | mg/L         | EPA 524.2       |

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:38:53 EST 2014



## Michigan Department of Environmental Quality

***Replicate Laboratory Report for  
Lansing Drinking Water Laboratory***

Owner/Location Information:

CITY OF FLINT  
5018 CLIO RD  
FLINT MI 48504

Sample Number: LLF34170

Sample/Collection Information:

WSSN: 02310

County: Genesee

Township:

Section:

Well #:

Collection Date: 8/21/2014 10:45:00 AM

Arrival Date: 8/21/2014 3:03:53 PM

Site Code: SITE #7 - DBP #7

Water Source: Public Community Water Supply

Sample Reason: Routine Monitoring

Sample Point: Treated Public Distribution System

Point Description: BATHROOM S

Collector: Public Water Supply Operator

Collected By: KEVIN MC LEOD

| <u>CasNo</u> | <u>Analyte</u>               | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u>   |
|--------------|------------------------------|---------------|---------------|--------------|-----------------|
| 79-08-3      | BROMOACETIC ACID             | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 5589-96-3    | BROMOCHLOROACETIC ACID       | 0.003         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-11-8      | CHLOROACETIC ACID            | 0.006         | 0.002         | mg/L         | EPA 552.1/552.2 |
| 75-99-0      | DALAPON                      | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 631-64-1     | DIBROMOACETIC ACID           | 0.001         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-43-8      | DICHLOROACETIC ACID          | 0.009         | 0.001         | mg/L         | EPA 552.1/552.2 |
| THA-00-C     | TOTAL HALOACETIC ACID (FIVE) | 0.030         | NA            | mg/L         | EPA 552.1/552.2 |
| 76-03-9      | TRICHLOROACETIC ACID         | 0.014         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 75-25-2      | BROMOFORM                    | 0.0024        | 0.0005        | mg/L         | EPA 524.2       |
| 124-48-1     | CHLORODIBROMOMETHANE         | 0.019         | 0.0005        | mg/L         | EPA 524.2       |
| 67-66-3      | CHLOROFORM                   | 0.082         | 0.0005        | mg/L         | EPA 524.2       |
| 75-27-4      | DICHLOROBROMOMETHANE         | 0.041         | 0.0005        | mg/L         | EPA 524.2       |
| TTHM-00-C    | TOTAL TRIHALOMETHANES        | 0.1444        | 0.0005        | mg/L         | EPA 524.2       |

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:39:02 EST 2014



## Michigan Department of Environmental Quality

**Replicate Laboratory Report for  
Lansing Drinking Water Laboratory**

Owner/Location Information:

3216 M L KING BLVD  
FLINT MI 48505

Sample Number: LLF34171

Sample/Collection Information:

WSSN: 02310

County: Genesee

Township:

Section:

Well #:

Collection Date: 8/21/2014 11:05:00 AM

Arrival Date: 8/21/2014 3:03:53 PM

Site Code: SITE #8 - DBP #6

Water Source: Public Community Water Supply

Sample Reason: Routine Monitoring

Sample Point: Treated Public Distribution System

Point Description: BATHROOM S

Collector: Public Water Supply Operator

Collected By: KEVIN MC LEOD

| <u>CasNo</u> | <u>Analyte</u>               | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u>   |
|--------------|------------------------------|---------------|---------------|--------------|-----------------|
| 79-08-3      | BROMOACETIC ACID             | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 5589-96-3    | BROMOCHLOROACETIC ACID       | 0.001         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-11-8      | CHLOROACETIC ACID            | 0.005         | 0.002         | mg/L         | EPA 552.1/552.2 |
| 75-99-0      | DALAPON                      | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 631-64-1     | DIBROMOACETIC ACID           | ND            | 0.001         | mg/L         | EPA 552.1/552.2 |
| 79-43-6      | DICHLOROACETIC ACID          | 0.006         | 0.001         | mg/L         | EPA 552.1/552.2 |
| THA-00-C     | TOTAL HALOACETIC ACID (FIVE) | 0.025         | NA            | mg/L         | EPA 552.1/552.2 |
| 76-03-9      | TRICHLOROACETIC ACID         | 0.014         | 0.001         | mg/L         | EPA 552.1/552.2 |
| 75-25-2      | BROMOFORM                    | 0.0024        | 0.0005        | mg/L         | EPA 524.2       |
| 124-48-1     | CHLORODIBROMOMETHANE         | 0.016         | 0.0005        | mg/L         | EPA 524.2       |
| 67-86-3      | CHLOROFORM                   | 0.059         | 0.0005        | mg/L         | EPA 524.2       |
| 75-27-4      | DICHLOROBROMOMETHANE         | 0.035         | 0.0005        | mg/L         | EPA 524.2       |
| TTHM-00-C    | TOTAL TRIHALOMETHANES        | 0.1124        | 0.0005        | mg/L         | EPA 524.2       |

## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:39:15 EST 2014



## Michigan Department of Environmental Quality

---

*Replicate Laboratory Report for  
Lansing Drinking Water Laboratory*

---

Owner/Location Information:

CITY OF FLINT  
1416 DUPONT ST  
FLINT MI 48503

Sample Number: LLF34172

Sample/Collection Information:

WSSN: 02310

County: Genesee

Township:

Section:

Well #:

Collection Date: 8/21/2014 11:18:00 AM

Arrival Date: 8/21/2014 3:04:02 PM

Site Code:

Water Source: Public Community Water Supply

Sample Reason: Water Quality Problem

Sample Point: Public System Well

Point Description: RESERVOIR

Collector: Public Water Supply Operator

Collected By: KEVIN MC LEOD

---

| <u>CasNo</u> | <u>Analyte</u>        | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u> |
|--------------|-----------------------|---------------|---------------|--------------|---------------|
| 75-25-2      | BROMOFORM             | 0.0024        | 0.0005        | mg/L         | EPA 524.2     |
| 124-48-1     | CHLORODIBROMOMETHANE  | 0.019         | 0.0005        | mg/L         | EPA 524.2     |
| 67-86-3      | CHLOROFORM            | 0.076         | 0.0005        | mg/L         | EPA 524.2     |
| 75-27-4      | DICHLOROBROMOMETHANE  | 0.037         | 0.0005        | mg/L         | EPA 524.2     |
| TTHM-00-C    | TOTAL TRIHALOMETHANES | 0.1344        | 0.0005        | mg/L         | EPA 524.2     |

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## Laboratory Comments:

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:39:25 EST 2014



## Michigan Department of Environmental Quality

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*Replicate Laboratory Report for  
Lansing Drinking Water Laboratory*

---

Owner/Location Information:

CITY OF FLINT  
1100 CEDAR ST  
FLINT MI 48503

Sample Number: LLF34173

Sample/Collection Information:

WSSN: 02310

County: Genesee

Township:

Section:

Well #:

Collection Date: 8/21/2014 11:44:00 AM

Arrival Date: 8/21/2014 3:04:06 PM

Site Code:

Water Source: Public Community Water Supply

Sample Reason: Water Quality Problem

Sample Point: Public System Well

Point Description: RESERVOIR

Collector: Public Water Supply Operator

Collected By: CHRIS BEATENHEAD

---

| <u>CasNo</u> | <u>Analyte</u>        | <u>Result</u> | <u>Detect</u> | <u>Units</u> | <u>Method</u> |
|--------------|-----------------------|---------------|---------------|--------------|---------------|
| 75-25-2      | BROMOFORM             | 0.0033        | 0.0005        | mg/L         | EPA 524.2     |
| 124-48-1     | CHLORODIBROMOMETHANE  | 0.025         | 0.0005        | mg/L         | EPA 524.2     |
| 67-66-3      | CHLOROFORM            | 0.080         | 0.0005        | mg/L         | EPA 524.2     |
| 75-27-4      | DICHLOROBROMOMETHANE  | 0.055         | 0.0005        | mg/L         | EPA 524.2     |
| TTHM-00-C    | TOTAL TRIHALOMETHANES | 0.1633        | 0.0005        | mg/L         | EPA 524.2     |

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Laboratory Comments:

Results do not agree between vials. The concentration of chloroform was above the calibrated level of the instrument (80 ppb).

By authority of PA 368 of 1978 as amended.

Print Date: Fri Nov 7 10:39:35 EST 2014

**Rennaker, Joanne (DEQ)**

---

**From:** Rosenthal, Adam (DEQ)  
**Sent:** Tuesday, December 09, 2014 10:39 AM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: Flint TTHM letter  
**Attachments:** Flint TTHM MCL 14 table.xlsx

Attached is the table for both OEL & LRAA. Still formatting and getting it in the letter.

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](mailto:DEQ-DWMA-Lansing@michigan.gov)

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, December 09, 2014 10:33 AM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Rosenthal, Adam (DEQ)  
**Subject:** RE: Flint TTHM letter

Can I get the updated table. I need to call Jennifer Crooks back this morning. Thanks.

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

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Tuesday, December 09, 2014 10:31 AM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Rosenthal, Adam (DEQ)  
**Subject:** RE: Flint TTHM letter

Steve,

Initially, I was also not coming up with the LRAA of 99 ppb; however, I discovered that the table (May 21<sup>st</sup> TTHM column) in our Sept. 10<sup>th</sup> letter was not correct....the corrected table confirms the 99 ppb LRAA.

Michael Prysby, P.E.  
 District Engineer

Office of Drinking Water and Municipal Assistance  
517 290-8817

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, December 09, 2014 10:13 AM  
**To:** Prysby, Mike (DEQ); Rosenthal, Adam (DEQ)  
**Subject:** RE: Flint TTHM letter

Adam,

I would like a table showing the 3 rounds of results the LRAA and the current OEL for each of the 8 sites, just for TTHM. I'm not getting a high LRAA of 99 ppb based on the info Mike had provided.

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

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Monday, December 08, 2014 1:48 PM  
**To:** Rosenthal, Adam (DEQ); Busch, Stephen (DEQ)  
**Subject:** Flint TTHM letter

Adam, Steve

I made some tweaks to the draft letter for consideration and can be tweaked further as needed. Changes are noted in red.....

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

**Rennaker, Joanne (DEQ)**

---

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**Cc:** Rosenthal, Adam (DEQ)  
**Subject:** RE: Flint TTHM letter

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

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**Subject:** RE: Flint TTHM letter

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

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**To:** Rosenthal, Adam (DEQ); Busch, Stephen (DEQ)  
**Subject:** Flint TTHM letter

Adam, Steve

I made some tweaks to the draft letter for consideration and can be tweaked further as needed. Changes are noted in red.....

Michael Prysby, P.E.  
 District Engineer

Office of Drinking Water and Municipal Assistance  
517 290-8817

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, February 27, 2015 1:55 PM  
**To:** Philip, Kris (DEQ)  
**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ)  
**Subject:** Re: Flint TTHM

Jeff Hansen from LAN is interested in receiving the most recent TTHM results so they can include it in Flints OEL report due March 1st.

Sent from my iPhone

On Feb 27, 2015, at 12:24 PM, Philip, Kris (DEQ) <[PHILIPK@michigan.gov](mailto:PHILIPK@michigan.gov)> wrote:

Here are Flint's most recent 4 quarters of TTHM data.

<02310\_Flint\_TTHM\_02 27 2015.xlsx>

**Rennaker, Joanne (DEQ)**

---

**From:** Crooks, Jennifer <crooks.jennifer@epa.gov>  
**Sent:** Thursday, October 16, 2014 9:39 AM  
**To:** Busch, Stephen (DEQ)  
**Subject:** RE: Flint Water Complaint

Steve—thank you for following up on this. Perhaps the following information will help the Water Service Center contact this citizen. The complete information for the citizen is:

Tokoya Cureton  
 810.394.2785  
[Tcicu99@live.com](mailto:Tcicu99@live.com)  
 324 West Jackson Ave  
 Flint 48505

**From:** Busch, Stephen (DEQ) [<mailto:BUSCHS@michigan.gov>]  
**Sent:** Thursday, October 16, 2014 8:12 AM  
**To:** Crooks, Jennifer  
**Subject:** FW: Flint Water Complaint

Jennifer,

As indicated below the City is in the process of following up on this complaint.

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

**From:** Brent Wright [<mailto:bwright@cityofflint.com>]  
**Sent:** Wednesday, October 15, 2014 3:01 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** [rbincsik@cityofflint.com](mailto:rbincsik@cityofflint.com); Prysby, Mike (DEQ)  
**Subject:** Re: Flint Water Complaint

Steve,

I had Mike Glasgow check on this and we have no record of any complaints at this address. We are going to make an attempt to visit this citizen, but with no phone number and name it makes it difficult to schedule a visit. At least we will flush and test hydrants in the area.

Thank you

On Tue, Oct 14, 2014 at 1:54 PM, Busch, Stephen (DEQ) <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)> wrote:

Rob,

We have been forwarded the following complaint information from EPA. Could you please let us know whether you have received their complaint and provide a summary of any action or communication with the complaintant? Thanks.

Citizen lives at 324 West Jackson Avenue, Flint, 48505

She states, "Water quality is bad since switching to Flint River. My water stinks like sewage at times. I have developed a cough and rash, brown sediment in sink basins and kitchen sink stays backed up. I have written City Hall Water Dept and Council President for help, but no response."

Stephen Busch, P.E.

Lansing and Jackson District Supervisor

Office of Drinking Water and Municipal Assistance

MDEQ

517-643-2314

--

**Brent Wright**  
**Water Plant Supervisor**  
**City of Flint**  
**4500 N. Dort Hwy.**  
**Flint, MI. 48505**  
**Ph: 810.787.6537 ext. 3510**  
**Fx: 810.787.3710**

**Rennaker, Joanne (DEQ)**

---

**From:** Brent Wright <bwright@cityofflint.com>  
**Sent:** Wednesday, October 15, 2014 3:01 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** rbincsik@cityofflint.com; Prysby, Mike (DEQ)  
**Subject:** Re: Flint Water Complaint

Steve,

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Stephen Busch, P.E.

Lansing and Jackson District Supervisor

Office of Drinking Water and Municipal Assistance

MDEQ

517-643-2314

--

**Brent Wright**  
**Water Plant Supervisor**  
**City of Flint**  
**4500 N. Dort Hwy.**  
**Flint, MI. 48505**  
**Ph: 810.787.6537 ext. 3510**  
**Fx: 810.787.3710**

**Rennaker, Joanne (DEQ)**

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Thursday, September 24, 2015 11:58 AM  
**To:** Feuerstein, Heather (DEQ); Lasher, GERALYN (DCH)  
**Cc:** Robinson, Mikelle (DCH); Hertel, Elizabeth (DCH); Travis, Rashmi (DCH); Anderson, Paula (DCH); Ridley, Nancy (DCH); Rockefeller, Cheryl (DCH); Colston, Leslie (DCH); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** RE: Flint Water FAQ Document

The following website also contains a concise summary of what consumers should know about lead and drinking water. Some of the message we are trying to convey to residents with lead plumbing or lead service lines is contained within this information.

Consumer information on lead is available on [Drinktap.org](http://Drinktap.org).

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

---

**From:** Feuerstein, Heather (DEQ)  
**Sent:** Thursday, September 24, 2015 10:59 AM  
**To:** Lasher, GERALYN (DCH)  
**Cc:** Robinson, Mikelle (DCH); Hertel, Elizabeth (DCH); Travis, Rashmi (DCH); Anderson, Paula (DCH); Ridley, Nancy (DCH); Rockefeller, Cheryl (DCH); Colston, Leslie (DCH); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** RE: Flint Water FAQ Document

Sorry about that. Attached is the corrected version. That sentence was deleted.

Thanks!  
 Heather Feuerstein  
 Management Assistant to  
 Maggie Pallone, Deputy Director and  
 Brad Wurfel, Communications Director  
 Department of Environmental Quality  
 517.284.6715

---

**From:** Lasher, GERALYN (DCH)  
**Sent:** Wednesday, September 23, 2015 5:12 PM  
**To:** Feuerstein, Heather (DEQ)  
**Cc:** Robinson, Mikelle (DCH); Hertel, Elizabeth (DCH); Travis, Rashmi (DCH); Anderson, Paula (DCH); Ridley, Nancy

(DCH); Rockefeller, Cheryl (DCH); Colston, Leslie (DCH); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Devereaux, Tracy Jo (DEQ)

**Subject:** Re: Flint Water FAQ Document

The answer to the last question on the first page seems to stop mid-answer. Could someone circulate a version with the complete answer please?

Thank you.

Sent from my iPad

On Sep 23, 2015, at 4:48 PM, Feuerstein, Heather (DEQ) <[FeuersteinH@michigan.gov](mailto:FeuersteinH@michigan.gov)> wrote:

Attached please find the FAQ document that was discussed during the Flint water conference call today.

Thanks!

Heather Feuerstein  
Management Assistant to  
Maggie Pallone, Deputy Director and  
Brad Wurfel, Communications Director  
Department of Environmental Quality  
517.284.6715

<Flint water FAQs.pdf>

**Rennaker, Joanne (DEQ)**

---

**From:** Feuerstein, Heather (DEQ)  
**Sent:** Thursday, September 24, 2015 10:59 AM  
**To:** Lasher, GERALYN (DCH)  
**Cc:** Robinson, Mikelle (DCH); Hertel, Elizabeth (DCH); Travis, Rashmi (DCH); Anderson, Paula (DCH); Ridley, Nancy (DCH); Rockefeller, Cheryl (DCH); Colston, Leslie (DCH); Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** RE: Flint Water FAQ Document  
**Attachments:** Flint water FAQs.pdf

Sorry about that. Attached is the corrected version. That sentence was deleted.

Thanks!

Heather Feuerstein  
 Management Assistant to  
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Attached please find the FAQ document that was discussed during the Flint water conference call today.

Thanks!  
 Heather Feuerstein

Management Assistant to  
Maggie Pallone, Deputy Director and  
Brad Wurfel, Communications Director  
Department of Environmental Quality  
517.284.6715

<Flint water FAQs.pdf>



## **Frequently Asked Questions:**

### **Water Lead Levels in the City of Flint**

#### **September 2015**

#### **How can lead get into drinking water?**

Lead detections in Flint drinking water exist at the home level. Sampling at the Flint Water Treatment Plant has shown no lead in its treated water. However, this contaminant leaches into water from a home's lead service lines, lead solder, and leaded plumbing materials including fixtures, faucets, and fittings.

#### **Does the city meet federal drinking water standards for lead and copper?**

Yes, the city is meeting state and federal guidelines for lead and copper.

The City of Flint has regularly monitored for lead and copper since federal law began requiring it in 1991.

When the City changed water sources in May 2014, state and federal law required the city to sample for lead and copper for a full year to determine how the water may be interacting with residential lead plumbing to increase lead levels. While the city's results show residential lead levels below the federal threshold for immediate response activities, Flint is moving quickly to optimize corrosion control measures in its water system.

#### **Some individual homes showed high numbers for lead. Isn't that a concern?**

For the homeowner, yes it is. There is no "safe" level for lead, and while the leading cause of lead poisoning around the country is lead paint, any source of lead ingestion is worthy of concern.

But the State and federal guidelines for lead and copper acknowledge an important reality: Any home that has a lead service connection or lead plumbing will impart some varying amount of lead into the home's water. The only way to eliminate lead in a home water system is to remove lead plumbing or replace lead service connections to the city system.

The lead and copper rule requires the local operator to sample dozens, sometimes hundreds of homes in the service area to get a general sense of how the water supply is interacting with lead plumbing and service connections. The tests are done specifically at homes with lead service connections.

### **Are there other ways the city monitors for lead exposure?**

The County Health Department, overseen statewide by the Michigan Department of Health and Human Services, regularly monitors blood levels in children throughout Michigan communities. The leading cause of lead poisoning is exposure to lead paint.

Blood lead level testing results for the 12-month period just after the City of Flint changed its water source (May 2014 – April 2015) showed no significant change in the pattern of blood lead levels in Flint, compared to the previous three years. This data suggests the recent change in water source by the City of Flint has not contributed to an increase in lead exposure throughout the community.

### **How does the state decide if the water is creating a lead problem?**

Compliance with the federal lead rule is based on a 90<sup>th</sup> percentile calculation. If more than 10 percent of samples report lead above the federal action level of **15 parts per billion**, a water supply has an "action level exceedance." An exceedance is not a violation. It triggers other requirements which could include public notification, additional water quality sampling, and possibly further treatment.

While some of Flint's individual samples exceeded the 15 parts-per-billion lead action level, compliance is based on **the 90<sup>th</sup> percentile of samples**. The City of Flint's 90<sup>th</sup> percentile level has ranged between 0 parts per billion in 2008 and 2011, and 15 parts per billion in 1992, but never exceeded the action level.

The two most recent sampling periods, in 2014 and 2015, were 6 parts per billion and 11 parts per billion, respectively.

### **Did the city use every sample they got back?**

Sampling requirements for lead and copper are designed to target the most common pathways to lead ingestion in homes with the least protection. The sample must be collected from a commonly used kitchen or bathroom tap, and in accordance with the provided sampling instructions. Homes that employ filtration or additional treatment cannot be included. Samples must also be collected within the established monitoring period.

### **I have a lead service connection or lead plumbing. What should I do?**

Replacement is the only way to eliminate lead exposure. However, here are some interim steps homeowners can take to reduce it:

Flush pipes before drinking, and only use cold water for consumption.

The more time water has been sitting in your home's pipes, the more lead it may contain. When water in a particular faucet has not been used for six hours or longer, "flush" cold-water pipes by running the water until it becomes as cold as it will get. This could take five to 30 seconds if there has been recent water use elsewhere in the home, such as showering or flushing toilets. Otherwise, it could take two minutes or longer.

Use only water from the cold-water tap for drinking, cooking, and especially for making baby formula. Hot water is likely to contain higher levels of lead.

**Who is responsible for replacement of lead materials?**

Replacement of service pipes on private property and any leaded plumbing materials within the home is a **homeowner's responsibility**. The City of Flint owns the service pipe from the water main to the curb stop valve, and that is **the City's responsibility**. This valve is normally located two feet in from the street curb. From there to the house is private property and the responsibility of the homeowner.

**Why doesn't the city at least replace its portion of lead service lines?**

Partial lead service line replacement has been shown to mobilize more lead and make the situation worse. Only full lead service line replacement has been demonstrated effective in achieving long-term reductions in drinking water lead levels.

**What is the City's timeline for installation of corrosion control treatment?**

The federal government allows the steps to complete the installation of optimal corrosion control treatment and follow-up monitoring to take up to five years.

However, the City of Flint has committed to completing installation of Optimized Corrosion Control Treatment in **less than six months**.

**What will happen when Flint joins the Karegnondi Water Authority next year?**

The City has committed to having Optimized Corrosion Control Treatment in place prior to its connection with the Karegnondi Water Authority (KWA). The water provided by KWA will come from a new source, Lake Huron. The city will continue its lead and copper sampling every six months. Additionally, the city's water treatment plant will continue to operate with uninterrupted Optimized Corrosion Control Treatment.

**How long would it take to replace lead service lines throughout Flint?**

The city has about 32,900 service connections in total. **More than 15,000** of these connections are considered lead service lines. Even if many crews were contracted, it would likely take up to 15 years to complete this work.

**What would it cost to replace the lead service line at my house?**

Average costs to replace a lead service line at an individual home range from \$2,000 to \$8,000. Costs vary depending on the length and size of service line that is needed, as well as the ground cover and soil conditions encountered.

With more than 15,000 lead service lines at an estimated average cost of \$4,000 for each replacement, total cost could be **\$60 million or more**.

**Rennaker, Joanne (DEQ)**

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Friday, January 16, 2015 8:24 AM  
**To:** Busch, Stephen (DEQ)  
**Subject:** RE: Flint Water Forum

Okay ... Thanks, Steve. Let's find some time to debrief & plan on Tuesday.  
 b

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, January 16, 2015 8:23 AM  
**To:** Wurfel, Brad (DEQ)  
**Subject:** FW: Flint Water Forum

Brad,

It looks like Flint is planning to meet internally today (Friday) and then convey details back out rather than host the conference call. The meeting is tentatively next Wednesday at 7:00 PM, I believe at City Hall chambers. I expect all local TV stations will be there along with mlive and other news paper reporters.

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:** Thursday, January 15, 2015 4:35 PM  
**To:** Green, Warren  
**Cc:** Jason Lorenz; Prysby, Mike (DEQ); Busch, Stephen (DEQ); [djansen@gcdcwws.com](mailto:djansen@gcdcwws.com); John O'Brien  
**Subject:** Re: Water Forum

All,

We will confirm the time and details on next Wednesday's meeting internally tomorrow morning and I will relay information to everyone.

Thank you,

On Wed, Jan 14, 2015 at 5:04 PM, Howard Croft <[hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)> wrote:  
 All,

In looking ahead to next weeks forum on water I am planning to host a conference call this Friday morning with the participants to get everyone on the same page and discuss details of how the forum should be structured. We have participation commitments from LAN engineering, Genesee County Drain Commissioners office, and MDEQ but we are leaving the door open for others.

The meeting is scheduled for Wednesday January 21st and we are contemplating what time it should be held. Currently we think 7:00 pm is the best time slot.

Please forward me your best availability for Friday morning, and I will establish the call. We would like to begin informing the public of the time, place, and participants of the forum on Friday afternoon.

Thank you,

--

**Howard Croft**

Public Works Director  
City of Flint  
1101 S. Saginaw Street  
Flint, MI 48502  
PH# 810.766.7346 Ext.2043  
[hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)

--

**Howard Croft**

Public Works Director  
City of Flint  
1101 S. Saginaw Street  
Flint, MI 48502  
PH# 810.766.7346 Ext.2043  
[hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)

**Rennaker, Joanne (DEQ)**

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Monday, August 24, 2015 10:56 AM  
**To:** Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)  
**Subject:** RE: Flint Water Study-VT

Should we have them include Pat Cook as the Treatment Specialist and LCR Manager for the community program?

Do we want to be sure they are aware of the impending change in source water in 2016 and that they should not spend a lot of resources making recommendations about changes to water treatment or water quality without first knowing that fact?

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Monday, August 24, 2015 10:31 AM  
**To:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Flint Water Study-VT

Perhaps we should put them in touch with the UM folks.

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Monday, August 24, 2015 10:23 AM  
**To:** Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** FW: Flint Water Study-VT  
**Importance:** High

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](mailto:buschs@michigan.gov)

---

**From:** Rosenthal, Adam (DEQ)  
**Sent:** Monday, August 24, 2015 8:53 AM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** FW: Flint Water Study-VT

---

**From:** Marc Edwards [<mailto:edwardsm@vt.edu>]  
**Sent:** Sunday, August 23, 2015 4:57 PM  
**To:** Rosenthal, Adam (DEQ); [bwright@cityofflint.com](mailto:bwright@cityofflint.com); 'Ptaszenski, Rachel'  
**Subject:** Flint Water Study-VT

Dear Adam, Mike and Rachel,

Hi there. I am a professor at Virginia Tech who specializes in research on corrosion, opportunistic premise plumbing pathogens, lead in water health effects and engineering ethics.

Over the next few months we will be studying Flint water quality issues, in conjunction with all parties who are interested in this subject.

We will be launching our web page to publicly report results of our work.

We visited Flint last week and collected a lot of samples from the distribution system, and we are also doing a lead in water study with residents, to complement that which was recently conducted by the city under the LCR.

Just giving you a heads up on this, and I hope you can give me a point of contact with each of your agencies.

Dependent on what we find, it might be desirable to touch base, in advance of our releasing certain findings.

We also intend to collaborate with all parties, in an open manner, to the extent that is possible, as our study progresses.

Mike, I think I met you a few years back at a Michigan AWWA event, and Rachel, you were kind enough to send me the coliform/E.Coli data last week. Adam, I am not sure if I have ever met you or not.

My cell phone is 540 320 8740, my office phone is 540 231-7236, and my e-mail is on this message. Feel free to call me at any time, if any of you should have any questions about our plans, or the Flint water quality issues that we will be studying.

Best Regards,  
Marc Edwards

**Rennaker, Joanne (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)**

**Rennaker, Joanne (DEQ)**

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**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

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**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](mailto:ByrneR1@michigan.gov) (517) 335-2521



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**Rennaker, Joanne (DEQ)**

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**From:** Wurfel, Brad (DEQ)  
**Sent:** Tuesday, September 08, 2015 2:20 PM  
**To:** Ronald Fonger  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** RE: flint water

Ron,

As we discussed last week, the state DEQ is just as perplexed by Edwards' results as he seems to be by the city's test results, which are done according to state and federal sampling guidelines and analyzed in certified labs.

When I said we were unsure how the Virginia Tech team got its results, that's not the same as being surprised that they got them. There are a conservatively estimated 15,000 old homes with lead plumbing in Flint alone, and this group specializes in looking for high lead problems. They pull that rabbit out of that hat everywhere they go. Nobody should be surprised when the rabbit comes out of the hat, even if they can't figure out how it is done.

It's scientifically probable a research team that specializes in looking for lead in water could have found it in Flint when the city was on its old water supply. We won't know that, because they've only just arrived in town and quickly proven the theory they set out to prove, and while the state appreciates academic participation in this discussion, offering broad, dire public health advice based on some quick testing could be seen as fanning political flames irresponsibly. Residents of Flint concerned about the health of their community don't need more of that.

As I mentioned last week, the issue here isn't Flint's water source or water plants. It's the high number of older homes with lead pipes and lead service connections. Anyone with lead plumbing in their homes should recognize there's some communication of lead from that.

The state and the EPA are working together in Flint – have been from the start, and we are in regular communication with federal counterparts to discuss Flint water. The state's program has been in place, protecting community water supplies for more than 40 years around the state. The reason this conversation began is because we have lead and copper rules; the city met the state and federal standard, and has agreed to further optimize its system to even further reduce lead levels, but let's be clear: lead pipes means some lead in water, at some level. Folks who have concerns should get a water specialist to take a look at their home and see what they need to do to achieve peace of mind, because lead and copper are home plumbing problems that no water source can eliminate entirely.

b

Brad Wurfel  
Communications Director  
Michigan Department of Environmental Quality  
517-284-6713  
517-230-8006 cell

---

**From:** Ronald Fonger [mailto:RFONGER1@mlive.com]  
**Sent:** Tuesday, September 08, 2015 11:39 AM  
**To:** Wurfel, Brad (DEQ)  
**Subject:** flint water

Brad:

This was posted by the Virginia Tech researchers this morning.

Since a part of it speaks directly to MDEQ's involvement in the Flint water situation, I wanted to see if we can get a comment from you for an initial story that I hope to post in about two hours.

Thanks,

<http://flintwaterstudy.org/2015/09/our-sampling-of-252-low-risk-homes-demonstrates-a-high-lead-in-water-risk-flint-should-be-failing-to-meet-the-epa-lead-and-copper-rule/>

**Ron Fonger**

MLive Media Group  
Reporter

mobile 810.347.9963

email [rfonger1@mlive.com](mailto:rfonger1@mlive.com)

address 540 S. Saginaw St. #101, Flint MI 48502

**Rennaker, Joanne (DEQ)**

---

**From:** Cook, Pat (DEQ)  
**Sent:** Friday, April 04, 2014 12:54 PM  
**To:** Busch, Stephen (DEQ)  
**Subject:** RE: Flint WTP - Bray Road Lagoon Proposal - MDEQ comments

According to 4.4.5.2 in Recommended Standards only pipes carrying elemental liquid or dry gaseous Cl<sub>2</sub> *under pressure* must be schedule 80 steel. Maybe there was some confusion about exactly where in the feed piping the gas was being converted from pressure to vacuum. Or maybe we missed the "under pressure" part in 4.4.5.2.

pat

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, April 04, 2014 12:22 PM  
**To:** Cook, Pat (DEQ)  
**Subject:** FW: Flint WTP - Bray Road Lagoon Proposal - MDEQ comments

Pat,

Wouldn't plastic tubing be allowed under the vacuum conditions? I'm not finding anything that would require the schedule 80 steel pipe, and not sure if my got this comment mixed up. Mike's original comment is listed below.

- It appears that make-up water and chlorine gas are not combined at the chlorine feeder (panel w. rotometer, vacc. monitor, auto. feed control valve, etc.) for production of liquid chlorine. Instead, this appears to take place at the ejector/check valve assembly on the plant supply line. Please confirm. If gas under vacuum is conveyed to the ejector at the plant supply line, the gas piping must be Schedule 80 seamless steel tubing. Please confirm. This can be included on the chlorination system schematic.

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

---

**From:** Matta, Samir [<mailto:SFMatta@lan-inc.com>]  
**Sent:** Thursday, April 03, 2014 3:57 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** Re: Flint WTP - Bray Road Lagoon Proposal - MDEQ comments

Hi Mike,

Does the piping have to be schedule 80 steel as our system is under vacuum and not under pressure as required by ten states standards?

Thanks.

Lockwood, Andrews & Newnam  
Samir Matta, PE  
(517) 819-2367

On Apr 3, 2014, at 8:57 AM, "Prysby, Mike (DEQ)" <PRYSBYM@michigan.gov> wrote:

Samir,

Attached are our comments pertaining to submittals received for Phase II – Segments I and II for the Flint WTP. If you have any questions concerning our comments, I will be available till close of business today to discuss with you. After today, you will need to contact Steve Busch concerning any questions regarding the Flint WTP project. I will return from vacation on Monday April 21<sup>st</sup>.

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

<Pre-lim Eng Reports - DEQ Comments III April 2, 2014.doc>

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**Rennaker, Joanne (DEQ)**

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**From:** Matta, Samir <SFMatta@lan-inc.com>  
**Sent:** Thursday, April 03, 2014 3:57 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** Re: Flint WTP - Bray Road Lagoon Proposal - MDEQ comments

Hi Mike,

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Lockwood, Andrews & Newnam  
Samir Matta, PE  
(517) 819-2367

On Apr 3, 2014, at 8:57 AM, "Prysby, Mike (DEQ)" <[PRYSBYM@michigan.gov](mailto:PRYSBYM@michigan.gov)> wrote:

Samir,

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

<Pre-lim Eng Reports - DEQ Comments III April 2, 2014.doc>

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**Rennaker, Joanne (DEQ)**

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**From:** Prysby, Mike (DEQ)  
**Sent:** Tuesday, July 14, 2015 7:54 AM  
**To:** Matta, Samir  
**Cc:** 'bwright@cityofflint.com'; Michael Glasgow; Busch, Stephen (DEQ)  
**Subject:** RE: Flint WTP GAC Permit Application

Samir,

The GAC addition and sand filter media replacement for the filters at the Flint WTP is approved. Construction Permit # W 151055 issued on July 14, 2015 validates the approval. A hard copy of the permit along with a set of approved plans and specifications will be mailed out today and you should receive the set within the next few days. This e-mail; however, acknowledges issuance of the DEQ construction permit; thus construction work pertaining to this project may proceed. If you have any further questions, please don't hesitate to contact me.

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

---

**From:** Matta, Samir [mailto:SFMatta@lan-inc.com]  
**Sent:** Monday, July 13, 2015 2:29 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Hansen, Jeff; Busch, Stephen (DEQ)  
**Subject:** RE: Flint WTP GAC Permit Application

Hi Mike,

As per our phone conversation, Calgon is pumping the wet sand into a truck with screened valves in the back that allows the water to drain out while keeping the sand in the truck. The removed materials is trucked to a landfill for disposal. The new sand comes in large bags that is dumped into a hopper and pumped back into the filter after water is added to the system.

I have included photos of the sand being pumped out into the truck for your review.

We also like to have the plant facility remain at 36 MGD and not change to 30 MGD even though we do not expect the City demands to get that high.

Let me know if you need anything else.

**Samir F. Matta, PE**  
Senior Project Manager



**Lockwood, Andrews  
& Newnam, Inc.**

A LEO A DALY COMPANY

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[www.lan-inc.com](http://www.lan-inc.com) • [SFMatta@lan-inc.com](mailto:SFMatta@lan-inc.com)

---

**From:** Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]

**Sent:** Monday, July 13, 2015 11:55 AM

**To:** Matta, Samir

**Cc:** Hansen, Jeff; Busch, Stephen (DEQ)

**Subject:** RE: Flint WTP GAC Permit Application

Samir,

The revised plans received from you this morning along with the response and attachments from Jeff Hansen on July 8, 2015 address the majority of our comments sent on July 6, 2015. The removal and re-installation of the sand media; however, is not described. Please provide a description of the procedure to remove and re-install the sand filter media. An electronic response will be adequate.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

---

**From:** Matta, Samir [<mailto:SFMatta@lan-inc.com>]

**Sent:** Friday, July 10, 2015 11:58 AM

**To:** Busch, Stephen (DEQ); Hansen, Jeff

**Cc:** Prysby, Mike (DEQ); Brent Wright ([bwright@cityofflint.com](mailto:bwright@cityofflint.com)); [mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com); Green, Warren

**Subject:** RE: Flint WTP GAC Permit Application

Thanks Steve.

I am out of town today. I will drop the plans on Monday.

Enjoy your Weekend.

Samir Matta, PE

Lockwood, Andrews & Newnam, Inc.

(517)819-2367

----- Original message -----

From: "Busch, Stephen (DEQ)" <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)>

Date: 07/10/2015 11:11 AM (GMT-05:00)

To: "Hansen, Jeff" <[jrhansen@lan-inc.com](mailto:jrhansen@lan-inc.com)>, "Matta, Samir" <[SFMatta@lan-inc.com](mailto:SFMatta@lan-inc.com)>

Cc: "Prysby, Mike (DEQ)" <PRYSBYM@michigan.gov>, "Brent Wright (bwright@cityofflint.com)" <bwright@cityofflint.com>, mglasgow@cityofflint.com, "Green, Warren" <jwgreen@lan-inc.com>  
Subject: RE: Flint WTP GAC Permit Application

Samir,

You may drop off revised plans today Friday or Monday. The other documents we can print.

If you come today give me a call at the number below. I will be in meetings from 12:00 – 2:00

If you come on Monday give call Mike, as he is scheduled to be back.

Thanks.

Stephen Busch, P.E.

Lansing and Jackson District Supervisor

Office of Drinking Water and Municipal Assistance

MDEQ

517-643-2314

---

**From:** Hansen, Jeff [mailto:jrhansen@lan-inc.com]

**Sent:** Wednesday, July 08, 2015 8:52 AM

**To:** Busch, Stephen (DEQ)

**Cc:** Prysby, Mike (DEQ); Brent Wright (bwright@cityofflint.com); mglasgow@cityofflint.com; Matta, Samir; Green, Warren

**Subject:** RE: Flint WTP GAC Permit Application

Steve,

In general response to your comments, our agreement with Flint is a design/build type so on the plans we have called out specific make/models to match what Flint currently uses for a number of items on your list rather than developing entire spec sections.

Specific responses to your comments are shown below in red. Revised plans and specs are attached and we will send hard copies by mail. Attachments are as follows:

1. Calgon Filtrasorb 400 GAC media data sheet
2. Calgon media change out procedures
3. Calgon disinfection procedures
4. Revised plans – there is only 1 change to a single note on sheet 6 as described below
5. Revised specs – added sections for piping, valves and pipe testing

Thanks,

**Jeffrey R. Hansen**

Senior Project Manager



1311 South Linden Road, Suite B • Flint, MI 48532

T 810.820.2682 C 810.333.3201

[www.lan-inc.com](http://www.lan-inc.com) • [JRHansen@lan-inc.com](mailto:JRHansen@lan-inc.com)

---

**From:** Busch, Stephen (DEQ) [<mailto:BUSCHS@michigan.gov>]

**Sent:** Monday, July 06, 2015 3:50 PM

**To:** Hansen, Jeff

**Cc:** Matta, Samir; Green, Warren; [mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com); Brent Wright ([bwright@cityofflint.com](mailto:bwright@cityofflint.com)); Prysby, Mike (DEQ)

**Subject:** Flint WTP GAC Permit Application

Our office received the permit application "Fint WTP Phase II, Segment 3 Filter Media Replacement" on June 30, 2015.

The only specifications provided with the permit application were for the following:

- 05550 Bolts, Anchor Bolts And Expansion Anchors
- 09928 Protective Coating Systems

Aside from information shown on the plan sheets and what was listed in the previously submitted basis of design document, no other specifications were provided regarding:

- GAC and Sand media, including removal, installation, ripening, and disinfection procedures

**Plan sheet 5 calls out effective size, uniformity coefficient, and specific gravity for GAC and sand. Also, we have selected Calgon's product Filtrasorb 400 in our agreement. We did not want to dictate means and methods on the plans or specs. However, Calgon procedures are attached for your reference as well as their Filtrasorb 400 product sheet.**

- Chlorine piping, joints, valves, installation, support, etc.

**Chlorine piping and valves are to be ASAHI Chem Prolok which are dual wall HDPE with butt fused joints and also the same type as the existing mid point chlorination piping. We will add a specification for this and have added some wording to the pipe call out near the center of sheet 6. Specific supports are called out on the plans and notes refer to sections 09928 for coating and 05550 for anchor bolts. See Key Note #1 on sheet 6. Key note call outs are designated with a number inside a hexagon in the plan view.**

- Water tight hatch to be installed

**The Bilco hatch specified in Key Note #2 on sheet 6 with the options listed is water tight.**

- Chlorine gas detector equipment

**The specific make/model of the chlorine detection equipment is called out with Key Note #3 on sheet 6. That type was selected to match other chlorine gas detectors currently used at the plant.**

Regarding the Protective Coating Systems specs and their related appendix, these are general in nature listing every part of the plant as potentially being recoated. Plan notes discuss a few items to be coated/recoated, but it is not entirely clear what the full scope of the coating work will consist of. **Coating will only be applied to those items where it is called for on the plans, which are the hangers/supports.**

We request any additional specification information regarding the above be provided for approval.

It is also noted that the basis of design is based on a flow of 30 MGD, approximately 2.5 gpm/ft<sup>2</sup> filter loading rate. The existing filters are currently rated for 36 MGD at 3 gpm/ft<sup>2</sup>. This would cause the WTP capacity rating to be lowered to 30 MGD. Any future request to expand filter capacity back to 36 MGD would need to be demonstrated through filter performance testing. **We showed 30 mgd in the basis of design and on the application form only because it is unlikely Flint demands will reach 36 mgd in the next 20 years. However, we would like to maintain the 36 mgd rating – do you need the basis of design and permit application resubmitted for this?**

Stephen Busch, P.E.

Lansing and Jackson District Supervisor

Office of Drinking Water and Municipal Assistance

MDEQ

517-643-2314

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**Rennaker, Joanne (DEQ)**

---

**From:** Hansen, Jeff <jrhansen@lan-inc.com>  
**Sent:** Wednesday, July 08, 2015 8:52 AM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Prysby, Mike (DEQ); Brent Wright (bwright@cityofflint.com); mglasgow@cityofflint.com; Matta, Samir; Green, Warren  
**Subject:** RE: Flint WTP GAC Permit Application  
**Attachments:** CarbonExchangeGravityFilters\_carbontransferprocedure.pdf; FS.SOP.4.8 - Filter Disinfection Using Sodium Hypochlorite.pdf; Calgon\_F400.pdf; Flint WTP Ph-II Seg-3 GAC\_07-07-15-to-MDEQ.pdf; Flint-GACandCL2-specs-toMDEQ\_07-07-15.pdf

Steve,

In general response to your comments, our agreement with Flint is a design/build type so on the plans we have called out specific make/models to match what Flint currently uses for a number of items on your list rather than developing entire spec sections.

Specific responses to your comments are shown below in red. Revised plans and specs are attached and we will send hard copies by mail. Attachments are as follows:

1. Calgon Filtrasorb 400 GAC media data sheet
2. Calgon media change out procedures
3. Calgon disinfection procedures
4. Revised plans – there is only 1 change to a single note on sheet 6 as described below
5. Revised specs – added sections for piping, valves and pipe testing

Thanks,

**Jeffrey R. Hansen**  
 Senior Project Manager



**Lockwood, Andrews  
& Newnam, Inc.**  
 A LEO A DALY COMPANY

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---

**From:** Busch, Stephen (DEQ) [<mailto:BUSCHS@michigan.gov>]  
**Sent:** Monday, July 06, 2015 3:50 PM  
**To:** Hansen, Jeff  
**Cc:** Matta, Samir; Green, Warren; [mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com); Brent Wright ([bwright@cityofflint.com](mailto:bwright@cityofflint.com)); Prysby, Mike (DEQ)  
**Subject:** Flint WTP GAC Permit Application

Our office received the permit application "Fint WTP Phase II, Segment 3 Filter Media Replacement" on June 30, 2015.

The only specifications provided with the permit application were for the following:

- 05550 Bolts, Anchor Bolts And Expansion Anchors
- 09928 Protective Coating Systems

Aside from information shown on the plan sheets and what was listed in the previously submitted basis of design document, no other specifications were provided regarding:

- GAC and Sand media, including removal, installation, ripening, and disinfection procedures  
Plan sheet 5 calls out effective size, uniformity coefficient, and specific gravity for GAC and sand. Also, we have selected Calgon's product Filtrasorb 400 in our agreement. We did not want to dictate means and methods on the plans or specs. However, Calgon procedures are attached for your reference as well as their Filtrasorb 400 product sheet.
- Chlorine piping, joints, valves, installation, support, etc.  
Chlorine piping and valves are to be ASAHI Chem Prolok which are dual wall HDPE with butt fused joints and also the same type as the existing mid point chlorination piping. We will add a specification for this and have added some wording to the pipe call out near the center of sheet 6. Specific supports are called out on the plans and notes refer to sections 09928 for coating and 05550 for anchor bolts. See Key Note #1 on sheet 6. Key note call outs are designated with a number inside a hexagon in the plan view.
- Water tight hatch to be installed  
The Bilco hatch specified in Key Note #2 on sheet 6 with the options listed is water tight.
- Chlorine gas detector equipment  
The specific make/model of the chlorine detection equipment is called out with Key Note #3 on sheet 6. That type was selected to match other chlorine gas detectors currently used at the plant.

Regarding the Protective Coating Systems specs and their related appendix, these are general in nature listing every part of the plant as potentially being recoated. Plan notes discuss a few items to be coated/recoated, but it is not entirely clear what the full scope of the coating work will consist of. Coating will only be applied to those items where it is called for on the plans, which are the hangers/supports.

We request any additional specification information regarding the above be provided for approval.

It is also noted that the basis of design is based on a flow of 30 MGD, approximately 2.5 gpm/ft<sup>2</sup> filter loading rate. The existing filters are currently rated for 36 MGD at 3 gpm/ft<sup>2</sup>. This would cause the WTP capacity rating to be lowered to 30 MGD. Any future request to expand filter capacity back to 36 MGD would need to be demonstrated through filter performance testing. We showed 30 mgd in the basis of design and on the application form only because it is unlikely Flint demands will reach 36 mgd in the next 20 years. However, we would like to maintain the 36 mgd rating – do you need the basis of design and permit application resubmitted for this?

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

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500 Calgon Carbon Drive  
Pittsburgh, PA 15205

**CARBON EXCHANGE PROCEDURES  
FOR POTABLE WATER GRAVITY FILTERS**

A carbon exchange consists of the removal of spent carbon from a filter and the installation of fresh carbon into the filter. The following procedures can also be used for initial carbon fills.

All spent carbon removals are completed hydraulically using the eduction method from the filter into an open dump truck.

The carbon installation can be completed from bulk truck deliveries or from 1,000-pound super sack deliveries. The eduction method can be used for installation from bulk trucks and from super sacks. A crane can be used to dump the carbon from the super sacks directly into the filter, allowing the filter to be filled when high-pressure water is not available.

The following section lists requirements for accomplishing a carbon exchange. The responsible party is noted after each item, either "customer" or Calgon Carbon "CCC". The designation of responsibility is for a typical project but can vary based on the specifications of the project.

1. **PROJECT REQUIREMENTS**

For removal of spent carbon or installation of fresh carbon using the eduction method the following is required:

1. Utilities
  1. A water source of at least 90 to 100 psi at 200 gpm. The supplied water source comes from the closest fire hydrant or a line, which is near a pump (i.e., a surface sweep pump). (Customer)
  2. A 2-1/2" fire hose reduced to 2" FNPT to connect to the eductor supplied by Calgon Carbon. The connection at the eductor is carbon removal and at the trailer for carbon installation. (Customer)
  3. A 3/4" garden hose at the filter for rinsing off the waders used by the labor force for carbon removal and at the trailer to insert in the hopper during carbon installation. (Customer)
  4. A drain to handle the disposal of water used in removing the spent carbon. The drain capacity should be equal to or greater than the water supplied for the carbon removal. (Customer)

2. Manpower

1. A plant operator to open or close plant water valves. (Customer)
2. Two (2) or three (3) laborers depending on the extent of work required. (Customer or CCC)
3. Supervision of installation. (CCC)

3. Miscellaneous

1. For installation or removal using a bulk trailer, an area large enough to stage one (1) or two (2) trailers is required. The approximate dimensions of a trailer are 51' long x 8'5" wide x 11'6" high. (Customer)
2. Sufficient storage for the super sacks upon arrival. The recommended storage area is an enclosed building. If this is not available and the carbon is stored outside for an extended period of time, the super sacks should be covered with tarpaulins or plastic and kept away from areas which have inadequate drainage to prevent submersion of any carbon in free-standing water. (Customer)
3. The necessary equipment (crane and/or forklift) and manpower to receive and stage the carbon in super sacks prior to loading the filters. The carbon can be hydraulically or dry installed. The super sacks weigh 1,000 pounds each, have an 18" discharge chute, and are stacked two (2) high with a pallet under the bottom super sack. (Customer)
4. The disposal of all super sacks and pallets. (Customer)
5. All transfer equipment, which includes a hopper, and eductor, a suction hose with wand, a F/F coupler, carbon slurry hoses, and a trough. (CCC)
6. Transportation for spent carbon return and virgin carbon delivery. (CCC)
7. Removal/installation sign-off certificates, which require a signature from the site contact and the Calgon Carbon Supervisor. (CCC)
8. Backwash rate curves to correspond with the product, which is installed. (CCC)

## 2. PRELIMINARY REQUIREMENTS

Customer should contact their Calgon Carbon Technical Sales Representative ten (10) working days prior to the date they plan to begin the exchange or installation. Subsequent to this notification, Calgon Carbon operations supervisor will work with the customer to reconfirm the start date and determine the equipment required to do the exchange.

## 3. SPENT REMOVAL - EDUCTION TO BULK TRAILER

1. Prior to spent carbon removal from the filter, the customer must isolate the filter from the treatment mode, complete a backwash, and lower the water level just below the top of the carbon bed so freeboard measurements can be taken.
2. While the filter is being backwashed, Calgon Carbon's supervisor will direct the connection of hoses, eductor and water supply.
3. Take free board measurements, then add water to the filter to a level of 12" to 24" of water above the carbon.
4. The driver prepares his truck to receive the spent carbon by installing a transfer hose to the front of the dump bed and a carbon retention screen on the chute and hooking up a drainage bib to the tailgate (if required) to catch all the water and direct it to a designated drain.
5. The suction hose with a wand is used for removing spent carbon. During carbon removal the operator will be required to add water into the filter to maintain a water level.
6. When it is determined that all the carbon has been removed, backwash the filter for a short amount of time, then take measurements of bed depth to determine if additional material should be removed.
7. When the removal is complete, free board measurements are again taken. Water is added to the filter to a level of 12" to 24" above the sand.

#### 4. CARBON FILL - EDUCTION FROM A BULK TRAILER

1. The virgin carbon trailer is positioned and set up with Calgon Carbon equipment to educt the carbon into the empty filter. Calgon Carbon Corporation Safe Job Procedure OP-5 (attached) will be used to transfer carbon with an aluminum hopper.
2. After the proper carbon level has been installed, the filter should sit overnight in a flooded state and then be backwashed prior to going on line.

If the filter must go into service immediately, a backwash must be completed. The backwash should begin at a low flow rate and be increased gradually to complete the backwash. A backwash removes any entrapped air or carbon fines, and segregates the carbon bed. The rates are determined by water temperature and are found on product bulletins supplied by Calgon Carbon Corporation.

3. Final freeboard measurements are taken after the backwash has been completed to verify that the proper amount of carbon has been installed.
4. All measurements are recorded on Calgon Carbon's removal/installation certificates and are to be signed by the customer as well as the Calgon Carbon Supervisor upon completion of each filter.
5. The procedure is repeated for each filter to be exchanged.
6. After the total job is complete, all equipment must be returned to Calgon Carbon Corporation, and the work area cleaned up before leaving the site.

#### 5. CARBON FILL - EDUCTION FROM SUPERSACKS

This method is similar to the method described in part D except as follows:

1. Use the free-standing hopper instead of the truck mounted hopper.
2. A crane or fork truck is necessary to bring super sacks from the storage area to the hopper.

## 6. CARBON FILL USING CRANE AND SUPERSACKS

1. The carbon will be furnished in 1,000-pound super sacks. The super sacks have an 18" discharge chute, and are stacked two (2) high with a pallet under the bottom super sack.
2. Sufficient storage for the super sacks shall be provided. The recommended storage area is an enclosed building. If this is not available and the carbon is stored outside for an extended period of time, the super sacks should be covered with tarpaulins or plastic and kept away from the areas which have inadequate drainage to prevent submersion of any carbon in free-standing water.
3. Add 12" to 24" of water to the filter.
4. A crane can be used to dump the carbon from the super sacks directly into the filter. Continue to add water to keep the carbon submerged.
5. After the proper carbon level has been installed, the filter should sit overnight in a flooded state and then be backwashed prior to going on line.

If the filter must go into service immediately, a backwash must be completed. The backwash should begin at a low flow rate and be increased gradually to complete the backwash. A backwash removes any entrapped air or carbon fines and segregates the carbon bed. The rates are determined by water temperature and are found on product bulletins supplied by Calgon Carbon Corporation.

6. Final freeboard measurements are taken after the backwash has been completed to verify that the proper amount of carbon has been installed.
7. All measurements are recorded on Calgon Carbon's removal/installation certificates and are to be signed by the customer as well as the Calgon Carbon Supervisor upon completion of each filter.
8. This procedure is repeated for each filter to be exchanged.
9. After the total job is complete, all equipment must be returned to Calgon Carbon Corporation, and the work area cleaned up before leaving the site.



## FIELD SERVICE STANDARD OPERATING PROCEDURES

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|                                                      |                                        |
|------------------------------------------------------|----------------------------------------|
| <b>Implementation Date:</b> 5/9/2014                 | <b>Last Reviewed/Updated:</b> 5/9/2014 |
| <b>Revision Date:</b> Rev 0                          | <b>Prepared by:</b> H. Ruddy           |
| <b>Approved by:</b> Eric R. Makar – Regional Manager |                                        |

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**SOP # FS.SOP.4.8 – Filter Disinfection using Sodium Hypochlorite**

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### PURPOSE

To remove any bacteria(s) and/or other contaminants that may be present.

### SCOPE

This policy is applicable to all Field Service employees when performing a filter disinfection using 12.5% Sodium Hypochlorite (NaOCl) Liquid Bleach.

### DEFINITIONS

**Short Term Exposure Limit (STEL):** is defined by ACGIH as the concentration to which workers can be exposed continuously for a short period of time without suffering from irritation; chronic or irreversible tissue damage; and narcosis.

**Chronic health effect:** is an adverse health effect resulting from long-term exposure to a substance. The effects could be skin rash; bronchitis; cancer; or any other medical condition.

**Irritant:** a chemical, which is not corrosive, but causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.

### CHEMICALS

- Sodium Hypochlorite 12.5% Solution (Bleach)

### EQUIPMENT

- Free Chlorine Water Test Kit (Industrial)

### PPE

- ☒ Full-Face Respirator w/organic vapor cartridge(s)
- ☒ Steel Toe Boots
- ☒ Tyvex Coveralls w/hood and feet
- ☒ Rubber Chemical Gloves

### HAZARDS

- ☒ Inhalation
- ☒ Skin Contact - burns, blisters, itching
- ☒ Eye Irritant irritation

### SAFE WORK PRACTICES

- Exhaust ventilation system is recommended; sufficient to remove chlorine odor;
- Exposure limits 2mg/m3 AIHA recommended STEL 15 minutes; and

## FIELD SERVICES STANDARD OPERATING PROCEDURES

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- Locations of eyewash stations must be located within 10 seconds, roughly 55 feet of all Emergency eye wash fountain and quick drench shower.

### PROCEDURE

1. Calculate the amount of water used by measuring the dimensions of each filter bay.

Length (L): \_\_\_\_\_

Width (W): \_\_\_\_\_

Height of Water (H): \_\_\_\_\_

Multiply the above values together to obtain the overall cubic feet of water.

$$\begin{aligned} \text{Example: } 25 \text{ FT (L)} \times 25 \text{ FT (W)} \times 10 \text{ FT (H)} \\ = 6,250 \text{ Cubic Feet} \end{aligned}$$

Next, multiply by 0.001476 to obtain the number of gallons of 12.5% (NaClO) needed.

$$\begin{aligned} 6,250 \text{ Cubic Feet} \times 0.001476 \\ = 9.2 \text{ Gal} \\ = 10 \text{ Gal} \end{aligned}$$

$$L \times W \times H \times 0.001476 = \text{_____ gallons of 12.5\% NaClO (round-up to nearest gallon)}$$

After all the granular activated carbon has been removed and before reinstallation; fill the entire filter basin up the maximum water level, and then disinfect by the following method:

1. Inject sufficient chlorine into the backwash water (or continuously inject into the filter influent water while filtering to waste) to produce a free chlorine residual of at least 25 mg/L throughout the filter.
2. Use the Sodium Hypochlorite (NaClO) at a concentrate of 12.5% for chlorination.
3. Use the chlorine test strip to measure the concentration to ensure the water meets the required 25 mg/L.
4. The chlorinated water should stand in the filter for a minimum of 12 hours.
5. At the end of 12 hours, use a new test strip to determine the amount of free chlorine residual in the water.
  - a. The free residual should be more than 15mg/L.
  - b. If the concentration is less 15 mg/L, the chlorination process must be repeated until the concentration exceeds 15 mg/L.
  - c. Sufficient tests should be made both from the top and bottom of the filter (and at intermediate points if feasible).

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## FIELD SERVICES STANDARD OPERATING PROCEDURES

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6. If satisfactory chlorine residuals are obtained after the chlorine retention period, backwash the filter thoroughly to remove the highly chlorinated water.
7. The granular activated carbon is ready to be reinstalled and the filter can be placed back in service.

### FIRST AID MEASURES

#### Eye Contact

Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains, at least 15 minutes. Continue irrigating with normal saline solution until ready to transport to a physician. Cover with a sterile bandage.

- Locations of eyewash stations must be located within in 10 seconds (roughly 55 feet) of all hazardous, particulate, or corrosive material;
- Eyewash stations must provide a minimum of 15 minutes of continuous flushing. (eyewash bottles cannot substitute an eyewash station)
- All employees who work with hazardous, particulate, and corrosive material shall be trained on the locations and proper operations of eyewash and shower stations.

#### Skin Contact

Remove contaminated clothing and shoes immediately. Flush affected area with large amounts of water, preferably a safety shower. Use soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). For burns, cover affected area securely with sterile, dry, loose fitting dressing. If skin is burned, get medical attention immediately.

#### Inhalation

Remove from exposure and get fresh air. Use bag valve mask or similar device to perform artificial respiration (rescue breathing) if needed. Keep warm and at rest. Get medical attention immediately if artificial respiration required.

### TRAINING

This policy is part of the Field Service new hire orientation and will be communicated following any changes.

### PROGRAM AUDIT/REVIEW

This policy will be evaluated annually by Field Service Management and updated as needed. Calgon Carbon's American Safety Council will evaluation and review any reported accidents, as well as near misses, to identify areas where additional safety measures need to be taken.

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## FIELD SERVICES STANDARD OPERATING PROCEDURES

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Field Service management will conduct periodic reviews of this policy to determine the effectiveness of the program by:

- Conducting employee behavior based safety audits;
- Performing a worksite hazard identification and risk analysis; and
- Interviewing employees to determine whether they are familiar with the requirements of this program and if safety measures are being practiced.

### **CORRECTIVE ACTIONS**

When necessary, Calgon Carbon reserves the right to discipline employees who knowingly violate company safety rules or policies. Compliance with all safety rules and procedures are a condition of employment. Disciplinary measures will include, but are not limited to:

- Verbal warning (documented) for minor offences.
- Written warning for more severe or repeat violations.
- Suspension without pay, if verbal and written warnings do not prove to be sufficient.

# FILTRASORB® 400

## Granular Activated Carbon

### Description

FILTRASORB 400 is a granular activated carbon developed by Calgon Carbon Corporation for the removal of dissolved organic compounds from water and wastewater as well as industrial and food processing streams. These contaminants include taste and odor compounds, organic color, total organic carbon (TOC), and industrial organic compounds such as TCE and PCE. This activated carbon is made from select grades of bituminous coal through a process known as reagglomeration to produce a high activity, durable, granular product capable of withstanding the abrasion associated with repeated backwashing, hydraulic transport, and reactivation for reuse. Activation is carefully controlled to produce a significant volume of both low and high energy pores for effective adsorption of a broad range of high and low molecular weight organic contaminants. FILTRASORB 400 is also formulated to comply with all the applicable provisions of the AWWA Standard for Granular Activated Carbon (B604), the stringent extractable metals requirements of ANSI/NSF Standard 61, and the Food Chemicals Codex.

### Features

- Calgon Carbon's reagglomerated coal-based granular activated carbons have several properties which provide superior performance in a wide range of applications.
- Produced from a pulverized blend of high quality bituminous coals resulting in a consistent, high quality product.
- The activated carbon granules are uniformly activated through the whole granule, not just the outside. This results in excellent adsorption properties and constant adsorption kinetics in a wide range of applications.
- The reagglomerated structure ensures proper wetting while also eliminating floating material.
- High mechanical strength relative to other raw materials, thereby reducing the generation of fines during backwashing and hydraulic transport.
- Carbon bed segregation is retained after repeated backwashing, ensuring the adsorption profile remains unchanged and therefore maximizing the bed life.
- Reagglomerated with a high abrasion resistance, which provides excellent reactivation performance.
- High density carbon resulting in a greater adsorption capacity per unit volume.

### Specifications

#### FILTRASORB 400

|                                        |                 |
|----------------------------------------|-----------------|
| Iodine Number                          | 1000 mg/g (min) |
| Moisture by Weight                     | 2% (max)        |
| Effective Size                         | 0.55 - 0.75 mm  |
| Uniformity Coefficient                 | 1.9 (max)       |
| Abrasion Number                        | 75 (min)        |
| Screen Size by Weight, US Sieve Series |                 |
| On 12 mesh                             | 5% (max)        |
| Through 40 mesh                        | 4% (max)        |

### Typical Properties\*

#### FILTRASORB 400

|                    |           |
|--------------------|-----------|
| Apparent Density   | 0.54 g/cc |
| Water Extractables | <1%       |
| Non-Wettable       | <1%       |

\*For general information only, not to be used as purchase specifications.

### Recycling by Thermal Reactivation

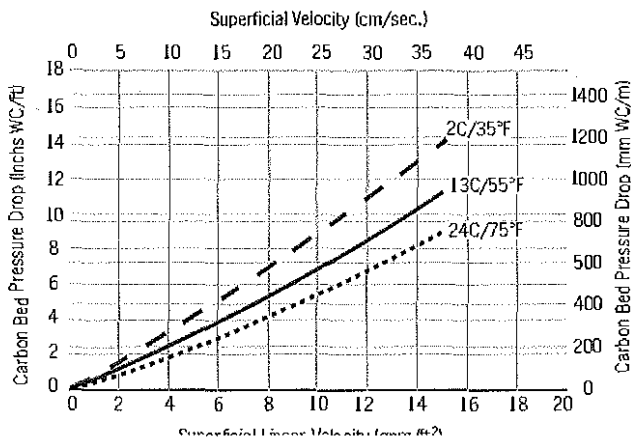
After a granular activated carbon's adsorptive capacity has been exhausted, it can be returned to Calgon Carbon for thermal reactivation. The thermal reactivation process involves a high temperature reaction with steam, which destroys the adsorbed organic compounds and restores the adsorptive capacity of the activated carbon.

Through reactivation, the spent activated carbon can be recycled for reuse, eliminating the costs and long-term liability associated with disposal of spent GAC. The benefits of a reactivated product over a virgin carbon are several, including economic, as reactivated GAC cost less than virgin GAC and environmental, as reactivated GAC conserves natural resources and reduces CO<sub>2</sub> emissions compared to the manufacture of virgin GAC. A further benefit of reactivating and reusing spent granular activated carbon is the ability for customers to ensure for themselves a reliable supply of media when needed, as the spent/reactivated carbon represents a renewable resource.

FILTRASORB 400 is designed with high mechanical strength and a dense, fully-developed pore structure to ensure low losses throughout the reactivation process and excellent adsorption performance upon reuse.

## Pressure Drop

Based on Backwashed and Segregated Bed



## Applications

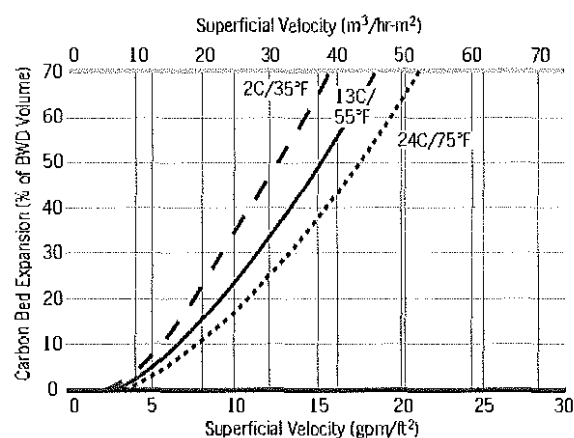
FILTRASORB 400 activated carbon can be used in a variety of liquid phase applications for the removal of dissolved organic compounds. FILTRASORB 400 has been successfully applied for over 40 years in applications such as drinking and process water purification, wastewater treatment, and food, pharmaceutical, and industrial purification.

## Design Considerations

FILTRASORB 400 activated carbon is typically applied in down-flow packed-bed operations using either pressure or gravity systems. Design considerations for a treatment system is based on the user's operating conditions, the treatment objectives desired, and the chemical nature of the compound(s) being adsorbed.

## Bed Expansion

Based on Backwashed and Segregated Bed



## Packaging

55 lb. (25 kg) poly bag  
1,000 lb. (454 kg) super sack  
Bulk truck

## Safety Message

Wet activated carbon preferentially removes oxygen from air. In closed or partially closed containers and vessels, oxygen depletion may reach hazardous levels. If workers are to enter a vessel containing carbon, appropriate sampling and work procedures for potentially low oxygen spaces should be followed, including all applicable federal and state requirements. Please refer to the MSDS for all up to date product safety information.

Filtrisorb is 100% freshly manufactured virgin granular activated carbon. Recycled granular activated carbon is not used in the production of Filtrasorb.

Making Water and Air Safer and Cleaner

[www.calgoncarbon.com](http://www.calgoncarbon.com)



**Corporate Headquarters**  
Calgon Carbon Corporation  
500 Calgon Carbon Drive

**European Operations**  
Chemviron Carbon Corporation  
Zoning Industriel C de Feluy

**Asia Operations**  
Calgon Carbon Asia Pte Ltd.  
9 Temasek Boulevard

**CONTRACT DOCUMENTS AND SPECIFICATIONS**  
**FOR**  
**CITY OF FLINT WATER TREATMENT PLANT**  
**PHASE II, SEGMENT 3 – FILTER MEDIA REPLACEMENT**  
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SECTION 02550                  CHEMICAL PIPING VALVES  
SECTION 02560                  PIPE TESTING

DIVISION 3                      CONCRETE

DIVISION 5                      METALS

SECTION 05550                  BOLTS, ANCHOR BOLTS AND EXPANSION ANCHORS

DIVISION 9                      FINISHES

SECTION 09928                  PROTECTIVE COATING SYSTEMS

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City of Flint Water Treatment Plant  
Phase II, Segment 3 – Filter Media Replacement

**SECTION 02540**  
**CHEMICAL PIPING**

PART 1 - GENERAL

1.01 Summary

This section governs the material, pipe, fittings, connections, butt fusion and general construction practices for all chemical piping.

1.02 References

- A. AWWA C110-08 Ductile Iron and Gray Iron Fittings
- B. AWWA C906-07 – Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 63 In., for Water Distribution and Transmission.
- C. AWWA C207-07 – Steel Pipe Flanges for Waterworks Service – Sizes 4 In. Through 144 In.
- D. ASTM D-1784 – Rigid Poly (Vinyl Chloride)(PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
- E. ASTM D-2837 – Standard Test method for Obtaining Hydrostatic Design basis for Thermoplastic Pipe Materials or Pressure Design Basis for Thermoplastic Pipe Products
- F. ASTM D-2846 - Chlorinated Poly (Vinyl Chloride) (PVC) Plastic Hot and Cold Water Distribution Systems
- G. ASTM D-3261-03 – Butt Heat Fusion for Polyethylene Plastic Pipe and Fittings
- H. ASTM D-3350 – Polyethylene Plastics Pipe and Fittings Materials
- I. ASTM F-439 – Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80
- J. ASTM F-441 – Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80
- K. ASTM F-2620 Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings

1.03 Related Work

- A. Section 02550 – Chemical Piping Valves
- B. Section 02560 – Pipe Testing

1.04 Pipe Packaging, Handling and Storage

- A. The manufacturer shall package the pipe in a manner designed to deliver the pipe to the project neatly, intact and without physical damage. The transportation carrier shall use appropriate method and intermittent checks to ensure the pipe is properly supported, stacked and restrained during transport such that the pipe is not nicked, gouged or physically damaged.
- B. Pipe shall be stored on clean, level ground to prevent undue scratching or gouging of the pipe. If the pipe must be stacked for storage, such stacking shall be done in accordance with the pipe manufacturer's recommendations. The handling of the pipe shall be done in such a

manner that it is not damaged by dragging over sharp objects or cut by chokers or lifting equipment.

- C. Sections of pipe having been discovered with cuts or gouges in excess of 5 percent of the wall thickness of the pipe shall be cut out and removed. The undamaged portions of the pipe shall be rejoined using the butt-fusion joining method.
- D. Fused segments of pipe shall be handled so as to avoid damage to the pipe. When lifting fused sections of pipe, chains or cable-type chokers must be avoided. Nylon slings are preferred. Spreader bars are recommended when lifting long fused sections. Care must be exercised to avoid cutting or gouging the pipe.

## PART 2 - PRODUCTS

2.01 Manufacturers – the list of manufacturers below does not imply pre-approval of any product. All products must meet the requirements of this specification and be approved by the Engineer.

### A. HDPE and CPVC Pipe

- 1. IPEX Inc,
- 2. Harvel Plastics Inc.
- 3. Charlotte Pipe and Foundry / Cresline Plastic Pipe Company
- 4. Spears Manufacturing
- 5. Harrison Plastics Corp.
- 6. Asahi / America

### B. HDPE Dual Containment Pipe

- 1. Asahi / America

2.02 Materials

### A. Pipe and Fittings

- 1. Chemical resistance data shall be provided for all plastic piping.
- 2. High Density Polyethylene (HDPE) – Single wall
  - a. All polyethylene pipe and fittings shall be in accordance with AWWA C906-07 from material having Standard PE code designation of PE 4710 and intended for use in the transportation of chlorinated water with a chlorine concentration of up to 2,000 ppm.
  - b. All HDPE pipe shall be black with UV stabilizer. Submit product data.
  - c. At the time of product submittal for approval, the supplier shall have enclosed an Affidavit of Compliance certifying that the pipe products furnished by him meet with all above standard requirements. Furthermore, polyethylene compounds shall be tested and certified as suitable for use with chlorinated water, in concentrations as listed, by an independent accredited testing agency.
  - d. The pipe and fitting manufacturer shall also supply certification that samples of this product have undergone stress regression testing, evaluation, and validation in accordance with ASTM D-2837 and PPI TR-3.

- e. Pipe and fittings shall be produced by the same manufacturer from identical materials meeting the requirements of this specification.
- f. Single wall HDPE Pipe and fittings shall be of 160 psi minimum pressure class, size and SDR as shown on the plans. If SDR is not shown stated on the plans, the minimum pipe thickness shall be SDR 11.
- g. Flanged connections, where shown, shall be supplied with 316 stainless steel lap joint flanges meeting AWWA C207D specifications, and joined with 5/8" diameter 316 stainless steel bolts, washers and nylon inserted locking nuts of the specified size. The stainless steel bolts shall have adequate thread length to assure proper joint seal.
- h. Dual Containment HDPE Piping and Fittings
  - i) Asahi Chem Prolok
    - a) PE 100-PC resin
    - b) HDPE material as per ASTM 3350
  - ii) Size and wall thickness ratings as shown on the plans. If thickness is not shown on the plans, pipe shall have the following minimum wall thicknesses: containment pipe - SDR 13.5, and carrier pipe - SDR 11.
  - iii) All pipe and fittings rated for minimum pressure of 150 psi at 68 degrees F.
  - iv) Manufacturer's data shall be submitted for dual containment pipe that adequately demonstrates that the pipe is suited for horizontal directional drill installation.
  - v) Pipe Centralizers
    - a) Full round centralizers thermally bonded to carrier pipe.
    - b) Spacing shall be per Plastic Piping Institute standards.
    - c) Molded or machined from HDPE pipe grade resins or sheet.
    - d) At least 2 openings per centralizer to permit fluid flow.
    - e) Centralizers shall uniformly maintain position of carrier pipe within the containment pipe.
    - f) OD of the centralizer shall meet the ID of the containment pipe.
    - g) End termination fittings shall be used where shown on the plans to provide transition to single wall pipe.

### 3. CPVC

- a. All CPVC pipe shall be manufactured from a Type IV, Grade I Chlorinated Polyvinyl Chloride (CPVC) compound with a minimum Cell Classification of 23447 per ASTM D1784.
- b. CPVC pipe shall conform to the requirements of ASTM F-441 chlorinated polyvinyl chloride plastic pipe, Schedule as shown on the plans. The pipe shall be manufactured in strict compliance to ASTM F441, consistently meeting the Quality Assurance test requirements of this standard with regard to material, workmanship, burst pressure, flattening, and extrusion quality. The pipe shall be produced in the USA using domestic materials, by an ISO 9001 certified manufacturer, and shall be stored indoors after production, at the manufacturing site, until shipped from factory. This pipe shall carry the National Sanitation Foundation (NSF) seal of approval for

potable water applications. The pipe shall have a Flame Spread rating < 25 and a Smoke Development rating < 50 when tested and listed for Surface Burning Characteristics in accordance with CAN/ULC-S102-2-M88 or equivalent.

- c. Fittings shall conform to the requirements as outlined in ASTM F-439 for Schedule 80 socket type fittings.

#### 4. Gaskets

- a. All flanged joints, except as otherwise specified, shall be made with rubber gaskets, full face. They shall conform to Appendix A of AWWA C110-08.

### PART 3 - EXECUTION

#### 3.01 Installation

- A. Installation practices, including support spacing, butt fusion and solvent welding, shall be in compliance with the manufacturer's printed recommendations.
- B. HDPE piping manufacturer shall provide written butt fusion procedure and requirements.
- C. Butt fusion heating requirements for dual containment piping shall be based on the thicker of the two pipes.
- D. The contractor shall install a sufficient number of unions for ease of disassembly as recommended by the manufacturer's printed recommendations.
- E. Curving HDPE pipe shall not exceed minimum manufacturer's recommendations. In general, bending radius shall not be less than 40 times the pipe OD.
- F. Dual wall piping manufacturer's representative shall provide up to 1 day on-site training for water treatment plant staff.

#### 3.02 Testing

- A. CPVC and/or single wall HDPE pipe shall be tested as per the requirements of Section 02560 Pipe Testing.
- B. HDPE Dual Containment Pipe - Test as per ASTM F 2164 and Section 02560 Pipe Testing.

#### 3.03 Joining

- A. All CPVC socket type connections shall be jointed with CPVC solvent, having a minimum viscosity of 2000 cps; as Type 80-c cement. Submit manufacturer's data for approval.
- B. Except where flange connections are specifically shown, HDPE pipe and fittings shall be butt fusion joined in accordance with the manufacturer's recommended procedure. Threaded or socket type connections will not be accepted. The pipe and fitting manufacturer shall provide fusion training services for field construction and inspection personnel.
- C. Only an agent of the manufacturer of dual containment pipe or operator properly trained for dual containment pipe thermal welding shall perform the welding.

\*\*\* END OF SECTION \*\*\*

City of Flint Water Treatment Plant  
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**SECTION 02550**  
**CHEMICAL PIPING VALVES**

PART 1 - GENERAL

1.01 Work Included

- A. Chemical piping valves and accessories for buried, exposed, submerged and other types of piping, except where included in other Sections.
- B. Coordination: Review installation procedures under other Sections and coordinate with the Work which is related to this Section, including buried piping installation, exposed piping installation, plumbing, etc.

1.02 Related Work

- A. Section 02540 – Chemical Piping

1.03 References (latest editions)

- A. ANSI B16.1 - Cast Iron Pipe Flanges and Flanged Fittings.
- B. ASTM A48 - Gray Iron Castings.
- C. ASTM A126 - Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
- D. ASTM D2464 - Threaded Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
- E. ASTM D2467 - Socket-type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
- F. ASTM F437 - Threaded Chlorinated Polyvinyl Chloride (CPVC) Plastic Pipe Fittings, Schedule 80.
- G. ASTM F439 - Socket-type Chlorinated Polyvinyl Chloride (CPVC) Plastic Pipe Fittings, Schedule 80.

1.04 Quality Assurance/Quality Control – Manufacturer's Qualifications

- A. Valves and appurtenances provided under this Section shall be the standard product in regular production by manufacturers whose products have proven reliable in similar service for at least five (5) years.
- B. Insofar as possible, all valves of the same specific type shall be the product of one (1) manufacturer.

1.05 Submittals

Submit shop drawings and product data as per the requirements below:

- A. Valve Manufacturer Submittals: Submit for review detailed drawings, data and descriptive literature on all valves and appurtenances, including:

1. Dimensions.
  2. Size.
  3. Materials of construction.
  4. Weight.
  5. Protective coating.
- B. Manufacturer's Certifications: Submit manufacturer's certificates of compliance with ANSI, AWWA and other Standards listed herein.
- C. Manufacturer's Service Report:
1. Certify that valves are properly installed except as noted.
  2. Recommend corrective action for any deficiencies noted.
- D. Submit a detailed operation and maintenance manual for all valves and appurtenances provided under this Section, including the following information:
1. Product name and number.
  2. Name, address and telephone number of manufacturer and local distributor.
  3. Instruction bulletins for operation, maintenance and recalibration.
  4. Complete parts and recommended spare parts lists.
- 1.06 Valve Delivery, Handling and Storage
- A. Deliver products to site under provisions of Section 01600.
  - B. Store and protect products under provisions of Section 01600.
  - C. Valves and appurtenances which are cracked, chipped distorted or otherwise damaged or dropped will not be acceptable.
  - D. Store all valves and appurtenances off the ground in enclosed shelter.

## PART 2 - PRODUCTS

### 2.01 General

- A. Valves shall be installed as shown on the Contract Drawings and as otherwise necessary to provide a safe, convenient, flexible and economical control of all piping systems and their related equipment.
- B. Valves 4" and larger equipped with flanged joints shall be in conformity with the current ANSI B16.1, "Cast Iron Pipe Flanges and Flanged Fittings", Class 250 drilling.
- C. Valves and unions or flanges shall be provided at each individual connection to each piece of equipment to permit complete servicing or removal of each item and drainage of pipe systems. Valves shall be provided for all branch lines; unless otherwise indicated or specified, all valves less than 4" shall be provided with threaded connections.

- D. Dual contained valves provided by the piping manufacturer shall be supplied pre-assembled and tested to 150% of the maximum operating pressure. Actuators, stem extensions and accessories shall be part of the preassembled package.
- 2.02 Ball Valves, 4" and smaller
  - A. Manufacturers:
    - 1. Asahi or approved alternative
  - B. Materials:
    - 1. CPVC Type IV, Cell Classification 23447HDPE
    - 2. O-Rings: EPDM or FKM
    - 3. All valves shall have polypropylene handle.
  - C. Rated Working Pressure:
    - 1. 150 psi at 68° F.

### PART 3 - EXECUTION

- 3.01 Installation
  - A. Install valves and specialties in accordance with manufacturer's recommendations and instructions to permit intended performance.
  - B. Extreme care shall be used in the handling, storage and installation of equipment to prevent damage or distortion of the equipment and to ensure proper performance.
- 3.02 Testing
  - A. All valves shall be given hydrostatic shop pressure test in accordance with applicable AWWA standard specified. The valves shall be tested, first by applying the hydrostatic pressure with the valve open, and then with the valve closed. The valves shall be tight and secure under the test pressure.
  - B. Valves and specialties shall be tested in place by the Contractor, and any defects in valves, specialties or connections shall be correct to the satisfaction of the Engineer.
- 3.03 Identification of Valves
  - A. Each shutoff or control valve installed inside the plant, valve vault, out building or other accessible area (except those provided as a component of a specific equipment item) shall be provided with a 1-1/2" minimum diameter heavy brass tag.
  - B. Each tag shall have a unique identifying alpha-numeric code identifying the valve type and service, as approved by the Engineer.

\*\*\*END OF SECTION\*\*\*

City of Flint Water Treatment Plant  
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**SECTION 02560  
PIPE TESTING**

PART 1 - GENERAL

1.01 Section Includes

- A. Testing of all piping, as specified.
- B. Pipelines to be Tested:
  - 1. Chemical Feed piping
  - 2. All other new piping not specifically listed above.

1.02 Related Sections

- A. Section 02540 – Chemical Piping
- B. Section 02550 – Chemical Piping Valves

1.03 Quality Assurance

All equipment, devices, and tools required for testing of piping systems shall be provided by Contractor and shall be of first class construction designed to perform the required service.

1.04 Submittals

Contractor shall submit for review his test procedures for each pipeline to be tested. Provide list of equipment and materials to be used during each test, including size, capacity, manufacturer, model numbers, and all necessary appurtenances.

PART 2 - PRODUCTS

2.01 Testing Equipment

- A. All testing equipment, including meter or measuring facilities shall be furnished by Contractor, and shall be subject to the Owner's approval.
- B. Contractor shall pay for all water necessary to complete testing.

PART 3 - EXECUTION

3.01 General

- A. Test all piping as specified herein except as otherwise authorized by the Engineer.
- B. Notify the Engineer 48 hours in advance of testing.
- C. Provide all testing apparatus, including pumps, hoses, gages and fittings.

- D. Pipelines shall hold the specified test pressure for a period of one (1) hour unless noted otherwise.
- E. Repair and retest pipelines which fail to hold specified test pressure or which exceed the allowable leakage rate.
- F. Conduct all tests in the presence of the Engineer unless otherwise approved.
- G. Contractor shall perform all specified testing.

### 3.02 Pressure and Leakage Tests Procedures

#### A. Exposed Piping, Interior Piping, and HDPE Pipe

- 1. Ensure that all supports, restraints, and pipe protection features are securely in place.
- 2. Section to be tested shall be slowly filled with water to allow for escape of entrapped air. Install corporation stops as necessary for removal of air.
- 3. Test only 1 pipeline section at a time.
- 4. Apply test pressure of 150 psi for two (2) hours and observe pressure gage. Carefully check for leaks while test pressure is being maintained.
  - a. Examine exposed pipe, joints, fittings and valves. Stop visible leakage or replace the defective pipe, fitting or valve.
  - b. Pump water into the line with the test pump to maintain the specified test pressure for a one-hour period.
  - c. All repair, replacement, and retesting required because of failure to meet test requirements shall be made by Contractor.
- 5. Allowable Leakage Rates: No leakage permitted.
- 6. Leakage Test shall be repeated following corrective work until a satisfactory test is achieved.

#### B. HDPE Dual Containment Pipe

- 1. Carrier Pipe: Hydrostatic test as per Part 3.02 (C) above.
- 2. Containment Pipe
  - a. Air test at 10 psi over 10 minutes with no allowable pressure drop.
  - b. Perform air test with carrier pipe full of water and pressurized to at least 20 psi to avoid collapse.

### 3.03 Cleaning

All piping shall be thoroughly cleaned and flushed in a manner approved by Engineer prior to being placed into service.

\*\*\*END OF SECTION\*\*\*

City of Flint Water Treatment Plant  
Phase II, Segment 3 – Filter Media Replacement

**SECTION 05550**  
**BOLTS, ANCHOR BOLTS AND EXPANSION ANCHORS**

**PART 1 - GENERAL**

**1.1 SUBMITTALS**

Submit the following information for review. Do not begin fabrication until after submittals have been reviewed.

A. Manufacturer's Product Data. Manufacturer's product data shall contain sufficient information to evaluate conformance to specifications and produce suitability for intended use. Submit test reports from accredited independent testing laboratories where specified. Submit manufacturer's product data for the following products:

1. Expansion Anchors. Certified pullout and shear capacities shall be included in the submittal.
2. Standard cast products.

**1.2 SUBSTITUTIONS**

Substitution of rolled sections, details or products is not permitted without prior written approval. If items shown or specified are not readily obtainable, permission to substitute for the specified item may be requested by the Contractor. Substitutions may be allowed on items of equal or superior properties which conform to design criteria.

**1.3 CODE REQUIREMENTS**

Design of steel fabrications shall conform to the requirements of AISC Specifications for Structural Steel for Building, Allowable Stress Design (Current Edition).

**1.4 INSPECTION AND TESTING**

The materials and workmanship covered in this specification may be inspected by the Owner, the Engineer or the Owner's designated testing laboratory. The testing laboratory will be employed and paid by the Owner as specified in Section 01380, Quality Control. Inspection may be performed in the mill, shop or field as deemed necessary. Inspection in no way relieves the Contractor from his responsibility to furnish satisfactory materials. The right to reject material at any time before final acceptance is reserved, if material and workmanship do not conform to drawings and specifications.

**1.5 DELIVERY AND STORAGE**

Schedule material delivery so that items may be erected promptly after arrival. If materials must be stored at the project site, they shall be stored aboveground on platforms, skids or other supports. Material stored at the site shall be kept free of dirt, mud, grease or oil. Protect stored material from corrosion.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

A. Bolts, Studs, Nuts and Washers.

**1. General**

- a. Bolt heads shall be marked with manufacturer, ASTM material designation/grade, and country where manufactured. Markings shall be raised or depressed.

b. At joint harnesses and restrained harnesses connected to flanges, the tie bolts and studs, flange bolts and nuts shall be in conformity with the current ASTM A193, Grade B7 and ASTM A194.

c. For pipe joints, bolt strength shall be adequate to provide compression needed for water tightness of the gasket material used.

2. Buried Conditions

a. Corrosion Resistant Steel (CRS) CRS anchor bolts, flange bolts, and studs shall be "Cor-Ten" type steel and shall conform to ASTM A325 Type 3 weathering steel with minimum tensile strength of 105 ksi. Type 3 bolts shall be marked A325. Nuts shall be in conformance with ASTM A563 Grade C3.

b. At buried mechanical joints, bolts and nuts shall be in conformance with all of AWWA C111 dimensions and requirements. Bolts and nuts shall be tension tested for a minimum ultimate tensile stress of 65 ksi using testing procedures corresponding to ASTM A307 requirements, and shall be proof load tested based on 45 ksi stress to AWWA C111 standards.

3. Exposed or Submerged Conditions.

a. Stainless Steel. Type 316 conforming to ASTM A193 Grade B8M, Class 2 with ASTM A194 Grade 8M stainless steel nuts and washers.

4. Other as Specified

a. Carbon Steel. Conform to ASTM A325, with suitable nuts and washers, as noted on the drawings. Washers bearing on metal shall be cast steel. Where type is not noted on the drawings, provide ASTM A325. Use carbon steel bolts where indicated on the drawings.

b. Stainless Steel. Where specified or indicated on the drawings as "stainless steel," "SS" or "stn. steel," Bolts shall be Type 304 conforming to ASTM A193 Grade B8M, Class 2 or 2B with ASTM A194 Grade 8 stainless steel nuts and washers or meet 3 (a) above.

B. Anchor Bolts.

1. Carbon steel anchor bolts shall be galvanized threaded rods conforming to ASTM A307, except where shown or specified otherwise, with suitable heavy hex nuts and oversize washers. Anchor bolts and nuts shall be tapped or chased after galvanizing. Use carbon steel anchor bolts except where noted otherwise on the drawings.

2. Stainless steel anchor bolts shall be Type 304 conforming to ASTM A193 Grade B8. Use stainless steel anchor bolts where shown on the drawings as "stainless steel," "stn. steel" or "SS." Provide stainless steel anchor bolts with suitable stainless steel nuts and oversize washers.

3. Provide anchor bolts for all equipment and machinery when anchor bolts are not furnished by the manufacturer. Anchor bolt type, size, length, projection, etc., shall conform to the requirements of the equipment and machinery manufacturer.

4. Provide templates to accurately position the anchor bolts in the forms.

C. Concrete Expansion Anchors.

1. Provide drilled-in concrete expansion anchors, which are externally threaded edge type expansion bolt anchors complete with washers and nuts. The anchors shall conform to Federal Specification FF S 325, Group II, Type 4, Class 1 concrete expansion anchors.

2. Carbon Steel Expansion Anchors. Not allowed.

3. Stainless Steel Expansion Anchors. Provide stainless steel expansion anchors conforming to AISI Type 316.

4. The expansion anchors shall have minimum ultimate capacity when tested in accordance with ASTM E 488 in 4,000 psi concrete as follows:

Stainless Steel:

| Bolt Size                | 1"      | 3/4"    | 5/8"    | 1/2"   |
|--------------------------|---------|---------|---------|--------|
| Minimum Shear Strength*  | 28,000# | 18,000# | 12,500# | 8,340# |
| Minimum Pullout Strength | 27,000# | 14,500# | 11,000# | 8,000# |
| Minimum Embedment        | 6"      | 4-3/4"  | 4"      | 3-1/2" |

\*Shear plane through the anchor bolt shank.

5. Expansion anchors shall be installed in accordance with the manufacturer's recommendations.
6. A list of standard materials used in the manufacture of the anchor components, including designated material specification (AISI, ASTM, etc.), as well as pullout and shear values attained from tests performed by a certified independent testing laboratory in accordance with ASTM E 488, shall be submitted to the Engineer for review. The submittal shall also include the manufacturer's installation instructions.

### PART 3 - EXECUTION

#### 3.1 CONDITION OF SURFACES

- A. Prior to installation, inspect surfaces to which miscellaneous metal items will be attached. If the condition of the surface is such that it will adversely affect installation, do not proceed with installation until corrective measures have been taken.
- B. Verify that aluminum surfaces that will be in contact with concrete or steel have been coated as specified

#### 3.2 INSTALLATION

- A. Accurately set work to established lines and elevations and securely fasten in accordance with approved shop drawings and provisions of this section.
- B. The Contractor shall be fully responsible for furnishing and installing any temporary braces, ties or shoring necessary to hold secure and safe all items under the action of wind and erection loads imposed thereon until construction is completed.
- C. Prior to placement of concrete, set concrete inserts (e.g. anchor bolts) in proper location and provide necessary anchorages or restraints to prevent movement of inserts during concrete placement.
- D. For stainless steel bolting, apply anti-sieze compound liberally to bolt threads and face of nuts to prevent galling.
- E. Follow manufacturer's installation instructions for concrete expansion anchors.

#### 3.3 ERECTION OF STEEL ITEMS

Erection of steel items must conform to AISC specification, Structural Steel for Buildings. Field-fabricated bolt holes, when required, shall be drilled; or as an alternate, they may be flame-cut undersize and reamed to correct size.

END OF SECTION

City of Flint Water Treatment Plant  
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**SECTION 09928**  
**PROTECTIVE COATING SYSTEMS**

**PART 1 - GENERAL**

**1.1 WORK INCLUDED**

- A. All labor, materials, equipment, transportation, supervision, tools, and services necessary for the surface preparation and field painting of exposed steel surfaces; including structural steel, equipment, piping, conduits, and all appurtenances and miscellaneous items
- B. All mechanical equipment shipped without a finish coat shall be field painted prior to installation.

**1.2 RELATED WORK**

- A. Work under this Section is also subject to the requirements specified in Divisions 0 and 1 of these Contract Documents:
- B. Section 01330: Submittal Procedures.
- C. Section 05120: Structural Steel
- D. Section 05500: Metal Fabrications
- E. Section 05510: Miscellaneous Metals
- F. Section 05550: Bolts, Anchor Bolts, Expansion Anchors, and Concrete Inserts

**1.3 REFERENCES**

- A. American National Standards Institute / American Society for Testing and Materials, ANSI / ASTM
  - 1. ANSI / ASTM D16: Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
- B. Ferrous Metal Standard: SSPC – Society of Protective Coatings
- C. Cast and Ductile Iron Standard: NAPF 500.
- D. Recommended Standards For Water Works by Great Lakes Upper Mississippi River Board of State Public Health And Environment Managers.
- E. Recommended Standards For Wastewater Facilities by Great Lakes Upper Mississippi River Board of State Public Health And Environment Managers.
- F. International Concrete Repair Institute (ICRI)

**1.4 DEFINITIONS**

- A. Conform to ANSI / ASTM D16 for interpretation of terms used in this Section.

**Quality Assurance**

- B. Product Manufacturer: Company specializing in manufacturing quality paint and finish products intended for use in water/wastewater treatment plants with three (3) years of experience.

- C. Applicator: Company specializing in water/wastewater treatment plant painting and finishing with three (3) years of experience.

#### 1.5 REGULATORY REQUIREMENTS

- A. Conform to applicable code for flame/fuel/smoke rating requirements for finishes.
- B. All coatings in the following categories shall meet the USEPA Federal Clean Air Act ruling, which becomes effective on September 11, 1999. All coatings specified in the technical specification sections shall be revised accordingly to meet these requirements. The main categories targeted for Volatile Organic Compound levels are as outlined below:

- |    |                               |           |
|----|-------------------------------|-----------|
| 1. | Form Release Agents           | (450 g/L) |
| 2. | Primers / Undercoatings       | (350 g/L) |
| 3. | Bituminous Coatings / Mastics | (500 g/L) |

#### 1.6 SUBMITTALS

- A. Submit in accordance with Section 01330
- B. Product Data
1. Provide product data on finishing products.
  2. Submit manufacturer's application instructions.
  3. Submit samples in 1" x 2" size illustrating range of colors and textures available for each surface finishing product scheduled for selection.
- C. Shop drawings shall include a listing of all items which the Contractor intends to paint, the paint materials designated for use on those specific items, color charts, and blank spaces to allow the Owner to insert their color selections for each item.

The color selections may be adjusted by the Owner and Engineer after a specific manufacturer of paint has been chosen by the Contractor, and the shop drawings have been reviewed by the Engineer. The Owner reserves the right to specify colors other than those stated in this Section, or as shown on the Drawings. It shall be the Contractor's responsibility to have the final color selections authorized by the Owner prior to ordering any paint materials.

#### 1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and protect products in accordance with Section 01600.
- B. Deliver products to site in sealed original labeled containers; inspect to verify acceptance.
- C. Container labeling to include manufacturer's name, type of paint, brand name, color designation, and instructions for mixing and / or reducing.
- D. Store paint materials at a minimum ambient temperature of 45o F and a maximum of 90o F, in a well ventilated area, unless manufacturer's instructions have different requirements.
- E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

#### 1.8 ENVIRONMENTAL REQUIREMENTS

- A. All paint shall be applied in accordance with the applicable manufacturer's printed data sheet and container label outlining recommended minimum and maximum surface and air temperatures required for application. Paint

shall not be applied to wet or damp surfaces and shall not be applied in rain, snow, fog or mist, or when the relative humidity exceeds 85%.

B. No paint shall be applied when it is expected that the relative humidity will exceed 85% and/or the air temperature will drop below recommended levels within 12 hours after paint application. Dew or moisture condensation should be anticipated, and if such conditions are prevalent, painting shall be delayed until certain that the surfaces are dry. Painting should be completed well in advance of the probable time of day when condensation will occur in order to permit the film an appropriate drying time prior to the formation of moisture on the surface.

C. Provide minimum lighting level of 15 foot-candles on surfaces to be finished.

#### 1.9 EXTRA STOCK

A. Provide 1-gallon container, or small kit, of each type of paint color to owner.

B. Label each container with color, and room location, in addition to the manufacturer's label.

C. Containers shall be tightly sealed.

#### 1.10 ITEMS TO BE PAINTED

A. General List: These lists are intended to provide an overview of work and there may be minor or specific exceptions noted on the Drawings or Specified in Appendix A – Itemized Painting Schedule.

1. All unit process equipment and their accessories. Equipment directly connected to color coded pipe shall be painted the same color as the pipe, or as specified in Appendix A – Itemized Painting Schedule.

2. All exposed piping, and appurtenances with associated hardware; including steel, ductile iron pipe, cast iron pipe, plastic, etc.

3. All exposed electrical conduits, brackets, etc. Properly prime galvanized surfaces as specified. Outdoor electrical apparatus and enclosures shall be coated in the same color as adjacent surfaces.

4. New building construction, including interior and exterior concrete masonry walls, all metal doors and frames, all drywall, and exposed wood.

5. All metal equipment and appurtenances not otherwise covered in the previous sections (except aluminum, chrome-plated and stainless items) shall be painted. Submerged items shall be painted black, unless otherwise indicated.

6. All aluminum, stainless steel, and other metal surfaces in contact with dissimilar metals shall be painted at the points of contact according to Appendix B to prevent contact between dissimilar metals. Aluminum in contact with concrete shall be coated per Appendix B to prevent direct metal contact to concrete.

7. All structural steel.

B. Excluded Items: Unless otherwise shown on the Drawings, or specified in other sections, the following is a general list of those surfaces not to be painted on-site or by the manufacturer.

1. Fiberglass Items.

2. Aluminum items, unless otherwise specified.

3. Stainless steel, unless otherwise specified.

4. Chrome Plating.

5. Pre-painted items.
6. Galvanized surfaces, excluding electrical conduits, unless otherwise specified.

C. Itemized Painting Schedule: In addition to the General List of items to be painted above, Appendix A - Itemized Painting Schedule at the end of this Section lists specific items to be painted as part of the Work. This schedule is not intended to be all inclusive, but is proved to indicate major equipment or other items of importance that are to be painted. The schedule does not relieve the Contractor's responsibility to provide a comprehensive list of items to be painted as part of the shop drawing submittal(s).

## **PART 2 - PRODUCTS**

### **2.1 ACCEPTABLE MANUFACTURERS**

#### **A. Paint: Interior and Exterior**

1. Tnemec Company
2. AkzoNobel (International Paint, LLC Devoc Coatings)
3. Approved Alternative

### **2.2 MATERIALS**

#### **A. Coatings: Ready mixed, except field-catalyzed coatings.**

1. Process pigments to soft paste consistency, capable of being readily and uniformly dispersed to homogeneous coatings.
2. Good flow and brushing properties; capable of drying or curing free of streaks or sags.

B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve finishes specified or commercial quality.

C. Provide best grade of various types of coatings scheduled as regularly manufactured by acceptable paint manufacturer. Products not displaying manufacturer's identification as "standard, best grade product," are not acceptable.

### **2.3 FINISH SCHEDULE**

A. This schedule is not intended to include mention of every item requiring field painting, but is intended as a guide to finishing various surfaces throughout the project.

1. The Finish Schedule in Appendix B at the end of this Section is based, in general, on the products of Tnemec Company and AkzoNobel, and is the basis for standard of quality. The standard "or equal" clause shall apply.
2. Product substitutions shall be subject to the requirements of Section 01600. Each such request shall include the name of the specified material for which a substitute is being requested; the name of the proposed substitute material; and a complete description of the proposed substitute including performance and test data and any other information necessary for an evaluation.
3. The burden of proof of the merit of the proposed substitute is upon the Contractor. The decision of the Engineer/Owner regarding approval or disapproval of the proposed substitution shall be final.
4. Where products are proposed other than those specified by name and number in the Finish Schedule, provide submittal as required including product data sheets and performance criteria along with a new painting schedule in the same format included in this Section.

B. Undercoats:

1. Provide undercoat / primer paint produced by the same manufacturer as the finish coat.
2. Insofar as practicable, use undercoat / primer and finish coat material as part of a unified system of paint finish.

C. Provide all paint and materials supplied by one manufacturer.

**PART 3 - EXECUTION**

3.1 INSPECTION

A. Verify that surfaces base conditions are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to the commencement of work.

1. Report all conditions that may adversely affect quality of the finished work prior to commencement of work.
2. Do not commence until such defects have been corrected.

C. Correct defects and deficiencies in surfaces, which may adversely affect work on this Section.

D. Beginning of installation means acceptance of existing surfaces and / or base.

3.2 PREPARATION OF SURFACES

A. Correct minor defects and clean surfaces which impact the work of this section.

B. Impervious Surfaces:

1. Remove mildew by power washing / scrubbing with a solution of trisodium phosphate (TSP) or bleach.
2. Rinse with clean water and allow surfaces to dry.

C. Preparation of Metal Surfaces

1. **SSPC-SP1 SOLVENT CLEANING:** The removal of dirt, oil, grease and foreign matter with solvents or commercial cleaners using various methods of cleaning such as wiping, dipping, steam cleaning or vapor degreasing. The removal of oil and grease by solvent cleaning is included in all other SSPC Surface Preparation Specifications.

2. **SSPC-SP2 HAND TOOL CLEANING:** The removal of loose rust and mill scale, or old paint by hand wire brushing, hand scraping, hand chipping or hand sanding.

3. **SSPC-SP3 POWER TOOL CLEANING:** The removal of loose rust and mill scale by mechanical means such as power sanders, wire brushes, chipping hammers, abrasive grinding wheels or needle guns.

4. **SSPC-SP4 FLAME CLEANING:** The dehydration of the surface by rapidly heating with a high temperature, high-velocity oxyacetylene flame followed by wire brushing and hand scraping to remove loose rust and mill scale.

5. **SSPC-SP5 WHITE METAL BLAST CLEANING:** The complete removal of all visible rust, mill scale, paint and foreign matter by compressed air nozzle blasting, centrifugal wheels or other specified method, leaving an overall, uniformly gray-white metallic appearance.

6. SSPC-SP6 COMMERCIAL BLAST CLEANING: The removal of at least sixty-six percent of all visible rust, mill scale, paint and other foreign matter from each square inch of surface by compressed air nozzle blasting, centrifugal wheels or other specified methods.

7. SSPC-SP7 BRUSH-OFF BLAST CLEANING: The removal of loose rust, mill scale, paint and foreign matter from the surface by compressed air nozzle blasting, centrifugal wheels or other specified methods.

8. SSPC-SP8 PICKLING: The complete removal of all rust, mill scale and foreign matter by chemical reaction or electrolysis in acid solutions. The degree of cleanliness is similar to SSPC-SP5 White Metal Blast Cleaning.

9. SSPC-SP9 WEATHERING AND CLEANING: This is a method of preparing unpainted metal surfaces for coating by weathering metals to remove all or part of mill scale followed by blast cleaning.

10. SSPC-SP10 NEAR-WHITE METAL BLAST CLEANING: The removal of ninety-five percent of all visible rust, mill scale, paint and other foreign materials from each square inch of surface by compressed air nozzle blasting, centrifugal wheels or other specified reason.

11. On galvanized surfaces, prepare in accordance with the methods outlined in ASTM D 6386-99 Standard Practice for Preparation of Zinc (Hot Dipped Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting.

12. On stainless steel surfaces, prepare by solvent cleaning prior to using any one of the methods in SSPC-SP1. Only solvents or cleaning solutions containing less than two hundred (200) ppm of halogens shall be used to prevent stress corrosion cracking. Abrasive blast cleaning procedures outlined by Steel Structures Painting Council for carbon steel may also be used for stainless steel. Only very hard silica sand or other abrasive material should be used for a fast cutting action and to obtain a sharp angular profile.

#### D. Shop Primed Steel Surfaces

1. The paint systems shown in appendix B are to be used for equipment and piping delivered to the site even though they may already be shop primed. A shop prime coat shall not be substituted for the surface preparation of prime coats required on-site by the paint systems listed in that Section.

2. Sand or scrape to remove loose primer and rust.

3. Feather edges to form a smooth transition to tight existing paint.

4. Shop Prime Coat: Apply per Finish Schedule in Appendix B at the end of this Section in accordance to the requirements for prime coating.

#### E. Concrete and Masonry Surfaces

1. All concrete and masonry surfaces to be painted or sealed shall be clean, dry and free of dirt, oils, dust, grease, wax, flaking or loose paint, efflorescence and other deleterious materials. All cracks, chips and other defects in plain concrete and masonry surfaces shall be filled prior to coating or sealing.

2. New concrete or masonry should not be coated for at least twenty-eight (28) days to permit the concrete or mortar to cure and dry out.

3. Prepare concrete or masonry surfaces to be coated in accordance with SSPC SP-13. Surface profile shall be accordance with ICRI CSP standards as recommended by the manufacture based on coating system and the intended environment. The surface of concrete or masonry to be coated should be examined for defects such as fins, protrusions, bulges and mortar spatter. These defects should be corrected by grinding or scraping. Remove non-degraded release agents, oil, wax, and grease by scraping off heavy deposits and solvent cleaning with a hot trisodium phosphate solution. Allow time to dry thoroughly before coating.

F. Cast and Ductile Iron Piping

1. Preparation per NAPF 500 requirements, latest edition.

G. Wood surfaces

1. Wood shall be clean and dry. Remove surface deposits of sap or pitch by scraping and wiping clean with mineral spirits or VM&P naphtha. Seal knots and pitch pockets with shellac reduced with equal parts of shellac thinner (denatured alcohol) before priming. Sand rough areas with the grain, starting with medium grit sandpaper and finishing with fine grit. Remove sanding dust. After prime coat is dry, fill cracks and holes with putty or spackling compound. When filler is hard, sand flush with the surface using fine grit sandpaper. Sand lightly between coats with fine grit, open-coated sandpaper.

H. PVC Pipe

1. All surfaces to be uniformly and thoroughly scarified using a medium grit sandpaper. Any dust or other contaminants remaining after sanding shall be removed with dry, oil free compressed air or by vacuum after cleaning.

I. Gypsum Drywall Construction

1. Sand joint compound with fine-grit, open-coated sandpaper to provide a smooth flat surface. Avoid heavy sanding of the adjacent wallboard surfaces, which will raise the nap of the paper covering. Remove dust from the surface by wiping with clean rags or other means. If additional joint finishing is required to provide a smooth surface, the same joint compound or ready-mixed spackling compound shall be used. Putty, patching pencils, caulking, or masking tape shall not be applied to the drywall surfaces to be painted. Lightly scuff-sand tape joints after priming to remove raised paper nap. Take care not to sand through the prime coat and remove dust by wiping with clean rags.

### 3.3 PROTECTION

- A. Protect elements surrounding work of this Section from damage or disfiguration.
- B. Repair damage to other surfaces caused by work of this section.
- C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.
- D. Remove empty paint containers from site.

### 3.4 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. All painting shall be done in the best manner by skilled workmen and in accordance with the SSPC Good Painting Practices PAI and the manufacturer's application recommendations. The Contractor shall follow OSH requirements. Extreme care shall be taken around volatile materials, which could pose a fire or explosion hazard. Precautions shall be taken to avoid workmen from inhaling toxic or dangerous vapors or paint particles. Containers for use shall be opened in the presence of the Engineer immediately before use.
- C. Paint shall be thoroughly stirred, strained, and kept at a uniform consistency during application. Where necessary, packaged paint other than cement-emulsion filler may be thinned immediately prior to application in accordance with the manufacturer's directions if authorized by the Engineer, but not in excess of one pint of thinner per gallon of paint.
- D. Surfaces that have been cleaned or pretreated shall be given a first coat of paint as soon as practical after surface preparation, prior to any deterioration of the prepared surfaces.

E. Each coat shall be applied at the rate and to the film thickness specified in Appendix B. One (1) gallon of paint as originally furnished must not cover a greater area than when applied by spray gun than when applied by brush unthinned.

F. All paint shall be thoroughly and smoothly applied or brushed out to a uniform film without runs or sags. Each coat of finish shall be allowed to completely cure and dry hard before application of the succeeding coat. First coats for specific metal surfaces shall be applied by brush, if required by the Engineer. When the trim has been shop primed, any subsequent coats may be applied by brush, roller, or spray. Other surfaces may be coated by brush, roller, or spray, except for filler coats. Sand lightly between coats if required to achieved specific finish.

G. Apply each coat of paint in contrasting color than the preceding coat unless otherwise approved by the Engineer.

H. Metal surfaces adjacent to other surfaces receiving water-based paints shall be primed and/or touched-up prior to the application of the water-based paints. The first coat on plaster shall include touching-up or application of primer-sealer as necessary to produce a uniform color and gloss. Application of styrene-butadiene filler shall be in accordance with the manufacturer's instructions. Surface voids, pores, and cracks shall be filled, and the completed dry film shall be free from pinholes or other imperfections. Surface irregularities need not be completely filled. The coasting material shall not be applied over caulking compound.

I. Paint on metal, masonry, plaster, or concrete areas of considerable size (except floors) may be sprayed by skilled workmen only. Respirators shall be worn by those in proximity of spray painting. The nozzle shall be held perpendicular to the surface being painted and the coat applied uniformly, thoroughly wetted, and properly bonded to the surface. Immediately after spraying, remove all surplus paint and smooth out all runs and sags by brushing out. Adjacent surfaces shall be protected from drips, spatter, and over spray.

### 3.5 PAINTING EQUIPMENT

A. Brushes shall be new and be the size and type best suited for the particular work. Brushes shall be kept clean and stored properly when not in use. If rollers are used for applying enamel, they shall have a short nap, as required by the manufacturer.

B. Spraying equipment shall be subject to the Engineer's authorization. Compressors shall be motor-driven, oil and water free, and shall be set in locations designated by the Engineer and connected and used without interfering with the work of other trades. The paint spray container shall have an efficient agitator for materials requiring this. All flexible hose, nozzles, and equipment shall be thoroughly cleaned after each day's work and maintained in first-class working conditions.

### 3.6 FINISHING MECHANICAL EQUIPMENT AND PIPING

A. Finish paint shop primed equipment to color selected.

B. Prime and paint insulted and exposed pipes, hangers, brackets, collars, and supports except where items are prefinished.

C. Replace identification markings on mechanical equipment when painted accidentally.

D. Pipe Color Code

1. All new, exposed, interior, and submerged piping shall be painted. Plastic pipe shall be painted only in order to indicate its use according to the Pipe Color Code, and only that portion which is exposed and not submerged shall be painted. Plastic pipe which is used for purposes other than those mentioned in the Pipe Color Code shall not be painted. In general, the only application for asphalt dipped pipe shall be buried installations. Pipe colors shall be according to the following schedule. The direction of flow of the contents of the pipe shall be stenciled on the piping. Permanently attached plastic markers may be used in lieu of the stenciling. Shop drawings shall indicate stencil or plastic marker method.

2. Water: Color banding and identification of piping (flow arrows, naming, numbering) in accordance with following schedule and the Recommended Standards for Water Works, published by the Great Lakes – Upper Mississippi River Board State Public Health and Environment Managers, latest edition.

|    |                            |                            |
|----|----------------------------|----------------------------|
| a. | Raw water line             | Olive                      |
| b. | Settled or Clarified water | Aqua                       |
| c. | Potable Water              | Blue                       |
| d. | Alum or Primary Coagulant  | Orange                     |
| e. | Ammonia                    | White                      |
| f. | Carbon Slurry              | Black                      |
| g. | Caustic                    | Yellow w/ green band       |
| h. | Chlorine                   | Yellow                     |
| i. | Fluoride                   | Light blue w/ red band     |
| j. | Lime Slurry                | Light Green                |
| k. | Ozone                      | Yellow w/ orange band      |
| l. | Phosphates                 | Light green w / red band   |
| m. | Potassium Permanganate     | Violet                     |
| n. | Soda Ash                   | Light green w/ orange band |
| o. | Sulfuric Acid              | Yellow w/ red band         |
| p. | Sulfur Dioxide             | Light green w/ yellow band |
| q. | Backwash Waste             | Light brown                |
| r. | Sludge                     | Dark brown                 |
| s. | Sewage (wastewater) line   | Gray                       |
| t. | Compressed Air line        | Green                      |
| u. | Gas                        | Red                        |
| v. | Polymers or Coagulant Aids | Orange w/ green band       |

The contents and direction of flow shall be stenciled on the piping in a contrasting color.

3. Wastewater: Color banding and identification of piping (flow arrows, naming, numbering) in accordance with following schedule and the Recommended Standards for Wastewater Facilities, published by the Great Lakes – Upper Mississippi River Board State Public Health and Environment Managers, latest edition.

|    |                             |                      |
|----|-----------------------------|----------------------|
| a. | Raw Sludge line             | Brown w/black bands  |
| b. | Sludge Recirc. Suction line | Brown w/yellow bands |

|    |                                   |                              |
|----|-----------------------------------|------------------------------|
| c. | Sludge Draw off line              | Brown w/orange bands         |
| d. | Sludge Recirc. Discharge line     | Brown                        |
| e. | Non-potable water line            | Blue w/black bands           |
| f. | Potable Water line                | Blue                         |
| g. | Sewage (wastewater) line          | Gray                         |
| h. | Chlorine Line                     | Yellow                       |
| i. | Sulfur Dioxide                    | Yellow w/red bands           |
| j. | Compressed Air line               | Green                        |
| k. | Water lines for heating digesters | Blue w/6" band @ 30" spacing |
| l. | Plumbing drains and vents         | Black                        |

The contents and direction of flow shall be stenciled on the piping in a contrasting color.

#### 4. Pipe Lettering Size

| <u>Pipe O.D. (inches)</u> | <u>Letter Height (inches)</u> |
|---------------------------|-------------------------------|
| 3/4 to 1-3/4              | 1/2                           |
| 1-1/2 to 2                | 3/4                           |
| 2-1/2 to 6                | 1-1/4                         |
| 8 to 10                   | 2-1/2                         |
| Over 10                   | 3-1/2                         |

#### 3.7 CLEANING

- A. As work proceeds, promptly remove paint where spilled, splashed or spattered.
- B. During progress of work, maintain premises free of unnecessary accumulation of tools, equipment, surplus materials and debris.
- C. Collect cotton waste, cloths, and materials that constitute a fire hazard; place in closed metal containers and remove daily from site.
- D. Upon completion of work, leave premises neat and clean, to the satisfaction of Engineer.

## APPENDIX A - ITEMIZED PAINTED SCHEDULE

| <u>A. New Items to be Painted</u> | <u>Color</u> |
|-----------------------------------|--------------|
| N/A                               |              |

| <u>B. Existing Items to Be Painted</u> | <u>Color</u> |
|----------------------------------------|--------------|
| N/A                                    |              |

END OF APPENDIX A

## APPENDIX B – FINISHED PAINTED SCHEDULE

| <u>Surface</u>                                                                                     | <u>Surface Preparation</u> | <u>Primer</u> | <u>Inter-mediate</u> | <u>Finish</u>  |
|----------------------------------------------------------------------------------------------------|----------------------------|---------------|----------------------|----------------|
| Steel-Structural<br>Tanks, Pipes, Equipment<br>Exterior, Non-Immersion                             | SSPC-SP6                   | TP2 or IPP1   | TI2 or<br>IPI1       | TF1 or<br>IPF1 |
| Steel-Structural<br>Tanks, Pipes, Equipment<br>Interior, Non-Immersion                             | SSPC-SP6                   | TP2 or IPP1   | TI2 or<br>IPI1       | TF4 or<br>IPF2 |
| Steel-Structural<br>Tanks, Pipes, Equipment<br>Interior, Non-Immersion<br>(2 <sup>nd</sup> Option) | SSPC-SP6                   | IPP2          | N/A                  | IPF2           |
| Steel-Structural<br>Tanks, Pipes, Equipment<br>Immersion, Potable Water                            | SSPC-SP10                  | TP2 or IPP3   | TI5 or<br>N/A (IP)   | TF8 or<br>IPF3 |
| Steel-Structural<br>Tanks, Pipes, Equipment<br>Immersion, Non-Potable Water                        | SSPC-SP10                  | TP2 or IPP2   | TI2 or<br>N/A (IP)   | TF4 or<br>IPF2 |
| Steel-Structural<br>Tanks, Pipes, Equipment<br>Below Grade                                         | SSPC-SP10                  | TP2 or IPP4   | N/A                  | TF5 or<br>IPF4 |
| Factory Primed Steel<br>Exterior Exposed                                                           | N/A                        | N/A           | TI4 or<br>IPI3       | TF1 or<br>IPF1 |
| Factory Primed Steel<br>Interior Exposed                                                           | N/A                        | N/A           | TI4 or<br>IPI3       | TF2 or<br>IPF2 |
| PVC Pipe<br>Exterior Exposed                                                                       | Scarify                    | TP1 or IPP1   | N/A                  | TF1 or<br>IPF1 |
| PVC Pipe<br>Interior Exposed                                                                       | Scarify                    | TP1 or IPP1   | N/A                  | TF1 or<br>IPF2 |

## APPENDIX B – FINISHED PAINTED SCHEDULE

| <u>Surface</u>                                                             | <u>Surface<br/>Preparation</u> | <u>Primer</u> | <u>Inter-<br/>mediate</u> | <u>Finish</u>   |
|----------------------------------------------------------------------------|--------------------------------|---------------|---------------------------|-----------------|
| Ductile Iron Pipe<br>Exterior Exposed<br>Non-Immersed                      | NAPF<br>500-03-03              | TP2 or IPP1   | TI2 or<br>IPI3            | TF1 or<br>IPF1  |
| Ductile Iron Pipe<br>Interior Exposed<br>Non-Immersed                      | NAPF<br>500-03-03              | TP2 or IPP1   | TI2 or<br>N/A (IP)        | TF4 or<br>IPF2  |
| Ductile Iron pipe<br>Immersion<br>Non-Potable Water                        | NAPF<br>500-03-03              | TP2 or IPP1   | TI2 or<br>IPI1            | TF4 or<br>IPF2  |
| Ductile Iron Pipe<br>Immersion<br>Potable Water                            | NAPF<br>500-03-03              | TP2 or IPP5   | TI5 or<br>N/A (IP)        | TF8 or<br>IPF3  |
| Ductile Iron Pipe<br>Below Grade                                           | NAPF<br>500-03-03              | TP2 or IPP4   | N/A                       | TF5 or<br>IPF4  |
| Galvanized Steel and<br>Non-Ferrous Metals<br>Exterior Exposed             | ASTM D 6386-<br>99             | TP1 or IPP1   | N/A                       | TF1 or<br>IPF1  |
| Galvanized Steel and<br>Non-Ferrous Metals<br>Interior Exposed             | ASTM D 6386-<br>99             | TP1 or IPP1   | N/A                       | TF2 or<br>IPF2  |
| Galvanized Steel and<br>Non-Ferrous Metals<br>Immersion, Potable Water     | ASTM D 6386-<br>99             | TP2 or IPP5   | N/A                       | TF10 or<br>IPF3 |
| Galvanized Steel and<br>Non-Ferrous Metals<br>Immersion, Non-Potable Water | ASTM D 6386-<br>99             | TP1 or IPP1   | N/A                       | TF4 or<br>IPF2  |
| Galvanized Steel and<br>Non-Ferrous Metals<br>Chain Link Fence             | ASTM D 6386-<br>99             | TP1 or IPP1   | N/A                       | TF1 or<br>IPF1  |
| Concrete<br>Exterior Exposed                                               | SSPC-SP 13                     | TP4 or IPP6   | TI3 or<br>IPI1            | TF7 or<br>IPF5  |

## APPENDIX B – FINISHED PAINTED SCHEDULE

| <u>Surface</u>                                                             | <u>Surface Preparation</u> | <u>Primer</u>                       | <u>Inter-mediate</u> | <u>Finish</u>   |
|----------------------------------------------------------------------------|----------------------------|-------------------------------------|----------------------|-----------------|
| Concrete<br>Exterior Exposed<br>Below Grade                                | SSPC-SP 13                 | N/A                                 | N/A                  | TF5 or<br>IPF6  |
| Concrete<br>Immersion<br>Non-Potable Water                                 | SSPC-SP 13<br>ICRI-CSP 5   | TP3 or IPP7                         | N/A or IPI1          | TF4 or<br>IPF2  |
| Concrete<br>Immersion<br>Potable Water                                     | SSPC-SP 13<br>ICRI-CSP5    | TP3 or IPP6                         | N/A or IPI2          | TF10 or<br>IPF3 |
| Concrete<br>Immersion<br>Brine Tank                                        | SSPC-SP 13<br>ICRI-CSP 5   | TP3 or IPP8                         | TI5 or<br>N/A (IP)   | TF12 or<br>IPF7 |
| Concrete<br>Interior Exposed                                               | SSPC-SP 13<br>ICRI-CSP 1-3 | TP3 or IPP2<br>Patch as<br>required | N/A                  | TF4 or<br>IPF2  |
| Concrete<br>Secondary Containment<br>Severe Conditions<br>Interior Exposed | SSPC-SP 13<br>ICRI - CSP 5 | TP3 or IPP6                         | TI6 or<br>IPI4       | TF9 or<br>IPF8  |
| Concrete Floors<br>Non-Slip Clear Finish                                   | SSPC-SP 13<br>ICRI-CSP 3   | TP6                                 | N/A                  | TF10            |
| Concrete Masonry<br>Exterior Exposed                                       | Clean and<br>Dry           | TP4 or IPP9                         | TI3 or<br>IPI1       | TF7 or<br>IPF1  |
| Concrete Masonry<br>Interior Exposed                                       | Clean and<br>Dry           | TP5 or IPP9                         | TI2 or<br>IPI1       | TF4 or<br>IPF2  |
| Plaster and Wallboard<br>Interior Exposed                                  | Clean and<br>Dry           | TP4 or<br>IPP10                     | N/A                  | TF3 or<br>IPF9  |
| Wood<br>Interior and Exterior                                              | Clean and<br>Dry           | TP4 or<br>IPP11                     | N/A                  | TF3 or<br>IPF10 |

## APPENDIX B – FINISHED PAINTED SCHEDULE

| <u>Surface</u>                                                                                                                                             | <u>Surface Preparation</u>             | <u>Primer</u>           | <u>Inter-mediate</u> | <u>Finish</u> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-------------------------|----------------------|---------------|
| Insulated Pipe<br>Interior                                                                                                                                 | Clean and Dry                          | TP4 or IPP6             | TI7 or IPI5          | TF6 or IPF11  |
| Concrete: Severe Wastewater (H <sub>2</sub> S) Environments                                                                                                | SSPC-SP 13<br>ICRI-CSP 5               | TP3 or IPP8             | TI8 or N/A (IP)      | TF11 or IPF7  |
| Steel: Severe Wastewater (H <sub>2</sub> S) Environments                                                                                                   | SSPC-SP 5, 3.0 mil minimum profiled    | N/A                     | TF11 or N/A (IP)     | TF11 or IPF7  |
| Steel-Structural<br>Tanks, Pipes, Equipment<br><br>Exterior, Non-Immersion – ELEVATED WATER STORAGE TANKS – NEW CONSTRUCTION                               | SSPC-SP10                              | IPP12                   | IPI6                 | IPF1          |
| Steel-Structural<br>Tanks, Pipes, Equipment<br><br>Exterior, Non-Immersion - ELEVATED WATER STORAGE TANKS – MAINTENANCE & REPAIR (Option 1 – polyurethane) | SSPC-SP7<br><br>Min: SSPC-SP2/SP3      | IPP13<br><br>Spot Prime | IPI6                 | IPF1          |
| Steel-Structural<br>Tanks, Pipes, Equipment<br><br>Exterior, Non-Immersion - ELEVATED WATER STORAGE TANKS – MAINTENANCE & REPAIR (Option 2 – acrylic)      | Power Wash w/Devprep 88 (min 2000 psi) | IPP13<br><br>Spot Prime | IPI5                 | IPF11         |

## E. Tnemec Prime (TP) Coat:

|     |                                                   |
|-----|---------------------------------------------------|
| TP1 | Series N69Hi-Build Epoxoline II, 2.0-3.0 mils dry |
| TP2 | Series 1 Omnithane 2.5 – 3.5 mils                 |
| TP3 | Series 218 MortarClad, min. 1/32"                 |
| TP4 | Series 151 Elasto-Grip FC, 0.7 – 1.5 mils dry     |

TP5 Series 130 EnviroCrete, 60 - 80 sq. ft./gal spread rate for porous CMU, 85 to 115 sq. ft./gal. for dense CMU

TP6 Series 201 Epoxoprime

F. Tnemec Intermediate (TI) Coats:

TI1 Series N69 Hi-Build Epoxoline II, 2.0-3.0 mils dry

TI2 Series N69 Hi-Build Epoxoline II, 4.0-6.0 mils dry

TI3 Series 156 EnviroCrete, 4.0-8.0 mils dry

TI4 Series 27 Typoxy, 2.0-3.0 mils dry

TI5 Series 140 Pota-Pox, 4.0-6.0 mils dry

TI6 Series 237SC PowerTread 8.0-10.0 mils dry

TI7 Series 6 Tneme-Cryl, 2.0 - 3.0 mils dry

TI8 Series 434 Perma-Shield H2S, 1/8" min. thickness

G. Tnemec Finish (TF) Coats:

TF1 Series 73 Endura-Shield, 2.0-3.0 mils dry

TF2 Series N69 Hi-Build Epoxoline, 2.0-3.0 mils dry

TF3 Series 113 HB Tneme-Tufcoat, 4.0 - 6.0

TF4 Series N69 Hi-Build Epoxoline II, 4.0-6.0 mils dry

TF5 Series 46H-413 Hi-Build Tneme Tar, 14.0-20.0 mils dry

TF6 Series 6 Tneme-Cryl, 2.0-3.0 mils dry

TF7 Series 156 EnviroCrete, 4.0-8.0 mils dry

TF8 Series N140 Pota-Pox Plus, 4.0 to 6.0 mils dry

TF9 Series 282 Tneme-Glaze, 6.0 - 8.0

TF10 Series 294 Clear CRU 2.0-3.0 mils dry

TF11 Series 435 Perma-Glaze 15.0 - 2.0 mils

H. International Paint (IPP) Prime Coats:

IPP1 Devoe Devran 201H, 2.0-3.0 mils dry

IPP2 Devoe Devran 224HS, 4.0-6.0 mils dry or

International Intergard 345, 4.0-6.0 mils dry

IPP3 Devoe Bar Rust 233H, 4.0-6.0 mils dry or

International Interseal 670HS, 4.0-6.0 mils dry

IPP4 Devoe DevTar 5A-HS, 6.0-8.0 mils dry

|       |                                                                                                                 |
|-------|-----------------------------------------------------------------------------------------------------------------|
| IPP5  | Devoe Bar Rust 233H, 2.0-3.0 mils dry (thinned) or<br>International Interseal 670HS, 2.0-3.0 mils dry (thinned) |
| IPP6  | Pre-Prime 167, 1.0-1.5 mils dry                                                                                 |
| IPP7  | Devoe Devfil 145                                                                                                |
| IPP8  | Enviroline 50 Moisture Tolerant Primer, 2.0-4.0 mils dry or<br>Ceilcote 680M Primer, 2.0-4.0 mils dry           |
| IPP9  | Devoe Bloxfil 4000                                                                                              |
| IPP10 | Devoe Tru-Glaze 4030, 2.0-3.0 mils dry                                                                          |
| IPP11 | Devoe Devflex 4020                                                                                              |
| IPP12 | Devoe Cathacoat 302H, 2.5-4.0 mils dry or<br>International Interzinc 22, 2.5-4.0 mils dry                       |
| IPP13 | Devoe Bar Rust 231, Spot Prime or<br>International Intergard 345, Spot Prime                                    |

I. International Paint Intermediate (IPI) Coats:

|      |                                                                                             |
|------|---------------------------------------------------------------------------------------------|
| IPI1 | Devoe Devran 224HS, 4.0-6.0 mils dry or<br>International Intergard 345, 4.0-6.0 mils dry    |
| IPI2 | Devoe Bar Rust 233H, 4.0-6.0 mils dry or<br>International Interseal 670HS, 4.0-6.0 mils dry |
| IPI3 | Devoe Devran 201H, 2.0-3.0 mils dry                                                         |
| IPI4 | Devoe Devchem 253, 5.0-6.0 mils dry                                                         |
| IPI5 | Devoe Devflex 659, 2.0-3.0 mils dry                                                         |
| IPI6 | Devoe Bar Rust 231, 4.0-6.0 mils dry or<br>International Intergard 345, 4.0-6.0 mils dry    |

J. International Paint Finish (IPF) Coats:

|      |                                                                                             |
|------|---------------------------------------------------------------------------------------------|
| IPF1 | Devoe Devthane 379, 2.0-3.0 mils dry or<br>International Interthane 990, 2.0-3.0 mils dry   |
| IPF2 | Devran 224HS, 4.0-6.0 mils dry or<br>International Intergard 345, 4.0-6.0 mils dry          |
| IPF3 | Devoe Bar Rust 233H, 4.0-6.0 mils dry or<br>International Interseal 670HS, 4.0-6.0 mils dry |

|       |                                                                                           |
|-------|-------------------------------------------------------------------------------------------|
| IPF4  | Devoe DevTar 5A-HS, 6.0-8.0 mils dry                                                      |
| IPF5  | Devoe Devthane 378, 2.0-3.0 mils dry or<br>International Interthane 870, 2.0-3.0 mils dry |
| IPF6  | Interzone 954 or Devtar 247, 16.0-20.0 mils dry                                           |
| IPF7  | Enviroline 222, 20.0-100.0 mils dry or<br>Ceilcote 663SG, 60.0-120.0 mils dry             |
| IPF8  | Devoe Devchem 258, 5.0-6.0 mils dry                                                       |
| IPF9  | Devoe Tru-Glaze 4418, 2.0-3.0 mils dry                                                    |
| IPF10 | Devoe Devflex 4216, 2.0-3.0 mils dry                                                      |
| IPF11 | Devoe Devflex 659, 2.0-3.0 mils dry                                                       |

END OF APPENDIX B

END OF SECTION

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Monday, July 13, 2015 11:55 AM  
**To:** Matta, Samir  
**Cc:** Hansen, Jeff (jrhansen@lan-inc.com); Busch, Stephen (DEQ)  
**Subject:** RE: Flint WTP GAC Permit Application

Samir,

The revised plans received from you this morning along with the response and attachments from Jeff Hansen on July 8, 2015 address the majority of our comments sent on July 6, 2015. The removal and re-installation of the sand media; however, is not described. Please provide a description of the procedure to remove and re-install the sand filter media. An electronic response will be adequate.

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

---

**From:** Matta, Samir [mailto:SFMatta@lan-inc.com]  
**Sent:** Friday, July 10, 2015 11:58 AM  
**To:** Busch, Stephen (DEQ); Hansen, Jeff  
**Cc:** Prysby, Mike (DEQ); Brent Wright (bwright@cityofflint.com); mglasgow@cityofflint.com; Green, Warren  
**Subject:** RE: Flint WTP GAC Permit Application

Thanks Steve.

I am out of town today. I will drop the plans on Monday.

Enjoy your Weekend.

Samir Matta, PE  
 Lockwood, Andrews & Newnam, Inc.  
 (517)819-2367

----- Original message -----

**From:** "Busch, Stephen (DEQ)" <BUSCHS@michigan.gov>  
**Date:** 07/10/2015 11:11 AM (GMT-05:00)  
**To:** "Hansen, Jeff" <jrhansen@lan-inc.com>, "Matta, Samir" <SFMatta@lan-inc.com>  
**Cc:** "Prysby, Mike (DEQ)" <PRYSBYM@michigan.gov>, "Brent Wright (bwright@cityofflint.com)"

<[bwright@cityofflint.com](mailto:bwright@cityofflint.com)>, [mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com), "Green, Warren" <[jwgreen@lan-inc.com](mailto:jwgreen@lan-inc.com)>  
Subject: RE: Flint WTP GAC Permit Application

Samir,

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If you come today give me a call at the number below. I will be in meetings from 12:00 – 2:00

If you come on Monday give call Mike, as he is scheduled to be back.

Thanks.

Stephen Busch, P.E.

Lansing and Jackson District Supervisor

Office of Drinking Water and Municipal Assistance

MDEQ

517-643-2314

---

**From:** Hansen, Jeff [<mailto:jrhansen@lan-inc.com>]

**Sent:** Wednesday, July 08, 2015 8:52 AM

**To:** Busch, Stephen (DEQ)

**Cc:** Prysby, Mike (DEQ); Brent Wright ([bwright@cityofflint.com](mailto:bwright@cityofflint.com)); [mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com); Matta, Samir; Green, Warren

**Subject:** RE: Flint WTP GAC Permit Application

Steve,

In general response to your comments, our agreement with Flint is a design/build type so on the plans we have called out specific make/models to match what Flint currently uses for a number of items on your list rather than developing entire spec sections.

Specific responses to your comments are shown below in red. Revised plans and specs are attached and we will send hard copies by mail. Attachments are as follows:

1. Calgon Filtrasorb 400 GAC media data sheet
2. Calgon media change out procedures
3. Calgon disinfection procedures
4. Revised plans – there is only 1 change to a single note on sheet 6 as described below
5. Revised specs – added sections for piping, valves and pipe testing

Thanks,

**Jeffrey R. Hansen**

Senior Project Manager



1311 South Linden Road, Suite B • Flint, MI 48532

T 810.820.2682 C 810.333.3201

[www.lan-inc.com](http://www.lan-inc.com) • [JRHansen@lan-inc.com](mailto:JRHansen@lan-inc.com)

---

**From:** Busch, Stephen (DEQ) [<mailto:BUSCHS@michigan.gov>]

**Sent:** Monday, July 06, 2015 3:50 PM

**To:** Hansen, Jeff

**Cc:** Matta, Samir; Green, Warren; [mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com); Brent Wright ([bwright@cityofflint.com](mailto:bwright@cityofflint.com)); Prysby, Mike (DEQ)

**Subject:** Flint WTP GAC Permit Application

Our office received the permit application "Fint WTP Phase II, Segment 3 Filter Media Replacement" on June 30, 2015.

The only specifications provided with the permit application were for the following:

- 05550 Bolts, Anchor Bolts And Expansion Anchors
- 09928 Protective Coating Systems

Aside from information shown on the plan sheets and what was listed in the previously submitted basis of design document, no other specifications were provided regarding:

- GAC and Sand media, including removal, installation, ripening, and disinfection procedures

**Plan sheet 5 calls out effective size, uniformity coefficient, and specific gravity for GAC and sand. Also, we have selected Calgon's product Filtrasorb 400 in our agreement. We did not want to dictate means and methods on the plans or specs. However, Calgon procedures are attached for your reference as well as their Filtrasorb 400 product sheet.**

- Chlorine piping, joints, valves, installation, support, etc.

**Chlorine piping and valves are to be ASAHI Chem Prolok which are dual wall HDPE with butt fused joints and also the same type as the existing mid point chlorination piping. We will add a specification for this and have added some wording to the pipe call out near the center of sheet 6. Specific supports are called out on the plans and notes refer to sections 09928 for coating and 05550 for anchor bolts. See Key Note #1 on sheet 6. Key note call outs are designated with a number inside a hexagon in the plan view.**

- Water tight hatch to be installed

**The Bilco hatch specified in Key Note #2 on sheet 6 with the options listed is water tight.**

- Chlorine gas detector equipment

**The specific make/model of the chlorine detection equipment is called out with Key Note #3 on sheet 6. That type was selected to match other chlorine gas detectors currently used at the plant.**

Regarding the Protective Coating Systems specs and their related appendix, these are general in nature listing every part of the plant as potentially being recoated. Plan notes discuss a few items to be coated/recoated, but it is not entirely clear what the full scope of the coating work will consist of. **Coating will only be applied to those items where it is called for on the plans, which are the hangers/supports.**

We request any additional specification information regarding the above be provided for approval.

It is also noted that the basis of design is based on a flow of 30 MGD, approximately 2.5 gpm/ft<sup>2</sup> filter loading rate. The existing filters are currently rated for 36 MGD at 3 gpm/ft<sup>2</sup>. This would cause the WTP capacity rating to be lowered to 30 MGD. Any future request to expand filter capacity back to 36 MGD would need to be demonstrated through filter performance testing. **We showed 30 mgd in the basis of design and on the application form only because it is unlikely Flint demands will reach 36 mgd in the next 20 years. However, we would like to maintain the 36 mgd rating – do you need the basis of design and permit application resubmitted for this?**

Stephen Busch, P.E.

Lansing and Jackson District Supervisor

Office of Drinking Water and Municipal Assistance

MDEQ

517-643-2314

---

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**Rennaker, Joanne (DEQ)**

---

**From:** Matta, Samir <SFMatta@lan-inc.com>  
**Sent:** Monday, July 13, 2015 2:29 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Hansen, Jeff; Busch, Stephen (DEQ)  
**Subject:** RE: Flint WTP GAC Permit Application  
**Attachments:** 20150707\_101709.jpg; 20150707\_102131.jpg; 20150707\_101747.jpg; 20150707\_101310.jpg; 20150707\_101232.jpg

Hi Mike,

As per our phone conversation, Calgon is pumping the wet sand into a truck with screened valves in the back that allows the water to drain out while keeping the sand in the truck. The removed materials is trucked to a landfill for disposal. The new sand comes in large bags that is dumped into a hopper and pumped back into the filter after water is added to the system.

I have included photos of the sand being pumped out into the truck for your review.

We also like to have the plant facility remain at 36 MGD and not change to 30 MGD even though we do not expect the City demands to get that high.

Let me know if you need anything else.

**Samir F. Matta, PE**  
 Senior Project Manager



**Lockwood, Andrews  
& Newnam, Inc.**  
 A LEO A DALY COMPANY

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**From:** Prysby, Mike (DEQ) [mailto:PRYSBYM@michigan.gov]  
**Sent:** Monday, July 13, 2015 11:55 AM  
**To:** Matta, Samir  
**Cc:** Hansen, Jeff; Busch, Stephen (DEQ)  
**Subject:** RE: Flint WTP GAC Permit Application

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Office of Drinking Water and Municipal Assistance  
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**Sent:** Friday, July 10, 2015 11:58 AM  
**To:** Busch, Stephen (DEQ); Hansen, Jeff  
**Cc:** Prysby, Mike (DEQ); Brent Wright ([bwright@cityofflint.com](mailto:bwright@cityofflint.com)); [mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com); Green, Warren  
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Cc: "Prysby, Mike (DEQ)" <[PRYSBYM@michigan.gov](mailto:PRYSBYM@michigan.gov)>, "Brent Wright ([bwright@cityofflint.com](mailto:bwright@cityofflint.com))" <[bwright@cityofflint.com](mailto:bwright@cityofflint.com)>, [mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com), "Green, Warren" <[jwgreen@lan-inc.com](mailto:jwgreen@lan-inc.com)>  
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Office of Drinking Water and Municipal Assistance

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Lansing and Jackson District Supervisor

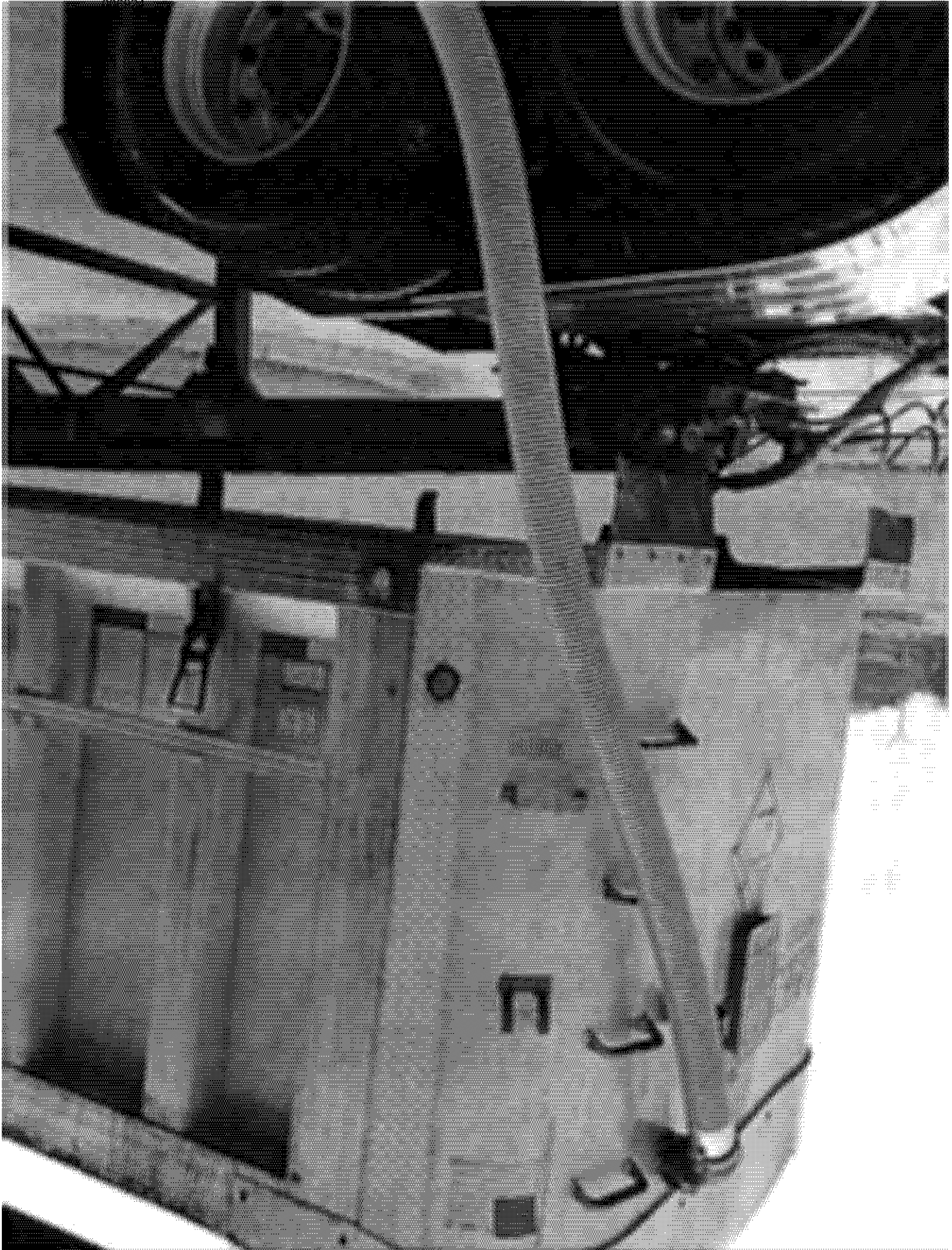
Office of Drinking Water and Municipal Assistance

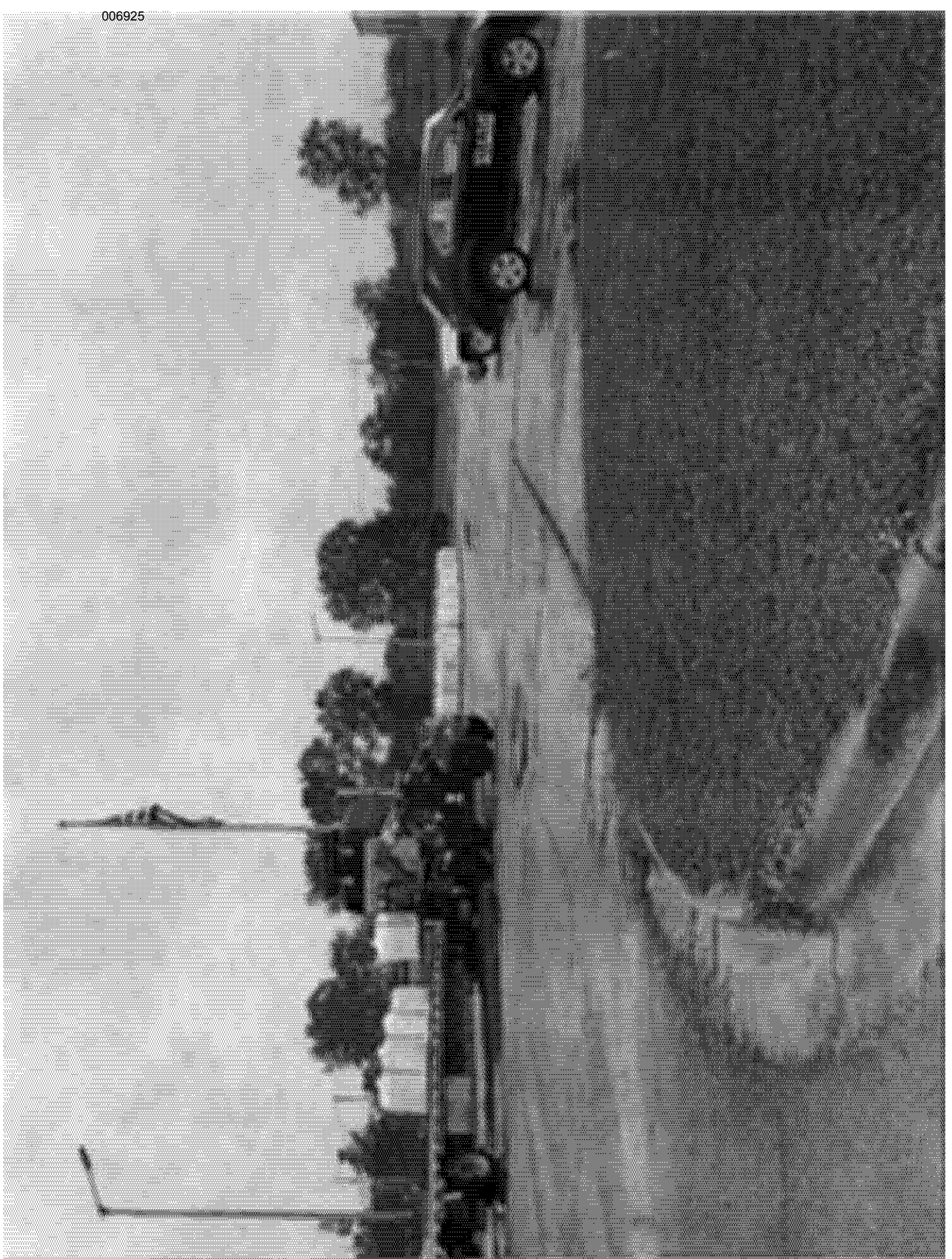
MDEQ

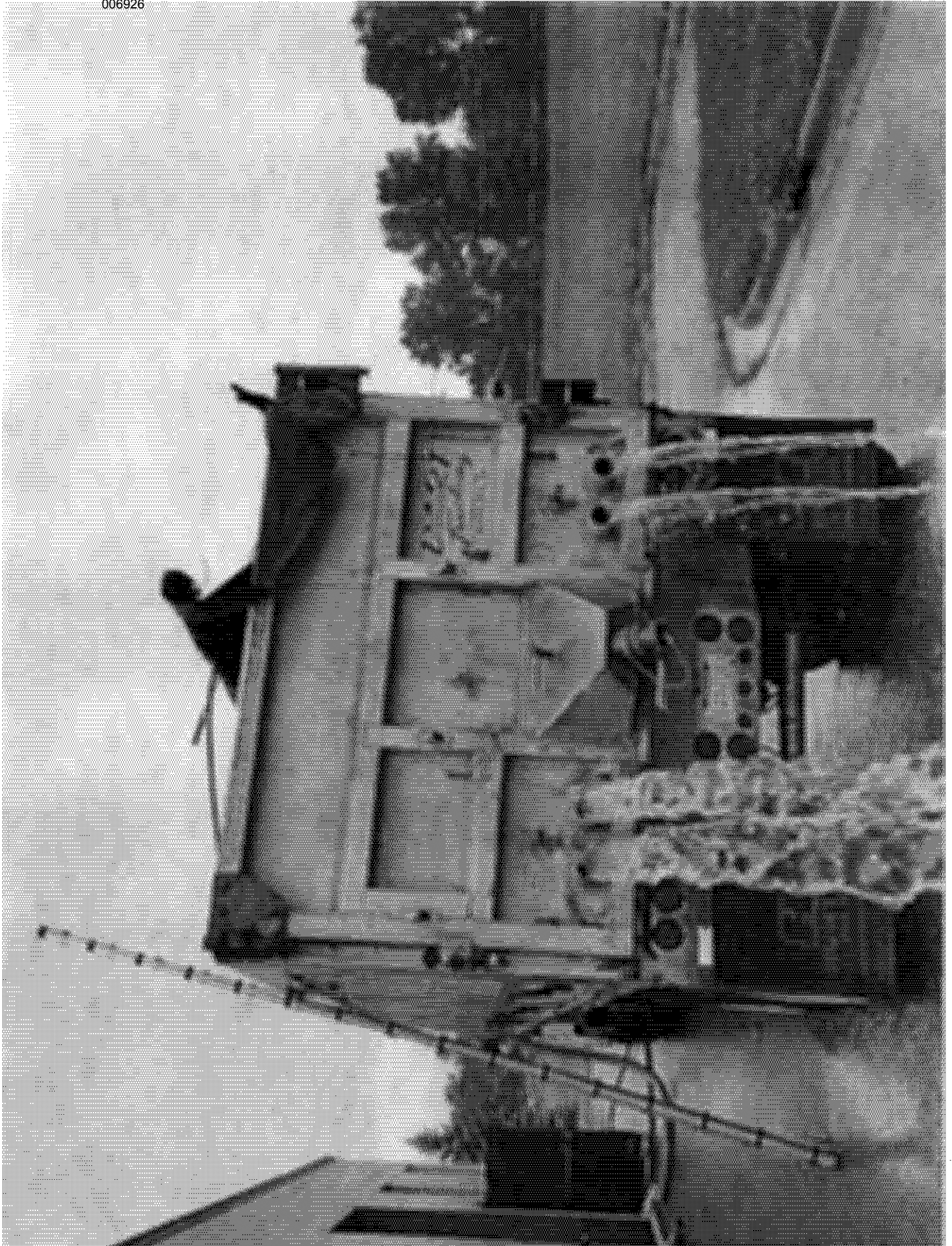
517-643-2314

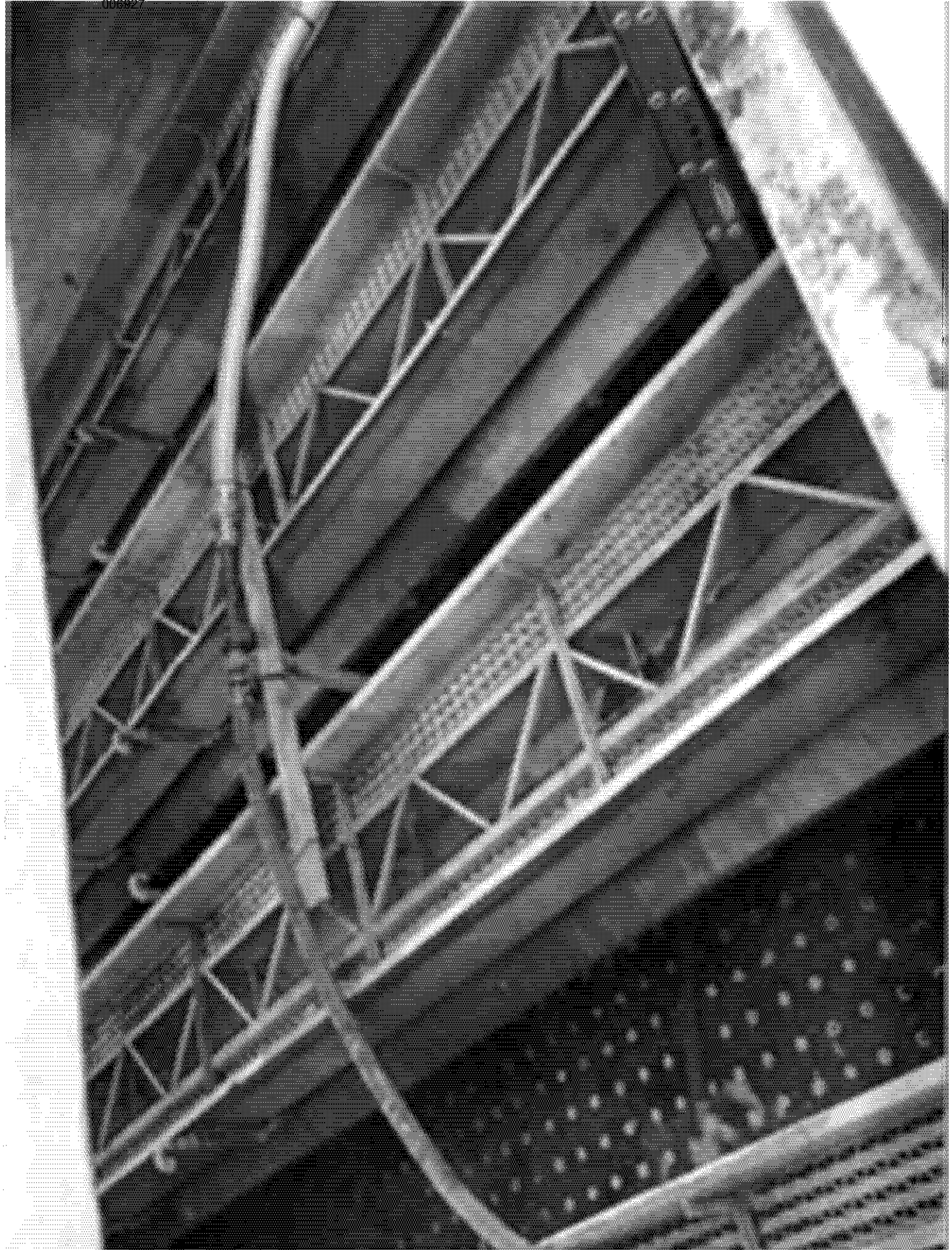
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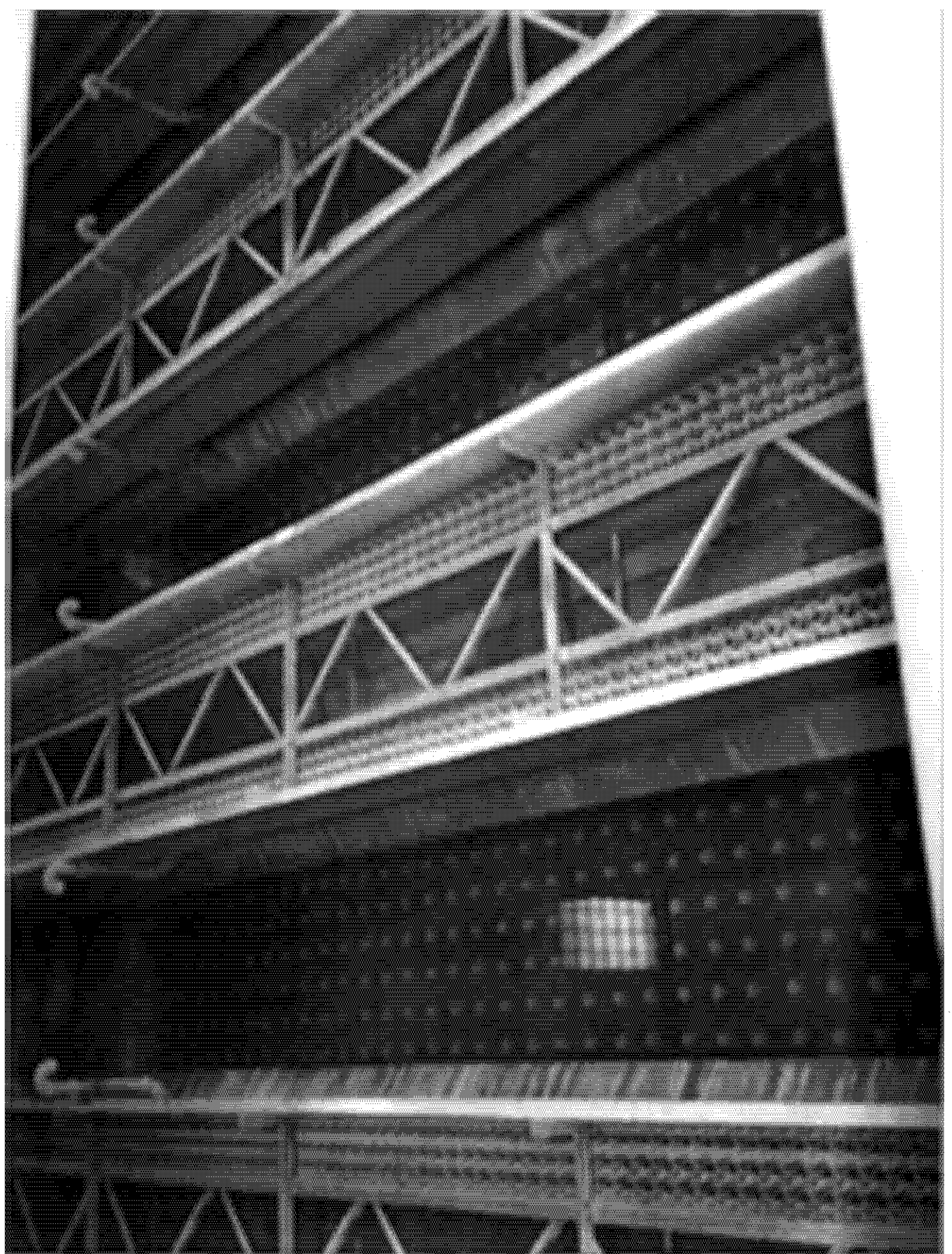
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**Rennaker, Joanne (DEQ)**

---

**From:** Lytle, Darren <Lytle.Darren@epa.gov>  
**Sent:** Monday, October 19, 2015 12:05 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Schock, Michael; Kempic, Jeffrey; Busch, Stephen (DEQ)  
**Subject:** RE: Flint WTP PH2 SEG4 - Corrosion Control

Mike,

Thank-you for giving us the opportunity to review the city of Flint's corrosion control plan.

We believe it is necessary that Flint boosts orthophosphate dosage. Given that the distribution system has not received orthophosphate in over a year, we expect that orthophosphate will need to be boosted to 1) meet the demand of the distribution system, 2) reach the service lines and other lead-containing components in premise plumbing, and 3) accelerate lead reduction at the consumer's taps. Orthophosphate should preferably be added in the same form as the Detroit source which is phosphoric acid from our understanding. This is the proposed case here, however, a simple test should be performed to make sure that the pH is not impacted in a significant way at the desired target dose.

We have not been able to obtain comprehensive water quality data for the finished water characteristics of the Detroit water that will be fed to Flint, to assess ranges of major chemical characteristic fluctuations. However, based upon the email trail, Detroit water entering the Flint system appears to only contain around 0.4 PO<sub>4</sub>/L. This concentration range is entirely too low compared to that needed in studies presented and published in the last 20+ years that have focused on lead released directly from lead pipes, and the solubility of the most likely lead orthophosphate pipes scales. We also strongly feel that targeted dose of 0.8 mg PO<sub>4</sub>/L is also too low, for the very same reason. We would be glad to share with you numerous standard corrosion control and treatment reference works, best practices guides and published results from US and international lead corrosion control field and pilot studies. Secondly, the basis for that target (other communities using Lake Huron source use the same dose) is not scientifically derived nor does it consider water quality and the current state of Flint's distribution system. We have reviewed the original Detroit corrosion study and have seen some of the LCR monitoring data, and besides the fact that it did not directly pertain to this water source, few dosages were tested in the cited 1994 pipe loop study, and the higher dosage than the one implemented in the field currently was more effective. Based on the limited amount of data on the quality of Detroit water, what we know about the history of Detroit corrosion control, we think an orthophosphate residual of 3 to 4 mg PO<sub>4</sub>/L should be the minimum starting test target residual for pipe passivation. It is likely that, at least initially a higher dosage will be necessary to reach the far ends of the distribution system and sufficiently reduce lead solubility and release from all lead sources. To allow flexibility, we feel the design of the chemical feed and storage systems should be able to consistently deliver a maximum dose of 5 to 6 mg PO<sub>4</sub>/L, if substantial orthophosphate loss is observed, if the starting dose is set for the desired residual level of 3 to 4 mg/L as PO<sub>4</sub>. We suggest that jar tests be performed in advance of orthophosphate addition to Detroit water to evaluate the impact of orthophosphate dose on turbidity that could result from interactions between orthophosphate and background Detroit water quality parameters (e.g., aluminum, calcium, etc.).

We want to stress that immediately shifting to Detroit water and adding orthophosphate will not necessarily translate to immediate improvements. Furthermore, this is a change, albeit a return to past conditions. Nonetheless, a period of system upset should be anticipated. The need for a communication strategy and a distribution system plan are critical.

Lastly, we see no mention of a water quality monitoring program. Two programs need to be put in place immediately (before return to Detroit water) to 1) identify lead sources, 2) assess treatment effectiveness against lead release from all of the simultaneously operating mechanisms (solubility, particulate release, galvanic corrosion), and 3) assess orthophosphate levels and stability of water quality in the distribution system.

There are multiple sources of lead in the Flint distribution system to the consumers' taps, such as: pipes; leaded brass; leaded solder; accumulations on old galvanized steel pipes; possibly accumulated on copper or some plastic pipes. It is critical that the fate of orthophosphate in the distribution system is understood, and how effective it is against each type of lead source, so dosing adjustment can be properly made. For this purpose, we recommend that a number of residences throughout Flint that meet the following plumbing criteria, be identified for an assessment of the contribution lead from the different potential service line and interior plumbing sources, through detailed mapping of plumbing materials, lengths, sizes, and location and type of inline devices and faucets using profile sampling. For confidence in interpretation, probably at least 5 sites from each of the configurations will be necessary. The configurations we would estimate to be most important (but should be changed or added to if local construction practice indicates it's necessary): Lead service line, galvanized steel interior plumbing; lead service line, copper with leaded solder joints; lead service line, plastic interior plumbing. It is also possible that interior plumbing may differ from the material used for the customer-side service line segment. We would be glad to discuss the specifics of this sampling effort.

For the purpose of assessing stability of water quality in the distribution system and to inform on orthophosphate residual adjustment, we suggest that 8 to 10 locations in the distribution system be selected to measure pH, alkalinity, orthophosphate, turbidity and iron on a weekly basis. These could be collected from TCR sampling locations, or other readily-accessible buildings, should be located at a distribution of locations in the distribution system and should be collected after a flush sufficiently long to assure that "fresh" distribution system water is being measured. Research has shown that over time, orthophosphate can reduce disinfectant demand associated with corroding metallic distribution system materials. These measurements need to be performed in the field and can simply be done with a portable HACH test kit or spectrophotometer.

A lead sampling plan needs to be in place to access the effectiveness of water change and treatment boost. LCR monitoring sites with confirmed lead service lines can be in the sampling pool. Sampling should consist of a 1 liter first draw sample (LCR sample without 5 minute pre-flush), followed by an additional flushed sample or two depending on profile sample results which is intended to capture major lead source(s). The specific details of this effort need to be worked out by the technical committee as soon as possible. We would gladly work with Flint on establishing a water sampling program to identify and verify lead service line sites. The plan and initial sampling effort should be performed before the switch so that one baseline sample set is collected.

Lastly, our strength does not fall under full-scale pump and chemical feed delivery systems. We would only say that the systems need to be scaled-up in size to accommodate our suggested dosing needs. Also, there is some discussion about diverting water to the Dort reservoir and an associated orthophosphate feed system. We are not familiar with the reservoir but are wondering if it is an open reservoir?

Of course this is a lot of information to share and we would gladly be available to discuss the technical and scientific basis for our suggestions.

Let us know if you have any questions and thanks again,

Darren and Mike

Darren A. Lytle, Ph.D., P.E.  
Branch Chief (Acting)  
U.S. Environmental Protection Agency  
26 West Martin Luther King Dr.  
Cincinnati, Ohio 45268  
Phone: (513) 569-7432  
Fax: (513) 487-2543  
email: lytle.darren@epa.gov

**From:** Prysby, Mike (DEQ) [mailto:PRYSBYM@michigan.gov]

**Sent:** Friday, October 16, 2015 1:32 PM

**To:** Lytle, Darren <Lytle.Darren@epa.gov>; Schock, Michael <Schock.Michael@epa.gov>

**Cc:** Busch, Stephen (DEQ) <BUSCHS@michigan.gov>

**Subject:** FW: Flint WTP PH2 SEG4 - Corrosion Control

Darren, Michael

We have received Flint's corrosion control proposal from their consultant. If you have comments, please provide them to me by Monday morning.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

---

**From:** Matta, Samir [<mailto:SFMatta@lan-inc.com>]

**Sent:** Friday, October 16, 2015 12:02 AM

**To:** Prysby, Mike (DEQ)

**Subject:** Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike,

Please see attached plans for the Corrosion Control Plan for the City of Flint. I will have the official submittal package to you tomorrow afternoon after I get Brent or Mike's signature on the permit application. I will call you when I get back in Lansing to drop the package. Is three sets of full size plans adequate? Would you like some half size plans? Let me know.

#### **Basis of Design**

Given that Flint will require lead and copper corrosion control and given that Detroit utilizes orthophosphate for their corrosion control methodology, and that Flint will be receiving Detroit water for the immediate future, orthophosphate is the appropriate corrosion control methodology for Flint. A dosage of 0.8 mg/l as  $\text{PO}_4$  has been recommended for the Detroit water. Numerous utilities utilizing Lake Michigan water have a target dosage of 0.9 mg/l as  $\text{PO}_4$ . Therefore, a target dosage in the range of 0.8 to 0.9 mg/l appears appropriate.

It is expected that, at least initially, there will be a significant  $\text{PO}_4$  demand in the system. This will require a significantly higher dosage until this demand is satisfied and the target residual can be maintained. We are therefore designing for capability of a maximum dosage of 1.5 mg/l.

The arriving Detroit water will likely have some residual  $\text{PO}_4$  when it arrives at Flint. It has been reported that this residual will be approximately 0.4 mg/l. The system must therefore be capable of a minimum dosage of 0.4 mg/l.

Based upon the usage of 75% Phosphoric Acid and a flow range of 4 MGD to 25 MGD, with an average day of 16 MGD, the expected feed rate will be 1.35 to 32 gpd. Average Phosphoric Acid feed is expected to be 10.8 gpd, requiring 30 days storage of 325 gal.

Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.

Please let me know if the information is adequate or you require additional information.

Thanks.

**Samir F. Matta, PE**  
Team Leader



**Lockwood, Andrews  
& Newnam, Inc.**

A LEO A DALY COMPANY

1311 South Linden Road, Suite B • Flint, MI 48532

2121 University Park Dr, Suite 100 • Okemos, MI 48864-6901

D 517.819.2367 C 517.819.2367

[www.lan-inc.com](http://www.lan-inc.com) • [sfmatta@lan-inc.com](mailto:sfmatta@lan-inc.com)

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**Rennaker, Joanne (DEQ)**

---

**From:** Lytle, Darren <Lytle.Darren@epa.gov>  
**Sent:** Friday, October 16, 2015 2:28 PM  
**To:** Prysby, Mike (DEQ); Schock, Michael  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** RE: Flint WTP PH2 SEG4 - Corrosion Control

Mike,

Will do.

Thanks much for sending to us.

Darren

Darren A. Lytle, Ph.D., P.E.  
 Branch Chief (Acting)  
 U.S. Environmental Protection Agency  
 26 West Martin Luther King Dr.  
 Cincinnati, Ohio 45268  
 Phone: (513) 569-7432  
 Fax: (513) 487-2543  
 email: [lytle.darren@epa.gov](mailto:lytle.darren@epa.gov)

**From:** Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]  
**Sent:** Friday, October 16, 2015 1:32 PM  
**To:** Lytle, Darren <[Lytle.Darren@epa.gov](mailto:Lytle.Darren@epa.gov)>; Schock, Michael <[Schock.Michael@epa.gov](mailto:Schock.Michael@epa.gov)>  
**Cc:** Busch, Stephen (DEQ) <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)>  
**Subject:** FW: Flint WTP PH2 SEG4 - Corrosion Control

Darren, Michael

We have received Flint's corrosion control proposal from their consultant. If you have comments, please provide them to me by Monday morning.

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

---

**From:** Matta, Samir [<mailto:SFMatta@lan-inc.com>]  
**Sent:** Friday, October 16, 2015 12:02 AM  
**To:** Prysby, Mike (DEQ)  
**Subject:** Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike,

Please see attached plans for the Corrosion Control Plan for the City of Flint. I will have the official submittal package to you tomorrow afternoon after I get Brent or Mike's signature on the permit application. I will call you when I get back in Lansing to drop the package. Is three sets of full size plans adequate? Would you like some half size plans? Let me know.

### Basis of Design

Given that Flint will require lead and copper corrosion control and given that Detroit utilizes orthophosphate for their corrosion control methodology, and that Flint will be receiving Detroit water for the immediate future, orthophosphate is the appropriate corrosion control methodology for Flint. A dosage of 0.8 mg/l as  $\text{PO}_4$  has been recommended for the Detroit water. Numerous utilities utilizing Lake Michigan water have a target dosage of 0.9 mg/l as  $\text{PO}_4$ . Therefore, a target dosage in the range of 0.8 to 0.9 mg/l appears appropriate.

It is expected that, at least initially, there will be a significant  $\text{PO}_4$  demand in the system. This will require a significantly higher dosage until this demand is satisfied and the target residual can be maintained. We are therefore designing for capability of a maximum dosage of 1.5 mg/l.

The arriving Detroit water will likely have some residual  $\text{PO}_4$  when it arrives at Flint. It has been reported that this residual will be approximately 0.4 mg/l. The system must therefore be capable of a minimum dosage of 0.4 mg/l.

Based upon the usage of 75% Phosphoric Acid and a flow range of 4 MGD to 25 MGD, with an average day of 16 MGD, the expected feed rate will be 1.35 to 32 gpd. Average Phosphoric Acid feed is expected to be 10.8 gpd, requiring 30 days storage of 325 gal.

Orthophosphate will need to be applied at two locations. Detroit water will enter the Flint system at Control Station CS2, and supplementary phosphate will be applied there. However, on occasion some incoming water may need to be diverted to the Dort Reservoir, bypassing CS2. This water would then be introduced to the system through High Service Pump Station PS4 and phosphate would be introduced at this location.

Please let me know if the information is adequate or you require additional information.

Thanks.

**Samir F. Matta, PE**

Team Leader



**Lockwood, Andrews  
& Newnam, Inc.**

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**Rennaker, Joanne (DEQ)**

---

**From:** Lytle, Darren <Lytle.Darren@epa.gov>  
**Sent:** Monday, October 19, 2015 8:46 AM  
**To:** Prysby, Mike (DEQ); Schock, Michael  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** RE: Flint WTP PH2 SEG4 - Corrosion Control

Mike-

Wrapping up our comments but I need to run to a meeting real quick. Will get them to you by 11 am. Thanks, Darren

Darren A. Lytle, Ph.D., P.E.  
 Branch Chief (Acting)  
 U.S. Environmental Protection Agency  
 26 West Martin Luther King Dr.  
 Cincinnati, Ohio 45268  
 Phone: (513) 569-7432  
 Fax: (513) 487-2543  
 email: [lytle.darren@epa.gov](mailto:lytle.darren@epa.gov)

**From:** Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]  
**Sent:** Friday, October 16, 2015 1:32 PM  
**To:** Lytle, Darren <[Lytle.Darren@epa.gov](mailto:Lytle.Darren@epa.gov)>; Schock, Michael <[Schock.Michael@epa.gov](mailto:Schock.Michael@epa.gov)>  
**Cc:** Busch, Stephen (DEQ) <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)>  
**Subject:** FW: Flint WTP PH2 SEG4 - Corrosion Control

Darren, Michael

We have received Flint's corrosion control proposal from their consultant. If you have comments, please provide them to me by Monday morning.

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

**From:** Matta, Samir [<mailto:SFMatta@lan-inc.com>]  
**Sent:** Friday, October 16, 2015 12:02 AM  
**To:** Prysby, Mike (DEQ)  
**Subject:** Flint WTP PH2 SEG4 - Corrosion Control

Hi Mike,

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Please let me know if the information is adequate or you require additional information.

Thanks.

**Samir F. Matta, PE**

Team Leader



**Lockwood, Andrews  
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**Rennaker, Joanne (DEQ)**

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Thursday, October 08, 2015 12:52 PM  
**To:** Gardner, Michael (OAG); Tetzlaff, Katherine (DEQ)  
**Cc:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Flint

Oversight of the Flint water supply is provided by our Lansing District staff. I recommend you contact Steve Busch, Lansing District Supervisor, to begin with.

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

---

**From:** Michael T. Gardner [<mailto:mgardner@audgen.michigan.gov>]  
**Sent:** Thursday, October 08, 2015 12:21 PM  
**To:** Tetzlaff, Katherine (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** Flint

Good afternoon,

Please ignore my previous email {I hit send by mistake}. Just wanted to let you know that I talked to our managers yesterday morning about Flint. Based on the recent developments in Flint's drinking water situation it was decided we would take a detail look at Flint's operation. I would like to start our review by obtaining some background information about Flint such as why the change was made, who made the decision to change water sources, when the change in water sources made, how was DEQ informed of the change, what did DEQ do to review the change in water source, how did Flint have the capacity to operate their own water system ....

Please let me know who I should meet with or who could provide documentation of the circumstances surrounding Flint drawing water from the Flint River.

Mike

**Rennaker, Joanne (DEQ)**

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Monday, April 21, 2014 11:09 AM  
**To:** Busch, Stephen (DEQ)  
**Subject:** Re: Flint

Half a dozen key talking points would e great.

Sent from my iPhone

On Apr 21, 2014, at 10:29 AM, "Busch, Stephen (DEQ)" <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)> wrote:

Brad,

Given that Flint is expected to complete work on the WTP and potentially change over from Detroit later this week, should we prepare a response statement from the DEQ in preparation for this event?

Obviously Flint is going to have a press release and invite media in as it's historic for them, but I know we are going to get questions.

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

**Rennaker, Joanne (DEQ)**

---

**From:** Cook, Pat (DEQ)  
**Sent:** Thursday, May 29, 2014 1:05 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Prysby, Mike (DEQ)  
**Subject:** RE: Flint

Ok. Any updates on the latest round of Unit 37 sampling or other monitoring that has been done since they went on-line full time?

pat

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, May 29, 2014 12:59 PM  
**To:** Cook, Pat (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: Flint

He has not contact me at all. Jennifer Crooks has spoken with him, and Mike followed up with Jennifer last week while she was in town on Flint.

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

---

**From:** Cook, Pat (DEQ)  
**Sent:** Thursday, May 29, 2014 12:46 PM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** Flint

Have either of you talked to Lathan Jefferson recently? He left me a voicemail message with complaints about the Flint water system. Any updates would be appreciated.

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](mailto:cookp@michigan.gov)

**Rennaker, Joanne (DEQ)**

---

**From:** Poy, Thomas <poy.thomas@epa.gov>  
**Sent:** Thursday, November 06, 2014 2:39 PM  
**To:** Benzie, Richard (DEQ); Crooks, Jennifer  
**Cc:** Busch, Stephen (DEQ); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Flint

Richard: Lathan Jefferson called this morning and got our receptionist. Same person who called you or a coincidence??? He told her that he did not want to talk to me because I cannot help him. He wanted to talk to my supervisor. Our receptionist tried to have him talk to me anyways but I was in a meeting. He has not called back but will be sent to our front office. I'm pretty sure Tinka talked to him when he originally called months ago. Plus, he talked to Jennifer, myself, Tom Murphy and Mindy Eisenberg (HQ).

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); [shekterl@michigan.gov](mailto:shekterl@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

**Rennaker, Joanne (DEQ)**

---

**From:** Crooks, Jennifer <crooks.jennifer@epa.gov>  
**Sent:** Monday, November 10, 2014 3:00 PM  
**To:** Poy, Thomas; Benzie, Richard (DEQ)  
**Cc:** Busch, Stephen (DEQ); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** Re: Flint

Yes, if this was Lathan Jefferson, he doesn't want to talk to me. I kept trying to discuss the actual lab data I received from Mike Prysby, and he definitely didn't want to talk with the State or any data from the State. I believe Mr Jefferson did talk with Tinka early on, since she referred him to talk with me.

Jen

---

**From:** Poy, Thomas  
**Sent:** Thursday, November 6, 2014 1:39 PM  
**To:** Benzie, Richard (DEQ); Crooks, Jennifer  
**Cc:** Busch, Stephen (DEQ); Prysby, Mike (DEQ); [shekterl@michigan.gov](mailto:shekterl@michigan.gov)  
**Subject:** RE: Flint

Richard: Lathan Jefferson called this morning and got our receptionist. Same person who called you or a coincidence??? He told her that he did not want to talk to me because I cannot help him. He wanted to talk to my supervisor. Our receptionist tried to have him talk to me anyways but I was in a meeting. He has not called back but will be sent to our front office. I'm pretty sure Tinka talked to him when he originally called months ago. Plus, he talked to Jennifer, myself, Tom Murphy and Mindy Eisenberg (HQ).

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); [shekterl@michigan.gov](mailto:shekterl@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

**Rennaker, Joanne (DEQ)**

---

**From:** Poy, Thomas <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); [shekterl@michigan.gov](mailto:shekterl@michigan.gov)  
**Subject:** Flint

Tom and Jennifer,

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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

**Rennaker, Joanne (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.

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

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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); [shekterl@michigan.gov](mailto:shekterl@michigan.gov)  
**Subject:** Flint

Tom and Jennifer,

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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

**Rennaker, Joanne (DEQ)**

---

**From:** Cook, Pat (DEQ)  
**Sent:** Thursday, May 29, 2014 1:05 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Prysby, Mike (DEQ)  
**Subject:** RE: Flint

Ok. Any updates on the latest round of Unit 37 sampling or other monitoring that has been done since they went on-line full time?

pat

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**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, May 29, 2014 12:59 PM  
**To:** Cook, Pat (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: Flint

He has not contact me at all. Jennifer Crooks has spoken with him, and Mike followed up with Jennifer last week while she was in town on Flint.

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

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**From:** Cook, Pat (DEQ)  
**Sent:** Thursday, May 29, 2014 12:46 PM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** Flint

Have either of you talked to Lathan Jefferson recently? He left me a voicemail message with complaints about the Flint water system. Any updates would be appreciated.

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](mailto:cookp@michigan.gov)

**Rennaker, Joanne (DEQ)**

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**From:** Wurfel, Brad (DEQ)  
**Sent:** Thursday, April 10, 2014 9:05 AM  
**To:** Busch, Stephen (DEQ)  
**Subject:** RE: flint's application for flint river withdrawals

I called Fonger and relayed what you shared with me. He's got it, I think. Thanks, man.

b

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**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, April 10, 2014 8:28 AM  
**To:** [rfonger1@mlive.com](mailto:rfonger1@mlive.com)  
**Cc:** Wurfel, Brad (DEQ)  
**Subject:** RE: flint's application for flint river withdrawals

Mr. Fonger,

There is no application for withdrawal from the Flint River. The City has had an established baseline withdrawal capacity prior to water withdrawal legislation becoming effective and has the ability to withdraw water from the River.

The City of Flint has applied and obtained construction permits through our office under the Michigan Safe Drinking Water Act for modifications of its existing Water Treatment Plant facilities.

Let me know if you have any additional questions.

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

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**From:** Wurfel, Brad (DEQ)  
**Sent:** Tuesday, April 08, 2014 1:05 PM  
**To:** Busch, Stephen (DEQ)  
**Subject:** Fwd: flint's application for flint river withdrawals

Steve, can you or one of your staff please help the Flint Journal?

Sent from my iPhone

Begin forwarded message:

**From:** "Fonger, Ronald" <[RFONGER1@mlive.com](mailto:RFONGER1@mlive.com)>  
**Date:** April 8, 2014 at 12:13:31 PM EDT  
**To:** "[wurfelb@michigan.gov](mailto:wurfelb@michigan.gov)" <[wurfelb@michigan.gov](mailto:wurfelb@michigan.gov)>  
**Subject:** flint's application for flint river withdrawals

Hi Brad:

I met with several Flint officials yesterday about the city's application for Flint River withdrawals, which they submitted last week.

I'm interested in getting a copy of that application if I can in advance of the permit being acted on.

I'm also interested in knowing the outcome as soon as possible.  
What's my best course of action?

**Ron Fonger**

MLive Media Group

Reporter

mobile 810.347.9963

email [rfonger1@mlive.com](mailto:rfonger1@mlive.com)

address 540 S. Saginaw St. #101, Flint MI 48502

**Rennaker, Joanne (DEQ)**

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**From:** Shaler, Karen (DEQ)  
**Sent:** Wednesday, September 30, 2015 11:09 AM  
**To:** Rennaker, Joanne (DEQ); DEQFOIA; Vorce, Susan (DEQ); Busch, Stephen (DEQ)  
**Cc:** Devereaux, Tracy Jo (DEQ); Feuerstein, Heather (DEQ); Renteria, Sylvia (DEQ)  
**Subject:** RE: FOIA request from Phelps - 6422-15

As we discussed, yes, please e-mail the three PDF documents to him at [pphelps277@yahoo.com](mailto:pphelps277@yahoo.com) as I understand that ODWMA will provide the documents at no charge. FYI, I also spoke with Lori Carter of the Accounting Service Center, who told me the \$50 FOIA deposit check has not yet been processed so once they receive it, she will have it returned to me to be voided and returned to Rep. Phelps. Thanks.

---

**From:** Rennaker, Joanne (DEQ)  
**Sent:** Wednesday, September 30, 2015 10:26 AM  
**To:** Shaler, Karen (DEQ); DEQFOIA; Vorce, Susan (DEQ); Busch, Stephen (DEQ)  
**Cc:** Devereaux, Tracy Jo (DEQ)  
**Subject:** RE: FOIA request from Phelps - 6422-15

Good Morning Karen,

Do you want me to e-mail the documents to Representative Phelps?

Jo Anne Rennaker  
 Secretary  
 Office of Waste Management and Radiological Protection  
 Office of Drinking Water and Municipal Assistance  
 517-284-6643

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**From:** Shaler, Karen (DEQ)  
**Sent:** Tuesday, September 29, 2015 6:29 PM  
**To:** DEQFOIA; Vorce, Susan (DEQ); Busch, Stephen (DEQ); Rennaker, Joanne (DEQ)  
**Cc:** DEQ-RMD-FOIA; Devereaux, Tracy Jo (DEQ); Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ)  
**Subject:** FW: FOIA request from Phelps - 6422-15

FYI, Maggie Pallone previously told me that she spoke with Rep. Phelps about his attached FOIA request. He told her that he would get back with her about whether or not he wanted to cancel his request. Maggie has since contacted his office 3 additional times to follow up, but no one has contacted her. That being said, late this afternoon, Maggie said to go ahead and treat his request as a FOIA after all.

In addition, today Sylvia Renteria sent his \$50 FOIA good faith deposit check to the Cashier's Office to be deposited due to the year-end closing deadline to deposit checks and is having it credited to ODWMA (see attached).

It turns out that the Executive Division does not have any of the requested records. However, ODWMA has three documents in the attached e-mail from Tracy Jo Devereaux that are responsive according to my conversation today with Steve Busch, so ODWMA will need to provide Rep. Phelps with those documents, apply the cost against the \$50 check, and either have a refund issued if the total cost is less than \$50 or invoice Rep. Phelps for any additional amount over \$50.

Please let me know if you need anything else from me. Thanks.

Karen

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**From:** Vorce, Susan (DEQ)  
**Sent:** Tuesday, September 15, 2015 11:31 AM  
**To:** Pallone, Maggie (DEQ); Copen, Leigh (DEQ); Shaler, Karen (DEQ)  
**Cc:** Schinderle, Jack (DEQ); Edlin, Karen (DEQ)  
**Subject:** FW: FOIA request from Phelps - 6422-15

Maggie:

The attached FOIA request has already been entered into the FOIA database.

However, I did not realize the requester was a State Representative.

Karen Shaler and JoAnne Rennaker (ODWMA-Lansing District) are working on this FOIA request.

Please contact me or Karen if you have any questions.

--Susan

Susan Vorce, FOIA Coordinator  
Department of Environmental Quality  
**517-284-6889 or 800-662-9278**  
[vorces@michigan.gov](mailto:vorces@michigan.gov)

**Rennaker, Joanne (DEQ)**

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**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Tuesday, October 20, 2015 8:24 AM  
**To:** Krisztian, George (DEQ)  
**Cc:** Sygo, Jim (DEQ); Cook, Pat (DEQ); Prysby, Mike (DEQ); Busch, Stephen (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** RE: Governor's Update

Our compiled list:

Item 3. – estimate the number of samples. Done. (100 per school).

Item 5. – legislative changes to Part 54 – draft language provided to Maggie on 10/15.

Item 10. – e-mail sent to Director of Shared Services requesting the three target/pilot elementary schools gather preliminary data and provide support for plumbing assessment by LARA staff.

Item 11. – revised draft sampling protocol shared with LARA, DHHS, EPA and GCHD. 10/19.

Item 16. - Scheduled for Wed. 10/21.

Item 19. – EPA comments received on 10/19 regarding Flint's corrosion control treatment plan. Call scheduled between DEQ and EPA scheduled for 10/20 to discuss.

Itemj 23. - Connection with DWSD was completed on Friday 10/16.

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**From:** Krisztian, George (DEQ)  
**Sent:** Monday, October 19, 2015 5:10 PM  
**To:** Cook, Pat (DEQ); Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Cc:** Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** Governor's Update  
**Importance:** High

Please submit your action item update for Monday (10/19/15). Please do this first thing Tuesday morning when you get in if you have not already done it.

Thank you  
 George

George L. Krisztian  
 Flint Action Plan Coordinator  
 Laboratory Director  
 Michigan Department of Environmental Quality  
 Desk ph (517) 284-6719  
 Cell ph (517) 204-0381

**Rennaker, Joanne (DEQ)**

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**From:** Feuerstein, Heather (DEQ)  
**Sent:** Thursday, October 29, 2015 10:41 AM  
**To:** Busch, Stephen (DEQ); Krisztian, George (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: handout

I will do that in Adobe

**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, October 29, 2015 10:38 AM  
**To:** Feuerstein, Heather (DEQ); Krisztian, George (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: handout

I think we need to include at least Flint, MI if not the school address somewhere to avoid confusion with any other Freeman Elementary school that might be in the State.

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](mailto:buschs@michigan.gov)

**From:** Feuerstein, Heather (DEQ)  
**Sent:** Thursday, October 29, 2015 10:33 AM  
**To:** Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)  
**Subject:** FW: handout

Attached is the final version of the report

**From:** Cavanaugh, Cheryl (MDARD)  
**Sent:** Thursday, October 29, 2015 9:35 AM  
**To:** Feuerstein, Heather (DEQ)  
**Cc:** Holton, Jennifer (MDARD)  
**Subject:** handout

Attached is the pdf, will send the design file in a sec.  
 CC

**Rennaker, Joanne (DEQ)**

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**From:** Prysby, Mike (DEQ)  
**Sent:** Thursday, March 19, 2015 10:24 AM  
**To:** Howard Croft  
**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ)  
**Subject:** RE: HC Letter & FAQ's

Howard,

It appears that my edits were not included in the final letter. The 6<sup>th</sup> paragraph down should be revised such that residents understand the difference between the Locational Running Annual Average (LRAA) and the results from the individual quarter (Feb 2015) ...to avoid possible confusion when they read the DEQ PN template which states that two of the eight sites are above the TTHM standard (this being based on the LRAA). Also, the words "annual average" needs to be replaced with Locational Running Annual Average (LRAA).

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, March 19, 2015 9:09 AM  
**To:** Brent Wright; Daugherty Johnson; Dayne Walling; donna. cole; [gdn2@aol.com](mailto:gdn2@aol.com); Howard Croft; James Henry; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; [larry.koehler@mcc.edu](mailto:larry.koehler@mcc.edu); Laura Sullivan; Michael Glasgow; Mike Lane; Prysby, Mike (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Nicholas; [rosejo@msu.edu](mailto:rosejo@msu.edu); Russell Hudson; Samir Matta; Warren Green; Elizabeth Murphy; Robert Bincsik; Robert Case; Jason Lorenz; Kelly Rossman-McKinney; Sharon Emery; Gerald Ambrose  
**Subject:** HC Letter & FAQ's

Technical Team Members,

Attached please find the final copy of a letter to the health community along with a Frequently Asked Question list.

These documents are ready for distribution among your peers and others. We anticipate mailing out the actual violation notice at the beginning of next week.

I will email everyone on this list when we determine a date for the next Technical Committee Meeting.

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](mailto:hcroft@cityofflint.com)

**Rennaker, Joanne (DEQ)**

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**From:** Crooks, Jennifer <crooks.jennifer@epa.gov>  
**Sent:** Tuesday, March 03, 2015 12:45 PM  
**To:** Busch, Stephen (DEQ); Deltoral, Miguel  
**Cc:** Rosenthal, Adam (DEQ); Poy, Thomas; Porter, Andrea; Prysby, Mike (DEQ)  
**Subject:** Re: HIGH LEAD: FLINT Water testing Results

Hi, Steve. I found that interesting that the Walters' interior piping is all PVC, and they have an iron pre-filter at the service connection. I remember in a discussion with Miguel, and maybe he can explain further, that systems with iron removal treatment had higher levels of lead at the tap, especially if the bacteria had been allowed to overgrow the filter. Seems there was a higher amount of lead particulate in the system. Miguel said in his email to us on 2/27 at 4:58am, that:

"Fe/Mn can transport lead from the lead service lines into the home. The lead sorbs onto the Fe/Mn particles. In SW systems, the Fe typically is released from the water mains."

Perhaps the iron pre-filter is contributing to the high lead levels?

Jennifer

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**From:** Busch, Stephen (DEQ) <BUSCHS@michigan.gov>  
**Sent:** Friday, February 27, 2015 12:48 PM  
**To:** Crooks, Jennifer; Deltoral, Miguel  
**Cc:** Rosenthal, Adam (DEQ); Poy, Thomas; Porter, Andrea; Prysby, Mike (DEQ); Benzie, Richard (DEQ); shekterl@michigan.gov  
**Subject:** RE: HIGH LEAD: FLINT Water testing Results

Miguel and Jennifer,

Thank you for this information, we will take it under consideration.

The City of Flint:

- Has a 90<sup>th</sup> percentile lead level of 6.0 ppb based on 100 samples collected in its most recent monitoring period of 7/1/2014 – 12/31/2014, with 2 samples (23 & 37 ppb) over the AL.
- Has a 90<sup>th</sup> percentile copper level of 110 ppb based on 100 samples collected in its most recent monitoring period of 7/1/2014 – 12/31/2014, with no samples over the Cu AL.
- Has an Optimized Corrosion Control Program
- Conducts quarterly Water Quality Parameter monitoring at 25 sites and has not had any unusual results.
- Has never had a 90<sup>th</sup> percentile lead AL exceedance
- Continues to meet all applicable plant tap standards and treatment technique requirements at its WTP
- Has developed and implemented an Operational Evaluation of its treatment and distribution systems, and continues to adjust and update this OE based on updated quarterly results

My understanding from Ben Grumbles and the LCR Short Term Revisions is that "EPA regulations require water systems to develop a targeted sampling pool, focused on those sites with the greatest risk of lead leaching. All compliance samples used to determine the 90<sup>th</sup> percentile must come from that sampling pool." [40 CFR 141.80(c)(1)], 56 Fed Reg. 26518 (June, 7, 1991), [40CFR 141.90(a)(1)(v), and 40 CFR 141.90(h)(2)]. Our office continues to work with our community water systems to follow these and all other requirements of the current lead and copper regulations.

212 Browning, the site in question, is not part of the City's established sample site pool. The residence consists of PVC plumbing materials, and has an iron pre-filter at the service connection.

Regarding TTHM, the most recent quarter monitoring from February 2015 was issued today by the lab. While 2 of the 8 DBP compliance sites continue to have an LRAA that exceeds the standard, quarterly results at all 8 DBP compliance sites were below less than half the standard level of 80 ppb, the highest being 28.5 ppb. Only one site now has an OEL over 80 ppb, at 85 ppb.

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

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**From:** Crooks, Jennifer [mailto:crooks.jennifer@epa.gov]  
**Sent:** Friday, February 27, 2015 11:05 AM  
**To:** Deltoral, Miguel; Prysby, Mike (DEQ)  
**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ); Poy, Thomas; Porter, Andrea  
**Subject:** Re: HIGH LEAD: FLINT Water testing Results

Hi, Steve and Mike. I talked with Miguel, and he said if you all would be interested in getting input from our expert, Mike Schock at EPA Cincinnati Research, on the Flint distribution system issues and dealing with lead and DBP's together, you should contact Mike directly--here is his information.

[schock.michael@epa.gov](mailto:schock.michael@epa.gov)  
(513) 569-7412

Jennifer

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**From:** Deltoral, Miguel  
**Sent:** Friday, February 27, 2015 4:58 AM  
**To:** Crooks, Jennifer; Prysby, Mike (DEQ)  
**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ); Poy, Thomas; Schock, Michael; Porter, Andrea  
**Subject:** Re: HIGH LEAD: FLINT Water testing Results

Jen/all - I think things got garbled in translation...

What I was saying is that where you find Pb values that high, it is usually due to particulate lead. Not always, but generally. Particulate lead is released sporadically from lead service lines, leaded solder and leaded brass in a number of ways and folks tend to discount these values as anomalies, but particulate lead release is a normal part of the corrosion process and it is universal (common) in all systems. It's just that it is not captured as often by the infrequent LCR sampling. If systems are pre-flushing the tap the night before collection on thisting LCR compliance samples (MDEQ still provides these instructions to public water systems) this clears particulate lead out of the plumbing and biases the results low by eliminating the highest lead values. If systems are pre-flushing and still finding particulate lead, the amount of particulate lead in the system can be higher than what is being detected using these 'pre-flushed' first-draw samples. My point on that was that people are exposed to the particulate lead on a daily basis, but the particulate lead is being flushed away before collecting compliance samples which provides false assurance to residents about the true lead levels in the water.

Some quick notes on particulate lead release:

- Fe/Mn can transport lead from the lead service lines into the home. The lead sorbs onto the Fe/Mn particles. In GW systems, Fe/Mn can come from the source water and more Fe from the water mains. In SW systems, the Fe typically is released from the water mains.
- Lead released from lead service lines can also 'seed' galvanized iron pipes inside the homes. Again, the lead sorbs onto the iron on the pipes and be released sporadically. Generally, the higher the flow, the more Fe and Fe+Pb particulate you will likely get.
- If there is a partial lead service line (lead connected to copper) you can get additional lead release due to galvanic corrosion.
- Leaded brasses and solder can also release particulate lead under certain circumstances.
- The particulate can contain very high concentrations of lead (hundreds to thousands of ppb Pb) which is a much higher concentration than lead paint, so even small particles can result in high lead values.
- If the lead service line was disturbed (water main repair/replacement, meter installation repair/replacement, service line leak repairs, etc.) you can have VERY high lead levels in the scale and sediment that is dislodged from the inside of lead service lines. Here in Chicago, during a partial lead service line replacement, we collected the scale and sediment that came into the home and we found 300,000+ ug/L lead in the scale; 125,000 ug/L Pb in the sediment. Very dangerous.
- Higher levels of PO<sub>4</sub> (3-4 mg/L Ortho) seem to reduce the amount of particulate Pb that is released in the absence of physical disturbances to the lead lines. Doesn't stop it entirely, but should generally reduce the occurrence. Caveat – Other water quality issues can change the chemical complexes that form on the pipe, so cleaner sources with more consistent WQ form more predictable scale complexes.

If I remember correctly, Detroit is feeding PO<sub>4</sub> for the LCR, but since Flint is no longer part of that interconnection, I was wondering what their OCCT was. They are required to have OCCT in place which is why I was asking what they were using.

Mike Schock is our resident expert and may be able to help out with the simultaneous compliance (Pb & DBPs) so I would suggest that folks give him a call.

Miguel A. Del Toral  
Regulations Manager  
U.S. EPA R5 GWDWB  
77 West Jackson Blvd, (WG-15J)  
Chicago, IL 60604  
Phone: (312) 886-5253

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**From:** Crooks, Jennifer  
**Sent:** Thursday, February 26, 2015 04:15 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ); Deltoral, Miguel; Poy, Thomas  
**Subject:** HIGH LEAD: FLINT Water testing Results

Thank you, Mike. These results are dated 2/18/15, so they're probably different results than the results Adam had, but they still have to be included in with compliance calculation of the 90<sup>th</sup> percentile. What dates are the earlier compliance samples?

Yes, the stagnation of the water would increase the lead levels, and I'm glad you're following up with the City to get the lead levels reduced for Mrs. Walters' home—which will hopefully be effective for her neighbors because they are also most likely being exposed to these high lead levels. Miguel reminded me this morning, there are no safe levels of lead in drinking water.

I talked with Miguel Del Toral about his knowledge on research on lead. He said that high levels of iron, usually bring high levels of lead. The large amount of black sediment at Mrs. Walters' home, is most likely particulate lead, Miguel said, where the lead actually bonds to the iron sediment. While the particulates of lead/iron are small, they're very highly concentrated with lead—up to 95% lead.

Miguel was wondering if Flint is feeding Phosphates. Flint must have Optimal Corrosion Control Treatment—is it Phosphates? Or is it pH/Alkalinity Adjustment? The reason he asks, is because systems using the pH/Alkalinity adjustment have problems with lead levels in the 100's or higher—and they have problems with random lead particulate matter in the distribution system. Miguel said that we all know that flushing regularly helps reduce the lead concentrations, but not immediately. The City can't just flush in advance of taking the compliance samples, they have to flush the lines on a regular schedule.

The problem with high lead issues, is that the water has so many different variables, that it's hard to pinpoint what is causing what problem where. From a public health perspective, can we assume that the high lead levels in Mrs. Walters' neighborhood are isolated to just her area? Or are they more widespread?

Please feel free to contact Miguel directly—312-886-5253; [Deltoral.miguel@epa.gov](mailto:Deltoral.miguel@epa.gov).

Jennifer

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**From:** Prysby, Mike (DEQ) [<mailto:PRYSBYM@michigan.gov>]

**Sent:** Thursday, February 26, 2015 10:25 AM

**To:** Crooks, Jennifer

**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ)

**Subject:** RE: HIGH LEAD: FLINT Water testing Results

Jennifer,

I recall Adam showing me a high lead/copper sample result (perhaps it was this one)....as part of the city's routine lead-copper monitoring. If so, it was a stagnated sample as part of the sampling protocol. Adam mentioned that all other samples were below the AL...and the city will not exceed the lead AL. I will confirm this. The city; however, needs to take further action to help address Ms. Walter's concern. The type of plumbing needs to be identified and sample tap location within the premise plumbing. They should offer to re-sample for PB after flushing the tap to demonstrate that flushing the tap will reduce the lead concentration. The city also needs to provide other lead-reduction strategies to Mrs. Walters.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

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**From:** Crooks, Jennifer [<mailto:crooks.jennifer@epa.gov>]

**Sent:** Thursday, February 26, 2015 10:53 AM

**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)

**Cc:** Poy, Thomas; Deltoral, Miguel

**Subject:** HIGH LEAD: FLINT Water testing Results

Hi, Steve and Mike. Thanks for talking with me yesterday, Steve, about the most recent TTHM results. We'll look forward to receiving them whenever you get them back from the lab.

However, the main purpose of my email is to alert you to the high lead levels reported to a citizen yesterday by Flint Water Dept. I have been discussing the water situation with LeeAnn Walters since January, and she has been talking with Mike Glasgow at the plant about the black sediment in her water. (HUGE KUDOs to MIKE!!) He did test it to find that the iron levels were greater than his test would go; GT 3.3. But, because the iron levels were so high, he suggested testing for lead and copper. WOW!!!! Did he find the LEAD! **104 ppb**. She has 2 children under the age of 3... Big worries here.

So, Steve, this goes back to what you and I were talking about yesterday. That the different chemistry water is leaching out contaminants from the insides of the biofilms inside the pipes. I think Lead is a good indication that other contaminants are also present in the tap water, that obviously were not present in the compliance samples taken at the plant. VOC/SOC and inorganics/metals would be good samples to start with to take at the tap. And since Ms. Walters' drinking water is showing the high lead levels, her tap water would be a good place to start, I think.

We also talked about Dr. Joan Rose from Michigan State being on the Flint Tech Advisory Committee—you also mentioned that someone from the Dept of Community Health was on the Committee. I'm thinking that Dr. Rose would want to dive further into this, since there's actual evidence that the water is leaching contaminants from the biofilms; or Dept of Community Health would want to get involved and look at this from an epidemiological perspective. (She and her family are also exhibiting the rashes when exposed to the water, and her daughter's hair is falling out in clumps.)

Maybe MSU could authorize the payment of the analyses for these samples? Or Dept of Community Health?

The citizen's name is:

LeeAnn Walters  
212 Browning Ave  
Flint, MI 48507  
616-212-6233  
[Lwalters313@gmail.com](mailto:Lwalters313@gmail.com)

Jennifer

**From:** Lea Moste [<mailto:lwalters313@gmail.com>]  
**Sent:** Thursday, February 26, 2015 9:08 AM  
**To:** Crooks, Jennifer  
**Subject:** Fwd: Re: Water testing Results

----- Forwarded message -----

From: "Michael Glasgow" <[mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com)>  
Date: Feb 26, 2015 7:55 AM  
Subject: Re: Water testing Results  
To: "Lea Moste" <[lwalters313@gmail.com](mailto:lwalters313@gmail.com)>  
Cc:  
Lee,

Here are your Lead & Copper Results. This number is very high, 104 ppb of lead. In the last few months over 100 samples have been tested and only 2 were over the 15 ppb regulatory limit, and the highest level I have seen is 37 ppb. I will pass this info to Mr. Croft so he is aware. I will send the sample I collected from your kitchen faucet today for a complete metals test (12 different metals), to see what the level is without letting the water stagnate over night. I'm hoping that value will be much, but we will have to see. Sorry for this news, but I wanted to let you know right away.

Mike

On Tue, Feb 24, 2015 at 1:50 PM, Michael Glasgow <[mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com)> wrote:

Lee,

I will bring a copy of last years annual report when I stop by tomorrow. The annual report from 2014 must be delivered to residents by July 1st of this year. I imagine we may have it complete by June.

Mike

On Fri, Feb 20, 2015 at 1:00 AM, Lea Moste <[lwalters313@gmail.com](mailto:lwalters313@gmail.com)> wrote:

Mike,

Thank you for the water reports and we already planned to see you on the 25th at 10:00am. I was wondering if you know who I need to talk to in the water plant to obtain the Annual Drinking Water Report from last year. According to the EPA website there is link to access but when you click on it, it cannot be accessed. Was also curious if there is an expected time frame for this years report due to the switch. If you can be of any assistance I would appreciate it.

Thank You

LeeAnne Walters

On Thu, Feb 19, 2015 at 12:47 PM, Michael Glasgow <[mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com)> wrote:

Lee & Dennis,

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**Rennaker, Joanne (DEQ)**

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**Sent:** Thursday, February 26, 2015 11:25 AM  
**To:** Crooks, Jennifer  
**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ)  
**Subject:** RE: HIGH LEAD: FLINT Water testing Results

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

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**To:** Crooks, Jennifer  
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**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ); Poy, Thomas; Schock, Michael; Porter, Andrea  
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- If there is a partial lead service line (lead connected to copper) you can get additional lead release due to galvanic corrosion.
- Leaded brasses and solder can also release particulate lead under certain circumstances.
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- If the lead service line was disturbed (water main repair/replacement, meter installation repair/replacement, service line leak repairs, etc.) you can have VERY high lead levels in the scale and sediment that is dislodged from the inside of lead service lines. Here in Chicago, during a partial lead service line replacement, we collected the scale and sediment that came into the home and we found 300,000+ ug/L lead in the scale; 125,000 ug/L Pb in the sediment. Very dangerous.
- Higher levels of PO<sub>4</sub> (3-4 mg/L Ortho) seem to reduce the amount of particulate Pb that is released in the absence of physical disturbances to the lead lines. Doesn't stop it entirely, but should generally reduce the occurrence. Caveat – Other water quality issues can change the chemical complexes that form on the pipe, so cleaner sources with more consistent WQ form more predictable scale complexes.

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 Regulations Manager  
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 77 West Jackson Blvd, (WG-15J)  
 Chicago, IL 60604  
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**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ); Poy, Thomas; Porter, Andrea  
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[schock.michael@epa.gov](mailto:schock.michael@epa.gov)  
 (513) 569-7412

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Thank You

LeeAnne Walters

On Thu, Feb 19, 2015 at 12:47 PM, Michael Glasgow <[mglasgow@cityofflint.com](mailto:mglasgow@cityofflint.com)> wrote:

Lee & Dennis,

Here is a list of test results from water sampled at your home over the last 2 weeks. I have sent in your lead and copper sample, and also a sample from the toilet tank for manganese. I should hopefully have results from this testing early next week. I'll plan on stopping over on Wednesday (the 25th) around 10 am again to give you these results & sample again.

Mike

**Rennaker, Joanne (DEQ)**

---

**From:** Datema, Maggie (DEQ)  
**Sent:** Thursday, December 04, 2014 9:26 AM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Thelen, Mary Beth (DEQ); Busch, Stephen (DEQ); Feuerstein, Heather (DEQ); Shaler, Karen (DEQ)  
**Subject:** Re: Hold Date for Flint Mtg. with Locals/Legislators?

That's my understanding as well.

On Dec 3, 2014, at 6:32 PM, "Shekter Smith, Liane (DEQ)" <[SHEKTERL@michigan.gov](mailto:SHEKTERL@michigan.gov)> wrote:

Correct.

Dan asked that we let him know when we will be prepared to issue the violation. It is my understanding that the plan will be for us/him/Maggie to contact the appropriate legislators the same day that we intend to send out the notice letter.

Liane

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Wednesday, December 03, 2014 6:14 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ); Datema, Maggie (DEQ); Feuerstein, Heather (DEQ); Shaler, Karen (DEQ)  
**Subject:** RE: Hold Date for Flint Mtg. with Locals/Legislators?

It is my understanding that the Director spoke with Liane and Maggie about the plan of action for this. I don't believe we are doing a meeting.  
 Is everyone all set on this and on the same page?

Just checking in to make sure I don't need to do anything at this point.

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](mailto:Thelenm2@michigan.gov)

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**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](mailto: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

**Rennaker, Joanne (DEQ)**

---

**From:** Butler, Sonya (DEQ)  
**Sent:** Thursday, October 01, 2015 8:35 AM  
**To:** Yelton, Lori (MDARD)  
**Cc:** Devereaux, Tracy Jo (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Busch, Stephen (DEQ)  
**Subject:** RE: IMPORTANT - Flint Community Schools and Contaminated Water (LEAD)

Ms. Yelton

I am not aware of any program to provide funding for bottled water. DEQ does have a Drinking Water Revolving Fund program that provides low interest infrastructure loans to communities to address public health/water quality issues. Unfortunately, the program does not provide bottled water.

**From:** Yelton, Lori (MDARD)  
**Sent:** Wednesday, September 30, 2015 10:28 AM  
**To:** Devereaux, Tracy Jo (DEQ)  
**Subject:** FW: IMPORTANT - Flint Community Schools and Contaminated Water (LEAD)  
**Importance:** High

Hi Tracy Jo,

I have received a request from MDE Nutrition Support Services regarding funding for bottled water for schools in Flint. Can you direct me to the correct person or tell me if DEQ has any funding for Flint schools and bottled water? Please see thread of messages below.

Thank you for this consideration,

*Lori Yelton, MS, RDN.*  
[yeltonl@michigan.gov](mailto:yeltonl@michigan.gov)  
 517-420-3249

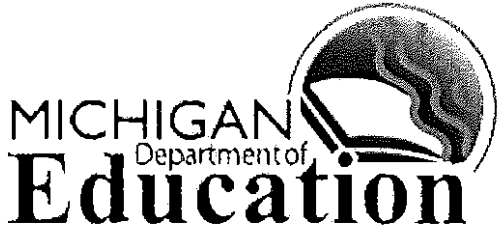
*Don't forget to mark your calendars for the Farmers Market at the Capitol, July 30, August 27 and September 24*

**From:** Moss, Marla (MDE)  
**Sent:** Wednesday, September 30, 2015 8:18 AM  
**To:** Yelton, Lori (MDARD) <[YeltonL@michigan.gov](mailto:YeltonL@michigan.gov)>  
**Cc:** Golzynski, Diane (MDE) <[GolzynskiD@michigan.gov](mailto:GolzynskiD@michigan.gov)>  
**Subject:** FW: IMPORTANT - Flint Community Schools and Contaminated Water (LEAD)  
**Importance:** High

See below – any ideas for Flint schools? Funding streams...etc? Any help appreciated.

Marla J. Moss, Director  
 Office of School Support Services  
 Phone – 517-373-2313  
[Mossm1@michigan.gov](mailto:Mossm1@michigan.gov)

*Customer Service is a priority at the Michigan Department of Education – helping Michigan schools, families, and communities improve the achievement and well-being of ALL our children.*



**From:** Fletcher, Vista - FNS [<mailto:Vista.Fletcher@fns.usda.gov>]  
**Sent:** Wednesday, September 30, 2015 7:52 AM  
**To:** Moss, Marla (MDE) <[MossM1@michigan.gov](mailto:MossM1@michigan.gov)>  
**Cc:** Guerrant, Kyle (MDE) <[GuerrantK@michigan.gov](mailto:GuerrantK@michigan.gov)>; Golzynski, Diane (MDE) <[GolzynskiD@michigan.gov](mailto:GolzynskiD@michigan.gov)>; Dixon, Janice (MDE) <[DixonJ5@michigan.gov](mailto:DixonJ5@michigan.gov)>; Houseman, Jennifer (MDE) <[HousemanJ1@michigan.gov](mailto:HousemanJ1@michigan.gov)>; Mikkelsen, Julie - FNS <[JULIE.MIKKELSON@fns.usda.gov](mailto:JULIE.MIKKELSON@fns.usda.gov)>; Thompson, Eleanor - FNS <[Eleanor.Thompson@fns.usda.gov](mailto:Eleanor.Thompson@fns.usda.gov)>  
**Subject:** RE: IMPORTANT - Flint Community Schools and Contaminated Water (LEAD)

Hi Marla,

We will have some discussions and do something checking and will get back to you today on this.

Thanks,  
 VSF

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**From:** Moss, Marla (MDE) [<mailto:MossM1@michigan.gov>]  
**Sent:** Wednesday, September 30, 2015 6:49 AM  
**To:** Mikkelsen, Julie - FNS; Fletcher, Vista - FNS; Thompson, Eleanor - FNS  
**Cc:** Guerrant, Kyle (MDE); Golzynski, Diane (MDE); Dixon, Janice (MDE); Houseman, Jennifer (MDE)  
**Subject:** IMPORTANT - Flint Community Schools and Contaminated Water (LEAD)  
**Importance:** High

Julie/Vista/Eleanor – we have been asked if our SAE dollars could be used to purchase water for Flint Community Schools. I know that serving water to students is a requirement of the HHFKA. See the link below -  
[http://www.mlive.com/news/flint/index.ssf/2015/09/flint\\_superintendent\\_looking\\_t.html](http://www.mlive.com/news/flint/index.ssf/2015/09/flint_superintendent_looking_t.html)

Or, do you know of any other existing funds within USDA that we could tap?

I'm looking for a quick reply - any information is appreciated. Thanks.

Marla J. Moss, Director  
 Office of School Support Services  
 Phone – 517-373-2313  
[Mossm1@michigan.gov](mailto:Mossm1@michigan.gov)

*Customer Service is a priority at the Michigan Department of Education – helping Michigan schools, families, and communities improve the achievement and well-being of ALL our children.*



**Rennaker, Joanne (DEQ)**

---

**From:** Henry, James <jhenry@gchd.us>  
**Sent:** Thursday, March 19, 2015 12:15 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Valacak, Mark; Cupal, Suzanne  
**Subject:** RE: Information Request and Documentation

Hello Mr. Busch,

Thanks for your response. I'm looking forward to working with your office moving forward. Based upon my experiences with this investigation, I think it is necessary for my communications to be candid and followed up in writing whenever possible. Our goal is to successfully conduct this investigation in efforts to better protect the public.

I agree there are ambiguities written in the FOIA request. GCHD does not have municipal water system expertise and we are continuously learning about the processes. The FOIA request is specific enough that we should have received a timely response from the City of Flint. Also, it is addressed to the City and I apologize if there were misunderstandings regarding the intended recipient.

There have not been any conclusions regarding the source of illnesses. Our team is gathering information and we suspect there may be several sources. It has been made clear that the Flint municipal water system is in compliance with the Safe Drinking Water Act. It seems reasonable that your office would be involved regardless if a potential health risk from municipal water is related to consumption, inhalation or dermal exposure. Perhaps the legislation should be revisited to better address risks.

As you mentioned, we had communications with your office in October 2014, regarding Legionella, but I also had three telephone conversations with Mr. Michael Prysby, from your office between January 21, 2015 and January 23, 2015. These conversations occurred around the same time that your office participated with the TTHM presentation in Flint. I "explicitly explained" the details of the Legionella concerns and the possible associations with the Flint municipal water system and I specifically requested to meet with your office for further discussions.

Mr. Prysby informed me that the concerns were discussed with you. I was informed there was no reason to meet because the municipal water system is in compliance with the Safe Drinking Water Act. Other than the timeframes written in your email, you are correct, I did not contact your office again until the email, dated March, 10, 2015.

GCHD has been working closely with MDCH and has consulted with CDC on several occasions regarding the epidemiological investigation. Also, we have been working with Legionella and municipal water experts, and recently with the USEPA. Based upon these discussions we have been informed that it is likely that a small amount of Legionella will survive the water treatment process at the plant and enter into the distribution system.

Our team is in the process of developing plans, which may include sampling locations within the distribution system and comparing environmental and clinical isolates. We recognize potential social, political and economic impacts regarding this investigation and need to be prepared for all outcomes. Hopefully, your office, the regulatory agency, will be available for assistance.

If a representative from your office is available to meet next week, please respond with some dates and times. I think it would be appropriate for the City to attend meetings and I will contact Mr. Croft, Flint DPW Director, after I receive a response from your office.

Thank you

Jim

Jim Henry  
 Jim Henry RS, MBA  
 Environmental Health Supervisor  
 Genesee County Health Department [www.gchd.us](http://www.gchd.us)  
 630 S. Saginaw St., Suite 4  
 Flint, MI 48502-1540  
 Phone (810) 257-3618 Fax (810) 257-3125  
 E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)



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For a copy of the Health Department's Notice of Information Practices, contact the Health Department or visit the Health Department's website at <http://www.gchd.us/>

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**From:** Busch, Stephen (DEQ) [<mailto:BUSCHS@michigan.gov>]  
**Sent:** Friday, March 13, 2015 3:47 PM  
**To:** Henry, James  
**Cc:** Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Information Request and Documentation

Mr. Henry,

The January 27, 2015, FOIA request you provided was directed to the City of Flint, not the DEQ. The DEQ has no record of a FOIA request from your office for such information. It is our understanding that the City has responded to your FOIA request, has helped you adequately redefine your request within the City's scope of public record to address such ambiguities as "any additional areas of concern", and provided you with additional information beyond the scope of your request.

The DEQ fully recognizes the public health threat posed to individuals that contract Legionnaires' Disease with the understanding that the disease is not contracted by ingestion of potable water and therefore not regulated under the federal Safe Drinking Water Act. Your email below claims that you have explicitly explained the situation to our Department. However, since contacting our office early last October to indicate a rise in cases, we have not received any further information regarding your epidemiological investigation into this matter.

Further, conclusions that legionella is coming from the public water system without the presentation of any substantiating evidence from your epidemiologic investigation appears premature and prejudice toward that end.

It is highly unlikely that legionella would be present in treated water coming from the City of Flint water treatment plant given the treatment plant's use of ozone along with complete treatment and chlorine disinfect contact time to comply with federal surface water treatment rules for potable water. Detections of total coliform or heterotrophic bacteria in the City's public water distribution system indicate an environment where bacterial growth may be supported. However, there is no direct correlation that can be made to the presence of legionella. While total organic carbon levels in potable water may serve as a food source for bacteria growth in private plumbing system, water temperatures in the City's distribution system are below legionella growth range, and chlorine residual levels would also limit such growth.

Our office agrees that water main breaks, water leaks, and system repairs are possible vectors for legionella to enter the public water system. These should be investigated as part of your epidemiology. DEQ staff can be made available to assist GCHD and the City regarding such matters, but to date no request by GCHD for any such meeting has been received, let alone declined as alleged in your email.

If GCHD is seeking assistance to complete its epidemiological investigation regarding this matter, such resource requests should be directed to the Michigan Department of Community Health. Our Office agrees that a multi-agency partnership would be beneficial to move forward and develop a unified response. In that respect, if our Office can be of any further assistance you may contact me directly.

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

**From:** "Henry, James" <jhenry@gchd.us>  
**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>  
**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>  
**Subject:** Information Request and Documentation

Hello everyone,

The Genesee County Health Department has made several written and verbal requests for specific information since October, 2014, including a Freedom of Information Act Request on January 27, 2015. The information still has not been received and the city's lack of cooperation continues to prevent my office from performing our responsibilities.

The Genesee County Health Department has the responsibility to conduct illness investigations and consider all potential sources, this is not optional. In 2014, Genesee County experienced a significant increase of confirmed Legionella illnesses relative to previous years. Legionella can be a deadly, waterborne disease that typically affects the respiratory system.

The increase of the illnesses closely corresponds with the timeframe of the switch to Flint River water. The majority of the cases reside or have an association with the city. Also, McLaren Hospital identified and mitigated Legionella in their water system. This is rather glaring information and it needs to be looked into now, prior to the warmer summer months when Legionella is at its peak and we are potentially faced with a crisis.

This situation has been explicitly explained to MDEQ and many of the city's officials. I want to make sure, in writing that there are no misunderstandings regarding this significant and urgent public health issue. The Trihalomethane issues "pale in comparison" to the potential public health risks of Legionella.

I am submitting the attached FOIA request again and requesting that the legal obligations of the request are met. If the information is not available, please let me know. In the past, I have requested to meet with the water plant staff and MDEQ regarding Legionella concerns. I did not receive a response from the water plant staff and MDEQ declined. I think it is in the best interest for all stakeholders that we meet and discuss the issues.

Respectfully,

Jim

**Jim Henry**

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

**Rennaker, Joanne (DEQ)**

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**From:** Miller, Corinne (DCH)  
**Sent:** Thursday, March 12, 2015 3:02 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Information Request and Documentation

Thank you Liane.

I asked staff for a status update after we spoke.

Corinne Miller, PhD  
 State Epidemiologist and Director  
 Bureau of Disease Control, Prevention and Epidemiology  
 Michigan Department of Community Health  
 201 Townsend Street  
 Lansing, Michigan 48913  
 Telephone: 517-335-8900  
 Fax: 517-335-8263

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Thursday, March 12, 2015 2:48 PM  
**To:** Miller, Corinne (DCH)  
**Cc:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** FW: Information Request and Documentation

Corinne –

This is the e-mail I mentioned this morning.

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

Begin forwarded message:

**From:** "Henry, James" <jhenry@gchd.us>  
**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>,

Dayne Walling <[dwalling@cityofflint.com](mailto:dwalling@cityofflint.com)>

Cc: "Valacak, Mark" <[MVALACAK@gchd.us](mailto:MVALACAK@gchd.us)>, "Cupal, Suzanne" <[scupal@gchd.us](mailto:scupal@gchd.us)>, "Hasan, Shurooq" <[shasan@gchd.us](mailto:shasan@gchd.us)>, "Childs, Bonnie" <[BCHILDS@gchd.us](mailto:BCHILDS@gchd.us)>, "Hallwood, Dawn" <[dhallwood@gchd.us](mailto:dhallwood@gchd.us)>, "Johnson, M.D., Gary" <[GJOHNSON@gchd.us](mailto:GJOHNSON@gchd.us)>

**Subject: Information Request and Documentation**

Hello everyone,

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This situation has been explicitly explained to MDEQ and many of the city's officials. I want to make sure, in writing that there are no misunderstandings regarding this significant and urgent public health issue. The Trihalomethane issues "pale in comparison" to the potential public health risks of Legionella.

I am submitting the attached FOIA request again and requesting that the legal obligations of the request are met. If the information is not available, please let me know. In the past, I have requested to meet with the water plant staff and MDEQ regarding Legionella concerns. I did not receive a response from the water plant staff and MDEQ declined. I think it is in the best interest for all stakeholders that we meet and discuss the issues.

Respectfully,

Jim

Jim Henry

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

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Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

**Rennaker, Joanne (DEQ)**

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**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, March 11, 2015 7:33 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: Information Request and Documentation

Liane,

Steve's initial response is below.

As I see it, we need a plan of action fast.

- 1) Inform DEQ management, including legislative and media liaisons; suggest additional communication with DCH
- 2) Prepare response to Genesee County email – did anyone in ODWMA or DEQ have any contact with Genesee County about Legionella and if so, when and what? Was anyone in ODWMA or DEQ requested to meet with Genesee County to discuss Legionella and if so, when, and did they “decline” to meet?
- 3) Contact Flint to alert them of County's concerns and determine their response to the January 27<sup>th</sup> FOIA request.
- 4) Arrange for a meeting with Genesee County and other parties as deemed appropriate by DEQ management – DCH, Flint, Governor's Office, etc.; Establish a “Lead” agency but also develop a team approach to move forward and determine an appropriate, common message as well as when such information should be shared and by whom. Determine how long has Genesee County, DCH, and Flint been aware of the increased cases of Legionella and what the message should be about delays in public notification.
- 5) Determine additional steps – possible monitoring protocols, premise plumbing treatment options, public precautions if any, etc.; Consider possible CDC assistance.
- 6) Determine if EPA will be willing to share their draft Legionella guidance document being developed by a workgroup consisting of EPA, the States of Ohio, Minnesota, Pennsylvania, Washington, Nevada, Missouri and Nebraska, and CDC. The guidance will characterize the effectiveness of treatment technologies to address Legionella and address relevant regulatory implications. The primary implication is that individual customers that install “secondary” treatment systems to remove, reduce or prevent Legionella in their premise plumbing (such as hospitals are already doing) become by federal definition, public water systems required to comply with all applicable requirements of the Safe Drinking Water Act. The guidance has been delayed by internal reviews at EPA, but they are hoping to be able to have a final document in summer of 2015.

That's all I can think of at this point. Let me know what you think.

**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, March 11, 2015 9:37 AM  
**To:** Prysby, Mike (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Information Request and Documentation

Mike,

I am not aware of a meeting request from Jim Henry or the Genesee County Health Department as indicated in his email below. Did you receive any such request?

The FOIA is specifically directed to the City of Flint not the DEQ. If requested some of the information asked for regarding Total Coliform and E.Coli compliance sampling could be provided, but there may also be additional construction repair sampling data.

We can respond to Jim when you get back in, but at this point while the change in source may have created water quality conditions that could provide additional organic nutrient source to support legionella growth, there is no evidence or confirmation of legionella coming directly from the Water Treatment Plant or in the community water supply distribution system at this time.

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

**From:** Prysby, Mike (DEQ)  
**Sent:** Wednesday, March 11, 2015 7:35 AM  
**To:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** Fwd: Information Request and Documentation

I am out today and will return tomorrow. Having trouble getting the attachment to open on my phone...but since it appears to be a FOIA regarding Legionella, I felt it is prudent to get this message to you. I will be available tomorrow to discuss or compile any info that we have.

Sent from my iPhone

Begin forwarded message:

**From:** "Henry, James" <jhenry@gchd.us>  
**Date:** March 10, 2015 at 6:40:17 PM EDT  
**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>  
**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>  
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Respectfully,

Jim

Jim Henry

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

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Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Thursday, March 12, 2015 7:47 AM  
**To:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Information Request and Documentation

Steve, Richard,

I did not receive a meeting request from Jim or the LHD concerning this matter.

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

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, March 11, 2015 9:37 AM  
**To:** Prysby, Mike (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Information Request and Documentation

Mike,

I am not aware of a meeting request from Jim Henry or the Genesee County Health Department as indicated in his email below. Did you receive any such request?

The FOIA is specifically directed to the City of Flint not the DEQ. If requested some of the information asked for regarding Total Coliform and E.Coli compliance sampling could be provided, but there may also be additional construction repair sampling data.

We can respond to Jim when you get back in, but at this point while the change in source may have created water quality conditions that could provide additional organic nutrient source to support legionella growth, there is no evidence or confirmation of legionella coming directly from the Water Treatment Plant or in the community water supply distribution system at this time.

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

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Wednesday, March 11, 2015 7:35 AM  
**To:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** Fwd: Information Request and Documentation

I am out today and will return tomorrow. Having trouble getting the attachment to open on my phone...but since it appears to be a FOIA regarding Legionella, I felt it is prudent to get this message to you. I will be

available tomorrow to discuss or compile any info that we have.

Sent from my iPhone

Begin forwarded message:

**From:** "Henry, James" <jhenry@gchd.us>

**Date:** March 10, 2015 at 6:40:17 PM EDT

**To:** Howard Croft <hcroft@cityofflint.com>, "Mike Prysby (DEQ)" <prysbym@michigan.gov>, Elizabeth Murphy <emurphy@cityofflint.com>, "Natasha Henderson" <nhenderson@cityofflint.com>, Jerry Ambrose <gambrose49@gmail.com>, Dayne Walling <dwalling@cityofflint.com>

**Cc:** "Valacak, Mark" <MVALACAK@gchd.us>, "Cupal, Suzanne" <scupal@gchd.us>, "Hasan, Shurooq" <shasan@gchd.us>, "Childs, Bonnie" <BCHILDS@gchd.us>, "Hallwood, Dawn" <dhallwood@gchd.us>, "Johnson, M.D., Gary" <GJOHNSON@gchd.us>

**Subject:** Information Request and Documentation

Hello everyone,

The Genesee County Health Department has made several written and verbal requests for specific information since October, 2014, including a Freedom of Information Act Request on January 27, 2015. The information still has not been received and the city's lack of cooperation continues to prevent my office from performing our responsibilities.

The Genesee County Health Department has the responsibility to conduct illness investigations and consider all potential sources, this is not optional. In 2014, Genesee County experienced a significant increase of confirmed Legionella illnesses relative to previous years. Legionella can be a deadly, waterborne disease that typically affects the respiratory system.

The increase of the illnesses closely corresponds with the timeframe of the switch to Flint River water. The majority of the cases reside or have an association with the city. Also, McLaren Hospital identified and mitigated Legionella in their water system. This is rather glaring information and it needs to be looked into now, prior to the warmer summer months when Legionella is at its peak and we are potentially faced with a crisis.

This situation has been explicitly explained to MDEQ and many of the city's officials. I want to make sure, in writing that there are no misunderstandings regarding this significant and urgent public health issue. The Trihalomethane issues "pale in comparison" to the potential public health risks of Legionella.

I am submitting the attached FOIA request again and requesting that the legal obligations of the request are met. If the information is not available, please let me know. In the past, I have requested to meet with the water plant staff and MDEQ regarding Legionella concerns. I did not receive a response from the water plant staff and MDEQ declined. I think it is in the best interest for all stakeholders that we meet and discuss the issues.

Respectfully,

Jim

Jim Henry

Jim Henry RS, MBA

Environmental Health Supervisor

Genesee County Health Department [www.gchd.us](http://www.gchd.us)

630 S. Saginaw St., Suite 4

Flint, MI 48502-1540

Phone (810) 257-3618 Fax (810) 257-3125

E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)

**Rennaker, Joanne (DEQ)**

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**From:** Brent Wright <bwright@cityofflint.com>  
**Sent:** Thursday, November 05, 2015 3:11 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Michael Glasgow; Howard Croft (hcroft@cityofflint.com); Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ); Natasha Henderson  
**Subject:** Re: Installation of Corrosion Control Treatment

Mike,

We received the permit in the mail today. I will start placing orders for the equipment and the staff at the plant will start on the piping portion of the two systems on Monday.

Thank you

On Wed, Nov 4, 2015 at 1:13 PM, Brent Wright <bwright@cityofflint.com> wrote:  
Mike,

We still have not received the permit from the DEQ. Do you know when it was mailed?

Brent

On Wed, Nov 4, 2015 at 12:55 PM, Prysby, Mike (DEQ) <PRYSBYM@michigan.gov> wrote:

Michael,

Please notify our department regarding the anticipated timeframe to install the corrosion control treatment system at the water treatment plant. The timeframe should take into account estimated time to receive the chemical feed pumps, storage equipment, and the orthophosphate compound. Coordination of the contractor to install the equipment also needs to be included. If there are any delays with the installation of the corrosion control treatment system, please notify us as soon as possible. Finally, please inform us when the corrosion control treatment system is installed. If this occurs by next Monday, I may take the opportunity to conduct an inspection prior to our 12pm meeting.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

--

**Brent Wright**  
**Water Plant Supervisor**  
**City of Flint**  
**4500 N. Dort Hwy.**  
**Flint, MI. 48505**  
**Ph: 810.787.6537 ext. 3510**  
**Fx: 810.787.3710**

--

**Brent Wright**  
**Water Plant Supervisor**  
**City of Flint**  
**4500 N. Dort Hwy.**  
**Flint, MI. 48505**  
**Ph: 810.787.6537 ext. 3510**  
**Fx: 810.787.3710**

**Rennaker, Joanne (DEQ)**

---

**From:** Brent Wright <bwright@cityofflint.com>  
**Sent:** Wednesday, November 04, 2015 1:13 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Michael Glasgow; Howard Croft (hcroft@cityofflint.com); Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** Re: Installation of Corrosion Control Treatment

Mike,

We still have not received the permit from the DEQ. Do you know when it was mailed?

Brent

On Wed, Nov 4, 2015 at 12:55 PM, Prysby, Mike (DEQ) <[PRYSBYM@michigan.gov](mailto:PRYSBYM@michigan.gov)> wrote:

Michael,

Please notify our department regarding the anticipated timeframe to install the corrosion control treatment system at the water treatment plant. The timeframe should take into account estimated time to receive the chemical feed pumps, storage equipment, and the orthophosphate compound. Coordination of the contractor to install the equipment also needs to be included. If there any delays with the installation of the corrosion control treatment system, please notify us as soon as possible. Finally, please inform us when the corrosion control treatment system is installed. If this occurs by next Monday, I may take the opportunity to conduct an inspection prior to our 12pm meeting.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

--

**Brent Wright**  
**Water Plant Supervisor**  
**City of Flint**  
**4500 N. Dort Hwy.**  
**Flint, MI. 48505**  
**Ph: 810.787.6537 ext. 3510**  
**Fx: 810.787.3710**

**Rennaker, Joanne (DEQ)**

---

**From:** Chastity Pratt <cpratt@bridgemi.com>  
**Sent:** Monday, January 26, 2015 1:31 PM  
**To:** Busch, Stephen (DEQ)  
**Subject:** Re: interview for article on Flint drinking water

Hi, Steve,

Thank you for the detailed response! I'll circle back around to you if we have further questions.

On Mon, Jan 26, 2015 at 1:06 PM, Busch, Stephen (DEQ) <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)> wrote:

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](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](http://www.bridgemi.com)**

C: 313-310-7867

--

Chastity Pratt Dawsey

Reporter

Bridge Magazine/The Center for Michigan

28 W. Adams Suite 330, Detroit, MI 48226

**[www.bridgemi.com](http://www.bridgemi.com)**

C: 313-310-7867

**Rennaker, Joanne (DEQ)**

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**From:** Donaldson, Kristina (DEQ)  
**Sent:** Thursday, April 18, 2013 5:34 PM  
**To:** Busch, Stephen (DEQ); Sygo, Jim (DEQ); Wyant, Dan (DEQ); Creal, William (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: KWA and City of Flint  
**Attachments:** Doc2013\_0417 DWSD Director Makes Statement on Flint's Decision.pdf

Fyi - Attached is a press release I received this morning from DWSD regarding the Flint decision.

Thanks,

Kris Donaldson, P.E.  
 District Supervisor  
 Office of Drinking Water & Municipal Assistance Michigan Department of Environmental Quality  
 27700 Donald Court  
 Warren, MI 48092  
 ph. 586-753-3759  
 fax. 586-753-3831

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**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, April 18, 2013 11:58 AM  
**To:** Donaldson, Kristina (DEQ)  
**Subject:** Fwd: KWA and City of Flint

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

Sent from my iPhone

Begin forwarded message:

**From:** "Busch, Stephen (DEQ)" <BUSCHS@michigan.gov<mailto:BUSCHS@michigan.gov>>  
**Date:** April 18, 2013, 11:48:03 AM EDT  
**To:** "Ms. Kristina Donaldson P.E." <donaIdkm@michigan.gov<mailto:donaIdkm@michigan.gov>>  
**Cc:** "Shekter Smith, Liane (DEQ)" <SHEKTERL@michigan.gov<mailto:SHEKTERL@michigan.gov>>  
**Subject:** Fwd: KWA and City of Flint

Kris,

As I mentioned on the phone the director would like you to be available via conference call as necessary to answer any DWSD related questions.

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

517-643-2314

Sent from my iPhone

Begin forwarded message:

From: "Thelen, Mary Beth (DEQ)" <THELENM2@michigan.gov<mailto:THELENM2@michigan.gov>>  
 Date: April 18, 2013, 8:21:02 AM EDT  
 To: "Busch, Stephen (DEQ)" <BUSCHS@michigan.gov<mailto:BUSCHS@michigan.gov>>  
 Cc: "Shekter Smith, Liane (DEQ)" <SHEKTERL@michigan.gov<mailto:SHEKTERL@michigan.gov>>, "Willard, Veronica (DEQ)" <WILLARDV@michigan.gov<mailto:WILLARDV@michigan.gov>>, "Thelen, Mary Beth (DEQ)" <THELENM2@michigan.gov<mailto:THELENM2@michigan.gov>>  
 Subject: RE: KWA and City of Flint

Hi Stephen,

I received word last night the Governor has called a meeting on Friday, April 19, 3:00-4:30 at the Detroit Cadillac Place Office. Director has asked that you attend with him. He will also have Bill Creal attend regarding the stormwater/wastewater issues. You may ride with the Director and Bill Creal. At this time, they plan to leave Lansing at 1:00.

Please give me a call after 10:30 today to discuss if this is a problem. I am going downstairs with the Director shortly for his Earth Day kickoff.

Hopefully, you can make this work for your schedule.

Thank you.

Mary Beth

Mary Beth Thelen  
 Executive Management Assistant to the Director Department of Environmental Quality  
 Thelenm2@michigan.gov<mailto:Thelenm2@michigan.gov>  
 517-373-7917 or 517-241-7390

From: Busch, Stephen (DEQ)  
 Sent: Wednesday, April 17, 2013 9:51 AM  
 To: Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ); Thelen, Mary Beth (DEQ)  
 Cc: Shaler, Karen (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ)  
 Subject: RE: KWA and City of Flint

Director Wyant, Deputy Director Sygo, and Liane,

A response at this point may be moot as Flint and Genesee Co. already held a press conference yesterday rejecting the DWSD offer.

It is also unclear whether DWSD provided its offer directly to Flint and Genesee Co. by the deadline in Treasurer Dillon's letter. However, Flint and Genesee Co. still took the offer under consideration.

Our office concurs with both Flint and Genesee Co. that the offers provided by DWSD were incomplete.

Of the two scenarios provided by DWSD it appeared that only Scenario 2 was listed as potentially being more cost effective. However, this scenario did not address the following:

1. The DWSD scenarios are based on 40 MGD of service capacity. However, the KWA project is providing 60 MGD of initial capacity with potential expansion to 75 MGD in the future. Therefore, in order for a more direct comparison the DWSD scenario would need to increase capacity to 60 MGD, which would increase fixed rate commodity costs as well as the capital costs for the Huron Plant that DWSD was planning to allocate to Flint and Genesee Co., presumably by as much as 50%.
2. DWSD proposals cover a 30 year period to 2042, but fail to recognize that after this period bond payments for the KWA project will be complete and result in a significant reduction in costs for the KWA option.
3. While DWSD indicates that Flint and Genesee Co. would be given "broadened representation", it remains unclear exactly what this means in terms of actual control in the decision making process.
4. This scenario continues to rely on a single transmission system and would require the City of Flint to maintain its WTP for emergency purposes and these costs do not appear to be included. In addition, use of the Flint WTP as an emergency backup would leave Genesee Co. without an adequate backup supply to meet their 30 year needs.

Again, without DWSD providing the specific details of these proposals, it is difficult to provide a true comparative analysis, and as such Flint and Genesee Co. appear to be justified in their rejection of these proposals.

Please let me know if you require any further response.

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

From: Sygo, Jim (DEQ)  
Sent: Tuesday, April 16, 2013 9:59 AM  
To: Busch, Stephen (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)  
Cc: Shekter Smith, Liane (DEQ); Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ)  
Subject: FW: KWA and City of Flint

Steve, Mike and Richard,

Please take a look at DWSD's last best offer to the City of Flint and provide your collective perspective to the Director through Liane by the end of the week. Copy me in as well. I'll be out of the office but would like to know if you think this is worth considering.

Thank you for your expedited review.

From: Wyant, Dan (DEQ)  
Sent: Tuesday, April 16, 2013 6:52 AM

To: Sygo, Jim (DEQ)  
Subject: FW: KWA and City of Flint

Jim,

Liane is out of the office today, Can you forward this directly to her staff that worked on this with us.

Dan Wyant, Director  
Department of Environmental Quality  
517-373-7917  
From: Wyant, Dan (DEQ)  
Sent: Tuesday, April 16, 2013 6:51 AM  
To: Sygo, Jim (DEQ); Creal, William (DEQ); Shekter Smith, Liane (DEQ)  
Cc: Anderson, Madhu (DEQ)  
Subject: FW: KWA and City of Flint

Bill and Liane,

Can you have your staff's take a quick look at this and let me know today if they think this changes their thoughts and comments to me last week.

Dan Wyant, Director  
Department of Environmental Quality  
517-373-7917  
From: Dillon, Andy (Treasury)  
Sent: Monday, April 15, 2013 7:55 PM  
To: Wyant, Dan (DEQ); Dennis Muchmore; Roberts, John (GOV)  
Cc: Stibitz, Brom (Treasury); Saxton, Thomas (Treasury)  
Subject: Fwd: KWA and City of Flint

FYI

Dan, any thoughts re the attached?

We gave dwsd until today to put best offer on table. Flint is to get back to us tmrw. I want to make sure their expected rejection is made in good faith.

Sent from my iPad

Begin forwarded message  
From: "Debra Ragland" <dragland@dwsd.org<mailto:dragland@dwsd.org>>  
To: "ekurtz@cityofflint.com<mailto:ekurtz@cityofflint.com>" <ekurtz@cityofflint.com<mailto:ekurtz@cityofflint.com>>  
Cc: "jwright@co.genesee.mi.us<mailto:jwright@co.genesee.mi.us>"  
<jwright@co.genesee.mi.us<mailto:jwright@co.genesee.mi.us>>, "Dillon, Andy (Treasury)"  
<DillonA2@michigan.gov<mailto:DillonA2@michigan.gov>>, "James Fausone"  
<fausone@dwsd.org<mailto:fausone@dwsd.org>>, "orrk@detroitmi.gov<mailto:orrk@detroitmi.gov>"  
<orrk@detroitmi.gov<mailto:orrk@detroitmi.gov>>, "Sue McCormick"  
<mccormick@dwsd.org<mailto:mccormick@dwsd.org>>  
Subject: KWA and City of Flint  
Please see attached on behalf of Sue F. McCormick.

Faxed copy forwarded to Mayor Dayne Walling and Jeff Wright.



**FOR IMMEDIATE RELEASE**

**Date: Wednesday, April 17, 2013**

**Media Contact:**

**Mary Alfonso, DWSD (313) 964-9477**

## **DWSD DIRECTOR MAKES STATEMENT ON FLINT'S DECISION**

*Statement by Director Sue F. McCormick, prepared by Bill Johnson for DWSD*

On April 15, 2013, the Detroit Water and Sewerage (DWSD) presented a good faith, comprehensive proposal to the City of Flint, the Genesee County Drain Commission and the Karegnondi Water Authority (KWA).

The essential elements of the proposal were that it offered Flint/Genesee an opportunity to reserve capacity in the Lake Huron Treatment Plant and accept assignment of capital and operations costs from a specific facility under the terms of a Public/Partnership. The calculated savings included an immediate 50-percent reduction in water unit costs, and approximately \$800 million in total savings over the term of the proposed 30-year contract.

It was disappointing that one day after our submission, Genesee County Drain Commissioner Jeff Wright and Ed Kurtz, Flint's emergency manager, summarily rejected our offer. We had pinned our hope on having the opportunity to have a meaningful discussion about the merits of our plan and the long-term benefits to Flint and its customers. Unfortunately, we were not afforded that opportunity this week or at any time during recent months.

We have subsequently advised Flint that the existing agreement we have with the city to provide water services is hereby terminated effectively one year from today's date (April 17, 2014).

We remain fully committed to holding harmless the remaining customers served by the DWSD system, up to and including all available legal options to recoup the "stranded costs" in the existing 25-mile pipeline, the Imlay Booster Station, and other facilities that primarily serve Flint and Genesee County.

We also remain open to engage Genesee County officials on any alternatives that would be mutually beneficial to DWSD and Flint going forward.

*Please direct all media inquiries to Bill Johnson at (248) 840-1095.*

# # #

**Rennaker, Joanne (DEQ)**

---

**From:** Sygo, Jim (DEQ)  
**Sent:** Wednesday, April 17, 2013 2:10 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ)  
**Subject:** Re: KWA and City of Flint

Thanks Steve , this was very helpful

Sent from my iPhone

On Apr 17, 2013, at 9:51 AM, "Busch, Stephen (DEQ)" <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)> wrote:

Director Wyant, Deputy Director Sygo, and Liane,

A response at this point may be moot as Flint and Genesee Co. already held a press conference yesterday rejecting the DWSD offer.

It is also unclear whether DWSD provided its offer directly to Flint and Genesee Co. by the deadline in Treasurer Dillon's letter. However, Flint and Genesee Co. still took the offer under consideration.

Our office concurs with both Flint and Genesee Co. that the offers provided by DWSD were incomplete.

Of the two scenarios provided by DWSD it appeared that only Scenario 2 was listed as potentially being more cost effective. However, this scenario did not address the following:

1. The DWSD scenarios are based on 40 MGD of service capacity. However, the KWA project is providing 60 MGD of initial capacity with potential expansion to 75 MGD in the future. Therefore, in order for a more direct comparison the DWSD scenario would need to increase capacity to 60 MGD, which would increase fixed rate commodity costs as well as the capital costs for the Huron Plant that DWSD was planning to allocate to Flint and Genesee Co., presumably by as much as 50%.
2. DWSD proposals cover a 30 year period to 2042, but fail to recognize that after this period bond payments for the KWA project will be complete and result in a significant reduction in costs for the KWA option.
3. While DWSD indicates that Flint and Genesee Co. would be given "broadened representation", it remains unclear exactly what this means in terms of actual control in the decision making process.
4. This scenario continues to rely on a single transmission system and would require the City of Flint to maintain its WTP for emergency purposes and these costs do not appear to be included. In addition, use of the Flint WTP as an emergency backup would leave Genesee Co. without an adequate backup supply to meet their 30 year needs.

Again, without DWSD providing the specific details of these proposals, it is difficult to provide a true comparative analysis, and as such Flint and Genesee Co. appear to be justified in their rejection of these proposals.

Please let me know if you require any further response.

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

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**From:** Sygo, Jim (DEQ)  
**Sent:** Tuesday, April 16, 2013 9:59 AM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ); Benzie, Richard (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ); Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ)  
**Subject:** FW: KWA and City of Flint

Steve, Mike and Richard,

Please take a look at DWSD's last best offer to the City of Flint and provide your collective perspective to the Director through Liane by the end of the week. Copy me in as well. I'll be out of the office but would like to know if you think this is worth considering.

Thank you for your expedited review.

---

**From:** Wyant, Dan (DEQ)  
**Sent:** Tuesday, April 16, 2013 6:52 AM  
**To:** Sygo, Jim (DEQ)  
**Subject:** FW: KWA and City of Flint

Jim,

Liane is out of the office today, Can you forward this directly to her staff that worked on this with us.

Dan Wyant, Director  
Department of Environmental Quality  
517-373-7917

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**From:** Wyant, Dan (DEQ)  
**Sent:** Tuesday, April 16, 2013 6:51 AM  
**To:** Sygo, Jim (DEQ); Creal, William (DEQ); Shekter Smith, Liane (DEQ)  
**Cc:** Anderson, Madhu (DEQ)  
**Subject:** FW: KWA and City of Flint

Bill and Liane,

Can you have your staff's take a quick look at this and let me know today if they think this changes their thoughts and comments to me last week.

Dan Wyant, Director  
Department of Environmental Quality  
517-373-7917

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**From:** Dillon, Andy (Treasury)  
**Sent:** Monday, April 15, 2013 7:55 PM

**To:** Wyant, Dan (DEQ); Dennis Muchmore; Roberts, John (GOV)  
**Cc:** Stibitz, Brom (Treasury); Saxton, Thomas (Treasury)  
**Subject:** Fwd: KWA and City of Flint

FYI

Dan, any thoughts re the attached?

We gave dwsd until today to put best offer on table. Flint is to get back to us tmrw. I want to make sure their expected rejection is made in good faith.

Sent from my iPad

Begin forwarded message

**From:** "Debra Ragland" <dragland@dwsd.org>  
**To:** "ekurtz@cityofflint.com" <ekurtz@cityofflint.com>  
**Cc:** "jwright@co.genesees.mi.us" <jwright@co.genesees.mi.us>, "Dillon, Andy (Treasury)" <DillonA2@michigan.gov>, "James Fausone" <fausone@dwsd.org>, "orrk@detroitmi.gov" <orrk@detroitmi.gov>, "Sue McCormick" <mccormick@dwsd.org>  
**Subject:** KWA and City of Flint

Please see attached on behalf of Sue F. McCormick.

Faxed copy forwarded to Mayor Dayne Walling and Jeff Wright.

**Rennaker, Joanne (DEQ)**

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Wednesday, September 23, 2015 9:16 AM  
**To:** Busch, Stephen (DEQ); Wurfel, Brad (DEQ); Benzie, Richard (DEQ)  
**Subject:** Re: lead sampling instructions

Brad - sharing this response from Steve as this question seemed to be causing a bit of confusion yesterday on our call. It may be something that we need to address in other forums.

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, September 23, 2015 9:10 AM  
**To:** Dykema, Linda D. (DCH)  
**Cc:** Shekter Smith, Liane (DEQ); Groetsch, Kory J. (DCH)  
**Subject:** RE: lead sampling instructions

The 36 ME is a general metals sample and would include lead, or as noted if lead or arsenic is the only metal requested it can be done at a lower cost \$18 vs. \$102. This is used at entry points to distribution systems, i.e. the finished water plant tap of a water treatment plant. The flushing described is used to ensure water quality is representative of the public water system. It is not a first draw sample.

A 36 CC is used specifically for customer tap lead and copper monitoring in accordance with the lead and copper rule. As indicated in the lab sheet it asks for a minimum 6 hour stagnation period, preservation within 14 days and a first draw sample, no flushing.

Here is the full lab analysis fee sheet showing all the types of requests not just the common ones.  
[http://michigan.gov/documents/deq/DEQ-RRD-LSS-EQP2301\\_454667\\_7.pdf?20150923084920](http://michigan.gov/documents/deq/DEQ-RRD-LSS-EQP2301_454667_7.pdf?20150923084920)

and the bottle requisition form linked below. Note the two bottles 36ME and 36CC are very different. If the lab had a request for the first draw lead and copper analysis on a metals bottle that was submitted it wouldn't be run and vice versa.

[http://michigan.gov/documents/deq/DEQ-RRD-LSS-EQP2301\\_ORDER\\_462884\\_7.pdf?20150923084920](http://michigan.gov/documents/deq/DEQ-RRD-LSS-EQP2301_ORDER_462884_7.pdf?20150923084920)

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](mailto:buschs@michigan.gov)

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**From:** Dykema, Linda D. (DCH)  
**Sent:** Tuesday, September 22, 2015 3:40 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ); Groetsch, Kory J. (DCH)  
**Subject:** RE: lead sampling instructions

Would you explain the difference between 36ME and 36CC and when you'd use which?

---

**From:** Dykema, Linda D. (DCH)  
**Sent:** Tuesday, September 22, 2015 3:37 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ); Groetsch, Kory J. (DCH)  
**Subject:** RE: lead sampling instructions

News reports are saying that the city/state tells people to flush the tap for 10 minutes then take the sample...there's a lot on the VA Tech web page to that effect as well.

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, September 22, 2015 3:32 PM  
**To:** Dykema, Linda D. (DCH)  
**Cc:** Shekter Smith, Liane (DEQ); Groetsch, Kory J. (DCH)  
**Subject:** Re: lead sampling instructions

On the lab instructions you are referring to the wrong analysis. See the 36 cc farther down

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

Sent from my iPhone

On Sep 22, 2015, at 3:26 PM, Dykema, Linda D. (DCH) <[DykemaL@michigan.gov](mailto:DykemaL@michigan.gov)> wrote:

I'm seeing a discrepancy in the instructions for DW sampling for lead between the back of form EQB 2300 (36ME) [http://www.michigan.gov/documents/deq/deq-ess-lab-eqp2300-wateranalysisform\\_237257\\_7.pdf](http://www.michigan.gov/documents/deq/deq-ess-lab-eqp2300-wateranalysisform_237257_7.pdf) and those at [http://www.michigan.gov/deq/0,4561,7-135-3313\\_3675\\_3691-9677--,00.html](http://www.michigan.gov/deq/0,4561,7-135-3313_3675_3691-9677--,00.html). The word or pdf instruction under helpful tools on the later page reads as Liane indicated in the call, flush the tap, let it sit 6 hours then take a first run sample. But the back of the request form says:

"Select a clean faucet and remove such attachments as aerators, dishwasher connectors, etc. Allow water to run for about ten minutes at full flow from the sampling tap. Reduce flow to avoid splashing, and collect the sample directly into the bottle. Do not use an intermediate container. Do not allow water from the outside surface of the faucet to drip into the bottle. Fill bottle to the bottom of neck."

*Linda D. Dykema, Ph.D.*  
 Environmental Public Health Director

Division of Environmental Health  
Michigan Department of Health & Human Services  
517.335.8566  
[dykema1@michigan.gov](mailto:dykema1@michigan.gov)

**Rennaker, Joanne (DEQ)**

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**From:** Dykema, Linda D. (DCH)  
**Sent:** Tuesday, September 22, 2015 3:37 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ); Groetsch, Kory J. (DCH)  
**Subject:** RE: lead sampling instructions

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**Sent:** Tuesday, September 22, 2015 3:32 PM  
**To:** Dykema, Linda D. (DCH)  
**Cc:** Shekter Smith, Liane (DEQ); Groetsch, Kory J. (DCH)  
**Subject:** Re: lead sampling instructions

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

Sent from my iPhone

On Sep 22, 2015, at 3:26 PM, Dykema, Linda D. (DCH) <[DykemaL@michigan.gov](mailto:DykemaL@michigan.gov)> wrote:

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*Linda D. Dykema, Ph.D.*

Environmental Public Health Director

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[dykema1@michigan.gov](mailto:dykema1@michigan.gov)

**Rennaker, Joanne (DEQ)**

---

**From:** Dykema, Linda D. (DCH)  
**Sent:** Tuesday, September 29, 2015 3:30 PM  
**To:** Benzie, Richard (DEQ)  
**Cc:** Busch, Stephen (DEQ); Philip, Kris (DEQ); Cook, Pat (DEQ); Shekter, Jean (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Lead Sampling Issues  
**Attachments:** MMWR lead in DW.pdf

Thanks Richard. This is really helpful.

I've attached a 2012 MMWR from CDC suggesting that, in some cases, there is a relationship between lead levels in drinking water and elevated blood lead levels. Note that, in the conclusions, the authors make the same point that regulatory testing was not designed to evaluate human exposure levels.

**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

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

*Centers for Disease Control and Prevention*



Morbidity and Mortality Weekly Report

Supplement / Vol. 61

August 10, 2012

# Lead in Drinking Water and Human Blood Lead Levels in the United States



**U.S. Department of Health and Human Services**  
Centers for Disease Control and Prevention

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# Lead in Drinking Water and Human Blood Lead Levels in the United States

Mary Jean Brown, ScD  
Stephen Margolis, PhD

*Division of Emergency and Environmental Health Services, National Center for Environmental Health*

**Corresponding author:** Mary Jean Brown, ScD, National Center for Environmental Health, CDC, 4770 Buford Highway NE, MS F-60, Atlanta, GA 30084. Telephone: 770-488-3300; Fax: 770-488-3635; E-mail: mjb5@cdc.gov.

## Introduction

Lead is a pervasive environmental contaminant. The adverse health effects of lead exposure in children and adults are well documented, and no safe blood lead threshold in children has been identified. Lead can be ingested from various sources, including lead paint and house dust contaminated by lead paint, as well as soil, drinking water, and food. The concentration of lead, total amount of lead consumed, and duration of lead exposure influence the severity of health effects. Because lead accumulates in the body, all sources of lead should be controlled or eliminated to prevent childhood lead poisoning. Beginning in the 1970s, lead concentrations in air, tap water, food, dust, and soil began to be substantially reduced, resulting in significantly reduced blood lead levels (BLLs) in children throughout the United States. However, children are still being exposed to lead, and many of these children live in housing built before the 1978 ban on lead-based residential paint. These homes might contain lead paint hazards, as well as drinking water service lines made from lead, lead solder, or plumbing materials that contain lead. Adequate corrosion control reduces the leaching of lead plumbing components or solder into drinking water. The majority of public water utilities are in compliance with the Safe Drinking Water Act Lead and Copper Rule (LCR) of 1991. However, some children are still exposed to lead in drinking water. EPA is reviewing LCR, and additional changes to the rule are expected that will further protect public health. Childhood lead poisoning prevention programs should be made aware of the results of local public water system lead monitoring measurement under LCR and consider drinking water as a potential cause of increased BLLs, especially when other sources of lead exposure are not identified.

This review describes a selection of peer-reviewed publications on childhood lead poisoning, sources of lead exposure for adults and children, particularly children aged <6 years, and LCR. What is known and unknown about tap water as a source of lead exposure is summarized, and ways that children might be exposed to lead in drinking water are identified. This report does not provide a comprehensive review of the current scientific literature but builds on other comprehensive reviews, including

the *Toxicological Profile for Lead* and the 2005 CDC statement *Preventing Lead Poisoning Among Young Children* (1,2). When investigating cases of children with BLLs at or above the reference value established as the 97.5 percentile of the distribution of BLLs in U.S. children aged 1–5 years, drinking water should be considered as a source. The recent recommendations from the CDC Advisory Committee on Childhood Lead Poisoning Prevention to reduce or eliminate lead sources for children before they are exposed underscore the need to reduce lead concentrations in drinking water as much as possible (3).

## Background

Lead is a relatively corrosion-resistant, dense, ductile, and malleable metal that has been used by humans for at least 5,000 years. During this time, lead production has increased from an estimated 10 tons per year to 1,000,000 tons per year, accompanying population and economic growth (4). The estimated average BLL for Native Americans before European settlement in the Americas was calculated as 0.016  $\mu\text{g}/\text{dL}$  (5). During 1999–2004, the estimated average BLL was 1.9  $\mu\text{g}/\text{dL}$  for the noninstitutionalized population aged 1–5 years in the United States (6), approximately 100 times higher than ancient background levels, indicating that substantial sources of lead exposure exist in the environment.

BLLs of U.S. children increased sharply during 1900–1975 as increased lead use and emissions caused widespread environmental contamination across the United States. Changes in federal laws to limit the use and emissions of lead have reversed this trend. Effective regulations include reducing or eliminating lead from gasoline for on-road vehicles, foods and food packaging, house paint, water pipes, plumbing fixtures, and solder used in plumbing and drink cans.

## Effects of Lead Exposure

### Effects on Children

The health consequences of lead exposure depend on the cumulative dose of lead and vulnerability of the individual

person rather than the environmental media (i.e., food, water, soil, dust, or air) in which the lead exists. Compelling evidence has established the cognitive effects of childhood lead exposure since they were first described in 1943 (7). To date, no safe blood lead threshold for the adverse effects of lead on infant or child neurodevelopment has been identified (2). Recent evidence suggests that the dose-effect relationship might be supralinear, with a steeper dose response and potential risk for an adverse health effect such as IQ loss at BLLs <10 µg/dL compared with BLLs ≥10 µg/dL (8–10). The developing fetus and child are more sensitive to lead exposure than adults because of the immaturity of the blood-brain barrier, increased gastrointestinal absorption, and hand-to-mouth behaviors, all of which increase exposure (11). Comorbidities such as iron deficiency also can enhance lead absorption.

Evidence from several prospective studies suggests that the adverse effects of early childhood exposure on neurodevelopment persist into the second decade of life (12–16). The mechanisms by which low levels of lead exposure might adversely affect neurobehavioral development remain uncertain, although experimental data support the involvement of many physiological pathways.

### Effects on Adults

**Overall.** Adults with occupational exposure to lead report more colds and influenza and exhibit suppressed secretory immunoglobulin A (IgA) levels, demonstrating lead-induced suppression of humoral immunity (17). Adults with occupational exposure also might have neurotoxic effects, including peripheral neuropathy. Motor nerve dysfunction can occur at BLLs as low as 40 µg/dL (18). Lead also is nephrotoxic and can cause progressive nephron loss leading to renal failure, gout, and hypertension. In a meta-analysis of the relationship between BLL and blood pressure, a small but statistically significant association between increased BLL and increased blood pressure was identified (19). BLLs ≥40 µg/dL have been associated with increased risk for cardiovascular, cancer, and all-cause mortality in several epidemiological studies. These effects might not be limited to adults with the long-term, high-dose exposure common in occupational settings. A study of approximately 13,000 adult participants in the third National Health and Nutrition Examination Survey (NHANES) with 12 years of follow-up found that adults in the highest tertile of BLL (≥3.6 µg/dL) were at increased risk for all-cause mortality and cardiovascular mortality but not for cancer mortality compared with those in the lowest tertile of BLL (<1.9 µg/dL) (20).

**Reproductive and Prenatal Effects.** Lead exposure remains a concern for pregnant and lactating women, particularly those who have an occupational exposure to lead, who are

recent immigrants, who are engaged in home renovations, or who have pica. Prenatal lead exposure resulting in maternal BLLs <10 µg/dL has measurable adverse effects on maternal and infant health, such as fertility, hypertension, and infant neurodevelopment (21). In addition, because lead persists in bone for decades, as bone stores are mobilized to meet the increased calcium needs of pregnancy and lactation, women and their infants might be exposed to lead long after external sources have been removed (22). Adverse reproductive effects are not limited to women. In males with occupational lead exposure, abnormal sperm morphology and decreased sperm count have been observed at BLLs <40 µg/dL (23).

### Carcinogenic Effects

Based on limited evidence from studies in humans and sufficient evidence from animal studies, the U.S. Department of Health and Human Services (HHS) has determined that lead and lead compounds are reasonably anticipated to be human carcinogens, and the U.S. Environmental Protection Agency (EPA) has determined that lead is a probable human carcinogen. The International Agency for Research on Cancer also has determined that inorganic lead is likely carcinogenic in humans (1).

### Scope of Public Health Concern

In 2004, 143,000 deaths and a loss of 8,977,000 disease-adjusted life years were attributed to lead exposure worldwide, primarily from lead-associated adult cardiovascular disease and mild intellectual disability in children (24). Children represent approximately 80% of the disease impact attributed to lead, with an estimated 600,000 new cases of childhood intellectual disabilities resulting from BLLs ≥10 µg/dL each year (25).

In 1987, one study estimated that reducing water lead levels to below the maximum contaminant level for lead (which was 20 parts per billion [ppb] during 1986–1991) would save nearly \$400 million per year (1985 dollars) (26). Although estimates of the reductions in lead concentrations for various media, air, dust, soil, and water are unavailable, reductions in BLLs were observed for each subsequent cohort of children aged 2 years who were not exposed to lead at the concentrations experienced by the cohort of children aged 2 years in 1976. As a result of the overall reduction of lead in the environment, including fuel, house paint, and drinking water, there was an estimated decrease in BLLs of 15.1 µg/dL and a related estimated economic benefit of \$110–\$300 million in earnings for children born after 1976 who were not exposed to high levels of lead (27). A recent cost-benefit analysis suggested that for every dollar spent to reduce lead hazards, \$17–\$220 is saved. This cost-benefit ratio compares favorably to that of other public health interventions such as vaccines (28).

## Historical Trends in Blood Lead Levels

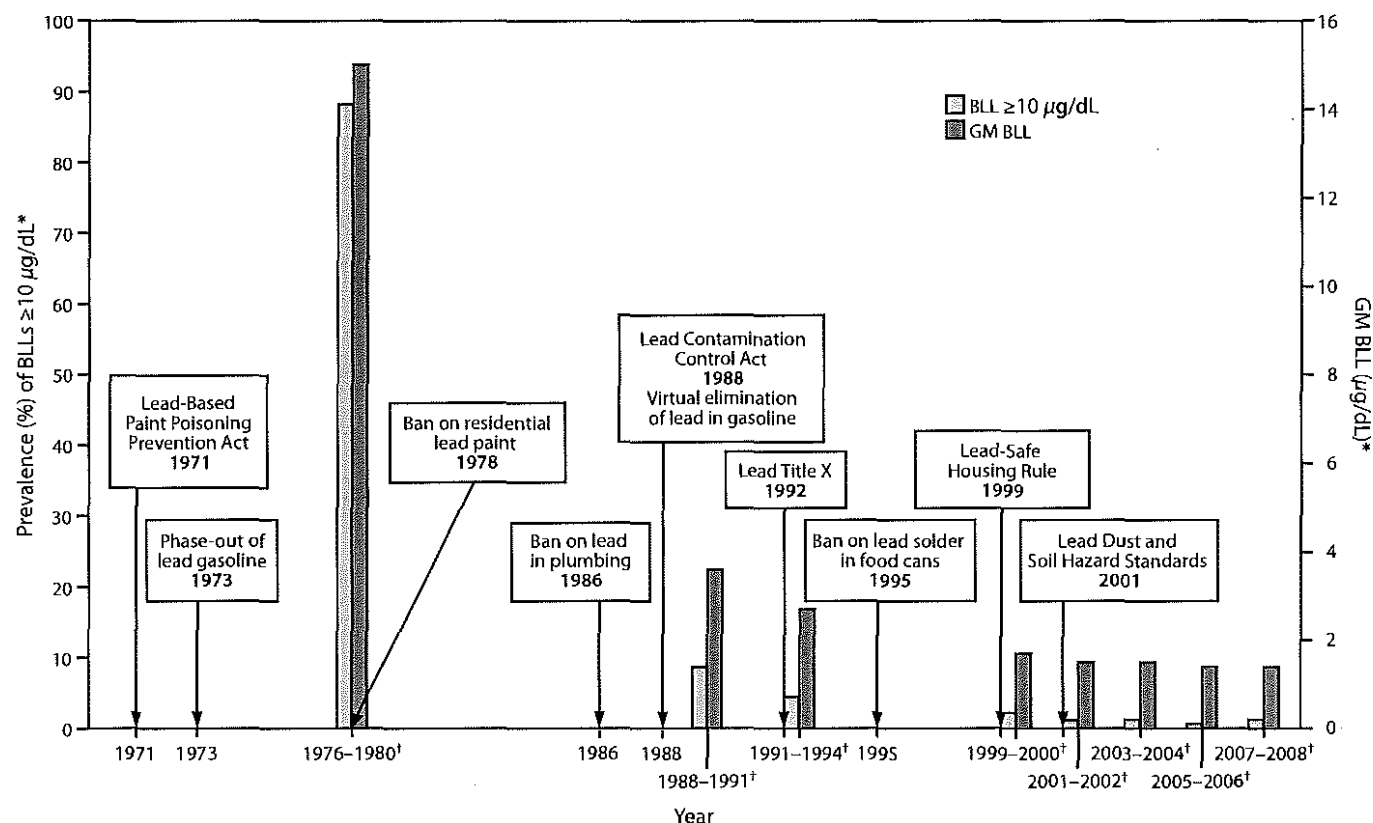
Since the 1970s, NHANES data have been used to track BLLs for the noninstitutionalized U.S. population (Figure). In 1978, approximately 13.5 million children aged 1–5 years had BLLs  $\geq 10 \mu\text{g/dL}$ , which is generally considered the threshold for housing inspection, health education, and home visits (i.e., case management) by local and state public health agencies. By 2007–2008, this number had decreased to approximately 250,000 (29). In addition, in the early NHANES data from the 1970s and 1980s, 12% of black children had BLLs  $\geq 30 \mu\text{g/dL}$ , compared with 2% of their counterparts who were white. Children living in low-income families also were at greater risk for BLLs  $\geq 30 \mu\text{g/dL}$  (10% of children in households earning  $< \$6,000$  per year compared with 1.2% living in households

earning  $> \$15,000$  per year) (30). By the 1999–2004 surveys, the percent differences in BLLs  $\geq 10 \mu\text{g/dL}$  for children aged 1–5 years, by race and family income, were no longer statistically significant, a trend that continues today at levels  $\geq 10 \mu\text{g/dL}$ , demonstrating the impact of policies at the federal, state, and local levels (6).

In the 1991–1994 NHANES, the overall prevalence of BLLs  $\geq 10 \mu\text{g/dL}$  was 2.2% but decreased to 0.7% by the 1999–2002 survey. Overall, the geometric mean (GM) decreased significantly ( $p < 0.05$ ; two-tailed t-test) from  $2.3 \mu\text{g/dL}$  to  $1.6 \mu\text{g/dL}$  during the same time period. Among children aged 6–12 years, boys had significantly higher GM BLLs than girls in all age, racial, and income groups (6).

Despite the considerable progress in decreasing BLLs, children aged  $< 6$  years continue to be exposed to lead. Although disparities among various subpopulations of children with

FIGURE. Timeline of lead poisoning prevention policies and blood lead levels in children aged 1–5 years, by year — National Health and Nutrition Examination Survey, United States, 1971–2008



Abbreviations: BLL = blood lead level; GM = geometric mean; NHANES = National Health and Nutrition Examination Survey.

Sources: Mahaffey KR, Annett JL, Roberts J, Murphy MS. National estimates of blood lead levels: United States (1976–1980). *N Engl J Med* 1982;307:573–9.

Jones R, Homa D, Meyer P, et al. Trends in blood lead levels and blood lead testing among U.S. children aged 1 to 5 years: 1998–2004. *Pediatrics* 2009;123:e376–85. National Health and Nutrition Examination Survey, 2000–2008. Available at <http://www.cdc.gov/nchs/nhanes.htm>. Accessed July 17, 2012.

\* National estimates for GM BLLs and prevalence of BLLs  $\geq 10 \mu\text{g/dL}$ , by NHANES survey period and sample size of children aged 1–5 years: 1976–1980: N = 2,372; 1988–1991: N = 2,232; 1991–1994: N = 2,392; 1999–2000: N = 723; 2001–2002: N = 898; 2003–2004: N = 911; 2005–2006: N = 968; 2007–2008: N = 817.

† NHANES survey period.

BLLs  $\geq 10$   $\mu\text{g}/\text{dL}$  are no longer significant, disparities in risk for exposure have persisted over time. In addition, mean BLLs continue to be higher for children from low-income families, non-Hispanic black children, and children living in older housing (i.e., built before 1950) (6). For example, the mean BLL for non-Hispanic black children (1.9  $\mu\text{g}/\text{dL}$ ) was significantly higher (36%) than that of white children (1.4  $\mu\text{g}/\text{dL}$ ) during 2007–2008.

Although the decrease in GM BLLs in women aged 20–59 years from 1.8  $\mu\text{g}/\text{dL}$  in 1988–1994 to 1.2 in 1999–2002 was similar to that seen in children, in utero exposure is also a substantial public health issue for certain populations, particularly new immigrants (31–33). In a 2003 study conducted in New York City, New York, BLLs  $\geq 5$   $\mu\text{g}/\text{dL}$  were more prevalent among pregnant women who were born outside the United States than pregnant women born in the United States (odds ratio = 8.2, 95% confidence interval = 3.8–17.3) (34).

## Lead in the Environments of Children

A review of the sources of lead in the environments of U.S. children discusses the contributions of various lead-contaminated media to BLLs in children (35). Deteriorating lead paint and lead in house dust and soil are the primary, and often the most concentrated, sources of lead. However, lead paint contamination is not the only source of exposure for U.S. children.

Lead is used in thousands of applications, each constituting a potential exposure source (36). Case reports from local and state lead programs indicate that up to 30% of children with BLLs  $\geq 10$   $\mu\text{g}/\text{dL}$  do not have an immediate lead paint hazard. For example, in 2004 in Arizona, lead-contaminated soil was the most commonly identified proximate exposure source, accounting for approximately 24% of increased BLLs in children, followed by paint (17%), folk remedies and pottery (17%), dust (15%), and miscellaneous other sources (19%). In 8% of cases, no lead hazard was identified (37).

In field investigations, nonpaint lead exposure sources might be insufficiently characterized and their importance underestimated. Lead program inspectors look for lead paint hazards in places where children with BLLs  $\geq 10$   $\mu\text{g}/\text{dL}$  spend time. Often, lead exposure sources other than paint are sought only when no lead paint hazards are found. Of 35 CDC-funded childhood lead poisoning prevention programs, only 15 reported that they routinely tested lead levels in water in homes where children have increased BLLs (CDC, unpublished data, 2009). Thus, for some children with BLLs  $\geq 10$   $\mu\text{g}/\text{dL}$ , important nonpaint sources such as water might not be identified.

Evidence also suggests that for children with BLLs 5–9  $\mu\text{g}/\text{dL}$ , no single source of exposure predominates. For these children, the contribution of multiple sources, including drinking water, seems likely, particularly for children who do not have well-established risk factors such as living in old housing or having a parent who is exposed to lead at work (38). CDC and its Advisory Committee on Childhood Lead Poisoning Prevention concur that primary prevention of lead exposure is essential to reducing high BLLs in children and that reducing water lead levels is an important step in achieving this goal.

## Lead in Drinking Water

Lead is unlikely to be present in source water unless a specific source of contamination exists. However, lead has long been used in the plumbing materials and solder that are in contact with drinking water as it is transported from its source into homes. Lead leaches into tap water through the corrosion of plumbing materials that contain lead (26,39). The greater the concentration of lead in drinking water and the greater amount of lead-contaminated drinking water consumed, the greater the exposure to lead. In children, lead in drinking water has been associated both with BLLs  $\geq 10$   $\mu\text{g}/\text{dL}$  (40,41) as well as levels that are higher than the U.S. GM level for children (1.4  $\mu\text{g}/\text{dL}$ ) but are  $< 10$   $\mu\text{g}/\text{dL}$  (42–44).

## History of Studies on Lead in Water

In 1793, the Duke of Württemberg, Germany, warned against the use of lead in drinking water pipes, and in 1878, lead pipes were outlawed in the area as a result of concerns about the adverse health effects of lead in water (45). In the United States, the adverse health consequences of lead-contaminated water were recognized as early as 1845 (46). A survey conducted in 1924 in the United States indicated that lead service lines were more prevalent in New England, the Midwest, Montana, New York, Oklahoma, and Texas (47). A nationwide survey conducted in 1990 indicated that 3.3 million lead service lines were in use, and the areas where they were most likely to be used were, again, the midwestern and northeastern regions of the United States. This survey also estimated that approximately 61,000 lead service lines had been removed through voluntary programs during the previous 10 years (48).

Research on exposure to lead in water increased as concern about the topic increased, and efforts were made to establish a level of lead in water that, at the time of the studies, was considered acceptable. A 1972 study in Edinburgh, Scotland, obtained 949 first-flush water samples (i.e., samples of water from the tap that have been standing in the plumbing pipes for at least 6 hours)

matched with 949 BLLs, as well as 205 running water samples matched to 205 BLLs (49). No dose-response relationship could be determined when comparing BLLs with four levels of lead in both first-flush water and in running water ( $<0.24 \mu\text{mol/L}$ ;  $0.24\text{--}0.47 \mu\text{mol/L}$ ;  $0.48\text{--}1.43 \mu\text{mol/L}$ ; and  $\geq 1.44 \mu\text{mol/L}$ ). The study concluded that the findings challenged whether it was necessary to lower the water lead concentration to  $<100 \text{ ppb}$ , which at that time was the acceptable concentration established by the World Health Organization. However, the study also reported that low levels of environmental lead exposure could have adverse health effects; therefore, knowing the degree of lead exposure from household water relative to other sources is important. Another study, in 1976, of 129 randomly selected homes in Caernarvonshire, England, reported a similar finding (50), describing the relationship between blood and water lead as slight.

Comparing studies on the relationship between BLLs and lead levels in water are difficult given that the age of study participants, water sample collection methods, and duration of the exposure to high water lead levels vary considerably across studies. Quantifying the contribution of lead in water to BLLs in children can be particularly challenging because of the difficulty of collecting valid, reliable, and reproducible water lead samples. Relatively small fluctuations in factors such as temperature, pH alkalinity, and dissolved solids affect the solubility of lead (51). In addition, intake estimation is difficult because of the incomplete understanding of individual children's water intake patterns. Nonetheless, during the 1990s, an association between blood and water lead levels continued to be reported, particularly in sensitive populations such as pregnant women and children. For example, in the Glasgow Duplicate Diet Study, the correlation coefficient between infant BLLs at age 3 months and composite water samples was 0.59 (52). In a study of the association between children's BLLs and water lead levels, with a convenience sample of 320 households, water lead levels explained as much as 12% of the variance in BLLs (53). BLLs also were shown to decrease when lead lines were completely replaced. In one study comparing water lead levels in housing of low-income persons before and after lead service lines were replaced, water lead levels decreased by 50% in the 3 months after total replacement of lead pipes from the distribution systems (54).

In the 1983 British Regional Heart Study, the BLLs of 7,378 men in 24 British towns were evaluated (55). All men were categorized based on lead concentration in domestic water, water hardness, and alcohol and cigarette consumption. The findings indicated that when first-draw home tap water measured  $100 \text{ ppb}$ , BLLs of the men were  $1.00 \mu\text{mol/L}$ , compared with  $0.7 \mu\text{mol/L}$  in men with home tap water that contained undetectable lead levels. The study recommended

that lead in water be given greater priority than in the past in any national campaign to reduce lead exposure. In a follow-up study in Glasgow, Scotland, tap water lead concentrations and maternal BLLs from 1981 were compared with water and BLLs from 1993 (56). In 1993, 17% of 1,812 homes had daytime, first-draw lead levels in 1 L of water that were  $\geq 10 \text{ ppb}$ , compared with 49% of 131 homes enrolled in a survey in 1981. Maternal BLLs decreased by 31% during the same period ( $11.9 \mu\text{g/dL}$  in 1981 vs.  $3.7 \mu\text{g/dL}$  in 1993). Despite this decrease, the study reported that even the reduced levels of lead in tap water might have presented a risk for bottle-fed infants.

The lead studies discussed above exclusively assessed lead in water, and tap water was the only source considered as the cause of the increased BLL. One landmark U.S. observational study conducted during the 1990s studied 183 urban children aged 12–31 months (37%, 12–18 months; 31%, 18–24 months; 33%, 24–31 months) (57). Of these children, 63% had BLLs  $<10 \mu\text{g/dL}$ , 20% had BLLs of  $10\text{--}14 \mu\text{g/dL}$ , 8% had BLLs of  $15\text{--}19 \mu\text{g/dL}$ , and 3% had BLLs  $\geq 20 \mu\text{g/dL}$ . The study evaluated lead in home foundation perimeter soils, potable water, paint, and house dust. Lead-contaminated house dust was the major contributor to BLLs  $\geq 10 \mu\text{g/dL}$ . However, the study reported that although lead-contaminated water had a statistically significant effect on children's BLLs after adjusting for other sources of lead exposure, no statistically significant contribution for drinking water could be discerned at levels below the current EPA action level of  $15 \text{ ppb}$  (57). Lead dust as a primary source of lead for children with increased BLLs was further demonstrated in a subsequent pooled analysis of 12 studies; floor dust lead levels as low as  $5 \mu\text{g/ft}^2$  were associated with 5% of enrolled children having a BLL  $\geq 10 \mu\text{g/dL}$  (58).

## LCR and Control Measures

In 1991, EPA promulgated LCR. LCR sets an action level of  $15 \text{ ppb}$  of lead in 1 L of first-draw water taken after the water has been standing in the pipes for at least 6 hours. LCR also establishes a nonenforceable maximum contaminant level goal (MCLG) of 0, the level of lead in drinking water at which no adverse health effects are likely to occur. However, EPA has determined that MCLG is not feasible because many sources of lead in water are not under the control of public drinking water suppliers (i.e., water utilities). LCR requires water utilities to monitor lead in drinking water from a sample of customer taps in homes with plumbing materials that contain lead and copper. If  $>10\%$  of the samples collected from a water utility serving  $<50,000$  residents exceeds the lead action level, the utility must identify and install optimal corrosion control treatment. Utilities serving  $\geq 50,000$  residents are required to have optimal corrosion control treatment regardless of level

of lead in drinking water. Any size water utility exceeding the lead action level and covered by LCR is required to educate the public about lead in drinking water until water levels are below the lead action level. Utilities that exceed the action level must distribute public education materials on lead to customers and organizations that serve consumers with populations at high risk for adverse health effects from lead (e.g., schools, pediatricians, and child-care centers). The public education materials must include information about the health effects of lead, sources of lead, and steps persons can take to reduce their exposure to lead.

LCR requires that additional action be taken when a water utility with lead service lines and optimized corrosion control treatment still exceeds the action level in >10% of samples collected. In addition to public education, these utility companies also are responsible for replacing the portion of the lead service lines (the line connecting a house to the water distribution system) that the utility company owns. Utility companies must offer to replace the section of line owned by the customer (the section from the water meter into the house). However, the utility company is not required to bear the cost of replacing the privately owned portion of the line. When a customer does not agree to replacement of the privately owned portion of the line, the utility company must notify the residents at least 45 days in advance that they might experience a temporary increase in water lead levels as the portion of the service line owned by the utility company is replaced and must provide guidance on measures to minimize their exposure to lead. A utility company also must collect a water sample within 72 hours after completion of the partial replacement, test the sample for lead, and notify the customer of the results.

Most U.S. drinking water systems are in compliance with LCR. In 2004, the Congressional Research Service reported that an EPA review of its water monitoring data conducted during 2000–2003 did not find a systemic problem of increased lead levels among water systems. For systems that serve >50,000 persons, 27 (3.6%) of these systems exceeded the action level of 15 ppb at least once in the time period. For systems that served 3,300–50,000 people, 237 (3.4%) exceeded the action level at least once since 2000 (59). However, lead service lines remain in use in neighborhoods in many cities. These pipes range in age from those installed during the late 1800s through 1986, although the preponderance of lead service line installations occurred before World War II.

Changes in water treatment and disinfection practices can substantially undermine lead corrosion control (60). In the mid-1990s in the District of Columbia (DC), high levels of free chlorine were used to decrease coliform bacteria in water, a process that inadvertently changed the type of lead mineral coating in the water lines to one with very low solubility in

the background pH of the DC drinking water. When the free chlorine was replaced with chloramines, the transformed highly insoluble lead scale minerals were no longer stable and dissolved. Therefore, a substantial level of lead was released from the lead service lines into drinking water at the tap (61). CDC reviewed the relationship between BLLs in children, the presence of a lead service line, and water disinfection practices in DC during 1998–2006 (62). The study reported that the presence of a lead service line was associated with higher BLLs in children. This relationship was most pronounced during 2001 through June 2004, when chloramines were used to disinfect the drinking water without adequate corrosion control (62). An observational study in which the BLLs of children were matched to population-based data of water lead levels during periods when water disinfection practices changed in DC concluded that the increase in water lead levels was associated with an increase in the BLLs of children (63). In a study in Wayne County, North Carolina, a unified geographic information system was used to link BLLs with water service lines made with or without lead. The use of chloramines in water predicted higher water lead levels and BLLs, controlling for well-established, known predictors of BLL (44).

Partial replacement of lead service lines might not effectively decrease the increased BLLs associated with lead service lines, as shown by one observational study in DC during July 2004–December 2006 that assessed the BLLs and type of water service line (62). Compared with children who had never had a lead service line, children having had a partial lead pipe replacement were at increased risk for increased BLLs, and BLLs of children with partial lead pipe replacement were not lower than those of children who lived in housing with a complete lead service line.

Water from systems that serve <25 persons and water from private drinking water wells is not regulated under the Safe Drinking Water Act, so LCR does not apply to these water sources, and they are not routinely tested for lead. Approximately 40–45 million people in the United States drink water that is not subject to the LCR regulations (64). The number of homes supplied by private wells or sources that serve <25 persons that have leaded plumbing, fixtures, or solder is unknown, as is the number of such homes that would benefit from appropriate corrosion control or water filtration at the point of use.

Since 1991, when LCR was finalized and enforced, tap water lead levels have substantially decreased (65). However, conditions still exist that could allow children to be exposed to water lead levels  $\geq 15$  ppb. Drinking water from systems with lead service lines that do not have optimized corrosion control might not be in compliance with LCR, which can result in this level of lead exposure. A system with lead service lines that is in compliance

with LCR can still expose children to lead levels  $\geq 15$  ppb because LCR permits  $\leq 10\%$  of sampled homes to exceed the action level of 15 ppb. Optimized corrosion control also might not completely prevent lead in plumbing materials from dissolving into drinking water. Persons who drink water from these sources might be exposed to lead levels  $> 15$  ppb.

## Conclusion

Although EPA has the primary responsibility for ensuring the safety of drinking water, state and local childhood lead poisoning prevention programs are important partners in ensuring that the public is protected from lead exposure. These programs promote blood lead screening, conduct blood lead surveillance, provide clinician and public education and outreach, and provide case management for children with elevated BLLs. Because children with elevated BLLs might be exposed to many sources of lead, all sources of lead should be considered when their homes are inspected. Childhood lead poisoning prevention programs can obtain data on lead in public drinking water systems from the water suppliers (66). Drinking water in older housing should be tested as a source of lead exposure when the local drinking water system is not in compliance with LCR or when another source of lead exposure cannot be identified for children with high BLLs (67).

Data are not available to address certain issues regarding lead in drinking water. The effect of water lead levels on BLLs of children and other populations at risk for adverse effects is difficult to measure. Current water sampling protocols were designed to assess the adequacy of water treatment, not the level of human exposure to lead. Important fluctuations in water lead levels might be missed because of limitations inherent in sampling protocols developed for regulatory purposes. Future research efforts could validate the accuracy of sampling protocols for identifying fluctuations of lead concentrations, predicting exposure to lead at the individual level, and determining how best to measure lead concentrations in multifamily versus single-family homes, child-care centers, and school settings. As new alternatives to lead in plumbing are developed, they should be evaluated before being marketed. More research, surveillance, and intervention studies also are needed to determine the most effective ways to reduce the lead concentration of drinking water to meet the goal of eliminating high BLLs in children.

Childhood lead poisoning prevention programs routinely provide information on practices that minimize exposure to lead in water. This information can be updated with additional materials promoting lead-safe plumbing practices.

Training curricula for lead exposure assessment protocols and case-management guidelines for children with elevated BLLs should incorporate lead-safe water and plumbing information. Appropriate risk communication materials for water customers that are accurate and reflect specific language and cultural factors might be beneficial.

Partial lead service line replacement has been associated with short-term increases in lead levels in drinking water (65) and has not been found to decrease risk for BLLs  $\geq 5$   $\mu\text{g}/\text{dL}$  in children (62). These findings imply that the practice of partially replacing lead service lines as a method to comply with LCR should be reconsidered. One alternative is full replacement of lead service lines, regardless of whether the lead service line is owned by the water authority or the property owner. Lower BLLs could be achieved if plumbing components contained the lowest possible levels of lead and monitoring and enforcement activities were effective. Finally, information about lead in plumbing components, often available in tax assessor data, could be incorporated into information routinely provided to homebuyers or renters before they make the decision to buy or rent a property.

Since 1970, considerable reductions in lead concentrations have occurred in air, tap water, food, dust, and soil, which significantly reduced the BLLs of children throughout the United States. However, children are still being exposed to lead, and no safe blood lead threshold for children has been identified.

All sources of lead in the environments of children should be controlled or eliminated (2). For the many children living in housing built before 1978, lead sources include lead paint hazards as well as lead in plumbing components and fixtures. Children can still be exposed to tap water with lead levels of  $\geq 15$  ppb if they live in older homes that are more likely to have lead water pipes or fixtures. To prevent lead exposure from tap water, persons involved with childhood lead poisoning prevention programs should be familiar with communities having buildings at high risk for lead and monitor whether local water providers are in compliance with LCR (66). EPA is currently reviewing LCR, which provides an opportunity for continued collaboration between EPA and CDC that focuses on reducing the public health consequences of exposure to lead in water.

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ISSN: 1546-0738

**Rennaker, Joanne (DEQ)**

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**From:** Bruneau, Michelle (DCH)  
**Sent:** Friday, September 11, 2015 11:46 AM  
**To:** Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ); Groetsch, Kory J. (DCH); Dykema, Linda D. (DCH)  
**Cc:** Benzie, Richard (DEQ)  
**Subject:** RE: Lead  
**Attachments:** 2015-09-09 - DHHS LEAD SAFE KG MB.pdf

Hi everyone:

Attached please find the very draft outreach and communications plan that Kory referred to – the scope will depend on what role we take on and availability of funding. The last page includes links I've compiled to the recent media, community groups, and the Virginia Tech group, as well as some potential talking points we might want to address.

I have reserved our conference line for 2pm.

The call in number is 877-873-8018; Access Code: 8282547.

Thank you!

- Michelle

><{{' }> [www.michigan.gov/eatsafefish](http://www.michigan.gov/eatsafefish) <' } }><

Michelle Bruneau, MA  
 Michigan Department of Health & Human Services  
 Project Manager & Health Educator  
 (517) 335-8984  
[bruneaum@michigan.gov](mailto:bruneaum@michigan.gov)

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, September 11, 2015 10:37 AM  
**To:** Shekter Smith, Liane (DEQ); Groetsch, Kory J. (DCH); Dykema, Linda D. (DCH)  
**Cc:** Bruneau, Michelle (DCH); Benzie, Richard (DEQ)  
**Subject:** RE: Lead

Ok with me.

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](mailto:buschs@michigan.gov)

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Friday, September 11, 2015 10:36 AM  
**To:** Groetsch, Kory J. (DCH); Dykema, Linda D. (DCH)

**Cc:** Bruneau, Michelle (DCH); Benzie, Richard (DEQ); Busch, Stephen (DEQ)

**Subject:** RE: Lead

Would 2pm work?

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

---

**From:** Groetsch, Kory J. (DCH)  
**Sent:** Friday, September 11, 2015 10:34 AM  
**To:** Shekter Smith, Liane (DEQ); Dykema, Linda D. (DCH)  
**Cc:** Bruneau, Michelle (DCH)  
**Subject:** Re: Lead

Hi Liane,

Yes - Michelle has written the bones of a health education and outreach plan. I have edited. A brief conversation this afternoon would be good.

Kory

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Friday, September 11, 2015 8:54:24 AM  
**To:** Dykema, Linda D. (DCH); Groetsch, Kory J. (DCH)  
**Subject:** Lead

Since we last spoke, there's been an increase in the media regarding lead exposure. Any progress developing a proposal for a lead education campaign? We've got a number of legislative inquiries that we are responding to. It would be helpful to have something more to be able to say.

Michigan Department of Community Health  
**Flint Water Lead Communication Plan**

---

September 9, 2015

*Presented by:*

*MDHHS-DEH Toxicology & Response Section*

## Plan Overview

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**Project:** Flint Water Lead

**Name of Campaign:** To be Determined (e.g. Lead us to Water: Flint Clean Water)

## Objective

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The Michigan Department of Health & Human Services has a mission to protect, preserve, and promote the health and safety of the people of Michigan with particular attention to providing for the needs of vulnerable and under-served populations. The residents of Flint currently perceive problems related to the usage of the Flint River as their temporary water source until a pipeline is completed which will bring water from Lake Huron. Problems – both substantiated and unsubstantiated included excess TTHM, discolored water, and high levels of lead in tap water. These problems have given rise to a well-organized community group Water You Fighting For ([wateryoufightingfor.com](http://wateryoufightingfor.com)) and has gotten the attention of water activists/researchers from Virginia Tech University ([flintwaterstudy.org](http://flintwaterstudy.org)).

Given there is no safe level of lead for young children, a public health outreach campaign to inform the public of the sources of lead in their community is recommended. MDHHS will promote collaboration between the City of Flint, the County Health Department, community members, and other interested parties to halt human exposure of lead through development and proactive delivery of scientifically accurate information delivered in multiple formats at a literacy level that is accessible to all.

## Background

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Drinking water analytical reports find that the water meets the federal drinking water standards and is safe for public consumption. The aesthetic quality of the water, which may make the water unappealing to drink or use, does not make the water unsafe. Poor aesthetic quality, if true, will be a barrier to conducting an effective public health outreach campaign.

Lead is not found to be elevated in the drinking water at the source; however, citizens have reported high lead levels in their tap water. Sources of lead to the tap water are likely from lead piping or solder in or entering the home. Lead piping and solder are sources that the home-owner needs to know how to address. Additionally, older homes (pre-1978) can have lead containing paint and homes near historic high-traffic areas can have elevated lead levels in soil.

## Target Markets

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- Citizens of Flint who use Flint City Water
- Citizens of Flint who live in homes built in 1987 or before
- Citizens of Flint who are pregnant or have children living in the home that are 6 or under

## Message Summary

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- There are personal actions individuals can take to prevent exposure to lead.
- Lead exposure does not just occur through water.
- You can be tested for blood lead levels to determine if you or your children been exposed.
- There are resources available to assist with remediation.

## Call to Action

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Exposure to lead through pipes, paint, and soil are preventable. There are steps people can take to be proactive in preventing their exposure and potential health issues. MDHHS notes that this problem is also not limited to Flint. This campaign will be created and piloted with the City of Flint, but may be expanded statewide.

## Project Plan

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### Public Meetings –

- Begin with small groups to identify key stakeholders
- Plan larger meeting addressing
  - the lifespan of water from source to treatment center to home
  - how people can identify if their home may be affected
  - what the VTU results really mean
  - what can be done on an individual, city, and state level

### e-Toolkits, Social Media & Print Outreach

- Compile existing information on being lead-safe
- Create easily shared infographics – what can be done, what are signs and symptoms
- Create brochures about health effects of lead

## Project Timeline

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| Responsibilities | Target Date | Objective | Tasked to: |
|------------------|-------------|-----------|------------|
| TBD              | TBD         | TBD       | TBD        |

## Current Media Review

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<http://www.washingtontimes.com/news/2015/sep/2/flint-water-is-risky-in-old-homes-researchers-say/>

[http://www.mlive.com/news/flint/index.ssf/2015/07/marchers\\_continue\\_drumbeat\\_for.html](http://www.mlive.com/news/flint/index.ssf/2015/07/marchers_continue_drumbeat_for.html)

- great photos

<http://www.washingtontimes.com/news/2015/jul/10/activists-rally-about-water-in-flint-after-weeklon/>

[http://www.deadlinedetroit.com/articles/12697/scary\\_lead\\_water\\_and\\_one\\_flint\\_family\\_s\\_toxic\\_nightmare#.VfCCoBFVhBc](http://www.deadlinedetroit.com/articles/12697/scary_lead_water_and_one_flint_family_s_toxic_nightmare#.VfCCoBFVhBc)

<http://flintwaterstudy.org/about-page/about-us/>

<http://www.wateryoufightingfor.com/>

[http://www.mlive.com/news/flint/index.ssf/2015/09/flint\\_mayoral\\_challenger\\_calls.html](http://www.mlive.com/news/flint/index.ssf/2015/09/flint_mayoral_challenger_calls.html)

<http://www.mlive.com/news/flint/index.ssf/2015/09/mayor.html>

<http://michiganradio.org/post/team-testing-flint-water-lead-sample-sample#stream/0>

[http://www.mlive.com/news/flint/index.ssf/2015/09/new\\_testing\\_shows\\_flint\\_water.html](http://www.mlive.com/news/flint/index.ssf/2015/09/new_testing_shows_flint_water.html)

- On Monday, Aug. 31, the researchers reported 42 percent of 120 initial samples from Flint had lead levels that were more than 5 parts per billion, "which suggests a serious lead-in-water problem, according to our experience and criteria."
- The EPA requires water systems like Flint's to collect tap samples from sites that are more likely to have plumbing materials containing lead.
- If more than 10 percent of samples exceed 15 ppb, then water systems are required to take action, including steps to optimize corrosion control treatment.
- "The city of Flint has offered free and independent testing to residents since spring, and I encourage people to use this service if they have questions," Walling's statement said.
- Edwards, a professor of civil and environmental engineering, said the elevated lead levels he has seen in Flint tap water are tied to a corrosive water source that contains about eight times more chloride than Detroit water does.
- "Chloride is generally considered to be very corrosive to iron. For instance, chloride present in road salts applied in the winter causes iron in cars and bridges to rust," the Virginia Tech team's website says.
- "This could be a huge public health problem. ... The Flint water just ate the pipe up," Edwards said of the testing he has overseen so far.
- "If it were me, I would not be using (Flint River water) for cooking or drinking unless I had it tested for lead," said Edwards, who previously mounted a six-year campaign that succeeded in forcing the U.S. Centers for Disease Control and Prevention to admit it had misled the public about the risk of lead in the Washington, D.C., area's drinking water, according to The

Washington Post.

- Since the switch, the city has been plagued by issues such as water main breaks and boil water advisories because of bacteria and has been in violation of the Safe Drinking Water Act because of high levels of total trihalomethanes (TTHM), a byproduct of chlorinating river water.
- The Rev. Allen Overton, who hand-delivered petitions to Walling on Monday, asking that city officials reconnect the Flint water system to Detroit, said Wednesday that the Virginia Tech experiment is more evidence Flint is not using the best quality of water available.
- "We have a major health issue here, (and) they are not being honest with the citizens of Flint," Overton said.

Flint Water Petition:

[https://secure3.convio.net/fww/site/Advocacy;jsessionid=7266B35978FAD2EFBD3A57D87D5085AB.app334b?pagename=homepage&page=UserAction&id=2199&autologin=true&s\\_src=blg&s\\_subsrc=070915\\_a](https://secure3.convio.net/fww/site/Advocacy;jsessionid=7266B35978FAD2EFBD3A57D87D5085AB.app334b?pagename=homepage&page=UserAction&id=2199&autologin=true&s_src=blg&s_subsrc=070915_a)

Dear [Flint Mayor Dayne Walling and Flint City Council],

Water is a basic human right. The United Nations General Assembly recognizes that access to safe drinking water and sanitation are essential to the realization of all human rights.

In 2014, Flint's emergency manager disconnected the city from the Detroit Water and Sewerage Department (DWSD) and started providing residents with water from the Flint River. Since that time, residents have been struggling to maintain access to a clean, safe drinking water supply.

Residents of Flint report having tap water with high levels of copper, lead, THMs (chemicals that result when chlorine mixes with organic matter), tin, lime and iron. The water is often brown or bluish-green in color and contains sediment. As a result, people are experiencing symptoms including hair loss, lead poisoning and diseases related to consuming high levels of copper (to name a few).

The Flint River clearly is not a safe, reliable source for the city's drinking water. It was as easy as pushing a button to disconnect from DWSD; it's time to push the button again, reconnecting Flint to DWSD and providing Flint residents with the clean, safe water they deserve.

Please reconnect Flint to the Detroit Water and Sewerage Department immediately and make water safe and clean for all.

Sincerely,

[Your Name]

[Your Address]

[City, State ZIP]

Washington DC

<https://www.dcwater.com/lead/>

- Sources of lead in drinking water

- **Lead service pipe**

In the U.S., lead service pipes were installed until the mid-1950s. Older properties may still have lead service pipes, which connect the water main in the street to household plumbing. The service pipe is owned by the property owner. Under certain conditions, DC Water is authorized to repair, maintain or renew the portion of the service pipe in public space. The maintenance of the portion of the service pipe on private property is the exclusive responsibility of the property owner. A "partial" lead service pipe replacement is where a portion of the service pipe is replaced, but a portion made of lead remains in public or private space.

Lead service pipes were installed until the mid-1950s.

- **Lead solder**

This connects pipes in household plumbing. In 1987, lead solder was banned from use in household plumbing. If your house was built before 1987, your plumbing may have lead solder.

- **Brass faucets, valves or fittings**

Almost all faucets, valves and fittings have brass components. Until 2014, brass faucets and fittings sold in the U.S. and labeled "lead-free" could contain up to eight percent lead. Effective January 2014, the Reduction of Lead in Drinking Water Act specifies that these materials may not contain more than 0.25 percent lead.

- **Galvanized iron pipes**

Household galvanized pipes are old, corroded pipes that were installed in many homes before the 1960s. These pipes can release lead in water if the property has, or previously had, a lead service pipe. Galvanized pipes are made with a protective layer of zinc. However, the zinc layer erodes over time and results in corrosion. When lead is released from a lead service pipe and passes through galvanized plumbing (particularly over decades of use), lead can accumulate on the inside, corroded walls of this plumbing.

Lead release from galvanized pipes can vary from home to home and can continue to occur even after a lead service pipe is replaced. Galvanized pipes can cause other water quality problems, such as low water pressure and discolored water. For additional information on household plumbing, [click here](#).

<https://www.sciencenews.org/article/stillbirth-rates-tied-lead-drinking-water>

**Rennaker, Joanne (DEQ)**

---

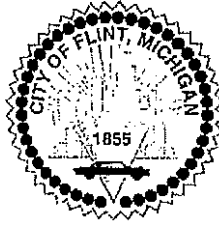
**From:** Daugherty Johnson <djohnson@cityofflint.com>  
**Sent:** Wednesday, October 15, 2014 4:11 PM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Cc:** Brent Wright; Robert Bincsik  
**Subject:** Re: Main Break and Valve replacement  
**Attachments:** Robert T main break and valve replacement notice.pdf; Utility Repairs\_Dort Hwy Oct 18 2014.pdf

I have attached the maps and press release we are sending out. The hand drawn is internal info. Please send comments as necessary.

Thanks  
Duffy

On Wed, Oct 15, 2014 at 3:06 PM, Daugherty Johnson <djohnson@cityofflint.com> wrote:  
Hello Steve and Mike. The City is planning on repairing a break on a 16" line on Saturday. The shutdown area will also allow us to replace a 24" valve, 18" valve and two 12" valves. We are planning to issue a Boil Notice for the affected areas. Could you please get back with me so we can coordinate what we've got going with your office. You can call me at (810) 577-8906 to set up a conference call.

Thanks  
Daugherty 'Duffy' Johnson  
Utilities Administrator  
City of Flint



CITY OF FLINT  
OFFICE OF EMERGENCY MANAGER  
DARNELL EARLEY  
ICMA-CM, MPA

Jason Lorenz  
Public Information Officer  
(810) 237-2039  
jlorenz@cityofflint.com

For Immediate Release

**Major Water Line Repairs Will Take Place in Robert T. Longway Blvd & Dort Hwy. Area, More Repairs to System Scheduled**

*Flint, Michigan – October 15, 2014* – The City of Flint's Department of Public Works has today announced that work on a water main break in the area of Dort and Longway is taking place and will be followed by more scheduled repairs to the system in that area. A break in the sixteen inch water main was discovered a week ago and crews have been examining the surrounding system. As a result, a number of valves in the area have been identified for repairs which will begin on Saturday, October 18, 2014.

This work will be on a part of the City's water transmission system, to which no residential customers are connected. However, there will be a reduction of pressure to the system, which may cause low water pressure in the surrounding area. In accordance with DEQ regulations we will be issuing a Boil Water Notice for the highlighted area (see attached map). Only residents who have low pressure during this 12 hour period are affected. Once again, this is merely a precaution and no one in the affected area should be directly connected to the portion of the system being repaired.

–CONTINUE–

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City Hall  
1101 S. Saginaw Street - Flint, Michigan 48502  
810-766-7346 FAX: 810-766-7218 [www.cityofflint.com](http://www.cityofflint.com)

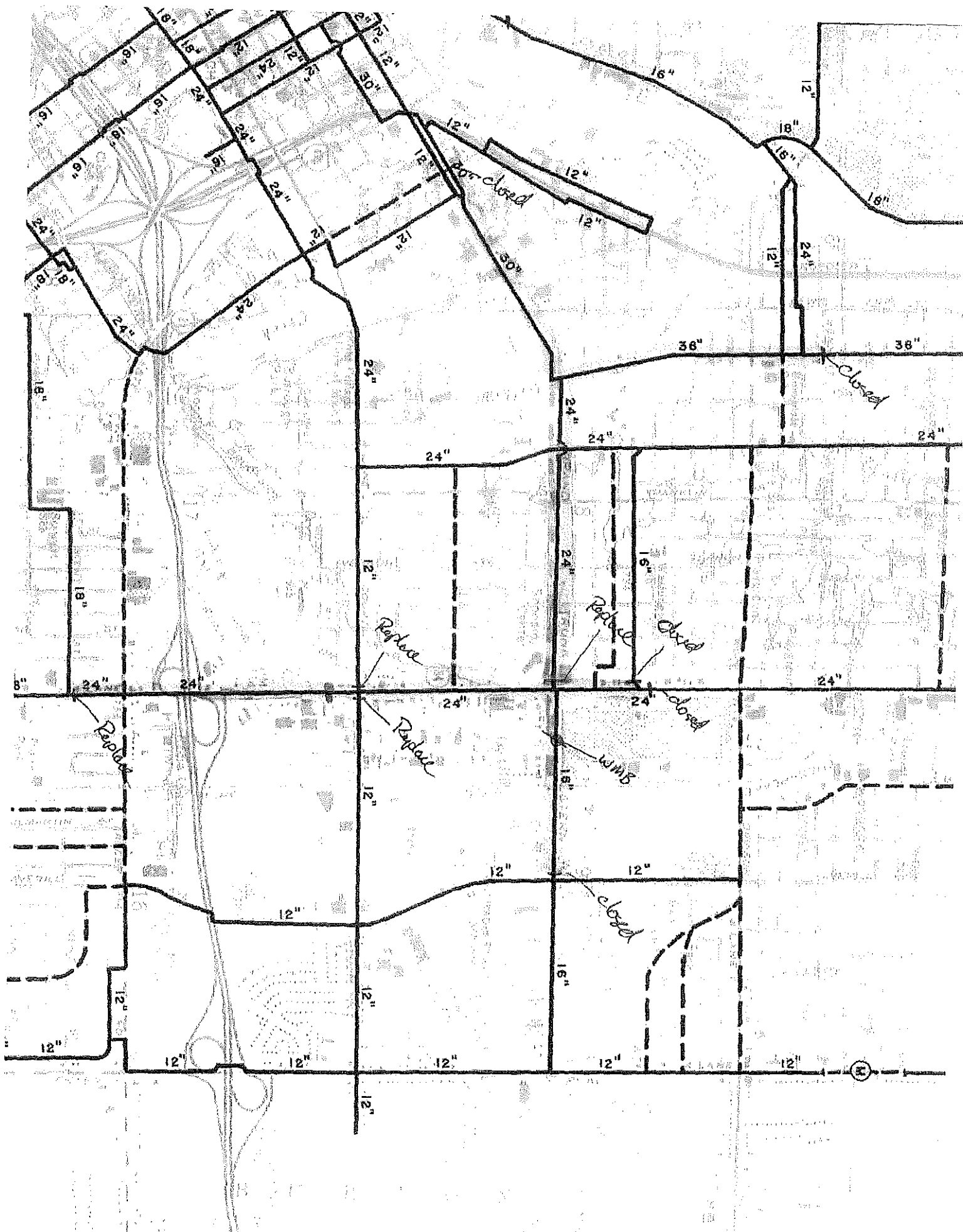


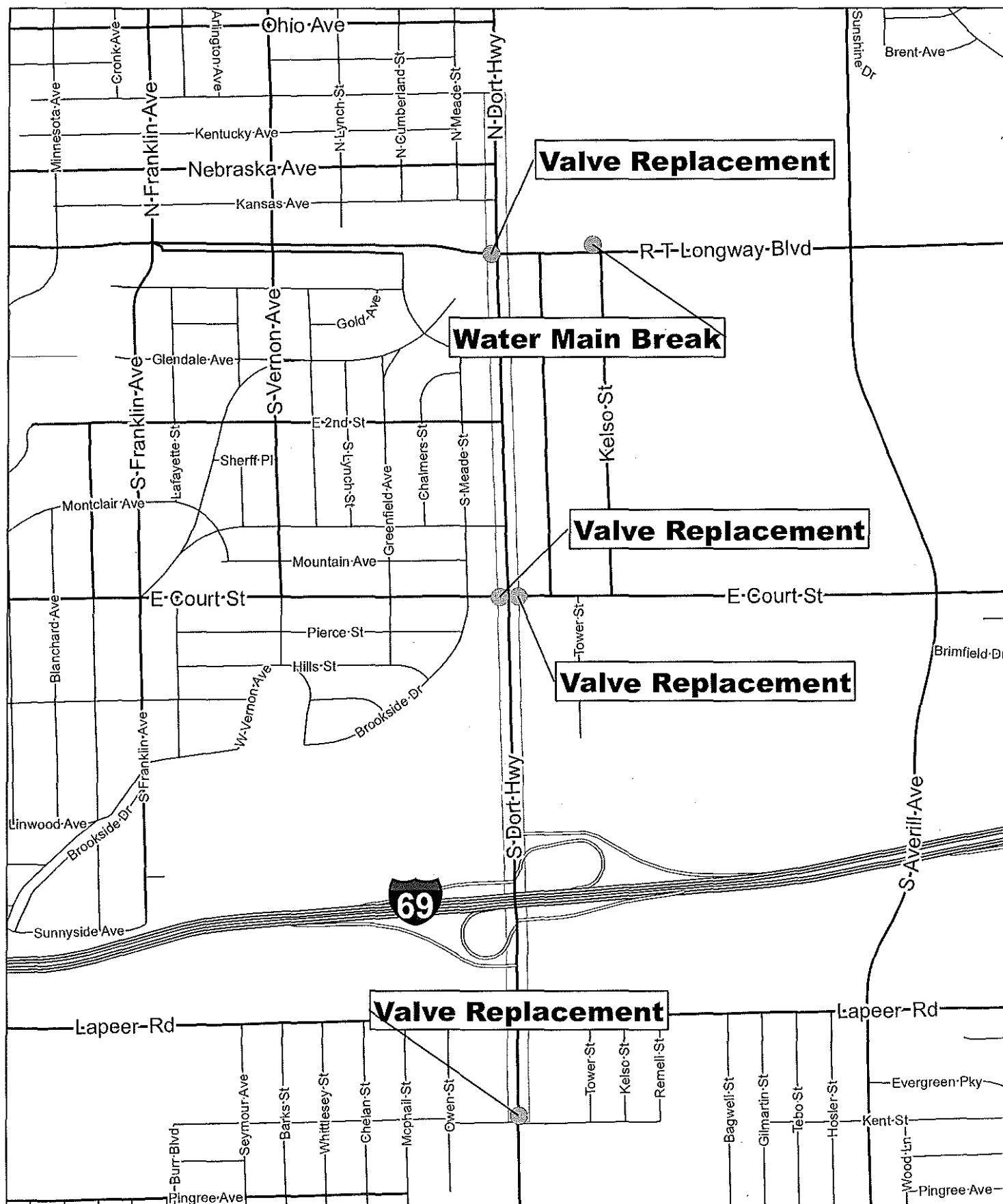
CITY OF FLINT  
OFFICE OF EMERGENCY MANAGER  
DARNELL EARLEY  
ICMA-CM, MPA

In the unlikely event that any residents in the area should experience a loss of water or low pressure during the repairs Saturday, they should expect to boil water for 48 hours after service is restored based on testing. Low pressure and discoloration may occur for those affected. The City of Flint asks that residents watch their local news station for announcement of the completion of repairs.

The work being performed will result in improved operational control over our large transmission line down Dort Hwy. which will include improving chlorine residuals in the southern portion of Flint. All of the scheduled work taking place is part of an ongoing, broader plan to examine different sections of the water system citywide for needed repairs and upgrades. Upgrading critical infrastructure such as the water system is a key part of the City's Strategic Plan.

-END-





1 in = 944 ft

0 500 1,000 2,000 3,000 Feet



**Rennaker, Joanne (DEQ)**

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Friday, September 11, 2015 2:10 PM  
**To:** Busch, Stephen (DEQ)  
**Subject:** RE: mayor walling's comment

Steve, do you have / can you assemble our figures on lead / copper testing in Flint? I spent quite some time last night talking with Ron Fonger, explaining wanted to see them. Not just the most recent round, but the previous rounds as well. Oh, and if you've got the DCH blood lead level tests document that they shared with us a few weeks ago, I don't seem to have that.

b

---

**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](mailto: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](mailto:rfonger1@mlive.com)

address 540 S. Saginaw St. #101, Flint MI 48502

**Rennaker, Joanne (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)  
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Stephen Busch, P.E.  
 MDEQ Lansing District Coordinator  
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 517-643-2314  
[buschs@michigan.gov](mailto:buschs@michigan.gov)

---

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**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

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**To:** Wurfel, Brad (DEQ)  
**Subject:** mayor walling's comment

Brad:

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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](mailto:rfonger1@mlive.com)

address 540 S. Saginaw St. #101, Flint MI 48502

**Rennaker, Joanne (DEQ)**

---

**From:** Henry, James <jhenry@gchd.us>  
**Sent:** Wednesday, October 07, 2015 10:42 AM  
**To:** Sitko, Anthony M; Busch, Stephen (DEQ); Tawwab, Bilal; Lisa Ermak  
**Cc:** Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); MVALACAK@gchd.us  
**Subject:** RE: MDEQ Water Testing for Flint Community Schools

Please refer all inquiries regarding the Flint school water results to MDEQ. The results have not been shared with GCHD.

Jim Henry RS, MBA  
 Environmental Health Supervisor  
 Genesee County Health Department [www.gchd.us](http://www.gchd.us)  
 630 S. Saginaw St., Suite 4  
 Flint, MI 48502-1540  
 Phone (810) 257-3618 Fax (810) 257-3125  
 E-mail [jhenry@gchd.us](mailto:jhenry@gchd.us)



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**From:** Henry, James  
**Sent:** Thursday, October 1, 2015 1:53 PM  
**To:** 'Sitko, Anthony M'; Busch, Stephen (DEQ); Tawwab, Bilal; Lisa Ermak  
**Cc:** Pallone, Maggie (DEQ); Wurfel, Brad (DEQ)  
**Subject:** RE: MDEQ Water Testing for Flint Community Schools

Good afternoon, below is the message that I sent to GCHD staff today. Please let me know if there are questions or concerns.

Thanks Jim

Attached is the school list w/assignments and sampling protocol. If the school locations are more geographical convenient for someone else, please feel free to switch.

Plan

- Report to GCHD tomorrow morning at regular scheduled time to pick up the water bottles and forms.
- Report to first school office w/identification (approx. 8:30am). They will have designated three sample locations per school. The school will have followed their part of the sampling protocol.
- Follow our part of the sampling protocol. Be very specific when identifying the location on the MDEQ sample form i.e. classroom numbers, NSEW, ect.

- Return to office with samples. MDEQ will pick up samples for analysis.

Let me know if there are questions/concerns. Thanks for helping to expedite the schools sampling.

Thanks Jim

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 Management Assistant to  
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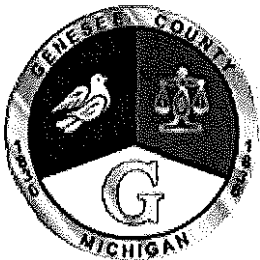
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Sounds great. Since there are multiple drinking fountains per school, GCHD staff will be as descriptive as possible on the report form regarding the sample location.

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**Attachments:** Lead\_Copper\_Sampling\_Instructions\_329915\_7.pdf; Flint School List.pdf

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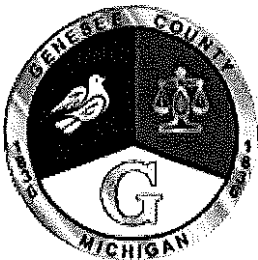
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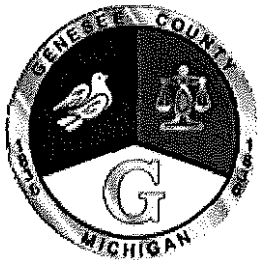
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**Sent:** Tuesday, September 29, 2015 3:12 PM  
**To:** Sitko, Anthony M  
**Cc:** Tawwab, Bilal; FARRIS SHARRECE; Lisa Ermak; Busch, Stephen (DEQ); Tommasulo, Karen (DEQ); Pallone, Maggie (DEQ)  
**Subject:** RE: MDEQ Water Testing for Flint Community Schools

We would like to have this call at 4:00.

Conference call info: 1-888-251-2909  
Access Code: 8426781

Please let me know if you have any questions.

Thanks!

Heather Feuerstein for Maggie Pallone  
Management Assistant to  
Maggie Pallone, Deputy Director and  
Brad Wurfel, Communications Director  
Department of Environmental Quality  
517.284.6715

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**From:** Sitko, Anthony M [<mailto:tsitko@flintschools.org>]  
**Sent:** Tuesday, September 29, 2015 1:23 PM  
**To:** Pallone, Maggie (DEQ)  
**Cc:** Tawwab, Bilal; FARRIS SHARRECE; Lisa Ermak  
**Subject:** MDEQ Water Testing for Flint Community Schools  
**Importance:** High

Greetings, Maggie,

Thank you for taking the time to talk with me this afternoon regarding water testing for our schools. Please find the attached list of sites within the Flint Community Schools at which Superintendent Tawwab would like water tested.

Per our discussion on the phone this afternoon, the list of school buildings is attached and I will be available between 3:00PM and 5:00PM for a conference call with yourself and the identified other parties.

I await your reply on the time for the conference call.

Regards,  
Tony

## Drinking Water Lead & Copper Sampling Instructions

Dear Resident:

Thank you for helping to monitor for lead and copper in your drinking water. It is important that you follow these instructions so that we may collect an accurate measurement of the lead and copper in your drinking water. This sample is supposed to represent the water you would typically drink and the faucet from where you would drink the water. Call your water supply if you have any questions.

1. Select a faucet in the KITCHEN or BATHROOM that is commonly used for drinking. DO NOT sample from a laundry sink or a hose spigot as these samples cannot be used by your utility.
2. Flush the COLD water for at least 5 minutes. Let the water sit for at least 6 hours **before** you plan to collect the sample. If you have a single handle faucet, turn it to the COLD side. DO NOT use this faucet again until it is sampled.
3. Wait at least 6 hours before collecting your sample but we do not recommend sampling if the faucet has sat idle for more than 12 hours.
4. Fill the sample bottle to the neck with the "first draw" of COLD water from the faucet that you flushed at least 6 hours previous.

5. Please answer the following questions:

a) Did you flush the water for at least 5 minutes and let it sit unused for 6 hours before you filled the bottle? ☐ Yes ☐ No

b) What date and time did you **flush the faucet**? Date \_\_\_\_\_ Time \_\_\_\_\_ P.M.

c) What date and time did you **fill the bottle**? Date \_\_\_\_\_ Time \_\_\_\_\_ A.M.

d) Did you fill the bottle from the same faucet that was flushed 6 hours before? ☐ Yes ☐ No  
If NO, please explain: \_\_\_\_\_

e) Which faucet did you use to fill the bottle? ☐ Kitchen ☐ Main Bathroom ☐ Other  
If OTHER, please describe: \_\_\_\_\_

f) Is this faucet connected to a home treatment device such as a water softener, a reverse osmosis unit, an iron removal device OR is any kind of additive used in the home? ☐ Yes ☐ No  
If YES, please describe: \_\_\_\_\_

Your Printed Name \_\_\_\_\_

Your Address \_\_\_\_\_

Your Signature \_\_\_\_\_

6. Attach this form to the bottle and leave it outside your front door for pick-up.

If you have any questions call:

Water Supply: \_\_\_\_\_

Manager or  
Water Operator: \_\_\_\_\_

Phone: \_\_\_\_\_

Or contact:

Michigan Department of Natural Resources & Environment

DNRE contact: \_\_\_\_\_

Phone: \_\_\_\_\_

Thanks again for your help. Information on this year's lead and copper monitoring will be printed in the *Consumer Confidence Report* that will be made available to you by July 1 of next year. We will send you the results within 30 days of receiving them. Contact your utility if you have any questions.


**FLINT COMMUNITY SCHOOLS**
*Expect More. Achieve More.*

923 E. Kearsley Street • Flint, MI 48503  
 Phone: (810) 760-1000 / Fax: (810) 760-7601  
[www.flintschools.org](http://www.flintschools.org)

**SCHOOL INFORMATION  
 2015-2016**

| SCHOOL                             | PHONE    | FAX      | ADDRESS                        | PRINCIPAL           |
|------------------------------------|----------|----------|--------------------------------|---------------------|
| <b>SECONDARY SCHOOLS</b>           |          |          |                                |                     |
| Northwestern High School           | 760-1780 | 760-8809 | G-2138 W. Carpenter Rd., 48505 | Tim Green           |
| Accelerated Learning Academy (ALA) | 760-8500 | 760-8809 | G-2138 W. Carpenter Rd., 48505 | Eddie Thomas        |
| Southwestern Classical Academy     | 760-1400 | 760-7772 | 1420 W. Twelfth St., 48507     | Cheryl Tate         |
| <b>ELEMENTARY SCHOOLS</b>          |          |          |                                |                     |
| Brownell K-2 STEM Academy          | 760-1643 | 760-1538 | 6302 Oxley Dr., 48504          | Darryl Grace        |
| Doyle Ryder Elementary             | 760-5265 | 760-5118 | 1040 N. Saginaw St., 48503     | Robert Bueche       |
| Durant-Tuuri-Mott Elementary       | 760-1594 | 760-7729 | 1518 University Ave., 48504    | Shelly Umphrey      |
| Eisenhower Elementary              | 760-1607 | 760-7457 | 1235 Pershing St., 48503       | Rachel Turner       |
| Freeman Elementary                 | 760-1797 | 760-8882 | 4001 Ogema St., 48507          | Anita Miller        |
| Holmes 3-8 STEM Academy            | 760-1968 | 760-1624 | 6602 Oxley Dr., 48504          | Anna Johnson        |
| Neithercut Elementary              | 760-1359 | 760-5133 | 2010 Crestbrook Ln., 48507     | Debra Jackson-Noble |
| Pierce Elementary                  | 760-1388 | 760-7147 | 1101 W. Vernon Dr., 48503      | Shalonda Byas       |
| Potter Elementary                  | 760-1813 | 760-5156 | 2500 N. Averill Ave., 48506    | Gretchen Shafer     |
| <b>OTHER BUILDINGS</b>             |          |          |                                |                     |
| Administration Building            | 760-1000 | 760-7601 | 923 E. Kearsley St., 48503     |                     |
| Central Kitchen                    | 760-1073 | 760-7073 | 305 Walnut, 48503              |                     |

ANDREW

DAWN

ANDREW

BILL

BILL

TONY

TONY

ANDREW

BRIAN

SHERYL

BRIAN

TIM

TINA

**Rennaker, Joanne (DEQ)**

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**From:** Benzie, Richard (DEQ)  
**Sent:** Friday, October 02, 2015 9:40 AM  
**To:** Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Wyant, Dan (DEQ); Busch, Stephen (DEQ); Krisztian, George (DEQ); Sygo, Jim (DEQ)  
**Subject:** RE: Media conference call re: Flint water action plan  
**Attachments:** Public Health Code Summary of Authority and Actions.pdf

I am not well versed on this matter as we have no prior history of such an event impacting a community public water system.

The attached document was received by our Noncommunity Public Water Supply program manager (Dana DeBruyn) at a presentation given by Deborah Garcia, Public Health Administrative Law Specialist who works in the Office of Legal Affairs and FOIA, formerly in DCH, now DHHS.

It seems like the authority used by Genesee County falls under the first Action of Imminent Danger Order. The fourth bullet implies that the Director (of DHHS?) may take full charge of the situation including the oversight of local health laws, rules, regulations and ordinances. It doesn't appear to place any particular onus or responsibility on the DEQ Director. Perhaps we need legal advice.

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

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**From:** Pallone, Maggie (DEQ)  
**Sent:** Friday, October 02, 2015 6:13 AM  
**To:** Wurfel, Brad (DEQ); Wyant, Dan (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ); Krisztian, George (DEQ); Sygo, Jim (DEQ)  
**Subject:** Fwd: Media conference call re: Flint water action plan

In light of the possible topics Director will need a clear understanding of what the Genesee county health emergency declaration means? Is there ANY role the DEQ may have?

Thanks  
 Maggie

Begin forwarded message:

**From:** "Wurfel, Sara (GOV)" <Wurfels@michigan.gov>  
**Date:** October 2, 2015 at 12:04:34 AM EDT  
**To:** "Wyant, Dan (DEQ)" <WyantD@michigan.gov>, "Wurfel, Brad (DEQ)" <WurfelB@michigan.gov>, "Tommasulo, Karen (DEQ)" <TommasuloK@michigan.gov>, "Pallone, Maggie (DEQ)" <PalloneM@michigan.gov>, "Lyon, Nick (DHHS)" <LyonN2@michigan.gov>, "Lasher, GERALYN (DHHS)" <lasergh@michigan.gov>, "Minicuci, Angela (DHHS)" <MinicuciA@michigan.gov>, "Eisner, Jennifer (DHHS)" <EisnerJ@michigan.gov>, "Hertel, Elizabeth (DHHS)" <HertelE@michigan.gov>  
**Cc:** "Murray, David (GOV)" <MurrayD1@michigan.gov>, "Kennedy, Jordan (GOV)" <KennedyJ4@michigan.gov>, "Brown, Jessica (GOV)" <BrownJ53@michigan.gov>, "Thelen, Mary Beth

(DEQ)" <THELENM2@michigan.gov>

**Subject: Media conference call re: Flint water action plan**

Hi all –

Per conversations today, here are the details for Friday's embargoed media conference call.

Given some of the changing information, we added in a quick pre-brief with the Governor from 11 to 11:10 a.m. to give us a chance to go over any last details and finalize flow. This will be followed by the actual media conf. call from 11:15 to 11:40 a.m. Know that folks will be needing to head to Flint immediately afterward.

Sounds like we'll have Dan, Nick and Dr. Wells in person. That's great and will work best when most everyone is in the same room. The location is Romney Building, 1<sup>st</sup> floor communications conference room. The governor will be joining us from phone.

We'll need to be fairly quick in overview and framing comments so we can get to as many Qs as possible.

Please let me know if anyone has any Qs, concerns or needs anything else at all. Or if you'd like a listen only line for anyone back in the depts. to catch the call.

Otherwise, see you in the Romney by 11 a.m. tomorrow.

Thanks so much!  
SW

p.s. Also attached key documents as stand right now – release, 2 infographics and the high level points.

**Agenda:**

|                |                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------|
| 11:15-11:16 AM | SW intro; sets parameters; introduces other participants; turns over to Governor for opening remarks               |
| 11:16-11:20 AM | Governor gives opening remarks; highlights reason for state action; introduces Director Wyant                      |
| 11:20-11:24 AM | Director Wyant remarks; highlights key steps in the action plan; introduces Director Lyon                          |
| 11:24-11:27 AM | Director Lyon remarks; highlights key health components of the plan and mentions Dr. Wells; turns back to Governor |
| 11:27-11:37 AM | Governor opens it up for Q&A                                                                                       |
| 11:37-11:39 AM | Governor closing remarks                                                                                           |
| 11:39-11:40 AM | SW wraps up call; reminds reporters of embargo, 1:30 p.m. press conference, and how to get a hold of everyone      |

**Possible Topics:**

Flint water action plan  
Lead in Flint water  
Handling of Flint water issue  
Genesee Co. health emergency action  
ACLU action  
Hurley data  
Reconnecting Flint to Detroit water

**Media invited:**

Flint area media (print, TV and radio) – Flint Journal/Ron Fonger; WJRT TV 12, WNEM TV 5, WEYI TV 25, WFNT Radio

Associated Press – Ed White

Detroit News – Jim Lynch

Detroit Free Press – Nancy Kaffer, Kristi Tanner & Kathy Gray

Michigan Radio – Steve Carmody

## Michigan Public Health Code - Summary of Authority and Actions

|    | Authority/Action                                                | Law <sup>1</sup>                                                   | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----|-----------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Imminent Danger Order                                           | § 2251 or § 2451                                                   | <ul style="list-style-type: none"> <li>• Issued by State Health Director or Local Health Officer</li> <li>• Requires determination of "imminent danger", i.e. a condition or practice exists which could reasonably be expected to cause death, disease, or serious physical harm immediately or before the imminence of the danger can be eliminated through enforcement procedures otherwise provided</li> <li>• May require immediate action to avoid, correct, or remove imminent danger</li> <li>• If Director determines that conditions anywhere in state constitute a menace to the public health, Director may take full charge of the administration of applicable state and local health laws, rules, regulations, and ordinances</li> <li>• Petition filed in circuit court for an order to compel compliance</li> <li>• Issued by State Health Director to notify State Board of Pharmacy and Director of Licensing and Regulatory Affairs to remove the imminent danger.</li> <li>• This is an imminent danger to the health and lives of individuals in this state that can be prevented or controlled by the promulgation of an emergency rule under section 46(2) of the administrative procedures act of 1969, 1969 PA 306, MCL 24.248, to schedule a substance or reschedule a substance as a controlled substance as provided in part 72.</li> <li>• The notification shall include a description of the substance to be scheduled or rescheduled and the grounds for the State Health Director's determination.</li> <li>• The State Health Director may provide copies of police, hospital, and laboratory reports and other information deemed appropriate to the Board of Pharmacy and Director of Licensing and Regulatory Affairs..</li> </ul> |
|    | Imminent Danger Notification to Schedule a Controlled Substance | § 2251(4)                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2. | Emergency Order to Control Epidemic                             | § 2253 or § 2453                                                   | <ul style="list-style-type: none"> <li>• Issued by State Health Director or Local Health Officer</li> <li>• May prohibit the gathering of people for any purpose and may establish procedures to be followed during the epidemic</li> <li>• Unlike Warning Notice (described below) may be issued to a class of persons</li> <li>• May be used to direct mass immunization (§ 9203)</li> <li>• Petition filed in circuit court for an order to compel compliance</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 3. | Order to Abate a Nuisance                                       | § 2455                                                             | <ul style="list-style-type: none"> <li>• Issued by State Health Director or Local Health Officer against owner of property</li> <li>• If property owner does not comply, may remove nuisance and charge owner</li> <li>• May seek warrant from court for assistance from law enforcement to remove nuisance</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 4. | Inspection or Investigation Authority                           | § 2221(2)(d)<br>§ 2241(1)<br>§ 2433(2)(c)<br>§ 2446<br>Rule 173(9) | <ul style="list-style-type: none"> <li>• State and local health departments are authorized to inspect or investigate: <ul style="list-style-type: none"> <li>- A suspected outbreak or exposure</li> <li>- Any matter, thing, premises, place, person, record, vehicle, incident, or event</li> </ul> </li> <li>• State and local health investigators to be provided with medical and epidemiological pertaining to individuals who have, are suspected of having, or may have been exposed to a disease or condition of public health significance</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 5. | Inspection or Investigative Warrant                             | §§ 2241-2247<br>§ 2446                                             | <ul style="list-style-type: none"> <li>• Application for warrant may be filed by State or Local Health Department</li> <li>• Issued by Magistrate based on facts stated in affidavit</li> <li>• May authorize property to be seized</li> <li>• May direct law enforcement to assist health department in inspection or investigation</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

<sup>1</sup> Refers to section of Public Health Code, MCL 333.1101 *et seq.* or communicable disease rules, Michigan Administrative Code, R 325.171 *et seq.*, promulgated under the Code (§§ 2226(d), 2435(d), 5111).

|    | Authority/Action                                                                            | Law <sup>1</sup>            | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----|---------------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6. | Criminal Prosecution                                                                        | § 2261 or § 2443            | <ul style="list-style-type: none"> <li>• A person who violates a rule or order of the State or Local Health Officer is guilty of a misdemeanor punishable by imprisonment for not more than 6 months, or a fine of not more than \$200, or both</li> <li>• Individual may be arrested if violation occurs in the presence of a police officer, or police officer has reasonable cause to believe individual has violated rule or order (MCL 764.15(1))</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 7. | Injunction                                                                                  | § 2255 or § 2465            | <ul style="list-style-type: none"> <li>• State Health Director or Local Health Director may maintain action</li> <li>• May seek court order to restrain, prevent, or correct:               <ul style="list-style-type: none"> <li>- A violation of a law, rule or order that health department has duty to enforce</li> <li>- An activity or condition that health department believes adversely affects the public health</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 8. | Warning Notice (for involuntary detention and treatment of individuals)                     | § 2453(2)<br>§§ 5201 - 5205 | <ul style="list-style-type: none"> <li>• Shall be issued by state health department representative or Local Health Officer upon a determination that individual:               <ul style="list-style-type: none"> <li>- Is or is reasonably believed to be a carrier of a specific infectious agent or serious communicable disease or infection</li> <li>- Has demonstrated inability or unwillingness to act in a manner that does not put others at risk of exposure</li> </ul> </li> <li>• Must be in writing (may be verbal in urgent circumstances, followed by a written notice within 3 days)</li> <li>• Must be specific and individual, cannot be issued to a class of persons</li> <li>• Must require individual to cooperate with health department in efforts to control spread of disease</li> <li>• May require individual to participate in education, counseling, or treatment programs, and to undergo medical tests to verify carrier status</li> <li>• Must inform individual that if individual fails to comply with Warning Notice, health department shall seek court order</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 9. | Court Order for Detaining, Transporting, Testing, or Treating Carrier of Infectious Disease | §§ 5205 - 5207              | <ul style="list-style-type: none"> <li>• If individual fails or refused to comply with Warning Notice (see discussion above), health department must petition Circuit Court (Family Division) for order requiring testing, treatment, education, counseling, commitment, isolation, etc., as appropriate               <ul style="list-style-type: none"> <li>- Individual has right to evidentiary hearing</li> <li>- Health department must prove allegations by clear and convincing evidence</li> <li>- Individual has right to appeal and review by Court of Appeals within 30 days</li> <li>- Before committing individual to a facility, court must consider recommendation of a commitment panel, and commitment order must be reviewed periodically</li> </ul> </li> <li>• In an emergency, health department may go straight to court (without issuing Warning Notice). Upon filing of affidavit by health department, court may order that individual be taken into custody and transported to an appropriate emergency care or treatment facility for observation, examination, testing diagnosis, treatment, or temporary detention               <ul style="list-style-type: none"> <li>- Court must have reasonable cause to believe that individual is a carrier and health threat to others</li> <li>- Emergency order may be issued <i>ex parte</i></li> <li>- Hearing on temporary detainment order must be held within 72 hours (excluding weekends and holidays)</li> </ul> </li> <li>• Individual who is subject of either emergency proceedings or petition on a Warning Notice has right to counsel at all stages of proceedings. Indigent individual is entitled to appointed counsel</li> </ul> |

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Tuesday, June 24, 2014 12:18 PM  
**To:** Busch, Stephen (DEQ)  
**Subject:** Re: Media Contact City of Flint

Steve,  
I was not aware of WTP grounds being used for bomb squad training-exercises.

QSent from my iPhone

On Jun 24, 2014, at 11:50 AM, "Busch, Stephen (DEQ)" <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)> wrote:

I just spoke with Dominic Adams, Flint Journal/Mlive.

According to the City of Flint Police Dept., prior to full time operation of the Flint WTP (April 2014), the City had a Bomb exercise/disposal range at the back of the property for the City's Water Treatment Plant. Dominic wanted to know if DEQ drinking water staff had discussions about this with the City prior to the WTP startup. I stated that I did not have discussions with the City on this, I would need to verify my staff hadn't discussed it, but I am sure they did not. I did ask whether he meant a firing/target range and he indicated that the site was used by the Flint bomb squad.

I indicated that I don't have expertise in explosives or the related waste issues, and that our focus has been on the water quality (we have no evidence of impact to the Flint River from this site). Those types of questions about impact to the land or waste issues would be best responded by staff in RRD and OWMRP, so I provided Dominic with the Lansing DS contacts for both (Kathy and Larry).

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

**Rennaker, Joanne (DEQ)**

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**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Thursday, March 05, 2015 1:26 PM  
**To:** Thelen, Mary Beth (DEQ)  
**Cc:** Devereaux, Tracy Jo (DEQ); Shaler, Karen (DEQ); Feuerstein, Heather (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Meeting on March 9

According to a calendar check, Steve and I are both available. We will both plan to attend the meeting.

Thanks.

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

---

**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Thursday, March 05, 2015 12:14 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Devereaux, Tracy Jo (DEQ); Shaler, Karen (DEQ); Thelen, Mary Beth (DEQ); Feuerstein, Heather (DEQ)  
**Subject:** FW: Meeting on March 9  
**Importance:** High

Liane,

Director has asked that Brad Wurfel attend this on Monday.

We also need you OR Stephen OR Mike or a combination of 2 of you. Director said it was your call. Brad felt it would be best to have Stephen at this meeting.

Please let me know ASAP who can attend.

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](mailto:Thelenm2@michigan.gov)

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**From:** Clayton, Stacie (GOV)  
**Sent:** Wednesday, March 04, 2015 5:25 PM  
**To:** Wyant, Dan (DEQ)

**Cc:** Thelen, Mary Beth (DEQ)  
**Subject:** Meeting on March 9

Director Wyant,

Harvey Hollins is requesting a DEQ technical person attend a meeting on Monday, March 9, at 1pm. The meeting will take place in the offices of the Sterling Corporation in the Hollister Building, 106 W. Allegan, Suite 2, Lansing, MI, and its purpose is regarding a possible solution for the Flint Water matter. Also in attendance will be Flint EM Gerald Ambrose and a Flint Water representative.

Additionally, I will have more you background information by Friday morning.

Thank you,  
Stacie

***Stacie Clayton, Assistant Director***

Harvey Hollins III, Director  
Governor's Office of Urban and Metropolitan Initiatives  
3044 West Grand Boulevard, Ste. 14-650  
Detroit, MI 48202  
313.456.4994 (office)  
[claytons3@michigan.gov](mailto:claytons3@michigan.gov)

**Rennaker, Joanne (DEQ)**

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**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, 34<sup>th</sup> District and Phil Phelps, 48<sup>th</sup> 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

**Rennaker, Joanne (DEQ)**

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Tuesday, October 21, 2014 1:45 PM  
**To:** Emergency Financial Manager  
**Cc:** mmurray@cityofflint.com; Thelen, Mary Beth (DEQ)  
**Subject:** RE: Meeting with Director Dan Wyant of DEQ on Flint's Drinking Water

Dear Darnell,

Super, yes we can meet 10:00 a.m. on Wednesday, October 29 in Flint.

Yesterday I spoke with your management assistant and she thought you were coming into Lansing on October 29 so we had arranged for you to meet here at 11:00. However, since you are not coming into Lansing, we certainly can drive to Flint to meet with you. We appreciate you taking the time to meet with Director Dan Wyant and his staff.

If anything changes, please let me 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](mailto:Thelenm2@michigan.gov)

**From:** Emergency Financial Manager [<mailto:em@cityofflint.com>]  
**Sent:** Tuesday, October 21, 2014 1:12 PM  
**To:** Thelen, Mary Beth (DEQ)  
**Subject:** RE: Meeting with Director Dan Wyant of DEQ on Flint's Drinking Water

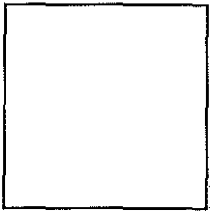
Good Morning Mary Beth:

Wednesday morning would work best for me. I would also like to invite Director Wyatt to Flint. We could meet at 10:00 AM in the Mayor's Conference Room, 1st Fl. Municipal Center, 1101 S. Saginaw Street, Flint, MI.

I have a standing 9:00 AM conference call meeting that morning with Treasury, the Governor's office, and the Michigan State Police. That usually runs between 30 and 45 minutes. Please let me know if this works.

I appreciate the opportunity to meet with Director on this very crucial issue in the City of Flint. You can also call me direct at 810.237.2057. My cellphone number is 810.449.1327.

Sincerely,



**Error! Filename not specified.**

Darnell Earley, ICMA-CM, MPA  
Emergency Manager  
Flint, MI

**Rennaker, Joanne (DEQ)**

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**From:** Deltoral, Miguel <deltoral.miguel@epa.gov>  
**Sent:** Friday, June 05, 2015 7:09 AM  
**To:** Crooks, Jennifer; Busch, Stephen (DEQ); Prysby, Mike (DEQ); Cook, Pat (DEQ)  
**Cc:** Poy, Thomas  
**Subject:** Re: more customer lead samples over the AL?

Slight correction...most old pipe from the home *to the shut-off* is galvanized, and the majority of lead they have seen is from the shut-off to the main. Apologies for not getting this report written up, but I keep getting sidetracked with NDWAC LCR and RTCR primacy packages. I will try to get that written up and out to you in the next week.

If I get copies of the latest results I will forward them, but my understanding is that the DEQ lab runs the samples, so they should be available within DEQ as well.

Miguel A. Del Toral  
 Regulations Manager  
 U.S. EPA R5 GWDWB  
 77 West Jackson Blvd, (WG-15J)  
 Chicago, IL 60604  
 Phone: (312) 886-5253

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**From:** Crooks, Jennifer  
**Sent:** Thursday, June 4, 2015 03:05 PM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ); [cookp@michigan.gov](mailto:cookp@michigan.gov)  
**Cc:** Deltoral, Miguel; Poy, Thomas  
**Subject:** more customer lead samples over the AL?

I talked with Miguel this week; he learned that there have been 2 more customer-requested lead samples that have come back over the AL: 22ppb and 40 ppb. These were customer-requested samples taken by Mike Glasgow and analyzed at the Flint lab. When I receive the lab reports, I'll email them to you—or Mike Glasgow should have copies of all the customer-requested lead sample results he's taken. Greg Waldorf, the contractor that replaced Ms. Walters' service line on Wed May 6, said that many of the customer services are galvanized from the customer to the water main, but they also have a lead line that connects the shut-off valve with the water main—which would make the lead piping City-owned.

Jennifer

**Rennaker, Joanne (DEQ)**

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**From:** Anderson, Paula (DCH)  
**Sent:** Wednesday, January 28, 2015 1:28 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Robinson, Mikelle (DCH); Moran, Susan (DCH); Miller, Mark (DCH); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Need for information on the municipal water situation in Flint.....Urgent

Thank you. Nick Lyon plans to come to Sue Moran's office (Sue is the Senior Deputy for Public Health) sometime between 2-2:15 pm. We will plan to call you at the number you provided.

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, January 28, 2015 1:20 PM  
**To:** Miller, Mark (DCH); Prysby, Mike (DEQ); Shekter Smith, Liane (DEQ)  
**Cc:** Anderson, Paula (DCH); Robinson, Mikelle (DCH)  
**Subject:** RE: Need for information on the municipal water situation in Flint.....Urgent

Please call me at the number listed below at 2:00. I will be on my way to the meeting with Richard Benzie, Field Operations Section Chief.

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

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**From:** Miller, Mark (DCH)  
**Sent:** Wednesday, January 28, 2015 12:41 PM  
**To:** Prysby, Mike (DEQ); Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ)  
**Cc:** Anderson, Paula (DCH); Robinson, Mikelle (DCH)  
**Subject:** Need for information on the municipal water situation in Flint.....Urgent  
**Importance:** High

Mike,

As discussed my Director of Community Health, Nick Lyon, asked for a quick briefing on the Municipal Water situation in Flint, at 2 PM today (Wednesday January 28<sup>th</sup>). I realize this is really short notice, but I'd like us all to be on the same page, especially if Nick get questions about it. At this point, I only have what I've heard in the media.

Can you give me a phone number of somebody that would be available at 2 PM today to answer Nick's questions? Please send it to Paula Anderson (cc:ed on this email).

Appreciate your assistance.

Mark Miller

Director, Local Health Services  
Michigan Dept. of Community Health  
201 Townsend, 6<sup>th</sup> Floor  
Lansing MI 48913  
(517) 335-8032  
[millerm1@michigan.gov](mailto:millerm1@michigan.gov)

**Rennaker, Joanne (DEQ)**

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**From:** Benzie, Richard (DEQ)  
**Sent:** Monday, August 10, 2015 10:54 AM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Shekter Smith, Liane (DEQ)  
**Subject:** RE: Need upate on lead / copper tests for Flint

Has the letter been sent to the city? Tom Poy wants to be able to tell the Regional Administrator.

---

**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 upate on lead / copper tests for Flint

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 90<sup>th</sup> 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 90<sup>th</sup> 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 watermain 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](mailto:buschs@michigan.gov)

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**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 update 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 update 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

**Rennaker, Joanne (DEQ)**

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**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Thursday, March 20, 2014 9:26 AM  
**To:** Brim, Richard (DEQ); Busch, Stephen (DEQ)  
**Cc:** Craig, John (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Willard, Veronica (DEQ)  
**Subject:** RE: New 3.13

All – the sentence requiring an Act 399 permit in 13.3 has been removed. I was uncomfortable that it appeared to only pertain to the activities under 13.3., when it's required for other actions proposed to be taken. In addition, there already is a general provision that actions taken under the order must comply with state and federal law, so I think Steve's concern is covered.

Thanks everyone for getting this done.

Liane

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

**From:** Brim, Richard (DEQ)  
**Sent:** Thursday, March 20, 2014 9:03 AM  
**To:** Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)  
**Cc:** Craig, John (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Willard, Veronica (DEQ)  
**Subject:** RE: New 3.13

We have added the suggested provision to the end of paragraph 3.13 as Steve requested, Rich.

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Thursday, March 20, 2014 8:57 AM  
**To:** Busch, Stephen (DEQ); Brim, Richard (DEQ)  
**Cc:** Craig, John (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Willard, Veronica (DEQ)  
**Subject:** RE: New 3.13

Rich – can you verify that the Order contains a provision that they must comply with state law (i.e., they need to apply for and get appropriate permits before commencing construction)? I think this will address Steve's concern below.

Otherwise, we'll probably need a generic statement about getting the appropriate Act 399 permits before they make system improvements.

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:** Thursday, March 20, 2014 8:37 AM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Brim, Richard (DEQ); Craig, John (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Willard, Veronica (DEQ)  
**Subject:** RE: New 3.13

I think this language is more palatable. Since this is being brokered by OWMRP, if we added a line at the end requiring the respondent to obtain necessary permits under 399 from ODWMA it might make a little more sense as a compliance program item.

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, March 19, 2014 4:51 PM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Brim, Richard (DEQ); Craig, John (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Willard, Veronica (DEQ)  
**Subject:** FW: New 3.13

I spoke with Mike earlier and suggested language that conveys that Flint has elected to leave the DWSD system. I think this addresses our issue. Your thoughts?

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

**From:** Robinson, Michael [<mailto:MRobinson@wnj.com>]  
**Sent:** Wednesday, March 19, 2014 4:47 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Subject:** FW: New 3.13

**From:** Robinson, Michael  
**Sent:** Wednesday, March 19, 2014 4:36 PM  
**To:** 'Brim, Richard (DEQ)'  
**Subject:** New 3.13

“Respondent has chosen to use its WTP to supply water to its customers and leave the DWSD after receipt of a notice of termination of service from DWSD. In order for Respondent to continue to use the WTP, Respondent must undertake the KWA public improvement project or undertake other public improvement projects to continue to use the Flint River, such as additional WTP public improvements, source water protection public improvements, and public improvements to obtain a back-up water supply, in order to comply with Act 399.”

Mike

**Rennaker, Joanne (DEQ)**

---

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**Sent:** Thursday, March 20, 2014 9:03 AM  
**To:** Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ)  
**Cc:** Craig, John (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Willard, Veronica (DEQ)  
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**Subject:** RE: New 3.13

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

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

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**To:** Busch, Stephen (DEQ)  
**Cc:** Brim, Richard (DEQ); Craig, John (DEQ); Sygo, Jim (DEQ); Shaler, Karen (DEQ); Willard, Veronica (DEQ)  
**Subject:** FW: New 3.13

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

---

**From:** Robinson, Michael [<mailto:MRobinson@wnj.com>]  
**Sent:** Wednesday, March 19, 2014 4:47 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Subject:** FW: New 3.13

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**From:** Robinson, Michael  
**Sent:** Wednesday, March 19, 2014 4:36 PM  
**To:** 'Brim, Richard (DEQ)'  
**Subject:** New 3.13

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Mike

--

**Rennaker, Joanne (DEQ)**

---

**From:** gdn2@aol.com  
**Sent:** Thursday, October 29, 2015 1:38 PM  
**To:** hcroft@cityofflint.com; Amy.Hovey@mail.house.gov; aleavitt@senatedems.org; achubb@cityofflint.com; bwright@cityofflint.com; lytle.darren@epa.gov; dwalling@cityofflint.com; donna.cole@genesys.org; Dykema, Linda D. (DHHS); Wells, Eden (DHHS); edwardsm@vt.edu; Krisztian, George (DEQ); jhenry@gchd.us; jgaskin@unitedwaygenesee.org; jlorenz@cityofflint.com; jmikewright@yahoo.com; jherman@genesys.org; jfobrien@gcdcwvs.com; KEVIN.KEANE@cmsenergy.com; ksmith@flint.org; larry.koehler@mcc.edu; dr.laura2@gmail.com; LawrenceR@mottchc.org; reynolds@mottchc.org; mglasgow@cityofflint.com; schock.michael@epa.gov; Wright.Michael@epa.gov; mjlane@umflint.edu; Prysby, Mike (DEQ); MVALACAK@gchd.us; nhenderson@cityofflint.com; nbirchm1@hurleymc.com; plevine@gcms.org; rbincsik@cityofflint.com; rosejo@msu.edu; Russell.Hudson@mclaren.org; SFMatta@lan-inc.com; skammer@cityofflint.com; s.mcelmurry@wayne.edu; Busch, Stephen (DEQ); Thompson, Sheryl D. (DHHS); jwgreen@lan-inc.com  
**Subject:** Re: NOTICE\_November Meeting Adjustment

Hi Howard,

I am unable to make the meeting on Monday, November 9th. I have patients scheduled at that time. Wednesdays are much better for my schedule.

Thank you,

Gerald Natzke DO (GCMS representative)

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

**From:** Howard Croft <hcroft@cityofflint.com>  
**To:** Amy Hovey <Amy.Hovey@mail.house.gov>; Andy Leavitt <aleavitt@senatedems.org>; Anthony Chubb <achubb@cityofflint.com>; Brent Wright <bwright@cityofflint.com>; Darren Lytle <lytle.darren@epa.gov>; Dayne Walling <dwalling@cityofflint.com>; donna.cole <donna.cole@genesys.org>; dykemal <dykemal@mich.gov>; Eden Wells (DHHS) <wellse3@michigan.gov>; edwardsm <edwardsm@vt.edu>; George Krisztian (DEQ) <krisztian@michigan.gov>; Gerald (Jed) Natzke <gdn2@aol.com>; Howard Croft <hcroft@cityofflint.com>; James Henry <jhenry@gchd.us>; Jamie Gaskin <jgaskin@unitedwaygenesee.org>; Jason Lorenz <jlorenz@cityofflint.com>; jmikewright <jmikewright@yahoo.com>; JoAnne Herman <jherman@genesys.org>; John O'Brien <jfobrien@gcdcwvs.com>; Kevin J. Keane <KEVIN.KEANE@cmsenergy.com>; Kirk Smith <ksmith@flint.org>; larry.koehler <larry.koehler@mcc.edu>; Laura Sullivan <dr.laura2@gmail.com>; Lawrence Reynolds <LawrenceR@mottchc.org>; Lawrence Reynolds <reynolds@mottchc.org>; Michael Glasgow <mglasgow@cityofflint.com>; Schock, Michael <schock.michael@epa.gov>; Michael Wright <Wright.Michael@epa.gov>; Mike Lane <mjlane@umflint.edu>; Mike Prysby (DEQ) <prysbym@michigan.gov>; MVALACAK <MVALACAK@gchd.us>; Natasha Henderson <nhenderson@cityofflint.com>; Norb Birchmeier <nbirchm1@hurleymc.com>; Pete Levine <plevine@gcms.org>; Robert Bincsik <rbincsik@cityofflint.com>; rosejo <rosejo@msu.edu>; Russell Hudson <Russell.Hudson@mclaren.org>; Samir Matta <SFMatta@lan-inc.com>; Sean Kammer <skammer@cityofflint.com>; Shawn Patrick McElmurry <s.mcelmurry@wayne.edu>; Stephen Busch (DEQ) <BUSCHS@michigan.gov>; thompsons2 <thompsons2@michigan.gov>; Warren Green <jwgreen@lan-inc.com>  
**Sent:** Wed, Oct 28, 2015 10:54 pm  
**Subject:** NOTICE\_November Meeting Adjustment

Technical Advisory Team,

We have a request to reschedule the next meeting for **Monday November 9th at 2:00 pm**. This would allow our EPA representatives their best opportunity to be present at the meeting and I believe that would be a significant benefit to the team especially considering the technical nature of the next meeting.

I know this is short notice but please check your schedules to see if you can attend and plan for this final adjustment. We will still hold the meeting at Flint City Hall at 2:00 pm in the same location as the last meeting and I will have an agenda ready as part of next weeks update.

I will also check on the link to our test map and will make sure that it is working on Thursday.

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](mailto:hcroft@cityofflint.com)

**Rennaker, Joanne (DEQ)**

---

**From:** Sygo, Jim (DEQ)  
**Sent:** Wednesday, March 27, 2013 2:53 PM  
**To:** Busch, Stephen (DEQ)  
**Subject:** RE: ODWMA Response - Flint KWA-DWSD Report  
**Attachments:** KWA - DWSD for WRD.DOCX

Thought I would share with you some items that WRD came up with as well. AS you might guess we are in a situations with Emergency Financial Managers so it's entirely possible that they will be making decisions relative to cost. The concern in either situation is that a compliant supply of source water and drinking water can be supplied.

**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, March 27, 2013 1:39 PM  
**To:** Thelen, Mary Beth (DEQ); Wyant, Dan (DEQ); Sygo, Jim (DEQ); Shekter Smith, Liane (DEQ)  
**Cc:** Willard, Veronica (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ); Bloemker, Jon (DEQ); Donaldson, Kristina (DEQ); Creal, William (DEQ)  
**Subject:** ODWMA Response - Flint KWA-DWSD Report  
**Importance:** High

Director Wyant, and Deputy Director Sygo,

Addendums to ODWMA comments provided yesterday regarding the City of Flint water system and comments on the reports from Tucker, Young, Jackson, Tull, Inc. (TYJT) can be found below in red. Additional comments are as follows:

With regards to regulatory authority for DEQ to allow or prevent the breakup of water utilities, and State vs. local decisions about cost effectiveness, it is important to note that when the DEQ permitted the water withdrawal for KWA (permit 2009-001) part of the decision making process (copy attached) included reasonable use and the balance of Economic Development, Social Development, and Environmental Protection. As part of the public participation process general comments were received (pages 6 & 7) regarding impacts on DWSD and rates to remaining customers. The Department's response to those comments stated:

"The DEQ is specifically precluded from using part 327 to "...diminish or create any existing authority of municipalities to require persons to connect to municipal water supply systems as authorized by law" (MCL 324.32726)."

And

"It is appropriately an issue for water service contract negotiations between the regional water system and its customers. To do otherwise invites unwanted intervention of the state into local decision making."

ODWMA cannot on its own assess an actual dollar value to any regional benefit for the City of Flint to remain a full customer of DWSD, but the following should be included in any additional analysis:

- The cost estimates provided in the TYJT report show a cost difference between full KWA and full DWSD participation of \$172 million over 30 years.
- The formation of KWA would itself be considered one of the largest regional drinking water authorities in the State in terms of capacity, and as such any regional benefits provided by DWSD may only be marginal in comparison.

Finally, we have additional questions for TYJT regarding the various DWSD supply options and the considerations they made in the operations of the Flint WTP. These considerations will have an impact on the cost estimates for DWSD options.

We look forward to further discussion of these comments during our meetings tomorrow, and please let us know if you have any additional questions for us between now and then.

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

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**From:** Busch, Stephen (DEQ)  
**Sent:** Tuesday, March 26, 2013 3:58 PM  
**To:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ)  
**Cc:** Willard, Veronica (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** RE: Flint Draft Response

I will provide additional follow up by tomorrow (Wed.) afternoon to my previous email below based on our discussion and the conference call with Andy Dillon earlier today.

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 26, 2013 12:37 PM  
**To:** Wyant, Dan (DEQ); Thelen, Mary Beth (DEQ); Sygo, Jim (DEQ)  
**Cc:** Willard, Veronica (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** Flint Draft Response

Director Wyant,

In preparation for our call today with Treasurer Dillon's office, ODWMA has developed the following for consideration. We can provide any additional info you require during the meeting.

ODWMA has reviewed the materials developed by the consultant Tucker, Young, Jackson, Tull, Inc. (TYJT) for Treasury regarding the City of Flint and potential alternatives for public water supply. Based on our reviews, we have developed the following comments to this point in our analysis:

1. The TYJT report does not contain the full scope of the Karegnondi Water Authority (KWA) raw water supply system. TYJT concerns over raw water supply redundancy and reliability are addressed to the satisfaction of ODWMA under the full KWA proposal. Please note some portions of the overall project are being financed independently by the Genesee County Drain Commission.
2. There are significant differences in contract language between KWA and Detroit Water and Sewerage Department (DWSD) with respect to the contracted maximum day demand capacity.
  - a. Under a KWA contract, a "maximum day" capacity of 18 million gallons per day (MGD) would fully satisfy current demands of the City of Flint, without the need to supplement raw water capacity using the Flint River. (18 MGD, average over a 30 day period).

- b. Under a DWSD model contract, a “maximum day” capacity, even at 18 MGD, would not satisfy the current demands for the City of Flint. (18 MGD, over any 24 hour period).
3. Restrictions in contracted capacity that would prevent the City of Flint from meeting peak demand requirements present potential limits to economic development within the City of Flint, including possible connection bans and water system extension bans. This information was previously conveyed to the City of Flint by ODWMA staff.
4. All contract options with DWSD that are considered semi-competitive with the KWA contract do not fully supply the City of Flint, and would require the City of Flint to meet a significant, if not majority, of its water demands by treating water from the Flint River. Continuous use of the Flint River at such demand rates would:
  - a. Pose an increased microbial risk to public health (Flint River vs. Lake Huron source water)
  - b. Pose an increased risk of disinfection by-product (carcinogen) exposure to public health (Flint River vs. Lake Huron source water)
  - c. Trigger additional regulatory requirements under the Michigan Safe Drinking Water Act (LT2ESWTR)
  - d. Require significant enhancements to treatment at the Flint WTP, beyond those identified in the TYJT report (see item 5 below).
  - e. Water Resource Division is evaluating potential impacts to NPDES wastewater discharge permits in downstream segments of the Flint River, as a result of decreased river baseflow caused by Flint WTP use.
5. The TYJT report does not adequately address increased requirements and costs associated with using the Flint River as a significant source for the Flint WTP, which are not necessary under a Lake Huron source water scenario. This includes:
  - a. The need to provide softening treatment
  - b. Limitations on disposal options for lime softening sludge
  - c. Increased ozone capacity, UV disinfection
  - d. Additional backup power, more power required for Flint River operation
6. The Flint WTP must operate at some minimum level and within a range of flow rates to maintain treatment effectiveness. Currently that minimum level is 9 MGD. This level may be reduced with additional capital costs to modify the WTP, not addressed in the TYJT report.
7. Allowing Flint WTP to blend water with DWSD sets a new precedent that could pose future consequences with other DWSD customers.
8. Costs impacts to remaining DWSD customers would be similar under the proposed scenarios, only retaining 8 MGD of 30+ MGD total Flint/Genesee Co. demands, based on the following:
  - a. Genesee County distribution system demands are pulling out of DWSD regardless of the decisions by Flint WTP
  - b. Flint’s need to utilize the Flint River as a source
9. ODWMA anticipates cost savings under the KWA proposal will be leveraged to provide additional improvements to the City of Flint water distribution system, improving efficiency and providing additional cost benefits. The KWA water withdrawal permit (2009-001) includes the required implementation of conservation measures that would also drive these distribution system improvements.
10. Major cost discrepancies in TYJT analysis
  - a. Engineering, Legal, Administration, Contingency – TYJT appears to have effectively double charged for these costs in their KWA estimates without adequate justification
  - b. Pumping facilities – TYJT cost estimate methodology does not appear to address localized market costs and does not distinguish fixed and variable costs in its comparison analysis.

11. Remaining DWSD customers in Lapeer County could potentially see water quality impacts as a result of Flint joining KWA, if they remain with DWSD. However, indications to ODWMA are that these communities are currently in final negotiations with KWA for service, which would make this a non-issue.
  - a. City Lapeer
  - b. City of Imlay City

Additional response to the TYJT report has also been provided by Rowe Engineering to Flint EFM, Mr. Ed Kurtz. (Copy Attached)

ODWMA has continued to meet on a regular basis with KWA, Genesee County, and the City of Flint regarding these water supply proposals.

ODWMA will continue to provide any additional detailed analysis requested by Treasury or the DEQ Executive Office.

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

**Rennaker, Joanne (DEQ)**

---

**From:** Dykema, Linda D. (DHHS)  
**Sent:** Monday, October 26, 2015 9:29 AM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Gray, Jennifer (DHHS); Busch, Stephen (DEQ); Krisztian, George (DEQ); Sygo, Jim (DEQ); Bruneau, Michelle (DHHS); Wells, Eden (DHHS); Groetsch, Kory J. (DHHS); Moran, Susan (DHHS)  
**Subject:** RE: Pb - follow-up from call.

All,

HHS has developed materials regarding blood lead testing that will be provided to parents through the schools. It sounds like DEQ is interested in developing materials regarding the water testing and results. I think it would be best to pull these efforts together to maintain consistency in the messaging.

Sue and Eden, please advise on how you'd like to move forward. Thanks

*Linda D. Dykema, Ph.D.*

Environmental Public Health Director  
 Division of Environmental Health  
 Michigan Department of Health & Human Services  
 517.335.8566  
[dykemal@michigan.gov](mailto:dykemal@michigan.gov)

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Friday, October 23, 2015 5:32 PM  
**To:** Groetsch, Kory J. (DHHS)  
**Cc:** Dykema, Linda D. (DHHS); Gray, Jennifer (DHHS); Busch, Stephen (DEQ); Krisztian, George (DEQ); Sygo, Jim (DEQ); Bruneau, Michelle (DHHS)  
**Subject:** RE: Pb - follow-up from call.

Let's try to set up a meeting for Tuesday. Thanks.

---

**From:** Groetsch, Kory J. (DHHS)  
**Sent:** Friday, October 23, 2015 5:19 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Dykema, Linda D. (DHHS); Gray, Jennifer (DHHS); Busch, Stephen (DEQ); Krisztian, George (DEQ); Sygo, Jim (DEQ); Bruneau, Michelle (DHHS)  
**Subject:** RE: Pb - follow-up from call.

Liane,

Apologies, apologies.

Jen, Michelle and I have been at an ATSDR conference this week. I am just getting to emails.

Obviously – this week I over. I am around all next week. Jen is available Monday and Tuesday. Michelle is around most of next week.

I think we could be helpful on both issues. Given I have been out of the loop all week, Linda will need to let me know the status of the MDHHS process and how we can help.

Kory

---

**From:** Shekter Smith, Liane (DEQ)

**Sent:** Tuesday, October 20, 2015 4:38 PM

**To:** Groetsch, Kory J. (DHHS)

**Cc:** Dykema, Linda D. (DHHS); Gray, Jennifer (DHHS); Busch, Stephen (DEQ); Krisztian, George (DEQ); Sygo, Jim (DEQ)

**Subject:** RE: Pb - follow-up from call.

To follow up – we've been told that filters have not been installed at schools. Rather, pitcher type filters have been provided to each classroom. Our sampling protocol reflects this.

I plan to address your secondary comments once the protocol is included as an insert in the final document. It is that document that will contain recommendations etc. that will apply to all schools eventually.

Also, as part of this week's action steps identified by DEQ to implement the governor's action plan, we proposed to meet with DHHS to discuss lead education materials for schools and we should also discuss the development of childcare facility guidance. Are you and your staff available to meet sometime this week?

**Rennaker, Joanne (DEQ)**

---

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**Sent:** Tuesday, October 20, 2015 4:38 PM  
**To:** Groetsch, Kory J. (DHHS)  
**Cc:** Dykema, Linda D. (DHHS); Gray, Jennifer (DHHS); Busch, Stephen (DEQ); Krisztian, George (DEQ); Sygo, Jim (DEQ)  
**Subject:** RE: Pb - follow-up from call.

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---

**From:** Groetsch, Kory J. (DHHS)  
**Sent:** Thursday, October 08, 2015 12:13 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Dykema, Linda D. (DHHS); Gray, Jennifer (DHHS)  
**Subject:** Pb - follow-up from call.

Hi Liane,

Linda asked I drop you a quick email. Jen, she, and I had a couple additional thoughts to consider when building the plan.

1. RE: Testing with and without filters
  - a. If the filters are already in place - could the “without filter testing” occur during next summer when the kids are out of school.
2. We recommend considering the following:
  - a. As part of implementing the monitoring plan, include a statement that training is to be provided to the school staff conducting sample collection, implementing precautionary measures, and providing routine activities related to this monitoring plan.
  - b. School should keep a daily log documenting their implementation of the precautionary measures
  - c. As part of this effort to identify lead sources in the plumbing, can LARA provide a written summary to the principle and have that be part of a planning process to have those lead containing plumbing be removed as building maintenance is conducted over the future. Since 2010, schools need to file a construction plan with LARA when conducting repairs.

Thank you for considering these thoughts.

Kory Groetsch, MS , Manager  
 Toxicology and Response Section

Michigan Dept of Health and Human Services (MDHHS)  
201 Townsend St.  
Lansing, MI 48913  
517-335-9935  
[groetschk@michigan.gov](mailto:groetschk@michigan.gov)

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**Rennaker, Joanne (DEQ)**

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**From:** Bartley, Cheryl (DEQ)  
**Sent:** Friday, May 30, 2014 8:22 AM  
**To:** Busch, Stephen (DEQ); Bennett, Charles (DEQ); Innes, Jim (DEQ)  
**Cc:** Shirey, Kathleen (DEQ); Prysby, Mike (DEQ); McClellan, Michael (DEQ)  
**Subject:** RE: PEAS

It is my understanding that this discharge is downstream of the intake for the WTP, but we will keep you and Mike informed.

**From:** Busch, Stephen (DEQ)  
**Sent:** Friday, May 30, 2014 8:14 AM  
**To:** Bennett, Charles (DEQ)  
**Cc:** Bartley, Cheryl (DEQ); Shirey, Kathleen (DEQ); Prysby, Mike (DEQ); McClellan, Michael (DEQ)  
**Subject:** RE: PEAS

Please keep Mike Prysby and I informed as to this discharge. Any impacts to the Flint River are highly sensitive due to use by the Flint WTP. Thanks.

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

**From:** Bartley, Cheryl (DEQ)  
**Sent:** Thursday, May 29, 2014 2:33 PM  
**To:** Collett, Joli (DEQ); DEQ-PEAS-Lansing  
**Cc:** DEQ-OEA-Compliance-Assistance  
**Subject:** RE: PEAS

Got it... ..Charles Bennett will be the lead.

**From:** Collett, Joli (DEQ)  
**Sent:** Thursday, May 29, 2014 2:29 PM  
**To:** DEQ-PEAS-Lansing  
**Cc:** DEQ-OEA-Compliance-Assistance  
**Subject:** PEAS  
**Importance:** High

**First response please "Reply All" to receipt of this PEAS Notification ASAP.****Incident Description:**

Noticed a sheen in the river, observed coming out of one the storm drains that discharges to the Flint River, coming out of Parcel B of the property known as old Chevy in the Hole, 300 North Chevrolet Avenue, Flint. A brownfield that was split in to five different parcels as they have worked on it. Outfall ID # F13-WARD-14.

One of the contractors remediating site to build park noticed the sheen coming out of the outfall after 9:20 am,

after 7 minutes the sheen dissipated, believe it was first flush after the rain, entering the storm sewer. Checked again at 10:30, 11:30 am and 8:00 pm yesterday, reported no sheen was occurring.

Is an ongoing investigation due to remediation.

|                                |                                                            |                                      |                 |
|--------------------------------|------------------------------------------------------------|--------------------------------------|-----------------|
| <b>Complainant (C)</b>         |                                                            | <b>Party Involved (PI) – Company</b> | ATT Pearlless   |
| • Name                         | Tom Hutchings<br>City of Flint                             | • Name                               | Lyon Londraigan |
| • Street Address               | Water Pollution Control<br>Facility<br>G-4652 Beecher Road | • Street Address                     |                 |
| • City or Twp                  | Flint                                                      | • City or Twp                        |                 |
| • State                        | MI 48532                                                   | • State                              | MI              |
| • Phone                        | 810-766-7210 x 3655                                        | • Phone                              | 989-754-9896    |
| • Alt Phone                    |                                                            | • Alt Phone                          |                 |
| • Type                         | Landline                                                   | • Type                               |                 |
| <b>Incident Street Address</b> |                                                            | <b>Name of Pollutant</b>             | Sheen, oil      |
| • Cross Streets                |                                                            | Release to <b>Water</b> (g)          | Yes             |
| • City or Twp                  |                                                            | Release to <b>Ground</b> (g)         |                 |
| • County                       | Genesee                                                    | Release to <b>Air</b> (lbs)          |                 |
| <b>Water Body Impacted</b>     | Flint River                                                | <b>Cleanup Contractor</b>            |                 |
| Occurred<br>Date/Time/Ongoing  | 5-28-2014, 9:20 am                                         | Release Secured<br>(Y or N)          | Yes             |

Is a cleanup contractor on-scene or called, if so , who: Ongoing investigation, remediation of brownfield site.

**Rennaker, Joanne (DEQ)**

---

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**Importance:** High

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Is an ongoing investigation due to remediation.

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| • City or Twp                  | Flint                                                      | • City or Twp                        |                 |
| • State                        | MI 48532                                                   | • State                              | MI              |
| • Phone                        | 810-766-7210 x 3655                                        | • Phone                              | 989-754-9896    |
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| Occurred<br>Date/Time/Ongoing  | 5-28-2014, 9:20 am                                         | Release Secured<br>(Y or N)          | Yes             |

Is a cleanup contractor on-scene or called, if so , who: Ongoing investigation, remediation of brownfield site.

**Rennaker, Joanne (DEQ)**

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Wednesday, October 28, 2015 4:35 PM  
**To:** Shane, Kirby (DEQ)  
**Cc:** Krisztian, George (DEQ); Pieper, Julia (DEQ); Smith, Carol (DEQ); Busch, Stephen (DEQ)  
**Subject:** RE: Pre-filled sampling forms  
**Attachments:** EQP 2300 32CC fillable Brownell.pdf; EQP 2300 32CC fillable Eisenhower.pdf; EQP 2300 32CC fillable Freeman.pdf

Kirby –

Attached are new forms for Brownell and Eisenhower.

We'll need 180 of each (150 32CC bottles and 30 36CC bottles) for each school. (2 sets of 180 bottles).

We'll also need 30 request for analysis forms for Freeman Elementary along with 30 36CC bottles.

If there's a check box for 32CC or 36CC, then staff won't have to be careful about which form they pick up. That makes the most sense to me, but I'm open to options.

---

**From:** Shane, Kirby (DEQ)  
**Sent:** Wednesday, October 28, 2015 4:16 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Krisztian, George (DEQ); Pieper, Julia (DEQ); Smith, Carol (DEQ)  
**Subject:** Pre-filled sampling forms

Hi Liane – George wanted me to get a hold of you about pre-filling the next round of sample analysis forms for this weekend. I've attached a blank copy of the form. If you could please pre-fill this out for the sampling events for this weekend and send them back, I will print copies to include with sampling kits.

Please let me know if you have any questions.

Thanks!  
 Kirby

Kirby Shane  
 Chief, Inorganic Unit  
 Laboratory Services  
 MichiganDEQ  
[shane@michigan.gov](mailto:shane@michigan.gov)  
 517.335.9888

# REQUEST FOR WATER ANALYSIS

## Billing Information *PLEASE PRINT*

|                        |                                        |                     |
|------------------------|----------------------------------------|---------------------|
| Name<br><b>DEQ</b>     | DWL Account number<br><b>M99953604</b> |                     |
| Mailing Address        |                                        |                     |
| City<br><b>Lansing</b> | State<br><b>MI</b>                     | Zip<br><b>48909</b> |



DRINKING WATER LABORATORY - LANSING  
DEPARTMENT OF ENVIRONMENTAL QUALITY

|                                             |                                                                                                |                                                  |
|---------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------|
| WSSN (Type I-II Public Water)<br><b>N/A</b> | Does sample contain chlorine?<br><input checked="" type="radio"/> Yes <input type="radio"/> No | For questions call us at:<br><b>517-335-8184</b> |
| SAMPLE SOURCE<br>9 - Other                  | SAMPLING PURPOSE<br>9 - Other                                                                  |                                                  |
|                                             | SAMPLE POINT<br>9 - Other                                                                      |                                                  |

REPORT RESULTS TO: (PLEASE PRINT) NOTE: RESULTS WILL BE EMAILED TO YOUR LOCAL COUNTY HEALTH DEPARTMENT

|                                          |                                              |                          |
|------------------------------------------|----------------------------------------------|--------------------------|
| Name<br><b>Steve Busch</b>               | E-mail address<br><b>buschs@michigan.gov</b> |                          |
| Mailing Address<br><b>525 W. Allegan</b> | Area Code & Phone number                     |                          |
| City<br><b>Lansing</b>                   | State<br><b>MI</b>                           | ZIP Code<br><b>48909</b> |

## SAMPLE COLLECTION INFORMATION (PLEASE PRINT)

|                                                                                                                                           |                                                                                                      |                                                                     |                                |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------|
| Sample Collector Name                                                                                                                     | Date Collected                                                                                       | Time Collected<br><input type="radio"/> AM <input type="radio"/> PM |                                |
| Collector Code<br><input type="radio"/> 0 - County Personnel<br><input type="radio"/> 2 - DEQ DW Staff<br><input type="radio"/> 9 - Other | <input type="radio"/> 1 - Water Supply Operator<br><input type="radio"/> 4 - DEQ Staff other than DW |                                                                     | System/Owner Name              |
| Collection Site (Street Address)<br><b>Brownell K-2 STEM Academy</b>                                                                      | Township (If known)                                                                                  | Section (If known)                                                  |                                |
| City<br><b>Flint</b>                                                                                                                      | County<br><b>Genesee</b>                                                                             | ZIP Code<br><b>48504</b>                                            | Well Number (If more than one) |
| Sampling Point (kitchen, bath, etc.)                                                                                                      |                                                                                                      | Site Code or Permit Number (If known)                               |                                |

| TEST CODE | INVESTIGATION UNIT # | DRINKING WATER TEST           | FEE     | <input checked="" type="checkbox"/> |
|-----------|----------------------|-------------------------------|---------|-------------------------------------|
| CCUB      | 32CC                 | Lead/Copper for Investigation | \$26.00 | <input checked="" type="checkbox"/> |

# REQUEST FOR WATER ANALYSIS

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|                 |                                 |              |
|-----------------|---------------------------------|--------------|
| Name<br>DEQ     | DWL Account number<br>M99953604 |              |
| Mailing Address |                                 |              |
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DRINKING WATER LABORATORY - LANSING  
DEPARTMENT OF ENVIRONMENTAL QUALITY

|                                      |                                                                                                |                                           |
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|                                      |                                                                                                | SAMPLE POINT<br>9 - Other                 |

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|                                   |                                       |                   |
|-----------------------------------|---------------------------------------|-------------------|
| Name<br>Steve Busch               | E-mail address<br>buschs@michigan.gov |                   |
| Mailing Address<br>525 W. Allegan | Area Code & Phone number              |                   |
| City<br>Lansing                   | State<br>MI                           | ZIP Code<br>48909 |

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|                                                                                                                                           |                   |                                                                                                      |                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
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|                                                                                                                                           |                   | System/Owner Name                                                                                    |                                                                     |
| Collection Site (Street Address)<br>Eisenhower Elementary                                                                                 |                   | Township (If known)                                                                                  | Section (If known)                                                  |
| City<br>Flint                                                                                                                             | County<br>Genesee | ZIP Code<br>48503                                                                                    | Well Number (If more than one)                                      |
| Sampling Point (kitchen, bath, etc.)                                                                                                      |                   | Site Code or Permit Number (If known)                                                                |                                                                     |

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DRINKING WATER LABORATORY - LANSING  
DEPARTMENT OF ENVIRONMENTAL QUALITY

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|                                      | SAMPLE POINT<br>9 - Other                                                                      |                                           |

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|-----------------------------------|---------------------------------------|-------------------|
| Name<br>Steve Busch               | E-mail address<br>buschs@michigan.gov |                   |
| Mailing Address<br>525 W. Allegan | Area Code & Phone number              |                   |
| City<br>Lansing                   | State<br>MI                           | ZIP Code<br>48909 |

## SAMPLE COLLECTION INFORMATION (PLEASE PRINT)

|                                                                                                                                           |                                                                                                      |                                                                     |                                |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------|
| Sample Collector Name                                                                                                                     | Date Collected                                                                                       | Time Collected<br><input type="radio"/> AM <input type="radio"/> PM |                                |
| Collector Code<br><input type="radio"/> 0 - County Personnel<br><input type="radio"/> 2 - DEQ DW Staff<br><input type="radio"/> 9 - Other | <input type="radio"/> 1 - Water Supply Operator<br><input type="radio"/> 4 - DEQ Staff other than DW |                                                                     | System/Owner Name              |
| Collection Site (Street Address)<br>Freeman Elementary School                                                                             | Township (If known)                                                                                  | Section (If known)                                                  |                                |
| City<br>Flint                                                                                                                             | County<br>Genesee                                                                                    | ZIP Code<br>48507                                                   | Well Number (If more than one) |
| Sampling Point (kitchen, bath, etc.)                                                                                                      | Site Code or Permit Number (If known)                                                                |                                                                     |                                |

| TEST CODE | INVESTIGATION UNIT # | DRINKING WATER TEST           | FEE     | <input checked="" type="checkbox"/> |
|-----------|----------------------|-------------------------------|---------|-------------------------------------|
| CCUB      | 32CC                 | Lead/Copper for Investigation | \$26.00 | ✓                                   |

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, October 09, 2015 12:08 PM  
**To:** Tim Davidek  
**Cc:** bwright@cityofflint.com; Busch, Stephen (DEQ)  
**Subject:** Re: Prepping the 72 for service

Tim, Brent

The procedure outlined by Genesee County and the city of Flint has DEQ's concurrence. Preparation of the portion of the 72-inch transmission main that has been out of service may proceed as proposed. Please keep me updated regarding the status of this operation.

Sent from my iPhone

On Oct 9, 2015, at 11:59 AM, Tim Davidek <[T\\_DAVIDEK@gcdcwws.com](mailto:T_DAVIDEK@gcdcwws.com)> wrote:

Mike,

Attached is the revision with the Dort Res. Added.

Thanks,

Tim Davidek

<cityofflint10815.doc>

**Rennaker, Joanne (DEQ)**

---

**From:** Michael Glasgow <mglasgow@cityofflint.com>  
**Sent:** Thursday, April 17, 2014 11:05 AM  
**To:** Rosenthal, Adam (DEQ)  
**Cc:** Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Subject:** Re: Proposed Water Monitoring - City of Flint

Adam,

Thank you for the quick response. I assumed there would be dramatic changes to our monitoring. I have people above me making plans to distribute water ASAP. I was reluctant before, but after looking at the monitoring schedule and our current staffing, I do not anticipate giving the OK to begin sending water out anytime soon. If water is distributed from this plant in the next couple weeks, it will be against my direction. I need time to adequately train additional staff and to update our monitoring plans before I will feel we are ready. I will reiterate this to management above me, but they seem to have their own agenda.

Thank you,

Mike Glasgow  
 Laboratory & Water Quality Supervisor  
 City of Flint Water Plant

On Wed, Apr 16, 2014 at 2:49 PM, Rosenthal, Adam (DEQ) <[ROSENTHALA@michigan.gov](mailto:ROSENTHALA@michigan.gov)> wrote:

Mike, we have been working on a revised schedule for the City of Flint, which is being sent out today in response to your email indicating the plant startup. Mike Prysby must have been the one in contact with Mr. Croft, not sure what was discussed. Mike is out and will return 4/21/14. Until then our supervisor, Steve Bush, can be contacted at 517-643-2314 for plant operation questions.

see attached schedule.

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

**From:** Michael Glasgow [mailto:mglasgow@cityofflint.com]

**Sent:** Wednesday, April 16, 2014 12:59 PM

**To:** Rosenthal, Adam (DEQ)

**Subject:** Proposed Water Monitoring - City of Flint

Adam,

Good afternoon, I am contacting you in regards to possible changes in our monitoring for our change to full time operation out of the Flint river. I am expecting changes to our Water Quality Monitoring parameters, and possibly our DBP and lead & copper monitoring plan. Also, I am wondering about our MOR required testing. I know you have probably been in contact with Howard Croft, however I have not seen anything except the notes you or Prysby made on the last page of our 2014 monitoring schedule "that things were subject to change". Any information would be greatly appreciated, because it looks as if we will be starting the plant up tomorrow and are being pushed to start distributing water as soon as possible. As the acting F-1, I would like to make sure we are monitoring, reporting and meeting our requirements before I give the O.K to start distributing water.

Thanks,

Mike Glasgow

Laboratory & Water Quality Supervisor

City of Flint Water Plant

(810)787-6537 ext. 3512

**Rennaker, Joanne (DEQ)**

---

**From:** Rosenthal, Adam (DEQ)  
**Sent:** Wednesday, April 16, 2014 2:50 PM  
**To:** Michael Glasgow  
**Cc:** Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Subject:** RE: Proposed Water Monitoring - City of Flint  
**Attachments:** 2014 Flint MS startup.doc; 2014 Flint revised MS-SBrev.doc; Flint MS Enclosure.doc

Mike, we have been working on a revised schedule for the City of Flint, which is being sent out today in response to your email indicating the plant startup. Mike Prysby must have been the one in contact with Mr. Croft, not sure what was discussed. Mike is out and will return 4/21/14. Until then our supervisor, Steve Bush, can be contacted at 517-643-2314 for plant operation questions.

see attached schedule.

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

**From:** Michael Glasgow [<mailto:mglasgow@cityofflint.com>]  
**Sent:** Wednesday, April 16, 2014 12:59 PM  
**To:** Rosenthal, Adam (DEQ)  
**Subject:** Proposed Water Monitoring - City of Flint

Adam,

Good afternoon, I am contacting you in regards to possible changes in our monitoring for our change to full time operation out of the Flint river. I am expecting changes to our Water Quality Monitoring parameters, and possibly our DBP and lead & copper monitoring plan. Also, I am wondering about our MOR required testing. I know you have probably been in contact with Howard Croft, however I have not seen anything except the notes you or Prysby made on the last page of our 2014 monitoring schedule "that things were subject to change". Any information would be greatly appreciated, because it looks as if we will be starting the plant up tomorrow and are being pushed to start distributing water as soon as possible. As the acting F-1, I would like to make sure we are monitoring, reporting and meeting our requirements before I give the O.K to start distributing water.

Thanks,

Mike Glasgow  
 Laboratory & Water Quality Supervisor  
 City of Flint Water Plant  
 (810)787-6537 ext. 3512

## 2014 Monitoring Schedule

### FLINT, CITY OF

WSSN: 02310

Collect samples early in the monitoring period. This schedule reflects your expected routine monitoring and is subject to change. To receive credit for monitoring, include the **WSSN, Site Code, and County** on your request for analysis form. Collect Bacteriological and Automated Partial Chemistry samples close to the shipping time and send overnight delivery. Send all sample results to your Department of Environmental Quality (DEQ) district office unless you use the DEQ laboratory. Test codes, sample units, and costs are listed to help you complete the DEQ laboratory form. Prices are subject to change without notice. The DEQ laboratory is closed on state holidays.

### Location: Plant Tap

Collect these samples at the entry point to the distribution system (after treatment, if applicable.)

| Sample Type                 | # Samples/<br>Frequency                                                                                                                                                                                                                                                                                                                                   | Collect<br>Before            | Site<br>Code | Fee                                                                                                                                                                                                                                           | Unit<br>Number | Test Code |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------|
| Automated Partial Chemistry | This DEQ lab scan includes nitrate, nitrite, fluoride, and sodium whose monitoring frequency requirements differ from one another. Before requesting analyses from a laboratory other than the DEQ laboratory, check with your DEQ district staff for the specific monitoring requirements.                                                               |                              |              |                                                                                                                                                                                                                                               |                |           |
|                             | 1/3 months                                                                                                                                                                                                                                                                                                                                                | Quarterly                    | TP001        | \$18.00                                                                                                                                                                                                                                       | 32             | R         |
| Volatile Organic Compounds  | 1/3 months                                                                                                                                                                                                                                                                                                                                                | Quarterly                    | TP001        | \$100.00                                                                                                                                                                                                                                      | 36VO           | CXVO      |
| Complete Metals             | 1/36 months                                                                                                                                                                                                                                                                                                                                               | 09/30/2014                   | TP001        | \$102.00                                                                                                                                                                                                                                      | 36ME           | CMET2     |
| Arsenic                     | 1/3 months                                                                                                                                                                                                                                                                                                                                                | Quarterly                    | TP001        | \$18.00                                                                                                                                                                                                                                       | 36ME           | CAS       |
| Cyanide                     | 1/3 months                                                                                                                                                                                                                                                                                                                                                | Quarterly                    | TP001        | \$25.00                                                                                                                                                                                                                                       | 36CNa          | CCN       |
| SOC – Pesticides            | 1/3 months                                                                                                                                                                                                                                                                                                                                                | Quarterly                    | TP001        | \$125.00                                                                                                                                                                                                                                      | 36PT           | CXPT      |
| SOC – Herbicides            | 1/3 months                                                                                                                                                                                                                                                                                                                                                | Quarterly                    | TP001        | \$120.00                                                                                                                                                                                                                                      | 36HB           | CXHB      |
| SOC – Carbamates            | 1/3 months                                                                                                                                                                                                                                                                                                                                                | Quarterly                    | TP001        | \$120.00                                                                                                                                                                                                                                      | 36LP           | CXLP      |
| Gross Alpha (Radiological)  | 1/3 months                                                                                                                                                                                                                                                                                                                                                | Quarterly                    | TP001        | Not performed at the DEQ Laboratory. A list of certified labs is at <a href="http://www.michigan.gov/DEQ">www.michigan.gov/DEQ</a> . Select Water, Drinking Water, Community Water Supply, then Certified Labs under Programs and Activities. |                |           |
| Radium 226 & Radium 228     | 1/3 months                                                                                                                                                                                                                                                                                                                                                | Quarterly                    | TP001        |                                                                                                                                                                                                                                               |                |           |
| Water Quality Parameters    | Bi-weekly                                                                                                                                                                                                                                                                                                                                                 | Every 2 Weeks                | TP001        | Various                                                                                                                                                                                                                                       | Various        | Various   |
| Total Organic Carbon (TOC)  | Pair/Monthly                                                                                                                                                                                                                                                                                                                                              | Monthly                      | TP001        | \$35.00                                                                                                                                                                                                                                       | 36TO           | CTOC      |
|                             | Monitor for TOC in the source water before any treatment at the same time as monitoring for TOC in the treated water. These samples (source water and treated water) are referred to as "paired samples." Collect the treated water sample not later than the point of combined filter effluent turbidity monitoring and representative of treated water. |                              |              |                                                                                                                                                                                                                                               |                |           |
| Expanded SOC's              |                                                                                                                                                                                                                                                                                                                                                           |                              |              |                                                                                                                                                                                                                                               |                |           |
| Dalapon & Haloacetic Acids  | 1/12 months                                                                                                                                                                                                                                                                                                                                               | Between 04/01 and 09/30/2014 | TP001        | \$130.00                                                                                                                                                                                                                                      | 36HA           | CXHA      |
| Diquate                     | 1/12 months                                                                                                                                                                                                                                                                                                                                               | Between 04/01 and 09/30/2014 | TP001        | \$150.00                                                                                                                                                                                                                                      | 36DQ           | CXDQ      |
| Endothall                   | 1/12 months                                                                                                                                                                                                                                                                                                                                               | Between 04/01 and 09/30/2014 | TP001        | \$150.00                                                                                                                                                                                                                                      | 36EN           | CXEN      |
| EDB & DBCP                  | 1/12 months                                                                                                                                                                                                                                                                                                                                               | Between 04/01 and 09/30/2014 | TP001        | \$70.00                                                                                                                                                                                                                                       | 36VO           | CXEV      |

## 2014 Monitoring Schedule

**FLINT, CITY OF**
**WSSN: 02310**

Collect samples early in the monitoring period. This schedule reflects your expected routine monitoring and is subject to change. To receive credit for monitoring, include the **WSSN, Site Code, and County** on your request for analysis form. Collect Bacteriological and Automated Partial Chemistry samples close to the shipping time and send overnight delivery. Send all sample results to your Department of Environmental Quality (DEQ) district office unless you use the DEQ laboratory. Test codes, sample units, and costs are listed to help you complete the DEQ laboratory form. Prices are subject to change without notice. The DEQ laboratory is closed on state holidays.

### Location: Distribution System

| Sample Type                       | Collect Samples According to the ... | # Samples/<br>Frequency                                                                                                                         | Collect                                        | Site Code               | Fee      | Unit Number | Test Code |
|-----------------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-------------------------|----------|-------------|-----------|
| Bacteriological – coliforms       | TCR Sampling Site Plan               | 100/Monthly                                                                                                                                     | Monthly                                        | DIST                    | \$16.00  | 30          | BPTC      |
| Chlorine Residual                 | DBP Monitoring Plan                  | Measure the residual disinfectant level at the same point and at the same time as the bacteriological sample and report the average to the DEQ. |                                                |                         |          |             |           |
| Lead Copper for Corrosion Control | Lead and Copper Sampling Pool        | 100/6 months                                                                                                                                    | Between 07/01 and 12/31/2014                   | DIST                    | \$26.00  | 36CC        | CCUB      |
| Water Quality Parameters          | Representative Sites                 | 25/Quarterly                                                                                                                                    | Quarterly                                      | DIST                    | Various  | Various     | Various   |
| Total Trihalomethanes             | DBP Monitoring Plan                  | 8/3 months                                                                                                                                      | During February, May, August and November 2014 | See DBP Monitoring Plan | \$65.00  | 36VO        | CXTM      |
| Haloacetic Acids                  |                                      | 8/3 months                                                                                                                                      | During February, May, August and November 2014 | See DBP Monitoring Plan | \$130.00 | 36HA        | CXHA      |



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING DISTRICT OFFICE



DAN WYANT  
DIRECTOR

April 16, 2014

Mr. Brent Wright  
City Of Flint – D.P.W  
Flint Water Plant  
4500 North Dort Highway  
Flint, Michigan 48505

WSSN: 02310

Dear Mr. Wright:

SUBJECT: Revised Drinking Water Monitoring Schedule – 2014  
Monthly Operation Reports  
Siting Plans and Record Keeping

**Monitoring Schedule:**

Enclosed is your revised Drinking Water Monitoring Schedule for calendar year 2014 outlining the minimum requirements for your public water supply. Your schedule has been revised based on the City's intent to change the source of its drinking water from the Detroit Water and Sewerage Department to treatment of the Flint River utilizing the City's Water Treatment Plant. Collect samples early in the monitoring period of the year indicated on the schedule. If you use a private laboratory you are required to report the results to us within the first ten days of the month following the month that you received the results. To receive credit for monitoring, the "**WSSN**" (water supply serial number), the "**Site Code**," and "**County**" must appear on the sample result. Bottles will NOT be mailed automatically. If you use the Department of Environmental Quality Laboratory, you can order bottles by calling 517-335-8184. Be certain of the United States Environmental Protection Agency sampling and analysis method requirements for hold times.

Please note that both distribution and entry point to the distribution system monitoring will increase upon plant startup.

**Monthly Operation Report (MOR) Requirements:**

The City shall submit MORs as required under Administrative Rule 1502 (R325.11502). In addition to plant operational data collected and as noted in the attached schedule, the City of Flint will be required to collect Total Organic Compounds (TOC) samples from the source and finish water on a monthly basis. You will also be required to collect Water Quality Parameters (WQPs) at your entry point every 2 weeks. The City must also demonstrate adequate contact time (CT) for disinfection in accordance with Administrative Rule 1505a (R325.11505a).

**Disinfection By-Product Sample Siting Plans:**

The City of Flint must return to routine standard monitoring of disinfection by-products, and a revised Disinfection & Disinfectants By-Product (DDBP) plan must be submitted, which identifies 4 additional sites, 8 sites in total, for routine quarterly monitoring. These sites must be selected in accordance with the Stage 2 DDBP Rule and supporting documentation must be submitted with the plan for review and approval by this office prior to monitoring.

**Lead and Copper Monitoring Requirements and Site Sample Pool**

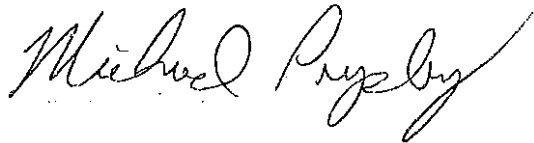
This change in source also increases your distribution system monitoring for WQPs to 25 samples per 6 months and 100 sample locations for Lead & Copper for 2 consecutive 6 month rounds of monitoring. The City will need to expand its current sample site pool in accordance with the requirements of Administrative Rule 710a (R325.10710a). A list of the proposed sample site pool locations, including each site's Tier, sample category, service material, and building plumbing material, shall be submitted to this office for review and approval.

**Record Keeping:**

The City shall maintain all monitoring records in accordance with all applicable requirements under the Administrative Rules including Rule 720a (R325.10720a), Rule 1506 (R325.11506), and Rule 1507 (R325.11507).

The Michigan Safe Drinking Water Act requires certain reports to be submitted to this office each year. Please remember that cross connection reports and annual pumpage reports are due by March 31, and the **Consumer Confidence Report** is due by July 1.

Also enclosed is the document "2014 Monitoring and Reporting Requirements." This provides additional details about monitoring and reporting requirements. If you have any questions, please contact us by telephone or e-mail using the information below.



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



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

Enclosure

cc/encl: Mr. Robert Bisnick, City Of Flint  
Genesee Co. Health Dept.

## 2014 Monitoring and Reporting Requirements

Please Monitor Early: Collect samples early in the monitoring period (month, quarter, year) of the year indicated on the schedule. Bacteriological and partial chemistry samples should be collected close to the shipping time and sent overnight delivery to assure sample holding times are not exceeded (30 and 48 hour hold times respectively). We also recommend avoiding mailing bacteriological samples immediately preceding or following a holiday because samples tend to exceed the 30 hour hold time. When this occurs, a repeat sample must be collected as soon as possible upon notification.

If you use a private laboratory please report the results to us within the first ten days of the month following the month that you received the results. A list of certified laboratories is available on request. If samples are not collected as indicated on your monitoring schedule, you will incur a monitoring violation and may also be subject to a fine. For information on the fines policy, visit <http://michigan.gov/deq>. Click on Water, Drinking Water, Community Water Supply, and Administrative Fines (under Laws and Rules).

To receive credit for monitoring, you must include the "**WSSN**" (water supply serial number), the "**Site Code**," and the "**County**" when you submit samples for analysis. Site codes are listed on your monitoring schedule.

Special Instructions If You Use The DEQ Laboratory: Bottles will NOT be mailed automatically. To order bottles, call the DEQ Laboratory at 517-335-8184 or download the form EQP 2301 *Requisition for Water Sample Units* from [www.michigan.gov/deq](http://www.michigan.gov/deq). Click on Key Topics, Laboratory Services, Drinking Water, Obtaining The Necessary Sampling Units, and 'test list'. Please note that the DEQ laboratory is closed on most state holidays. The DEQ laboratory prices are subject to change without notice.

Special Instructions For Automated Partial Chemistry, VOC and TTHM Samples: These sample bottles must be cooled and preserved during shipment to the laboratory. If you use the DEQ laboratory, you will receive the ice pack, acid dropper (if necessary) and small cooler when you request the bottles. Samples must be preserved correctly to be used for compliance purposes. To avoid resampling follow instructions contained with the sample bottle. If you would like more information, contact the DEQ lab, at 517-335-8184, or contact this office.

Cyanide: Previously, supplies that chlorinated the water were waived from monitoring for cyanide. The U.S. EPA now requires all supplies to sample the entry point for cyanide.

UCMR3 Monitoring: You may have monitoring requirements in 2014 under the third Unregulated Contaminant Monitoring Rule (UCMR3). The U.S. EPA will contact you directly if your water supply is required to monitor in 2014. A list of laboratories certified to analyze the samples collected for UCMR3 is available at <http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr3/upload/lablist.pdf>. Contact the U.S. EPA with questions.

Reminder if Lead and Copper Monitoring Due This Year: You must 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 the customer notice within 3 months after the end of the monitoring period. Water supplies that failed 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." To download the *Lead and Copper Report and Consumer Notice of Lead Result Certificate* in Microsoft Word or PDF format, visit [www.michigan.gov/deq](http://www.michigan.gov/deq). Click on Water, Drinking Water, Community Water Supply, and Reporting Forms (under Manuals, Forms & Brochures).

Annual Reports: Act 399 requires certain reports to be submitted to this office each year.

- The **Cross Connection Report**, due by March 31, describes the status of your local cross connection control program. Manufactured housing communities are exempt from this requirements until 2016.

Each year, water supplies must submit a report regardless of whether a formal program has been implemented. If cross connections do not exist in your water system, indicate so on the report. Download the Cross Connection Report form from <http://michigan.gov/deq>. Click on Water, Drinking Water, Community Water Supply, Reporting Forms (under Manuals, Forms & Brochures). Instructions are included with the form.

- The **Annual Pumpage/Usage Report**, due by March 31, is required of water supplies that do not submit monthly operation reports.

A summary of water pumpage and water use must be submitted by each water supply that does not submit a monthly operation report. To manage our natural resources, pumpage data are compiled to determine water use demands in Michigan. Download the Annual Pumpage/Usage Report form from <http://michigan.gov/deq>. Click on Water, Drinking Water, Community Water Supply, Reporting Forms (under Manuals, Forms & Brochures). Please be sure to indicate the appropriate units on the report (e.g. million gallons or gallons).

- The **Consumer Confidence Report**, due by July 1 to your customers, to your local health department and to this office.

Electronic delivery methods may be used to distribute the CCR to bill-paying customers, provided they are direct. For more information on e-delivery, visit [www.michigan.gov/deq](http://www.michigan.gov/deq). Click on Water, Drinking Water, Community Water Supply, Consumer Confidence Report Rule (under Laws and Rules).

**Rennaker, Joanne (DEQ)**

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**From:** Howard Croft <hcroft@cityofflint.com>  
**Sent:** Monday, January 12, 2015 1:37 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Busch, Stephen (DEQ); Benzie, Richard (DEQ); Wurfel, Brad (DEQ); Shekter Smith, Liane (DEQ); Flint Mayor  
**Subject:** Re: Public Works Meeting

Mike,

Thank you for your response,

We have decided to move forward with a forum that brings industry experts such as the DEQ, the Genesee County Drain Commissioner, and a health professional together to give a brief presentation and answer questions. We are targeting Wednesday January 21st at 5:30 to hold the meeting at Flint City Hall. The Mayor and I are extremely hopeful that you and any other available DEQ representatives are able to make the meeting as we believe that this will go a long way to assist in rebuilding customer confidence. Please let me know at your earliest opportunity if you can attend.

Thank you,

On Wed, Jan 7, 2015 at 2:18 PM, Prysby, Mike (DEQ) <[PRYSBYM@michigan.gov](mailto:PRYSBYM@michigan.gov)> wrote:

Howard,

This note confirms my telephone discussion with you today. The city has scheduled a Public Works Committee at 5pm today and the TTHM violation is on the agenda. The meeting will be open to the public and will also have media coverage. Given the timing of the meeting (today at 5pm) the DEQ will not be able to participate. The DEQ is willing to participate in a future public meeting (in the next one to two weeks). Please notify us of the next planned meeting(s) and request the department's participation to help answer questions and/or to speak on specific items pertaining to this issue. Please send the request to me so I can organize our participation. If you have any further questions, please call me at your earliest convenience.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

--

**Howard Croft**

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7346 Ext.2043

[heroft@cityofflint.com](mailto:heroft@cityofflint.com)

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Thursday, January 15, 2015 12:49 PM  
**To:** Fonger, Ronald  
**Cc:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** Re: qualifications

Ron,

I am out of the office till next Tues; however, I am taking the opportunity to answer your question concerning qualification (certification requirements) for the Flint WTP. The city of Flint (WTP) is required to designate an Operator In Charge (OIC) holding an F-1 drinking water license. The F designation stands for Complete Treatment and the 1 designation stands for the level (based on pop served, greater than 20,000). Flint meets this requirement. Flint must also have a shift operator available having at least an F-4 license to cover shifts when the OIC is not present. The city employs numerous operators holding F-4, F-3, and F-2 licenses; thus, the city meets MDEQ's operator certification requirements.

Sent from my iPhone

On Jan 15, 2015, at 9:33 AM, "Fonger, Ronald" <[RFONGER1@mlive.com](mailto:RFONGER1@mlive.com)> wrote:

Hi Mike:

There's some reader conversation about the qualifications of those who operate the Flint Water Plant. I know there are requirements that some on staff have achieved a certain certification. I've heard city officials talk about that.

What are the certifications required and how many employees have to have achieved it?

Thanks,

**Ron Fonger**

MLive Media Group  
Reporter

mobile 810.347.9963

email [rfonger1@mlive.com](mailto:rfonger1@mlive.com)

address 540 S. Saginaw St. #101, Flint MI 48502

**Rennaker, Joanne (DEQ)**

---

**From:** Crooks, Jennifer <crooks.jennifer@epa.gov>  
**Sent:** Thursday, October 01, 2015 5:57 PM  
**To:** Rosenthal, Adam (DEQ); Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Cc:** Benzie, Richard (DEQ); Philip, Kris (DEQ); Poy, Thomas  
**Subject:** RE: question for ORD/Mike Schock

I'm out of the office tomorrow, so if you've been able to track down a schematic of the Flint's treatment plant, perhaps you can forward it to Mike Schock in Cincinnati? His email is [schock.michael@epa.gov](mailto:schock.michael@epa.gov).

If not, I'm back in the office on Monday and maybe you can steer me toward the City to obtain a schematic. I'll check in with you then.

Thank you all.

Jennifer

---

**From:** Crooks, Jennifer  
**Sent:** Wednesday, September 30, 2015 11:51 AM  
**To:** Rosenthal, Adam (DEQ); Prysby, Mike (DEQ); 'Busch, Stephen (DEQ)'  
**Cc:** Richard Benzie; kris philip; Thomas Poy  
**Subject:** question for ORD/Mike Schock  
**Importance:** High

Tom P told me that your Director, Dan Wyatt, asked that his staff work with ORD/Mike Schock and Darren Lytle. Mike and Darren are both working on getting up to speed on the basics of the Flint water treatment scheme. I had a request from Mike Schock this morning about information about treatment and various sample results for Flint. So, I sent them the final OEL report from Flint that is on their website, as well as the 5 MORs that are also on Flint's website.

Mike had an additional question; he's looking for a schematic of the Flint treatment process to help him evaluate the possible successfulness of phosphate treatment at Flint. See Mike's brief explanation below.

I don't want to make this a big project if it's not handy; would Mike Glasgow have this schematic?

Thank you all! I know your time is very valuable right now.

Jennifer

---

**From:** Schock, Michael  
**Sent:** Wednesday, September 30, 2015 10:57 AM  
**To:** Crooks, Jennifer  
**Cc:** Lytle, Darren  
**Subject:** RE: more pdfs

Jennifer;

Thank you so much!

Would you happen to know if any other report has, or that you might have somewhere, a currently-valid process schematic for the entire set of treatments done at the Flint plant? It would be helpful to have a better picture of where things like softening, type of coagulant and GAC fit into the picture. There are several potential interrelationships that would affect the successfulness of the phosphate treatment proposed and dosage, and the instability cause by the major chemistry change from Detroit finished water (which I understand was from their Lake Huron-fed plant).

--Mike

---

**From:** Crooks, Jennifer

**Sent:** Wednesday, September 30, 2015 9:29 AM

**To:** Schock, Michael; Lytle, Darren

**Subject:** more pdfs

April 2015 MOR is not on the website.

**Rennaker, Joanne (DEQ)**

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**From:** Benzie, Richard (DEQ)  
**Sent:** Tuesday, January 13, 2015 10:44 AM  
**To:** Crooks, Jennifer  
**Cc:** Poy, Thomas; Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: question on Flint

Those bills seem high even if it includes sewerage. Do you know if it does include wastewater? If it does, be sure to point that out – that it is a combined bill that reflects both utilities, not just the cost of drinking water. But those bills sound almost as high as what most of those customers are probably paying for their internet and cellphone service or even their cable bills! I wonder which one they think is more essential.

I believe there have been some significant wastewater treatment plant projects in the Genesee County system in recent years, so maybe a significant component of any increase is also on the wastewater side.

Richard

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**From:** Crooks, Jennifer [<mailto:crooks.jennifer@epa.gov>]  
**Sent:** Tuesday, January 13, 2015 10:33 AM  
**To:** Benzie, Richard (DEQ)  
**Cc:** Poy, Thomas  
**Subject:** RE: question

Thanks for the update, Richard. The numerous people I talk to from Flint say their water bills are between \$175-\$200/month. Would DWSD have raised their rates that high? (Don't answer that; just pure conjecture ☺) I talked with a woman yesterday, whose pediatrician swears there has been an increase in kidney stones in his patients since April. I told her to have the pediatrician contact CDC in Atlanta. (I prepared a briefing this summer for ATSDR/CDC about the physical ailments people were complaining about to me, but without any expert or documentation, they didn't pick it up.) Talked to another man yesterday that's mounting a campaign to stop paying their water bills, and wants to organize against the City. And on it goes...

Jen

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**From:** Benzie, Richard (DEQ) [<mailto:BENZIER@michigan.gov>]  
**Sent:** Monday, January 12, 2015 5:08 PM  
**To:** Crooks, Jennifer  
**Subject:** RE: question

Still going on – even some council members talking about going back to Detroit at least until the KWA pipeline is available sometime in 2016. I don't know that the newspapers or media are advocating for one side or the other in this issue, but covering those individuals who are keeps the flames flickering.

I can't say the city wouldn't be better off to not have switched to the River, but I believe Flint was sure that DWSD was going to raise water rates significantly after the contract expired (by decree of DWSD) in order to recoup lost bonding costs or something similar. Flint did not want to be subjected to rates without any contractual controls.

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**From:** Crooks, Jennifer [<mailto:crooks.jennifer@epa.gov>]  
**Sent:** Monday, January 12, 2015 4:57 PM  
**To:** Benzie, Richard (DEQ)  
**Subject:** question

Richard—Last week when we were on the call with Jason, Wendy, and Tom Poleck, you made a passing comment about the newspaper getting into the stories about Flint drinking water, maybe elevating the issue in the public to fire them up? Perhaps talk of going back to Detroit water?

Jen

**Rennaker, Joanne (DEQ)**

---

**From:** Crooks, Jennifer <crooks.jennifer@epa.gov>  
**Sent:** Monday, February 09, 2015 2:30 PM  
**To:** Benzie, Richard (DEQ); Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Subject:** RE: question on flushing/water rates in MI

Thank you, Richard. Yes, Steve B explained to me this morning, that the commodity charge is based upon the amount of water the resident is using; however, the base rate/service charge would include operation and maintenance costs, including flushing.

Jen

**From:** Benzie, Richard (DEQ) [mailto:BENZIER@michigan.gov]  
**Sent:** Monday, February 09, 2015 12:57 PM  
**To:** Crooks, Jennifer; Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Subject:** RE: question on flushing/water rates in MI

There currently is no regulatory oversight of rates in Michigan.

But be careful about saying residents aren't paying for water used for flushing – as the overall costs of operating the water system have to be reflected in the revenue stream somewhere. The rates probably reflect the cost of producing "lost" water, just not in an accountable manner. If you say they are paying for it (even directly), it may still generate a negative reaction if they realize the costs are "hidden" and being borne by all customers.

**From:** Crooks, Jennifer [mailto:crooks.jennifer@epa.gov]  
**Sent:** Monday, February 09, 2015 12:12 PM  
**To:** Benzie, Richard (DEQ); Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Subject:** question on flushing/water rates in MI

Richard—I have a couple of questions for you regarding the citizen complaint on Flint, that I'm responding to.

Regarding the water rates part of this email, "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**"

I was going to remind the citizen that they are only charged based upon what the water meter reads at individual connection (home). The citizens aren't directly paying for what is being flushed. I was going to say that the flushing program removes stagnant water in the system, which can increase levels of trihalomethanes and increase bacteria growth, among other activities.

Also, who regulates water rates in Michigan? I don't think MI has a rate commission, right? Any oversight on individual water supply rates?

Jennifer

**From:** Crooks, Jennifer  
**Sent:** Monday, February 09, 2015 8:22 AM  
**To:** Richard Benzie; Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Subject:** FYI: (CWA - FY15-124819-3709-CV) Referred to Region - Michigan

Forgot to cc you all. Jen

**From:** Crooks, Jennifer  
**Sent:** Monday, February 09, 2015 8:09 AM  
**To:** Dee, Rhiannon  
**Cc:** Poy, Thomas  
**Subject:** RE: (CWA - FY15-124819-3709-CV) Referred to Region - Michigan

Rhiannon—Let me tell you, this Flint situation is a nasty issue—I've had people call me 4 letter words over the phone, yell at me, and call me a crook—yes, the last one was a play on my last name—I didn't think it was funny, though I'm developing a thick skin ☺.

I can respond to the Flint drinking water issue, and the water rate issue, and refer them back to the State if they have further questions. But I cannot respond to the sewerage dump (who receives the report when there is a sewer overflow?) or the chemical—though Richard is probably right—the 'toxic chemical' is probably chlorine—and that's what I'll say in my response. One citizen was confused about 'chlorides' being 'chlorine'....

Let me know if you would like me to respond to this citizen complaint as I explained above.

Jennifer

**From:** Dee, Rhiannon  
**Sent:** Friday, February 06, 2015 10:50 AM  
**To:** Benzie, Richard (DEQ)  
**Cc:** [ostlundp@michigan.gov](mailto:ostlundp@michigan.gov); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Crooks, Jennifer; Poy, Thomas; Vantil, Barbara  
**Subject:** RE: (CWA - FY15-124819-3709-CV) Referred to Region - Michigan

Richard,

While I understand this complaint conflates various issues, my intention of forwarding it on to Pete and Barry was to relay the potential NPDES impacts of the complainants allegations.

Best,

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

**From:** Benzie, Richard (DEQ) [<mailto:BENZIER@michigan.gov>]  
**Sent:** Friday, February 06, 2015 9:38 AM  
**To:** Dee, Rhiannon  
**Cc:** [ostlundp@michigan.gov](mailto:ostlundp@michigan.gov); 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](mailto:ostlundp@michigan.gov)

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**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](mailto:dee.rhiannon@epa.gov)

---

**From:** [howard.donna@epa.gov](mailto: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](mailto:howard.donna@epa.gov)  
TO: [Dee.Rhiannon@epa.gov](mailto:Dee.Rhiannon@epa.gov)  
CC: [Beese.Jennifer@epa.gov](mailto: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



**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Thursday, March 19, 2015 11:07 AM  
**To:** Daugherty Johnson  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** RE: RE: Flint Water Age map

Daugherty,

Based upon the most recent information provided to us from the city and your consultant, we are comfortable with either size transmission main (20-inch or 24-inch) for the transmission main project. An Act 399 permit (Permit No. W131020) issued March 18, 2013 (expired yesterday) included 23,550 LF of 24-inch WM, 1068 LF of 8-inch WM and 6800 LF of 8-inch WM. Given the reduced scope (lineal footage) of the project and expired permit...A new Act 399 permit seems more appropriate. Also, if the remaining work in the future (to complete the rest of the project) is completed under a separate contract, then, a separate Act 399 permits needs to be issued for that contract. A revised Act 399 permit application and set of plans (reduced scope) are needed. Assuming no changes in actual location of the proposed watermain and appurtenances, we should be able to expedite the review and issuance permit in a timely manner.

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

**From:** Daugherty Johnson [mailto:djohnson@cityofflint.com]  
**Sent:** Thursday, March 19, 2015 9:43 AM  
**To:** Prysby, Mike (DEQ)  
**Subject:** Fwd: RE: Flint Water Age map

Hello Mike. Here are the referenced exhibits in the 24 in. main reduction letter

Daugherty

----- Forwarded message -----

From: "Mack, Melissa" <MCMack@lan-inc.com>  
 Date: Mar 19, 2015 9:34 AM  
 Subject: RE: Flint Water Age map  
 To: "Daugherty Johnson" <djohnson@cityofflint.com>  
 Cc:

Hi Duffy,

Please see attached.

Melissa

**Melissa C. (Henderson) Mack, PE**

Associate, Project Manager



2925 Briarpark Drive, Suite 400 • Houston, TX 77042-3720

T 713.266.6900 x 2436 D 713.821.0436

[www.lan-inc.com](http://www.lan-inc.com) • [MCMack@lan-inc.com](mailto:MCMack@lan-inc.com)

**From:** Daugherty Johnson [<mailto:djohnson@cityofflint.com>]  
**Sent:** Thursday, March 19, 2015 6:57 AM  
**To:** Mack, Melissa  
**Subject:** RE: Flint Water Age map

For clarification, I need the exhibits referenced in the letter you sent me discussing the downsizing of the 24 inch transmission main.

On Mar 19, 2015 7:55 AM, "Daugherty Johnson" <[djohnson@cityofflint.com](mailto:djohnson@cityofflint.com)> wrote:

Hello Melissa. Could you send the exhibits referenced in the letter. DEQ wants to see them.

Thanks  
Duffy

On Mar 15, 2015 5:26 PM, "Mack, Melissa" <[MCMack@lan-inc.com](mailto:MCMack@lan-inc.com)> wrote:

You should be able to print to any size. Try 11x17 portrait. I'm attaching again in case the file got corrupt when it was sent last time.

**Melissa C. (Henderson) Mack, PE**

Associate, Project Manager



2925 Briarpark Drive, Suite 400 • Houston, TX 77042-3720

T 713.266.6900 x 2436 D 713.821.0436

[www.lan-inc.com](http://www.lan-inc.com) • [MC Mack@lan-inc.com](mailto:MC Mack@lan-inc.com)

**From:** Daugherty Johnson [mailto:[djohnson@cityofflint.com](mailto:djohnson@cityofflint.com)]  
**Sent:** Friday, March 13, 2015 1:46 PM  
**To:** Mack, Melissa  
**Subject:** RE: Flint Water Age map

I cannot print the map in its entirety. Do I need to scale a specific way?

On Mar 13, 2015 8:54 AM, "Mack, Melissa" <[MC Mack@lan-inc.com](mailto:MC Mack@lan-inc.com)> wrote:

Duffy,

As discussed here is the water age map from January showing the water sample locations.

Thanks,

Melissa

**Melissa C. (Henderson) Mack, PE**

Associate, Project Manager



2925 Briarpark Drive, Suite 400 • Houston, TX 77042-3720

T 713.266.6900 x 2436 D 713.821.0436

[www.lan-inc.com](http://www.lan-inc.com) • [MC Mack@lan-inc.com](mailto:MC Mack@lan-inc.com)

**From:** Mack, Melissa  
**Sent:** Thursday, March 12, 2015 1:12 PM  
**To:** Daugherty Johnson; Green, Warren; Matta, Samir  
**Subject:** Re: Flint Water Age map

Duffy,

We heard back from Innovyze. The model file got corrupted, but they are walking us through a fix. We are documenting the process so we'll know what to do if it happens in the future.

We expect to have fixed this afternoon and have the maps to you thereafter.

Thank you,

Melissa

Sent from my iPhone

On Mar 11, 2015, at 5:04 PM, Mack, Melissa <[MCMack@lan-inc.com](mailto:MCMack@lan-inc.com)> wrote:

Duffy,

We ran into a technical issue with the model creating the water age maps without the 24-inch highlighted. We have to send the model to Innovyze. They weren't able to help us over the phone. We will get you the maps as soon as possible.

Thanks,

Melissa

**Melissa C. (Henderson) Mack, PE**

Associate, Project Manager

<image001.gif>

2925 Briarpark Drive, Suite 400 • Houston, TX 77042-3720

T 713.266.6900 x 2436 D 713.821.0436

[www.lan-inc.com](http://www.lan-inc.com) • [MMack@lan-inc.com](mailto:MMack@lan-inc.com)

**From:** Daugherty Johnson [<mailto:djohnson@cityofflint.com>]

**Sent:** Wednesday, March 11, 2015 9:07 AM

**To:** Mack, Melissa; Green, Warren; Matta, Samir

**Subject:** Flint Water Age map

Hello Melissa. Would you please send me a copy of the latest Water Age map for Flint.

Thanks

Duffy

**Rennaker, Joanne (DEQ)**

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Wednesday, October 07, 2015 2:51 PM  
**To:** Alana Holland  
**Cc:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: Reporter from TV5 today

Hi, Alana. Thanks for stopping in. Much confusion around this issue so we appreciate you covering it.

The City added Lime to its process to soften the water. This adjusts the pH level (and has a corrosion control effect, while not an outright corrosion control).

Point is, figures I've seen indicate the present pH of the water is within .02 of where it was on the Detroit system. I've copied our two Flint water specialists to correct me if I'm wrong and offer any other technical information you might need.

Again, thanks.

b

---

**From:** Alana Holland [<mailto:Alana.Holland@wnem.com>]  
**Sent:** Wednesday, October 07, 2015 2:46 PM  
**To:** Wurfel, Brad (DEQ)  
**Subject:** Reporter from TV5 today

Hi Brad,

Thanks for setting up the meeting for us today. If you need anything, you can e-mail me at [Alana.holland@wnem.com](mailto:Alana.holland@wnem.com) or call at (989)758-2026.

Also, Dan said he didn't have the specifics at the time, but we could get the ph levels of Flint water vs. ideal drinking water. Is that something we could have?

Thank you,

Alana Holland

WNEM TV5 Reporter  
[Alana.holland@wnem.com](mailto:Alana.holland@wnem.com)  
 (989)274-1397 - cell  
 (989)758-2026 - desk



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**Rennaker, Joanne (DEQ)**

---

**From:** Brent Wright <bwright@cityofflint.com>  
**Sent:** Monday, August 18, 2014 1:01 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Michael Glasgow; Rosenthal, Adam (DEQ); Busch, Stephen (DEQ)  
**Subject:** Re: Sample results

That is correct Mike the positive was from Sample Site #5.

Thank you

On Mon, Aug 18, 2014 at 12:45 PM, Prysby, Mike (DEQ) <[PRYSBYM@michigan.gov](mailto:PRYSBYM@michigan.gov)> wrote:

Brent,

I need to clarify a discrepancy in my field notes concerning the single TC Positive result obtained last Thurs Aug 14<sup>th</sup> (the second set of 9 repeat samples). I noted last Friday that the positive result on that day was from Sample Site #4 – Taco Bell; however, during our call this morning; it was mentioned that the positive result was from Sample Site #5. Please confirm.

Also, I will be out today after 2pm for physician appt. Please contact Steve Busch and/or Adam Rosenthal concerning new sample results and/or additional information. I will be back in the office tomorrow morning at 7:00am.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

--

**Brent Wright**  
**Water Plant Supervisor**  
**City of Flint**  
**4500 N. Dort Hwy.**  
**Flint, MI. 48505**  
**Ph: 810.787.6537 ext. 3510**  
**Fx: 810.787.3710**

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Monday, March 30, 2015 7:48 AM  
**To:** Cook, Pat (DEQ)  
**Cc:** Busch, Stephen (DEQ); Rosenthal, Adam (DEQ)  
**Subject:** RE: Schedule 2 plants

Pat,

Your note serves as a reminder for me to confirm Flint's population (<100,000). I requested the city to provide us with the most recent number of residential accounts ...if which they have responded. Flint's most recent estimate of residential accounts shows further loss of customer base...and is below 100K. I will tally up the numbers, compare against their most recent Sanitary Survey and provide an updated population estimate for Adam to enter into SDWIS.

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

---

**From:** Cook, Pat (DEQ)  
**Sent:** Friday, March 27, 2015 4:02 PM  
**To:** Bolf, Michael (DEQ); Brennan, Patrick (DEQ); Bridges, Jeriesha (DEQ); Brookens, Todd (DEQ); Chooi, Wood (DEQ); Conradson, Scott (DEQ); Dehtiar, Luke (DEQ); Drake, Jerry (DEQ); Esparsa, Brian (DEQ); Gotham, Daryl (DEQ); Islam, Abuzoha (DEQ); Johnson, Stephanie (DEQ); Joseph, Mark (DEQ); London, Bob (DEQ); Lopez, Amber (DEQ); Pascoe, Doug (DEQ); Prysby, Mike (DEQ); Reinke, Joseph (DEQ); Reyes, Katelyn (DEQ); Sarkipato, Ernest (DEQ); Skinker, Bethel (DEQ); Slater, Brad (DEQ); Swendsen, Kurt (DEQ); Swenor, Scott (DEQ); Thurston, Brian (DEQ); Wozniak, Gary (DEQ)  
**Subject:** Schedule 2 plants

Hi All,

According to the population figures in SDWIS, below is a list of Schedule 2 water plants that will have to conduct a second round of Crypto, E. coli and turbidity sampling from their raw water source(s) starting in October, 2015. This monitoring is required by the Long Term 2 Enhanced Surface Water Treatment Rule and Act 399. As a reminder, a Schedule 2 water plant serves 50,000 to 99,999 people OR belongs to a Combined Distribution System in which the largest system serves 50,000 to 99,999.

The plan is to forward to the appropriate district engineers a sample letter and Monitoring Plan template that they in turn will have to mail to the plants. The letter explains the source water sampling requirements while also reminding them that the monitoring plans have to be completed/submitted to the district office's by July 1<sup>st</sup>.

Please look at the below list and let me know if any plants meeting the Schedule 2 definition are missing or need to be added.

Schedule 2 Plants

- All plants receiving raw water from the Saginaw Midland pipeline: Au Gres, Linwood, Omer, Saginaw, Sims-Whitney, Standish, Midland
- Flint
- Wyoming

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](mailto:cookp@michigan.gov)

**Rennaker, Joanne (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.

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**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

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

Thanks,  
Richard

**Rennaker, Joanne (DEQ)**

---

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

Thanks,  
Richard

**Rennaker, Joanne (DEQ)**

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**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

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**To:** Benzie, Richard (DEQ); Ostrander, Debbie (DEQ)  
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Let me know if you can or cannot meet this request.

Thanks,  
Richard

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Tuesday, September 09, 2014 10:31 AM  
**To:** Busch, Stephen (DEQ)  
**Cc:** Michael Glasgow; Rosenthal, Adam (DEQ); Brent Wright; Daugherty Johnson; Howard Croft  
**Subject:** Re: September 2014 Boil Water Notice Timeline

It may be worthwhile to see if Wade Trim can run an updated hydraulic model with these valves closed to see what the pressure is in the affected area. I recall the north central area of Flint having marginal pressures (35 to 40 psi) under peak conditions as identified in the reliability study.

Sent from my iPhone

On Sep 9, 2014, at 10:00 AM, "Busch, Stephen (DEQ)" <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)> wrote:

Mike,

Thanks for the information.

Given these valve issues, would low pressure conditions less than 35 psi, 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, tuberculation on the pipe walls, and/or phosphate coating.

Please continue with your investigation and let us know how the valve repair/replacement goes.

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

**From:** Michael Glasgow [<mailto:mglasgow@cityofflint.com>]  
**Sent:** Tuesday, September 09, 2014 9:47 AM  
**To:** Prysby, Mike (DEQ); Busch, Stephen (DEQ); Rosenthal, Adam (DEQ)  
**Cc:** Brent Wright; Daugherty Johnson; Howard Croft  
**Subject:** September 2014 Boil Water Notice Timeline

Gentlemen,

Attached is a timeline of events that led us to the recent boil water notice. It shows all sampling and results from 9/2 thru today.

FYI:

I was just talking with a couple of employee's from the Water Service Center who have been helping us with our investigation of the the distribution system. It seems that they have found

one of the possible causes of our recent issues. A 36" transmission main not far west of the treatment plant had a valve that was closed, and the 24" transmission main that leads west also has a valve that is closed. The 36" valve was opened, however the valve on the 24" is inoperable. With these valves closed, it appears the water leaving the plant has no direct route to the west side of the city (or the West Side Reservoir)

Mike Glasgow  
City of Flint Water Plant

**Rennaker, Joanne (DEQ)**

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**From:** Wurfel, Brad (DEQ)  
**Sent:** Tuesday, May 13, 2014 9:13 PM  
**To:** Busch, Stephen (DEQ)  
**Subject:** Re: sewage spill reporting

I'm aware, thanks. He wanted you to reassure folks the flint river would still be safe to drink.

Sent from my iPhone

> On May 13, 2014, at 4:31 PM, "Busch, Stephen (DEQ)" <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)> wrote:

>

> Brad,

>

> WRD handles sso's and cso's. Cheryl Bartley is the Lansing DS. I haven't received any notification from flint about impacts from the river on treatment nor from Mike.

>

> The WTP's are designed to handle fluctuations in raw water quality from rain events.

>

> Stephen Busch, P.E.

> Lansing and Jackson District Supervisor Office of Drinking Water and

> Municipal Assistance MDEQ

> 517-643-2314

>

> Sent from my iPhone

>

>> On May 13, 2014, at 3:47 PM, "Shekter Smith, Liane (DEQ)" <[SHEKTERL@michigan.gov](mailto:SHEKTERL@michigan.gov)> wrote:

>>

>> Steve Busch or Mike Prysby. Steve is not in, but will answer his phone if he can.

>>

>> From: Wurfel, Brad (DEQ)

>> Sent: Tuesday, May 13, 2014 3:43 PM

>> To: Shekter Smith, Liane (DEQ)

>> Cc: McClellan, Michael (DEQ)

>> Subject: FW: sewage spill reporting

>>

>> Who can help Flint Journal?

>>

>>

>> From: Fonger, Ronald [<mailto:RFONGER1@mlive.com>]

>> Sent: Tuesday, May 13, 2014 3:04 PM

>> To: Wurfel, Brad (DEQ)

>> Subject: RE: sewage spill reporting

>>

>> Hey Brad: Any word on my best contact? Sorry. We're getting hammered by rain again today and so I'm hoping to check today.

>> Thanks again,

>>

>> Ron Fonger

>> MLive Media Group  
>> Reporter  
>>  
>> mobile 810.347.9963  
>> email [rfonger1@mlive.com](mailto:rfonger1@mlive.com)<<mailto:rfonger1@mlive.com>>  
>> address 540 S. Saginaw St. #101, Flint MI 48502  
>>  
>>  
>>  
>>  
>> From: Wurfel, Brad (DEQ) [<mailto:WurfelB@michigan.gov>]  
>> Sent: Tuesday, May 13, 2014 11:37 AM  
>> To: Fonger, Ronald  
>> Subject: RE: sewage spill reporting  
>>  
>> Hey, Ron.  
>> I'll get you both. I'm not sure how fast the reporting gets put to the database.  
>> b  
>>  
>> From: Fonger, Ronald [<mailto:RFONGER1@mlive.com>]  
>> Sent: Tuesday, May 13, 2014 11:14 AM  
>> To: Wurfel, Brad (DEQ)  
>> Subject: sewage spill reporting  
>>  
>>  
>> Hi Brad:  
>> Is there a resource online that I can check for any reported sewage spills reported by local communities?  
>> If not, is there a person you could suggest I check with on the same subject.  
>> With Flint drawing water from the river for drinking now, I'd just like to keep an eye on that and last night's heavy rains reminded me to check.  
>> Hope all is well there, and thanks,  
>>  
>>  
>> Ron Fonger  
>> MLive Media Group  
>> Reporter  
>>  
>> mobile 810.347.9963  
>> email [rfonger1@mlive.com](mailto:rfonger1@mlive.com)<<mailto:rfonger1@mlive.com>>  
>> address 540 S. Saginaw St. #101, Flint MI 48502  
>>  
>>  
>>

**Rennaker, Joanne (DEQ)**

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Thursday, September 03, 2015 11:20 AM  
**To:** Wurfel, Brad (DEQ); Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: steve busch

If he needs to talk to someone here, Mike Prysby was the one who contacted Flint officials to learn what was decided at the meeting held Tuesday between the city and their consultant to discuss a number of issues including the possibility of optimizing their treatment for corrosion control. Mike provided an update that I forwarded to Region 5 EPA as they were asking about the status.

But this information is best obtained from the city officials that Mike contacted to learn what was discussed.

Richard

---

**From:** Wurfel, Brad (DEQ)  
**Sent:** Thursday, September 03, 2015 11:16 AM  
**To:** Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Prysby, Mike (DEQ)  
**Subject:** FW: steve busch

What do we want to do with this today? Seems Steve's outta here.  
b

---

**From:** Ronald Fonger [<mailto:RFONGER1@mlive.com>]  
**Sent:** Thursday, September 03, 2015 11:03 AM  
**To:** Wurfel, Brad (DEQ)  
**Subject:** steve busch

Brad:  
We are planning to follow up on the issue of Flint optimizing its water system to further limit exposure to lead from plumbing in homes.  
I left messages we Steve Busch Wednesday and again this morning and am expecting to get some information from the city on what it's doing or considering.  
Any help in getting a minute with Steve would be appreciated.  
Thanks for this and your help yesterday,

**Ron Fonger**  
MLive Media Group  
Reporter

mobile 810.347.9963  
email [rfonger1@mlive.com](mailto:rfonger1@mlive.com)  
address 540 S. Saginaw St. #101, Flint MI 48S02

**Rennaker, Joanne (DEQ)**

---

**From:** Howard Croft <hcroft@cityofflint.com>  
**Sent:** Thursday, October 08, 2015 5:41 AM  
**To:** Amy Hovey; Andy Leavitt; Brent Wright; Darren Lytle; Dayne Walling; donna. cole; edwardsm; Gerald (Jed) Natzke; Howard Croft; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Lawrence Reynolds; Lawrence Reynolds; 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; Busch, Stephen (DEQ); Warren Green; John Monsees; Kevin Keane  
**Subject:** Re: TAC Team Summary 10\_7\_15  
**Attachments:** TAC Meeting Summary 10\_7\_15.pdf

All,

Please find attached, the summary of Wednesday's meeting.

Thank you,

On Wed, Oct 7, 2015 at 9:42 PM, Howard Croft <[hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)> wrote:  
 All,

I want to personally thank everyone for participating in today's meeting, it is encouraging to see the commitment that exists to address the concerns around health. I apologize for the poor phone reception we experienced today, I will have that corrected at the next meeting.

I am sending a summary of today's meeting and have attempted to chronicle the highlights or major points that we discussed. I have also included an electronic version of Marc Edwards presentation and will forward any other documents that are requested.

Please look for continued communication from me as we work to move forward as fast as possible. I expect to have November and December dates selected very soon and will maintain the stream of information to this team as it becomes available.

Please do not hesitate to email or call me with any questions or requests.

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](mailto: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](mailto:hcroft@cityofflint.com)

**City of Flint  
Technical Advisory Committee Meeting  
Summary**

**Location:** Flint City Hall

**Date:** Wednesday October 7, 2015

**Time:** 2:00 pm

**Introductions**

Everyone gave individual introductions in round table fashion

**Comments**

The City Administrator Natasha Henderson commented on the urgency of the situation stressing that time is of the essence and we hoped to achieve a consensus opinion from the Advisory Group.

**System Overview/Update**

DPW Director Howard Croft discussed the original formation of the group, the fact that the group was engaged throughout the TTHM concerns, and the value of having experts gathered to together along with the medical community for a substantive discussion. An additional goal is to have a more unified public voice all working to be solution driven with good communication.

**VA Tech Findings**

Marc Edwards of VA Tech (through a conference call in) narrated a presentation that he prepared for the meeting. (The presentation is provided on the email).

Laura Sullivan of Kettering translated a part of the presentation due to poor phone connection.

**Q-** John O'Brien of the Drain Commissioners office asked if the VA Tech study had compared Flint River water and water from DWSD running through comparable distribution systems. John also commented on the timetable and progress status of the KWA stating that 38 miles of pipe are in the ground and continues to be installed at ~5 miles a month projecting completion by mid-2016, weather permitting.

**A –** Marc Edwards's response was yes, the comparison was done on equal terms.

**EPA Comments**

Darren Lytle of the EPA spoke and said that he had toured the Flint Plant earlier in the day with Utilities Administrator Mike Glasgow and was comfortable with what he saw. His comments also touched on a technical nature which drew brief conversation from Warren Green of LAN.

Mr. Lytle agreed to stay involved through the implementation of KWA, requested more data to review and asked that Michael Schock of the EPA who could not attend today be considered one of the top lead experts in the nation and that we keep him updated at every step.

**Mayor's Comments**

DPW Director introduced Mayor Walling made comments thanking everyone for their participation and asked if anyone had a valid reason to NOT go back to DWSD.

There was no direct response but John O'Brien questioned what the expectations were going to be and that lead levels would not be reduced to zero. Several people responded that this was understood.

Dr. Lawrence Reynolds gave comments that focused on the short and long term impact of lead levels especially in children.

Pete Levine and Kirk Smith also commented that they saw no “pro” to staying on the Flint River as opposed to switching back to DWSD.

### **DWSD Option**

City Administrator Natasha Henderson asked the committee to not look at cost but at the health and science of what is the best interim source of water for residents. She said she would like to go back to DWSD both as a resident and as City Administrator.

Warren Green of LAN asked that as an engineer, he would like to see the actual data that was derived from the VA Tech studies and brought up the need for corrosion control or the addition of phosphate regardless of the water source.

### **Corrosion Control**

Discussion around corrosion control continued with Darren Lytle of the EPA, Marc Edwards, and Warren Green discussing dosing with each source and questioning the timetable of rebuilding a film layer.

### **Service Line Replacement**

Skipping Filters for a moment, DPW Director Howard Croft displayed a draft copy of a Lead Service Line Replacement plan for Flint that mirrors the Washington D.C. model and looks for a grant funding source to assist with the homeowner side of the line. Mr. Croft also commented on the partnership formed with U of M Flint to get all of the lead service lines identified and put into GIS data points.

### **Update on Filters**

Jamie Gaskin, United Way CEO gave a full update on how the United Way has been the hub for coordination efforts regarding distributing filters to residents. Jamie reiterated that they have made a request of the state to supply them with leadership support that has gone unfulfilled.

Jamie also addressed the early morning question of whether or not the 25,000 “Brita” filters that were being distributed would filter lead, this brand was purchased by the state and is being distributed by DHHS. Eden Wells the Michigan Chief Medical Official addressed that the research had been done and the filters were indeed NSF certified and filter lead.

Andy Leavitt commented on the scope of work that Jamie and the United Way undertook outside of their normal purview and their swift action.

### **Committee Recommendation**

Howard Croft announced that as committee chair, given the meetings discussions, he was prepared to make a recommendation from the TAC tem to the City Administrator and Mayor that the city return to DWSD as a water source. (Pending any objections from the group – no objections were made)

Director also commented that providing water from the Treatment Plant was still under review and pro’s and con’s were being evaluated prior to a firm decision being brought forth.

Drawing the meeting to a close, the DPW Director committed that weekly updates would be provided to the Technical Advisory Committee and that November and December meetings would be set up to maintain better communication.

Meeting closed at approximately 4:15 pm.

### **Howard Croft**

Public Works Director  
City of Flint

**Rennaker, Joanne (DEQ)**

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**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, January 16, 2015 12:18 PM  
**To:** Busch, Stephen (DEQ)  
**Subject:** Re: tally of Flint calls

Did not get a chance yesterday to call her back

Sent from my iPhone

On Jan 16, 2015, at 12:15 PM, "Busch, Stephen (DEQ)" <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)> wrote:

Mike,

The tally sheet indicated you contacted Ms. Blasdeed but were cut off and going to call her back on Thursday. Did you ever get back with her? She has called and left a message.

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

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Wednesday, January 14, 2015 3:58 PM  
**To:** Busch, Stephen (DEQ); Benzie, Richard (DEQ); Shekter Smith, Liane (DEQ); Rosenthal, Adam (DEQ); Rennaker, Joanne (DEQ)  
**Subject:** tally of Flint calls

See updated list....

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

**Rennaker, Joanne (DEQ)**

---

**From:** Benzie, Richard (DEQ)  
**Sent:** Wednesday, January 07, 2015 6:22 PM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ); Rosenthal, Adam (DEQ)  
**Subject:** RE: Tally of Flint calls

I tried to forward another call to all of you but of course, only the non-cell phone numbers can have a message forwarded. I am going to have to get that changed.

Anyway, Adam received the message, but Mike and Steve did not. It was from a Sandra Wilkes(?) from Flint at 810-449-5401. She's very concerned about her water. Would one of you please contact her. Thanks.

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Wednesday, January 07, 2015 11:43 AM  
**To:** Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ)  
**Subject:** FW: Tally of Flint calls

FYI. I had Mike put together a list of those who have contacted us and we have responded to regarding the Flint TTHM violation, I have added those Adam and I spoke with too. If you or your staff receive calls this should help to note whether the individual has already been in contact with staff, so share with your staff as appropriate. Hopefully, it will help avoid any mixed messages and can shorten the conversations to any additional concerns or questions the individual may have.

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

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Wednesday, January 07, 2015 11:30 AM  
**To:** Busch, Stephen (DEQ)  
**Subject:** Tally of Flint calls

Steve,

Attached is a list of the calls from the public that I have taken to avoid duplication of efforts. I will update the list and re-send to you following each additional call received.

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

**Rennaker, Joanne (DEQ)**

---

**From:** Wright, Michael <Wright.Michael@epa.gov>  
**Sent:** Wednesday, October 07, 2015 4:45 PM  
**To:** Howard Croft; Amy Hovey; Andy Leavitt; Brent Wright; Lytle, Darren; Dayne Walling; donna. cole; edwardsm; Gerald (Jed) Natzke; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; Michael Glasgow; Mike Lane; Prysby, Mike (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; Schock, Michael; Sean Kammer; Busch, Stephen (DEQ); Warren Green  
**Subject:** RE: Technical Advisory Meeting

Howard

Thanks for setting up that call. I think we may have been speaking over each other towards the end there, but I wanted to make sure my last point was clear. If Lead is the primary concern right now (which is definitely should be), I hope there is no discussion of a boil advisory in response to the Lead issue. From an exposure assessment perspective, this makes little sense and will only exacerbate matters. This is because heating water can concentrate lead levels and increase exposures via drinking water. I hope this was clear especially to the clinicians in the room, if concerned patients are coming to them for advice (like they were with the THM situation). Again, I missed a lot of the conversation and may have mis-heard details on that. But, I just wanted to make sure this point was made *if* a boil advisory (presumably to combat microbial issues??) is really on that table.

Mike

**From:** Howard Croft [<mailto:hcroft@cityofflint.com>]  
**Sent:** Monday, October 05, 2015 2:54 PM  
**To:** Amy Hovey; Andy Leavitt; Brent Wright; Lytle, Darren; Dayne Walling; donna. cole; edwardsm; Gerald (Jed) Natzke; Howard Croft; James Henry; Jamie Gaskin; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; [larry.koehler@mcc.edu](mailto:larry.koehler@mcc.edu); Laura Sullivan; Michael Glasgow; Wright, Michael; Mike Lane; Mike Prysby (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; [rosejo@msu.edu](mailto:rosejo@msu.edu); Russell Hudson; Samir Matta; Schock, Michael; Sean Kammer; Stephen Busch (DEQ); Warren Green  
**Subject:** Technical Advisory Meeting

All,

I am confirming that our Technical Advisory Meeting will be this Wednesday October 7th at 2:00 - 4:30 pm at City Hall.

The meeting will discuss the emergence of the lead concerns and we will have up to date discussion around the immediate response of filter distribution.

There will be expert discussion about corrosion control, the DWSD option, how the long term solution of line replacement would unfold, and details on the status of KWA. The agenda will be distributed at the meeting.

We look forward to everyone's attendance, please email me with any questions.

--

**Howard Croft**  
Public Works Director

City of Flint  
1101 S. Saginaw Street  
Flint, MI 48502  
PH# 810.766.7135 Ext.2043  
[hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)

**Rennaker, Joanne (DEQ)**

---

**From:** Schock, Michael <Schock.Michael@epa.gov>  
**Sent:** Thursday, September 24, 2015 1:17 PM  
**To:** Howard Croft; Brent Wright; Dayne Walling; donna. cole; edwardsm; Gerald (Jed) Natzke; James Henry; Jason Lorenz; jmikewright; JoAnne Herman; John O'Brien; Kirk Smith; larry.koehler@mcc.edu; Laura Sullivan; lytle.darrin@epa.gov; Michael Glasgow; Wright, Michael; Mike Lane; Prysby, Mike (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; rosejo@msu.edu; Russell Hudson; Samir Matta; Sean Kammer; Warren Green; Busch, Stephen (DEQ)  
**Cc:** Lytle, Darren  
**Subject:** RE: Technical Advisory Meeting

Howard;

Thank you for the meeting invitation. However, I am not available to attend the meeting that week. I wish there had been some consultation with Dr. Lytle and myself about our other commitments and our travel availability, before scheduling the meeting. I still will be available to participate overall the advisory process.

I noticed also that the email address for Dr. Lytle appears to have a typographical error in it, but you may have spoken to him on the phone about the meeting. The correct email address is: [lytle.darren@epa.gov](mailto:lytle.darren@epa.gov).

Thank you, again, for the opportunity to participate.

Regards,

Mike

*Michael R. Schock*

U.S. Environmental Protection Agency  
 ORD, NRMRL, WSWRD, TTEB  
 26 West Martin Luther King Drive  
 Cincinnati, OH 45220

Phone: 513.569.7412  
[schock.michael@epa.gov](mailto:schock.michael@epa.gov)

**From:** Howard Croft [<mailto:hcroft@cityofflint.com>]

**Sent:** Wednesday, September 23, 2015 3:52 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](mailto:larry.koehler@mcc.edu); Laura Sullivan; [lytle.darrin@epa.gov](mailto:lytle.darrin@epa.gov); Michael Glasgow; Wright, Michael; Mike Lane; Mike Prysby (DEQ); Natasha Henderson; Norb Birchmeier; Pete Levine; Robert Bincsik; [rosejo@msu.edu](mailto:rosejo@msu.edu); Russell Hudson; Samir Matta; Schock, Michael; Sean Kammer; Warren Green; Busch, Stephen (DEQ)

**Subject:** Technical Advisory Meeting

Technical Advisory Team,

I am writing to inform everyone that we have scheduled the next Technical Advisory Committee meeting to be Wednesday October 7<sup>th</sup>, 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](mailto:hcroft@cityofflint.com)

**Rennaker, Joanne (DEQ)**

---

**From:** Howard Croft <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  
**Attachments:** GCHD Lead in Water Fact Sheet.pdf; Information Plan.pdf; Lead Advisory Release.pdf

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 7<sup>th</sup>, 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,

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**Howard Croft**

Public Works Director  
City of Flint  
1101 S. Saginaw Street  
Flint, MI 48502  
PH# 810.766.7135 Ext.2043  
[hcroft@cityofflint.com](mailto: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](mailto:hcroft@cityofflint.com)



# Genesee County Health Department

Mark Valacak, M.P.H., Health Officer  
Gary K. Johnson, M.D., M.P.H., Medical Director

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## **How does lead get into my tap water?**

Under typical circumstances, lead will dissolve into the water. The concentration of lead in drinking water can vary greatly, depending on the corrosiveness of the water, the type and age of the plumbing materials and the length of time that the water stands in the pipes. The highest levels of lead occur when very corrosive water stands motionless in lead or lead soldered pipe for long periods of time.

## **How do I know if my tap water is contaminated with lead?**

The only way to know whether your tap water contains lead is to have it tested. You cannot see, taste, or smell lead in drinking water. There are different sampling methods for sampling lead in drinking water. To determine your household risk, it is recommended to take a first draw sample.

## **Does lead in my tap water cause health effects?**

Lead can cause damage to the brain, red blood cells and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that won't hurt adults can slow down normal mental and physical development of growing bodies. Lead in water can be a special problem for infants, whose diets may be mostly liquids, such as baby formulas or concentrated juices mixed with water. Smaller bodies can absorb lead more rapidly than bigger ones. A child's mental and physical growth can be permanently harmed by too much lead. Risk will vary, depending on the individual, the circumstances, and the amount of water consumed.

## **What can I do to reduce or eliminate lead in my tap water?**

Flush your cold-water pipes by running the water for approximately 5 minutes. The longer the water has been sitting in the pipes, the more lead it may contain. You can fill containers for later use, after the flushing process. Use only water from the cold-water tap for drinking, cooking, and especially for making baby formula. Hot water is likely to contain higher levels because it dissolves more lead. You may choose to install a water filter that is NSF-certified for lead removal. If a water filter is installed, replace filters at least as often as recommended by the manufacturer.

Buy a lead-free faucet. The legal definition of "lead-free" still allows brass faucets to contain up to 8 percent lead. However, faucets marked with "NSF 61/9" and/or "California Proposition 65" meet stricter limits. Regularly clean particles from faucet aerators.

**Is it safe to take a bath or shower, if my water has high lead levels?**

Yes. Bathing and showering should be safe for you and your children, even if the water contains lead over EPA's action level. Human skin does not absorb lead in water. This information applies to most situations and to a large majority of the population, but individual circumstances may vary. Some situations, such as cases involving highly corrosive water, may require additional recommendations or more stringent actions.

**Who do I contact for more information?**

The local water authority is always your first source for testing and identifying lead contamination in your tap water. You can visit the City of Flint Website at [www.cityofflint.com](http://www.cityofflint.com) or contact the Flint Water Department at 810-787-6537.

[WWW.EPA.GOV](http://WWW.EPA.GOV)

[WWW.MDEQ.GOV](http://WWW.MDEQ.GOV)



## **CITY OF FLINT**

### **DPW - PUBLIC INFORMATION PLAN**

September 24<sup>th</sup> – Press Conference at Hurley Hospital

September 25<sup>th</sup> – Press Conference at City Hall (Heath Information)

September 30<sup>th</sup> – DPW Committee Meeting (Water Update)

October 7<sup>th</sup> - Technical Advisory Meeting

October 9<sup>th</sup> - Quarterly Water Report

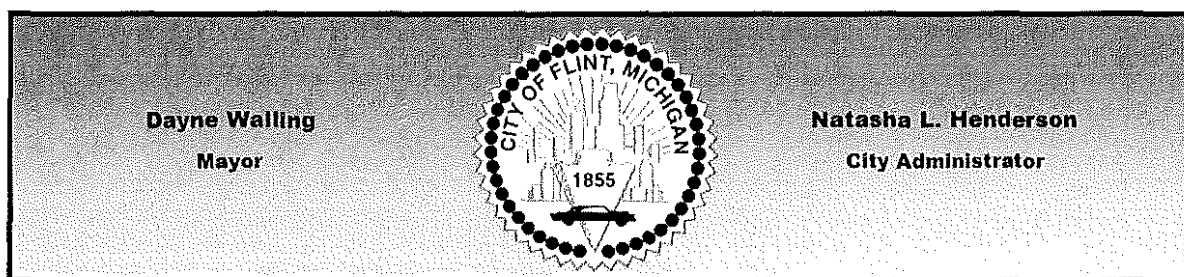
October 13<sup>th</sup> - Meeting with the Board of Health

November 16<sup>th</sup> - Technical Advisory Meeting (Tentative)

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DPW Director will be available for Radio Interviews and Neighborhood Meetings

\*To be scheduled through the City's Public Information Officer



Jason Lorenz  
 Public Information Officer  
 Office: (810) 237-2039  
 Cell: (810) 875-2576  
[jlorenz@cityofflint.com](mailto:jlorenz@cityofflint.com)

For Immediate Release

### City of Flint Issues Lead Advisory

**Flint, Michigan – September 25, 2015** – The City of Flint is issuing a Lead Advisory for residents to be aware of lead levels in drinking water after hearing concerns from the medical community. While the City is in full compliance with the Federal Safe Drinking Water Act, this information is being shared as part of a public awareness campaign to ensure that everyone takes note that no level of lead is considered safe.

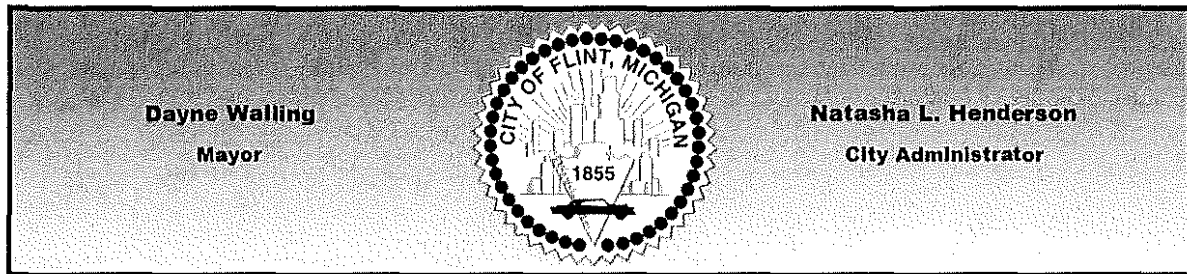
The Genesee County Health Department has issued a fact sheet regarding lead precautions for residents. The fact sheet can be found on their website at [www.gchd.us](http://www.gchd.us). Here are a few of the suggestions the Health Department recommends:

- Flush your cold-water pipes by running the water for approximately 5 minutes
- Use only water from the cold-water tap for drinking, cooking, and especially for making baby formula.
- Install a water filter that is NSF-certified for lead removal.

Lead contamination can leach into water from a home's lead water service lines, lead solder, and leaded plumbing materials including fixtures, faucets, and fittings. Older service lines with pipes and fixtures installed before 1986 can sometimes be more susceptible to lead issues due to materials used in the home such as lead based paint and lead pipes.

This message is meant as a precaution to residents and does not mean that all homes in the City will experience the same issue. Residents with concerns about lead service lines

City Hall  
 1101 S. Saginaw Street - Flint, Michigan 48502  
 810-766-7346 FAX: 810-766-7218 [www.cityofflint.com](http://www.cityofflint.com)



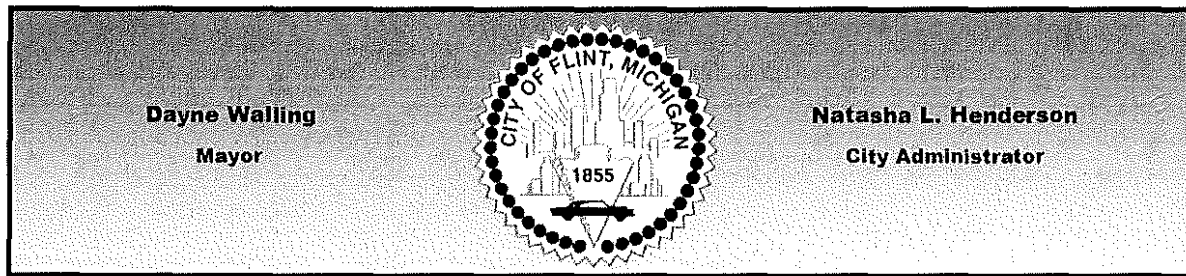
and lead in home plumbing fixtures are encouraged to contact the City's Utilities Division to schedule a free water testing by calling the Water Treatment Plant at 810-787-6537 and pressing #1 after prompted or by emailing [flintwater@cityofflint.com](mailto:flintwater@cityofflint.com).

The City of Flint is working proactively along with the County Health Department, the Michigan Department of Environmental Quality, and the U.S. Environmental Protection Agency to improve the water system throughout the City. An accelerated plan to add a corrosion control agent to our water within 30 to 60 days with expedited approval from the Michigan Department of Environmental Quality is already underway. This will reduce corrosion which can cause lead in old pipes to leach into the water.

This plan is in addition to Mayor Walling's letter requesting \$30 Million in water infrastructure assistance funding from the State of Michigan. \$10 Million of that request would be for the replacement of lead service lines in households to ensure that lead no longer presents a danger to the drinking water of our residents. As the letter states, "It is the City's position that the abatement of lead through the removal of lead containing pipes and fixtures in homes is the best long term solution to keeping our residents' water safe."

Mayor Walling further stated: "I am extremely concerned about the risks around lead with Flint's children and I will be working tirelessly to ensure the water is safe and all of our families have the information they need. I also will continue to pursue funding for infrastructure improvements and a comprehensive healthy homes initiative that addresses lead in paint and pipes. We have to get the lead out of our community to eliminate the threat of childhood lead poisoning."

The City of Flint continues working proactively with the County Health Department, the Michigan Department of Environmental Quality, and the U.S. Environmental Protection Agency to improve the water system throughout the City. The City remains committed to working with all of our partners in the Water Technical Advisory Committee to address all



issues of public health and quality concerns that face the community. Updates on progress made in addressing this issue will be made during regular public meetings including City Council and other scheduled meetings. Information on this and all related matters will continue to be posted on the City of Flint's website, [cityofflint.com](http://cityofflint.com).

—END—

**Rennaker, Joanne (DEQ)**

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**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, October 02, 2015 10:04 AM  
**To:** sheila.bw@hotmail.com  
**Cc:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Ticket #23002-490657 Response Sent

Sheila,

I am responding to your e-mail to address your concerns with lead Flint's drinking water. The drinking water treated at the Water Treatment Plant (WTP) and distributed to Flint residents meets all applicable drinking water standards and has not detected the presence of lead in any plant tap samples (water that leaves the WTP). Although the drinking water standards are being met, and compliance with the Action Level for lead is being achieved (90% of selected sites sampled throughout the city are at or below the 15 parts per billion Action Level for lead in accordance to EPA's monitoring requirements), there is no safe level for lead in drinking water. Compliance with the lead Action Level; however, does not mean that under certain conditions that some residents may have water within their domestic plumbing system that has leached lead from either a lead service line or lead solder.

The only way to know if you are being exposed to a higher concentration of lead at your residency is to have a sample collected from your residency and analyzed for lead at a certified laboratory. It is our understanding that the city of Flint is working with their customers on lead sampling requests without charge. You will need contact the city to arrange for the sampling.

If lead is present in the water at your home or if there is uncertainty, our advice is to minimize stagnation of the water prior to consumption by running your faucet for several minutes to clear out the stagnated water from your plumbing and service line.

Below is a link that provide additional information regarding lead in drinking water.

<http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm>

If you have any further concerns regarding lead in your drinking water or on any other water related matter, please don't hesitate to contact me.

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

**From:** Sheila Bailey-Waddell [mailto:sheila.bw@hotmail.com]  
**Sent:** Wednesday, September 30, 2015 8:43 PM  
**To:** Hill, Charles (DEQ); Selden, Barry (DEQ); Smith, Laura (DEQ); Prysby, Mike (DEQ)  
**Subject:** RE: Ticket #23002-490657 Response Sent

Hello,

Have you not heard that the water quality in Michigan is detrimental to its residents? It is filled with lead; killing our children and the elderly who are most vulnerable. What is the EPA doing about this? Even the hospitals are forced to order distilled water for patients (in/out). I want expeditious answers.

Thank you,  
 Sheila

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**From:** [sheila.bw@hotmail.com](mailto:sheila.bw@hotmail.com)  
**To:** [hillc@michigan.gov](mailto:hillc@michigan.gov); [seldenb@michigan.gov](mailto:seldenb@michigan.gov); [smithl16@michigan.gov](mailto:smithl16@michigan.gov)  
**Subject:** FW: Ticket #23002-490657 Response Sent  
**Date:** Thu, 7 May 2015 17:16:50 -0400

---

**From:** [sheila.bw@hotmail.com](mailto:sheila.bw@hotmail.com)  
**To:** [safewater\\_support@supportportal.com](mailto:safewater_support@supportportal.com); [bartholi@msu.edu](mailto:bartholi@msu.edu); [info@cityofflint.com](mailto:info@cityofflint.com); [senator@stabenow.senate.gov](mailto:senator@stabenow.senate.gov); [bennettc4@michigan.gov](mailto:bennettc4@michigan.gov)  
**Subject:** RE: Ticket #23002-490657 Response Sent  
**Date:** Thu, 7 May 2015 16:41:38 -0400

Hello,

It is unfortunate that you don't track local drinking water information. So in essence your tracking efforts are limited to the auspices of NRCS Water Division only for the conservation of farming and other natural (non-human) resources. What if, by chance, the local water source is not being accurate in their reporting of safe drinking water and source supply?

Thank you,  
 Sheila

<http://mi.water.usgs.gov/pubs/MISC/RTSMI-0121/pdf/WTO222b.pdf>

---

**From:** [safewater\\_support@supportportal.com](mailto:safewater_support@supportportal.com)  
**To:** [sheila.bw@hotmail.com](mailto:sheila.bw@hotmail.com)  
**Date:** Thu, 20 Feb 2014 08:25:04 -0500  
**Subject:** Ticket #23002-490657 Response Sent

The Safe Drinking Water Hotline has responded to your question(s).

Hello,

Thank you for contacting the Safe Drinking Water Hotline. You had some concerns regarding your local water quality. Please review the information included below:

The Safe Drinking Water Hotline does not track local drinking water information. The best source of specific information about your drinking water is your water supplier. Water suppliers that serve the same people year-round are required to send their customers an annual water quality report called a Consumer Confidence Report (CCR). The CCR describes any contaminants that have been detected in your drinking water, how these detection levels compare to health-based national drinking water standards, and the source of your drinking water. To obtain a copy of your CCR, you may search online at <http://cfpub.epa.gov/safewater/ccr/index.cfm>.

If your water system's report is not online, you should contact your local water provider to obtain a copy of this report. To find the telephone number for your local water provider, please check your water utility bill, your local phone book, or search online at <http://cfpub.epa.gov/safewater/ccr/index.cfm>.

If your city has a population in excess of 100,000, they are obligated to publish the reports online. Many local governments have sites where reports can be posted, even if a system itself does not have a site. EPA will make links from its Web site (<http://water.epa.gov/drink/index.cfm>) to all the reports of which it is aware (Preparing Your Drinking Water Consumer Confidence Report: Revised Guidance for Community Water Suppliers), EPA816-R-05-002).

If your city has not made the 2012 report available, please contact your state water program. They are the regulatory and enforcement agency for all public water systems in your state. The state water program should help you find the data. You can find contact information to your state by following the link below:

<http://water.epa.gov/drink/local/index.cfm>. <http://cfpub.epa.gov/safewater/ccr/index.cfm>.

EPA's Safe Drinking Water Hotline answers questions about the regulations and programs developed in response to the Safe Drinking Water Act. The Safe Drinking Water Hotline provides information, including access to publications, on EPA's drinking water standards, source water protection, and underground injection wells. The Hotline also provides referrals to state public water supply supervision programs, state underground injection control programs, and state laboratory certification programs.

If you have additional questions, you may contact the Safe Drinking Water Hotline at the following number:

(800) 426-4791 -- Toll Free

For more information, please visit EPA's Office of Ground Water and Drinking Water Internet web site:

<http://water.epa.gov/drink/index.cfm>.

Thank you for your interest in safe drinking water.

#### **Ticket Information:**

Ticket #: 23002-490657

Date Created: 2/19/2014 02:18 PM EST

Subject: Water Quality Assessment

Question: I live in Flint Michigan. What I have learned is Michigan appears to have 2012 and 2014 reports but neither are being reported by EPA. On this side of reporting for this data, we have no information as to the status of the 2012 or 2014 data. There are automotive plants in my area and the water quality is suspected to be less than satisfactory for residents.

#### **To update or check the status of this Ticket:**

1. Go to: <http://safewater.supportportal.com/link/portal/23002/23015/Ticket/490657>
2. Log in, and you will be automatically taken to the Ticket page.

**Rennaker, Joanne (DEQ)**

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**From:** Brent Wright <bwright@cityofflint.com>  
**Sent:** Monday, December 29, 2014 12:08 PM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Busch, Stephen (DEQ); Howard Croft; Daugherty Johnson; Michael Glasgow  
**Subject:** Re: TTHM Violation Notification

Thank you Mike.

On Mon, Dec 29, 2014 at 11:47 AM, Prysby, Mike (DEQ) <[PRYSBYM@michigan.gov](mailto:PRYSBYM@michigan.gov)> wrote:

Brent,

R 325.10403 (3), a , Sections i and ii of the Michigan Safe Drinking Water Act (Act 399) and Administrative Rules require suppliers to provide public notice within 30 days by mail or direct delivery (Section i) and by any other means reasonably calculated to reach customers not normally reached by mail (Section ii). The city may elect to include the public notice in their water billing. Newspaper and website posting must be utilized in the event that the city is unable to include the PN in their current billing cycle by the 30-day deadline; however, the city's next water billing cycle must include the PN. The PN must also be re-issued every three months; thus, the city needs to prepare for mail delivery.

Michael Prysby, P.E.

District Engineer

Office of Drinking Water and Municipal Assistance

517 290-8817

**From:** Brent Wright [<mailto:bwright@cityofflint.com>]  
**Sent:** Monday, December 29, 2014 10:58 AM  
**To:** Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Cc:** Howard Croft; Daugherty Johnson; Michael Glasgow  
**Subject:** TTHM Violation Notification

Mike, Steve

Concerning the violation notification for TTHM's the city needs clarification on the delivery of notification. In the last violation notification for Total Coliform the City published it in the local paper and posted it on the city website, this satisfied the DEQ requirements. Would this be adequate for the TTHM notification? Thank you for your prompt reply concerning this matter.

--

**Brent Wright**

**Water Plant Supervisor**

**City of Flint**

**4500 N. Dort Hwy.**

**Flint, MI. 48505**

**Ph: 810.787.6537 ext. 3510**

**Fx: 810.787.3710**

--

**Brent Wright**

**Water Plant Supervisor**

**City of Flint**

**4500 N. Dort Hwy.**

**Flint, MI. 48505**

**Ph: 810.787.6537 ext. 3510**

**Fx: 810.787.3710**

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Monday, December 29, 2014 11:27 AM  
**To:** Busch, Stephen (DEQ)  
**Subject:** RE: TTHM Violation Notification

Steve,

Yes...Section ii is also included the VN letter. No record of us waiving the requirement.....I will inform the city accordingly.

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

---

**From:** Busch, Stephen (DEQ)  
**Sent:** Monday, December 29, 2014 11:23 AM  
**To:** Prysby, Mike (DEQ)  
**Cc:** Rosenthal, Adam (DEQ); Benzie, Richard (DEQ)  
**Subject:** Re: TTHM Violation Notification

From what I see it says both section i and ii unless otherwise directed by the department in writing. I'm not sure if the dwac has some write up on this in their database. Ccrs could be different since it is generally used for tier iii notices. They may not be able to include in their bills by the 30 day deadline but could put in newspaper and web followed by the bill later. They will need to reissue every 3 months for a while anyway so they should prepare to mail it out.

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

Sent from my iPhone

On Dec 29, 2014, at 11:09 AM, Prysby, Mike (DEQ) <[PRYSBYM@michigan.gov](mailto:PRYSBYM@michigan.gov)> wrote:

Steve,

According to R 325.10403 (3), a (i)

Community water supplies shall provide notice (Tier 2) by using both of the following forms of delivery

- (i) Mail or direct delivery to each customer receiving a bill

As far as I see in the rules .....Flint needs to send the TTHM PN via direct mail.....and is stated in the Dec. 16<sup>th</sup> Violation Notice letter.

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

**From:** Brent Wright [<mailto:bwright@cityofflint.com>]  
**Sent:** Monday, December 29, 2014 10:58 AM  
**To:** Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Cc:** Howard Croft; Daugherty Johnson; Michael Glasgow  
**Subject:** TTHM Violation Notification

Mike, Steve

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**Water Plant Supervisor**  
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**4500 N. Dort Hwy.**  
**Flint, MI. 48505**  
**Ph: 810.787.6537 ext. 3510**  
**Fx: 810.787.3710**

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Monday, December 29, 2014 11:47 AM  
**To:** Brent Wright; Busch, Stephen (DEQ)  
**Cc:** Howard Croft; Daugherty Johnson; Michael Glasgow  
**Subject:** RE: TTHM Violation Notification

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

**From:** Brent Wright [<mailto:bwright@cityofflint.com>]  
**Sent:** Monday, December 29, 2014 10:58 AM  
**To:** Prysby, Mike (DEQ); Busch, Stephen (DEQ)  
**Cc:** Howard Croft; Daugherty Johnson; Michael Glasgow  
**Subject:** TTHM Violation Notification

Mike, Steve

Concerning the violation notification for TTHM's the city needs clarification on the delivery of notification. In the last violation notification for Total Coliform the City published it in the local paper and posted it on the city website, this satisfied the DEQ requirements. Would this be adequate for the TTHM notification? Thank you for your prompt reply concerning this matter.

--

**Brent Wright**  
**Water Plant Supervisor**  
**City of Flint**  
**4500 N. Dort Hwy.**  
**Flint, MI. 48505**  
**Ph: 810.787.6537 ext. 3510**  
**Fx: 810.787.3710**

**Rennaker, Joanne (DEQ)**

---

**From:** Craig, John (DEQ)  
**Sent:** Thursday, February 06, 2014 3:41 PM  
**To:** Busch, Stephen (DEQ); Arduin, Jim (DEQ); Brim, Richard (DEQ)  
**Subject:** RE: update regarding Bray Road consent order

OK. Let me take a crack at it. I'll get you the a new draft this afternoon.

**From:** Busch, Stephen (DEQ)  
**Sent:** Thursday, February 06, 2014 3:35 PM  
**To:** Craig, John (DEQ); Arduin, Jim (DEQ); Brim, Richard (DEQ)  
**Subject:** RE: update regarding Bray Road consent order

Thanks John.

I believe the City will want to add the attached language or something similar as a new paragraph/subsection under the findings (Section 2). If we could add it now to the draft that would be helpful, but we can try to negotiate it on Monday if necessary.

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

**From:** Craig, John (DEQ)  
**Sent:** Thursday, February 06, 2014 2:42 PM  
**To:** Busch, Stephen (DEQ); Arduin, Jim (DEQ); Brim, Richard (DEQ)  
**Subject:** FW: update regarding Bray Road consent order  
**Importance:** High

Steve and Jim, I have attached a draft consent order related to the city of Flint Bray Road site pursuant to Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451. This is a rough draft based on the information available to the Office of Waste Management and Radiological Protection, but is a good starting point for development of the consent order. This draft has not been internally distributed for review and comment by DEQ staff, OWMRP and ODWMA management, or the Department of Attorney General, so it is subject to additional changes. However, in the interest in moving the project along, you may share it with the City and their representatives, with the above caveat, in order to continue what I hope will be fruitful discussions next Monday.

Unfortunately, I will be out of the office tomorrow, Friday, February 7<sup>th</sup>, so I will not be available to discuss my revisions or respond to questions you may have. I'll be back in the office on Monday at 10:00 AM. Thanks. John

John Craig, Chief,  
 Enforcement Section\* | Office of Waste Management and Radiological Protection | Department of Environmental Quality | Constitution Hall –  
 Lansing  
 ☎ Phone: 517-284-6546 | 📠 Facsimile 517-373-4797

*\* Supporting the Office of Drinking Water and Municipal Assistance | Office of Oil, Gas, and Minerals | Office of Waste Management and Radiological Protection*

**From:** Robinson, Michael [<mailto:MRobinson@wnj.com>]  
**Sent:** Thursday, February 06, 2014 10:42 AM

**To:** Busch, Stephen (DEQ)  
**Cc:** Arduin, Jim (DEQ); Brim, Richard (DEQ); Craig, John (DEQ)  
**Subject:** Re: update regarding Bray Road consent order

Great. I think we can make progress even without a "final" draft. Thanks

Sent from my iPhone

On Feb 6, 2014, at 7:25 AM, "Busch, Stephen (DEQ)" <[BUSCHS@michigan.gov](mailto:BUSCHS@michigan.gov)> wrote:

I agree on Monday. It will be the only day next week I will be available to meet on this.

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

---

**From:** Robinson, Michael [<mailto:MRobinson@wnj.com>]  
**Sent:** Thursday, February 06, 2014 9:26 AM  
**To:** Arduin, Jim (DEQ)  
**Cc:** Busch, Stephen (DEQ); Brim, Richard (DEQ); Craig, John (DEQ)  
**Subject:** Re: update regarding Bray Road consent order

We need to keep our meeting on Monday. Please send me what you have with the understanding that it still needs review within the DEQ. Can you also briefly identify any issues in an email to me today? We really must move things along. I appreciate your efforts. Thanks, mike

Sent from my iPhone

On Feb 6, 2014, at 4:11 AM, "Arduin, Jim (DEQ)" <[ARDUINJ@michigan.gov](mailto:ARDUINJ@michigan.gov)> wrote:

Mike,

Due to the fact that this order significantly involves two divisions within the DEQ, it is taking longer to coordinate and incorporate internal comments and concerns. In addition, as I understand it, you have asked Steve Busch to add in additional stipulations/findings which are apparently going through appropriate staff review within the Drinking Water Division and have yet to work their way back to me for incorporation into the order. I honestly don't have a timeframe for you, as much of what is happening in this process is no longer in my control. I will forward the draft to you as soon as I can.

I will be out in the field all day today but will make the rounds around the office tomorrow to see where things stand. Even if we get you a copy tomorrow, it leaves you little time to prepare for Mondays meeting. We may need to reschedule.

Jim

James Arduin  
Senior Geologist  
Michigan Department of Environmental Quality  
Office of Waste Management and Radiological Protection  
(517) 284-6652

Please note the new phone number.

---

**From:** Robinson, Michael [<mailto:MRobinson@wnj.com>]  
**Sent:** Wednesday, February 05, 2014 11:35 PM  
**To:** Arduin, Jim (DEQ)  
**Subject:** RE: update regarding Bray Road consent order

Any chance you can send me a draft on Thursday?

---

**From:** Arduin, Jim (DEQ) [<mailto:ARDUINJ@michigan.gov>]  
**Sent:** Monday, February 03, 2014 8:48 AM  
**To:** Robinson, Michael  
**Cc:** Busch, Stephen (DEQ)  
**Subject:** update regarding Bray Road consent order

Mike,

We are still addressing several comments that were made during our review process.

I hope to get you a copy of the draft order later today.

Jim

James Arduin  
Senior Geologist  
Michigan Department of Environmental Quality  
Office of Waste Management and Radiological Protection  
(517) 284-6652

Please note the new phone number.

**Rennaker, Joanne (DEQ)**

---

**From:** Howard Croft <hcroft@cityofflint.com>  
**Sent:** Monday, October 12, 2015 12:35 PM  
**To:** Shekter Smith, Liane (DEQ)  
**Cc:** Devereaux, Tracy Jo (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ); Krisztian, George (DEQ)  
**Subject:** Re: Vendor Inquiries

Liane,

Thank you, I am comfortable with guiding vendors in the right direction.

On Mon, Oct 12, 2015 at 9:47 AM, Shekter Smith, Liane (DEQ) <[SHEKTERL@michigan.gov](mailto:SHEKTERL@michigan.gov)> wrote:

Howard –

I anticipate that we will be receiving various inquiries from vendors that are interested in providing products or services to assist the City of Flint with water concerns. Since these contacts are more appropriately handled by the city, it is our intention to forward them City contact information so that they can connect with you directly.

As a reminder, you'll want to make sure that any products or devices being proposed for use are appropriately certified by NSF for drinking water use. The appropriate certification status should be established before any further consideration given.

Liane J. Shekter Smith, P.E., Chief

Office of Drinking Water and Municipal Assistance

Michigan Department of Environmental Quality

517-284-6543

--

**Howard Croft**

Public Works Director

City of Flint

1101 S. Saginaw Street

Flint, MI 48502

PH# 810.766.7135 Ext.2043

[hcroft@cityofflint.com](mailto:hcroft@cityofflint.com)

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Friday, October 30, 2015 2:35 PM  
**To:** Sygo, Jim (DEQ); Busch, Stephen (DEQ)  
**Subject:** RE: We need to discuss today  
**Attachments:** PO4 Permit (revised dosage).pdf

Jim,

Attached is the revised PO4 dosage that LAN sent us last Tuesday. The revised dosage sheet was included in the permit. The Act 399 Permit application; however, included the original PO4 dosage on the BOD page that was proposed prior to EPA's comments and should have been omitted (my over-sight). We can discuss this later today. The revised dosage should address EPA's concern.

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

---

**From:** Sygo, Jim (DEQ)  
**Sent:** Friday, October 30, 2015 9:06 AM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** FW: We need to discuss today

Will this be part of the letter coming out today?

---

**From:** Kaplan, Robert [<mailto:kaplan.robert@epa.gov>]  
**Sent:** Friday, October 30, 2015 8:58 AM  
**To:** Sygo, Jim (DEQ)  
**Subject:** We need to discuss today

Jim,

In the interests of time, I am sending over a comment from TF discussions directly. There are a few technical concerns about the permit issued to Flint. Could you consider the comment below and let me know your thoughts? It's important to all that we get this nailed down without delaying the feeding of corrosion control. Thanks.

*There is a unit "issue" in the section of phosphate dosages. In our phone call the other day, DEQ indicate the units discussed were mg/L as P, when we questioned how much phosphate was being consumed in the Flint system from the Detroit water feed. This also came up in a prior discussion on the phone Darren and I had with DEQ about observations of phosphate loss, even within Detroit. The recommendations Darren and I provided for an initial dose of a total amount of PO4 (as PO4), were that the target residual to the estimated theoretical point of*

*diminishing returns to optimize phosphate (in lieu of having it be determined by actual pilot testing) should be in the 3-4 mg/L as PO<sub>4</sub> neighborhood, closer to 4.*

*At this time (but not when they change water supplies!) they only need to supplement the PO<sub>4</sub> coming from Detroit. Thus, the pumps to be installed should have the minimum capacity to dose to achieve the 3-4 mg/L as PO<sub>4</sub> level (1-1.3 mg/L as P), with extra capacity to achieve 4-6 mg/L as PO<sub>4</sub> (1.3 to 2 mg/L as P), to assure that they could overcome an estimated system pipe wall demand. So, the design max dosage for the pumps should be 6 mg/L as PO<sub>4</sub> – (the minimum amount of phosphate received from Detroit, in mg/L as PO<sub>4</sub>). The minimum would be 3.5 to 5 mg/L as PO<sub>4</sub> – (the maximum amount of phosphate received from Detroit, in mg/L as PO<sub>4</sub>).*

*I seem to recall that we were assured on our phone call the other day that the changes were being made to address our concerns, but that the units were in mg/L as P. Since the conversion factor of P to PO<sub>4</sub> is 3, then clearly, the target residual would be about 1-1.3 mg/L as P, but it looks like the units are PO<sub>4</sub> in this permit. They say the max design dosage would be 1.5 mg/L, which is still a little low, if the units truly are mg/L as P (4.5 mg/L supplement on top of received water). But I'm really confused by the level they say is received from Detroit, because they very explicitly say "as PO<sub>4</sub>" in the engineering report that is the basis for the permit request, not as "P."*

*I'm thinking some water samples should be taken for alkalinity and orthophosphate (or total P, given it's a phosphoric acid product, for convenience of analysis and preservation) and have your R5 laboratory analyze them, so that we can be sure of the phosphate and alkalinity levels.*

Sent from my iPhone

## Flint Phosphate Calculations

Chemical will be 75% NSF certified Phosphoric acid

75% acid has a density of 13.17 #/gal. (5,974 g/gal)  $13.17 \times 453.5923$

Of this 75% is Phosphoric acid ( $H_3PO_4$ ) = 4,480 g  $H_3PO_4$ /gal  $5,974 \times 0.75$

Molecular weight of  $H_3PO_4$  is 97.9913 g/mole

Moles  $H_3PO_4$  / gal = 45.72  $4,480/97.9913$

Moles  $H_3PO_4$  = Moles Orthophosphate ( $PO_4^{3-}$ ) = Moles Phosphorus (P)

| Species     | Molecular Wt. | Moles / gal | g/gal   |
|-------------|---------------|-------------|---------|
| $H_3PO_4$   | 97.9913       | 45.72       | 4,480   |
| $PO_4^{3-}$ | 94.9676       | 45.72       | 4341.92 |
| P           | 30.97         | 45.72       | 1407.72 |

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

PERMIT NO.

W 151104 OCT 28 2015

### Proposed Operating Parameters

EXAMINED AND APPROVED FOR COMPLIANCE  
WITH ACT 399, P.A. 1976

Assumptions per DEQ:

- City of Detroit residual is 0.39 mg/l as P
- MDEQ wants Flint to maintain a residual of approximately 1.0 mg/l as P
- Feed pump capacity should be sized for a max dose of 2.0 mg/l as P

|         | Plant Flow | Dosage as $PO_4^{3-}$ * | Dosage as P |
|---------|------------|-------------------------|-------------|
| Maximum | 25 MGD     | 6.13 mg/l               | 2.0 mg/l    |
| Average | 16 MGD     | 3.07 mg/l               | 1.0 mg/l    |
| Minimum | 8 MGD      | 1.53 mg/l               | 0.5 mg/l    |

\*Equivalent dosage to P dosage

### Feed Rate Calculations

Maximum feed rate (Max Flow  $\times$  Max Dosage)

$$25 \text{ MGD} \times 3782 \text{ g/gal } H_2O \times 2.0 \text{ ppm} / 1,408 \text{ g/gal} = 134.30 \text{ gpd Phosphoric Acid}$$

Average feed rate (Avg Flow  $\times$  Avg Dosage)

$$16 \text{ MGD} \times 3782 \text{ g/gal } H_2O \times (1.0 \text{ ppm} - 0.39 \text{ ppm}) / 1,408 \text{ g/gal} = 26.21 \text{ gpd Phosphoric Acid}$$

Minimum feed rate (Min Flow  $\times$  Min Dosage)

$$8 \text{ MGD} \times 3782 \text{ g/gal } H_2O \times (1.0 \text{ ppm} - 0.39 \text{ ppm}) / 1,408 \text{ g/gal} = 13.10 \text{ gpd Phosphoric Acid}$$

### Storage Requirements

30 days supply at average flow and dosage =  $26.21 \text{ gpd} \times 30 \text{ days} = 786 \text{ gal.}$

Assuming the use of 275 gal semi-bulk totes, 3 totes required (recommend 2 in service, 1 spare)

Four Function Valve  
AUTOPRIME™ liquid End  
High Viscosity Liquid End  
Low Level Float Switch  
Digi-Pulse Flow Monitor  
Repair & Preventive Maintenance Kits  
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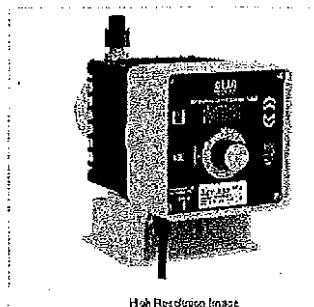
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## Series C Chemical Metering Pumps

### Series C Chemical Metering Pumps

Series C Chemical Metering Pumps have been an industry standard for over 20 years. Designed for Municipal/Industrial applications, the familiar yellow and black pumps have a rugged, totally enclosed, chemically resistant housing for protection in the harshest environments. Encapsulated electronics and a rigid housing and stroke bracket ensure years of precise, repeatable performance.



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Adjustable stroke frequency and the flexibility of up to 1000:1 turndown ratio  
 Manually adjustable stroke length provides accurate pump output adjustment  
 NEMA 4X / IP65 enclosure for protection against corrosive environments  
 Time tested electronics for reliable, repeatable performance  
 Totally encapsulated electronics for protection against moisture and corrosive conditions  
 Inputs for low level switch available on certain models  
 Models with external pacing for flow proportional applications  
 Advanced control options for simplified system integration (pulse multiply/divide, 4-20 mA, remote on/off)

\*UL, \*CUL, NSF 60, NSF 61, \*CE Certifications

#### Control Codes:

1 - Dual Manual Control (speed and stroke length)  
 7 - Pulse Input / Dual Manual Control  
 9 - Pulse/Analog Input / Dual Manual Control

| Output Codes with standard liquid end |                    |
|---------------------------------------|--------------------|
| Max Capacity:                         | Max Pressure:      |
| *CX0 - 1.3 GPH (4.9 l/h)              | 300 psi (20.7 Bar) |
| *CX1 - 2.5 GPH (9.5 l/h)              | 150 psi (10.3 Bar) |
| *CX2 - 4.0 GPH (15.1 l/h)             | 100 psi (6.9 Bar)  |
| *CX3 - 8.0 GPH (30.3 l/h)             | 80 psi (4.1 Bar)   |
| *CX4 - 20 GPH (75.7 l/h)              | 25 psi (1.7 Bar)   |
| C76 - 4.0 GPH (15.1 l/h)              | 175 psi (12.1 Bar) |
| C77 - 10.0 GPH (38.0 l/h)             | 80 psi (5.5 Bar)   |
| C78 - 25 GPH (95.0 l/h)               | 30 psi (2.07 Bar)  |

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

PERMIT NO.

W 151104 OCT 28 2015

 EXAMINED AND APPROVED FOR COMPLIANCE  
 WITH ACT 399, P.A. 1976

MMP

**Rennaker, Joanne (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

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Monday, January 26, 2015 1:37 PM  
**To:** Shekter Smith, Liane (DEQ); Wurfel, Brad (DEQ)  
**Cc:** Busch, Stephen (DEQ); Benzie, Richard (DEQ)  
**Subject:** RE: Wrong phone number.

I contacted Mr. Wyatt to let him know that we are not available for an "on camera" interview today. Since they need to get the report out today, Mr. Wyatt's reporter (Jeno) will be contacting me around 2:30pm for a telephone interview.

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

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

**Rennaker, Joanne (DEQ)**

---

**From:** Michael Glasgow <mglasgow@cityofflint.com>  
**Sent:** Tuesday, November 18, 2014 2:54 PM  
**To:** Rosenthal, Adam (DEQ)  
**Cc:** Brent Wright; Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** Re:

Adam,

We were planning on sampling DBP's tomorrow &/or Thursday, following the schedule that was set up during Stage 2 DBP implementation (3rd full week of November), and samples will be mailed out Thursday. I would expect the lab to receive samples on Friday the 21st. With the Holiday next week, I don't expect results until after the first of December.

Mike Glasgow  
City of Flint Water Plant

On Tue, Nov 18, 2014 at 2:33 PM, Rosenthal, Adam (DEQ) <[ROSENTHALA@michigan.gov](mailto:ROSENTHALA@michigan.gov)> wrote:

Brent & Mike, we need to find out if you have collected the 4<sup>th</sup> quarter DBPs (TTHM & HAA5), or when you plan on collecting the samples, and when to expect results. Please let us know.

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

**Rennaker, Joanne (DEQ)**

---

**From:** Prysby, Mike (DEQ)  
**Sent:** Thursday, October 15, 2015 10:31 AM  
**To:** Howard Croft (hcroft@cityofflint.com); Michael Glasgow; 'bwright@cityofflint.com'; Tim Davidek (T\_DAVIDEK@gcdcwws.com); jfobrien@gcdcwws.com; "mhorgan@gcdcwws.com".GWIA.SOM-GWIA01; Krisztian, George (DEQ); Shekter Smith, Liane (DEQ); Busch, Stephen (DEQ); Benzie, Richard (DEQ); Rosenthal, Adam (DEQ)  
**Subject:** Recommissioning the 72-inch transmission main

Based upon discussions with Genesee County and the city of Flint, the portion of the 72-inch transmission main (pipeline) that was taken out of service, while the Flint Water Treatment Plant (WTP) treated water from the Flint River, was flushed and disinfected in accordance to AWWA Standard C651-14. Two sets of samples were collected from two locations 16 hours apart for total coliform analysis. The city of Flint and Genesee County has informed the DEQ that both sets of samples are Non-Detect for total coliform. Based upon the disinfection procedure and the absence of total coliform from both sets of samples, the un-used portion of the pipeline may be placed into service.

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

**Rennaker, Joanne (DEQ)**

---

**From:** Rosenthal, Adam (DEQ)  
**Sent:** Thursday, October 15, 2015 2:15 PM  
**To:** Busch, Stephen (DEQ); Shekter Smith, Liane (DEQ)  
**Subject:** repeat sample 2015 PbCu Flint

3714 Beecher Rd, Melissa Mays co-founder of Water you fighting for.

3/24/15 kitchen, Pb = 2 ppb

5/14/15 main bathroom, Pb = 8 ppb

Preliminary and Deliberative not subject to FOIA

**Rennaker, Joanne (DEQ)**

---

**From:** Shekter Smith, Liane (DEQ)  
**Sent:** Friday, October 16, 2015 6:05 PM  
**To:** tsitko@flintschools.org  
**Cc:** Krisztian, George (DEQ); Dykema, Linda D. (DHHS); Edgerton, Shelly (LARA); Madziar, Joseph (LARA); Busch, Stephen (DEQ); Cook, Pat (DEQ); Sygo, Jim (DEQ); Devereaux, Tracy Jo (DEQ)  
**Subject:** Request for information prior to DLARA plumbing assessment

Mr. Sitko,

Thank you for meeting with us today. As we discussed, Department of Licensing and Regulatory Affairs (LARA) plumbing inspectors will be contacting school officials at Freeman Elementary, Eisenhower Elementary, and Brownell K-2 STEM Academy to schedule an on-site visit. LARA plumbing inspectors will be performing an on-site assessment of each building's plumbing in preparation for and prior to samples being collected as part of a lead and copper evaluation.

As we discussed, it would be most helpful if school officials could provide background information prior to visits by the LARA plumbing inspectors.

In order to assist LARA staff to identify and prioritize sample sites, school staff should compile, collect, and review any records pertaining to the building plumbing. This includes building permits, plumbing permits, as built plans, and information about the service line and all potable water pipes, fixtures and appurtenances within the building. At a minimum, a diagram of each floor layout should be provided.

In addition, answers to the following questions will help streamline the on-site assessment process.

- When was the facility built?
- Have new buildings or additions been added? If so, when were they added? If built since 1986, were lead-free plumbing and solder used?
- When were the most recent plumbing repairs made and where were they located?
- What are the potable water pipes in your facility made of and what is their location? Options include: lead, brass, copper, plastic, galvanized metal and other materials. What materials were used to solder the potable water pipes in your system? Are brass taps, fittings or valves used? Note the locations.
- How many of the following outlets provide water for consumption: Bubblers, ice makers, water coolers and kitchen taps. Note their location. Include taps that might be used for making coffee or preparing formula.
- What brands and models of water coolers (cooled drinking fountains) provide water in your facility and what is their location?
- Do faucets have accessible screens and have they been cleaned?
- Can you detect any signs of corrosion, such as leaks, rust-colored water or stains?
- Is any electrical equipment grounded to water pipes?
- Are there any records of previous water testing?

LARA staff will be contacting each school directly to set a date and time for the assessment. It would also be very helpful if a school representative familiar with the building layout and plumbing system could accompany LARA staff as they conduct the assessment. A room reserved for records review would also be appreciated.

Thank you for coordinating this effort and forwarding this request to your school principals.

Again, we look forward to working with you.

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

**Rennaker, Joanne (DEQ)**

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**From:** Crooks, Jennifer <crooks.jennifer@epa.gov>  
**Sent:** Wednesday, February 25, 2015 12:19 PM  
**To:** Busch, Stephen (DEQ); Prysby, Mike (DEQ)  
**Subject:** results from recent Flint TTHM samples?

**Importance:** High

Mike/Steve--Yes, I have another controlled correspondence from the White House. I thought I'd update my last letter, in case you have these results—I'm hoping that all 8 locations are below 80 this time?

Jennifer

**Rennaker, Joanne (DEQ)**

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**From:** Prysby, Mike (DEQ)  
**Sent:** Tuesday, September 17, 2013 10:04 AM  
**To:** Busch, Stephen (DEQ); Cook, Pat (DEQ)  
**Subject:** Revised CT calc for Flint WTP  
**Attachments:** CT Calc at 18 MGD w. softening.xls

Attached is a slight revision to the CT calc for the Flint WTP. The revision reflects the lowest operating level in the 3-MGAL clearwell of 10 ft. 15 feet is the high level alarm and each foot drop represents 200,000 gallons. The 10 foot operating level reflects 2.0 Mgal of water remaining in the clearwell. In a nut shell, the WTP provides 0.42 additional log removal (18 MGD, 0.5 deg C, pH 9.0, CL2 1.0 ppm) at the lowest operating level which falls slightly short of the 0.5 additional log removal requirement.

If the outgoing free chlorine residual is increased to 1.5 ppm, 0.54 additional log removal is achieved, thus meeting the required CT.

I will be sending a copy of this CT calc to Warren Green at LAN and to Brent Wright at the Flint WTP.

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

**Rennaker, Joanne (DEQ)**

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**From:** Thelen, Mary Beth (DEQ)  
**Sent:** Wednesday, October 14, 2015 2:26 PM  
**To:** Shekter Smith, Liane (DEQ); Krisztian, George (DEQ); Sygo, Jim (DEQ); Tommasulo, Karen (DEQ); Busch, Stephen (DEQ)  
**Cc:** Pallone, Maggie (DEQ); Wurfel, Brad (DEQ); Thelen, Mary Beth (DEQ); Shaler, Karen (DEQ); Feuerstein, Heather (DEQ); Devereaux, Tracy Jo (DEQ); Wyant, Dan (DEQ)  
**Subject:** Sample Letter FW: FLINT WATER : New form letter-

Below is a response that the Governor's office will be using for some of their constituent inquiries. If specific inquiries come to them, they will send to the appropriate department (DEQ, DHHS, etc.). Just wanted to keep you in the loop. 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:** Stoken, Laura (GOV)  
**Sent:** Wednesday, October 14, 2015 2:20 PM  
**To:** Thelen, Mary Beth (DEQ)  
**Cc:** Shaler, Karen (DEQ)  
**Subject:** RE: FLINT WATER : New form letter- questions

Thank you for your recent correspondence sent to Governor Rick Snyder regarding the water in Flint. As a member of Governor Snyder's staff, I am responding on his behalf.

Flint families and children will be better protected by reconnecting with the Great Lakes Water Authority as the source of the city's drinking water until the Karegnondi Water Authority pipeline is completed. Governor Snyder has asked the state Legislature to provide half, or \$6 million, of the \$12 million needed to reconnect with the authority through next summer, when the KWA is expected to be completed. The Flint city government will provide \$2 million and the Charles Stewart Mott Foundation has committed \$4 million.

Governor Snyder said "Flint residents need to have access to safe, clean, water now and long into the future." The technical experts helping the city on its water advisory all agree this move back to the Great Lakes Water Authority provides the best public health protection for children and families. The Governor appreciates Detroit's willingness to reconnect with Flint, the Mott Foundation's generous commitment, and the dedication of all parties to come together to protect Flint families and children.

Flint city leaders requested the state's help to fund the reconnection and to assist with health and infrastructure issues. Flint's move to the Great Lakes Water Authority is expected to cost about \$1.3 million per month until the Karegnondi Water Authority is completed next summer.

The move to Detroit water, which is expected to include many public health benefits. As large bodies of water, the Great Lakes are naturally prone to fewer problems from large rain events and other runoff issues that can sometimes be present in shallower rivers. Additionally, the Great Lakes Water Authority water already has additional corrosion control, using phosphates to help coat the insides of pipes and limit lead from leaching into the water. However, reconnecting with the authority will not completely resolve the city's problem with lead service lines or aging infrastructure. It will take time for pipes in Flint to become coated with the phosphate corrosion control. Additionally, some households in the city could experience lead in their drinking water until all lead pipes and plumbing are replaced.

To best protect public health, Governor Snyder, state, and local authorities will continue to carry out steps outlined on Oct. 2 in a comprehensive action plan, including continued testing, the use of faucet filters and providing residents with accurate information about steps to eliminate lead exposure. The Michigan Departments of Environmental Quality (DEQ) and Health and Human Services (MDHHS) also committed an additional \$3.5 million for water filters, free lead testing through the state laboratory for Flint water customers, and hiring additional staff to conduct health exposure monitoring for lead in drinking water.

Free filters are available for current MDHHS clients at the 125 E. Union St. or 4809 Clio Road MDHHS office locations. For residents who are not currently enrolled in MDHHS assistance programs, free filters are available at the Genesee County Community Action Resource Department offices at 2727 Lippincott and 601 North Saginaw in Flint. Staff will be at all four locations from 9 a.m. to 4 p.m., Monday through Friday, to distribute filters and assist residents who have questions about proper installation. At the Lippincott location only, extended hours will be offered this weekend, including until 7 p.m. on Thursday and Friday and from 10 a.m. to 2 p.m. on Saturday.

Other good practices for residents concerned about lead include turning on the cold water tap and running the water until it's as cold as it will go. Additionally, only use cold water for cooking, drinking and especially mixing baby formula.

The state also released the first results from its lead screening program in schools and homes. Of 37 total samples taken at 13 buildings, four samples spread over three buildings exceeded the federal action level of 15 parts per billion.

However, this sampling provides only an initial screen, and the state is committing to further testing water and inspecting plumbing at these schools. Until testing is complete, schools are advised to continue using bottled water and filtration as a precaution to protect children.

In addition, free testing is still available for any other Flint school, including daycares and Head Starts. Free testing is also available for any Flint resident.

Please visit [Michigan.gov/Flintwater](http://Michigan.gov/Flintwater) for additional resources.

Thank you, again, for taking the time to share your concerns with our office. Should you have any further comments, questions or concerns regarding this or any other state-related matter, I've included my contact information below.

Sincerely,

Laura Stoken  
Manager, Constituent Relations

Executive Office of the Governor, Rick Snyder  
517.335.7858