
From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Wednesday, April 15, 2015 6:01 PM
To: Shekter Smith, Liane (DEQ); Benzie, Richard (DEQ); Philip, Kris (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Subject: RA visit to Flint, Michigan
Attachments: Flint Hot Issue 4-15.doc

I talked with Tom P this afternoon and the language on the SRF paragraph has not yet been finalized, so he doesn't have a final yet. He said he doesn't expect much to change from the draft. Attached please see the draft briefing.
Jennifer

From: Poy, Thomas
Sent: Monday, April 06, 2015 9:46 AM
To: Glowacki, Joanna; Crooks, Jennifer
Subject: RE: HOT Issue Request - Flint, Michigan - Due April 14

Attached is a draft of the hot issue for Flint – it has a placeholder paragraph on the SRF piece as I'm waiting on STPB to give me language on principal forgiveness this week.

Tom

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

Issue: Flint Drinking Water Issues

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

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

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

Flint has a number of DW-SRF loans outstanding. The State recently restructured their loans to allow Flint to defer 2015 payments to future years. Rep. Dan Kildee has been inquiring to EPA on whether principal forgiveness can be applied retroactively to existing loans. EPA is working on a response.

Message:

- Flint switched from purchasing treated Lake Huron water from Detroit to treating Flint River water themselves until a pipeline being constructed can provide them with raw Lake Huron water to treat in 2016.

- Flint has/had MCL violations and has been working with MDEQ staff, a consultant, and a technical advisory committee to improve operations.

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

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Thursday, April 16, 2015 1:56 PM
To: Philip, Kris (DEQ); Busch, Stephen (DEQ); Prysby, Mike (DEQ)
Subject: FW: Flint control AX-15-000-7426 WH
Attachments: Control AX 15 000 7426 WH Durand 41615.pdf

Our latest attempt at responding to a citizen's concerns.
Jen

From: Sulej, Erik
Sent: Thursday, April 16, 2015 12:54 PM
To: Crooks, Jennifer; Murphy, Thomas; Shoven, Heather
Subject: Flint control AX-15-000-7426 WH

For your records.

*Erik S. Sulej
Ground Water and Drinking Water Branch
U.S. Environmental Protection Agency, Region 5
77 W. Jackson Blvd (WG-15J), Chicago, IL 60604
Phone: (312) 886-3473 / Email: sulej.erik@epa.gov*



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 REGION 5
 77 WEST JACKSON BOULEVARD
 CHICAGO, IL 60604-3580

REPLY TO THE ATTENTION OF:

APR 15 2015

WG-15J

Mr. John D. Durand
 1008 Woodside Drive
 Flint, Michigan 48503

Dear Mr. Durand:

Thank you for your January 13, 2015 letter to President Obama concerning the quality of the drinking water in the City of Flint, Michigan (Flint). Your letter was forwarded to me for a response, since Flint's municipal water supply is located within the geographical boundaries of the Region 5 office of the U.S. Environmental Protection Agency.

To respond to your letter, my staff contacted the Michigan Department of Environmental Quality (MDEQ) District Supervisor for the Lansing District, Steve Busch, to discuss Flint's drinking water issues. Mr. Busch is aware of the multiple complaints from citizens. He and his staff are working closely with Flint's Water Department to ensure the distribution system and the water treatment processes work more efficiently and effectively. Since April 2014, Flint exceeded the health standards for *E. coli* in August 2014, for total coliform bacteria in September 2014, and TTHMs in the fourth quarter of 2014; all other regulated contaminants meet State and Federal health standards, as required under the Federal and Michigan Safe Drinking Water Acts (SDWA). Flint conducted the proper follow-up to the above violations as required by Federal and State regulations. Flint has returned to compliance the bacteria MCL violations that occurred in August and September 2014.

Compliance with the TTHM health standard is based upon the average of one year of sample data, from the most recent four quarters, at each sampling location. The initial monitoring in early summer 2014 reported elevated levels of TTHM compounds throughout Flint's distribution system. The MDEQ's Lansing District office advised Flint that it needed to immediately implement operational techniques at the drinking water treatment plant and in the distribution system to reduce the formation of TTHM compounds. Flint's actions have reduced TTHM concentrations to the point where the most recent results at all eight sample locations are below the drinking water TTHM health standard. Due to the exceedances in 2014, Flint must continue to provide quarterly public notification of TTHM concentrations. Flint continues to work with the MDEQ engineers to reduce the TTHM levels within the distribution system.

For further information regarding MDEQ's oversight and assistance to the City of Flint regarding its drinking water quality, you can contact Mr. Busch at:

Steve Busch, District Supervisor
Lansing District Office
Office of Drinking Water and Municipal Assistance
Michigan Department of Environmental Quality
P.O. Box 30242
Lansing, Michigan 48909-7742
(517) 643-2314
buschs@michigan.gov

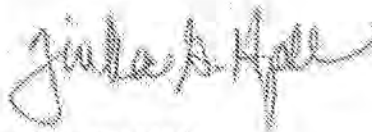
In your letter, you suggested that the source of drinking water should be switched back to Detroit drinking water which comes from Lake Huron. EPA does not have the authority to require Flint to change its source of drinking water back to Detroit drinking water. The decision to change the source of Flint's drinking water was a local decision, and continues to be a local decision only. However, Flint is obligated to take actions necessary to meet drinking water standards.

Your letter indicated that you received a letter of alert regarding refrigerant and cleaning solvents found in the Flint River. We believe the letter of alert to be the public notice dated January 2, 2015 that was sent to you by Flint regarding the drinking water TTHM violation, as required by Federal and State SDWAs; however it did not reference refrigerant and cleaning solvents. To clarify, the TTHMs found in Flint's drinking water are a by-product of the chlorination process which begins at the Flint water treatment plant as chlorine reacts with naturally occurring organic compounds from the Flint River. Refrigerants and solvents are not the contributing organic compounds of TTHM formation found in Flint drinking water.

Additional information is enclosed for your information.

We appreciate your interest in this matter. If you have additional questions, please contact Jennifer Crooks of my staff at (312) 886-0244 or crooks.jennifer@epa.gov.

Sincerely,



Tinka G. Hyde
Director, Water Division

Enclosure

cc: Mike Prysby, MDEQ
Steve Busch, MDEQ
Richard Benzie, MDEQ

Additional Information

April 2015

The source of drinking water for the City of Flint was changed from Detroit (which comes from Lake Huron) to the Flint River at the end of April 2014. The quality of the water in the Flint River is different than that from Lake Huron, and requires additional treatment to ensure an acceptable quality drinking water. The MDEQ has been working closely with the Operator-in-Charge at the Flint Water Treatment plant to ensure that the citizens of Flint are provided drinking water that meets health standards. The use of Flint River water as a source for your drinking water is an interim source. Flint plans to connect to the Karegnondi pipeline, which will draw water from Lake Huron, in 2016.

Some citizens have noted concerns regarding the health effects of TTHMs. By law, Flint must inform consumers of health standard exceedances. The risk of developing long-term health problems from TTHM exposure is low for those in general good health and can be a concern after years of ingestion. The risk of developing health problems is higher for some sub-populations, such as the immune-compromised and pregnant women; therefore, this group may want to seek alternative sources of water, such as bottled water, or purchase a home water treatment device. Consumers may want to talk with their doctors to help them make individual health decisions.

There has also been a concern regarding the high cost for drinking water in Flint. A part of the water rate is based upon the amount of water the resident is using; however, the base rate/service charge includes debt service charges and operation and maintenance costs of the water supply. The Michigan Department of Treasury conducts annual financial audits of local units of government in accordance with U.S. government auditing standards and Michigan Public Act 34 of 2001, the Municipal Finance Act. This includes Flint and its proprietary utility funds. While these audits do not set the rate structure, they do ensure that funds generated through water rates are accounted and directed in accordance with applicable laws.

Copies of these audits can be obtained online at the following location:

<https://treas-secure.state.mi.us/LAFDocSearch/>

There is currently no Federal regulatory oversight of water utility rates in Michigan.

Telephone numbers for citizens to call if they have further concerns about their drinking water quality:

Flint Water Service Center deals with problems in the distribution system: (810) 766-7202

Flint Water Treatment Plant deals with the actual treatment of the water prior to its pumping into the distribution system: (810) 787-6537

From: Cook, Pat (DEQ)
Sent: Tuesday, April 28, 2015 9:09 AM
To: Benzie, Richard (DEQ); Philip, Kris (DEQ)
Cc: Busch, Stephen (DEQ)
Subject: FW: Flint Corrosion Control?

I think you should be aware of this. Steve and I will respond to Miguel later in the week regarding his 4-25-15 email.

pat

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

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 Lane 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

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

From: Deltoral, Miguel [<mailto:deltoral.miguel@epa.gov>]
Sent: Saturday, April 25, 2015 10:11 AM
To: Cook, Pat (DEQ)
Cc: Porter, Andrea; Crooks, Jennifer; Poy, Thomas
Subject: Re: Flint Corrosion Control?

Hi Pat,

I'll be heading out to MI for RTCR tomorrow and won't see email until next Tuesday, but I wanted to follow up on this because Flint has essentially not been using any corrosion control treatment since April 30, 2014 and they have LSLs. Given the very high lead levels found at one home and the pre-flushing happening at Flint, I'm worried that the whole town may have much higher lead levels than the compliance results indicated, since they are using pre-flushing ahead of their compliance sampling.

If the source water lead is non-detect (zero), then according to 141.89(a)(3) they should use zero for that source water value:

"All lead and copper levels measured between the PQL and MDL must be either reported as measured or they can be reported as one-half the PQL specified for lead and copper in paragraph (a)(1)(ii) of this section. All levels below the lead and copper MDLs must be reported as zero"

As far as the treatment determination, there are only two scenarios for a large system to be deemed to have optimized corrosion control without treatment and Flint does not appear to meet either:

The first is at 141.81(b)(3)

Any water system is deemed to have optimized corrosion control if it submits results of tap water monitoring conducted in accordance with § 141.86 and source water monitoring conducted in accordance with § 141.88 that demonstrates for two consecutive 6-month monitoring periods that the difference between the 90th

percentile tap water lead level computed under §141.80(c)(3), and the highest source water lead concentration is less than the Practical Quantitation Level for lead specified in § 141.89(a)(1)(ii).

If Flint's highest source water lead was zero, and their 90th percentile was 0.006, then Flint does not meet this criteria, because the difference must be LESS THAN the PQL (i.e., 0.004 or less). $0.006 - 0 = 0.006$.

The second is at 141.81(b)(3)(i):

Those systems whose highest source water lead level is below the Method Detection Limit may also be deemed to have optimized corrosion control under this paragraph if the 90th percentile tap water lead level is less than or equal to the Practical Quantitation Level for lead for two consecutive 6-month monitoring periods.

Although Flint's source water lead was non-detect (zero), the 90th percentile lead level is 0.006 which is above the PQL of 0.005, so Flint would not meet this criteria either.

Am I missing something?

Miguel A. Del Toral
Regulations Manager
U.S. EPA R5 GWDWB
77 West Jackson Blvd, (WG-15J)
Chicago, IL 60604
Phone: (312) 886-5253

From: Cook, Pat (DEQ) <COOKP@michigan.gov>
Sent: Friday, April 24, 2015 12:45 PM
To: Deltoral, Miguel
Subject: RE: Flint Corrosion Control?

Total Lead collected from the plant tap on 5/22/14 was zero

pat

From: Deltoral, Miguel [mailto:deltoral.miguel@epa.gov]
Sent: Friday, April 24, 2015 11:59 AM
To: Cook, Pat (DEQ)
Cc: Poy, Thomas; Porter, Andrea
Subject: Re: Flint Corrosion Control?

What was the source water lead level?

Miguel A. Del Toral
Regulations Manager
U.S. EPA R5 GWDWB
77 West Jackson Blvd, (WG-15J)

Chicago, IL 60604
Phone: (312) 886-5253

From: Cook, Pat (DEQ) <COOKP@michigan.gov>
Sent: Friday, April 24, 2015 10:43 AM
To: Deltoral, Miguel
Cc: Poy, Thomas; Porter, Andrea
Subject: RE: Flint Corrosion Control?

Hi Miguel - Flint is currently not practicing corrosion control treatment at the WTP. When they started treating water at their WTP last spring, we placed them on full chart (100 sites) Pb/Cu monitoring for two consecutive 6 month periods. WQ monitoring is also being conducted. The first round of samples after switch-over from DWSD (July 1, 2014 – Dec 31, 2014) had 90th percentiles of 6 ppb for Lead and 110 ppb for Copper. The second round of samples (Jan 1, 2015 – June 30, 2015) is underway with approximately 20 of the 100 sample site results in. The highest lead result out of the 20 received thus far is 13 ppb.

Based on the matrix of recommended corrosion control study components for Large PWS's for both Lead and Copper, there are no additional requirements for the City of Flint based on the levels of lead and copper in the current source water and the results of the lead and copper distribution monitoring. The only provision of the Lead & Copper Rule which classifies the existing treatment of large PWSs as optimized for corrosion control is when the difference between the 90% Pb-TAP and Pb-POE is less than the lead practical quantitative level (PQL) for each six-month period of the initial monitoring program. By definition, the PQL for lead is 0.005 mg/L; and the lead value for the source water used in this determination is the highest source water lead concentration. If this condition is met, then no study or testing is required. We believe this condition has been met for Flint. However, we will re-evaluate this after the 2nd round of 6 month sampling is completed.

If you have any further questions, please contact the Lansing District Supervisor, Steve Busch at (517) 643-2314 or at buschs@michigan.gov.

Have a good (and hopefully warm) weekend!

Patrick Cook, P.E.
Community Drinking Water Unit
Office of Drinking Water & Municipal Assistance
Michigan Department of Environmental Quality
Phone: (517) 284-6514
cookp@michigan.gov

From: Deltoral, Miguel [<mailto:deltoral.miguel@epa.gov>]
Sent: Thursday, April 23, 2015 12:33 PM
To: Cook, Pat (DEQ)
Cc: Poy, Thomas; Porter, Andrea
Subject: Flint Corrosion Control?

Hi Pat,

What's Flint doing now (post Detroit) for corrosion control treatment?

Miguel A. Del Toral
Regulations Manager
Ground Water and Drinking Water Branch
77 West Jackson Blvd (WG-15J)

Chicago, IL 60604

Phone: (312) 886-5253

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Wednesday, May 27, 2015 1:58 PM
To: Cook, Pat (DEQ);Prysbey, Mike (DEQ);Busch, Stephen (DEQ)
Cc: Benzie, Richard (DEQ);Philip, Kris (DEQ);Deltoral, Miguel;Poy, Thomas
Subject: Flint sample results/2 houses for (dw) metals (Cu, Pb, Zn)
Attachments: 1505003_work order.pdf; 1505003,1505004 FINAL EXCEL 26 May 15 0943.xls;
1505003,1505004 FINAL May 26 15 0943.PDF; 1505004_work order.pdf

Importance: High

Pat, Steve, Mike: When Miguel was in Flint observing Ms Walters' service line being replaced, he also sampled 2 homes connected to the water main Ms. Walters' home was connected to. The Excel spreadsheet attached provides the sample results, 15 samples per house. The 5th column, Sample No., is from 1-15 which is Home 1, then the numbers start again at 1 and go through 15, which is Home 2. These are the 2 homes connected to the water main that Ms. Walters' 136 ft service line (iron pipe) was connected to. Her home also had the lead line connecting the shut-off to the main, as does Home 1. I know I talked with Pat about the sequential sampling in late April at Ms. Walters' home, prior to her service line being replaced, but I don't think I sent you those sample results---they were in the thousands of ppb, probably particulate lead. I will get with Miguel and communicate with you his ideas concerning the source of this lead in Ms. Walters' service line. See Miguel's email below regarding these 2 homes' sample results.

If you have questions, please let me or Miguel know.

Jennifer
312-886-0244
Miguel
312-886-5253

From: Deltoral, Miguel
Sent: Tuesday, May 26, 2015 11:42 AM
To: Poy, Thomas
Cc: Porter, Andrea; Marc Edwards; Schock, Michael
Subject: Fw: 1505003 & 1505004; ICP-MS (dw) metals (Cu, Pb, Zn); Flint MI

Here are the results from the two homes sampled in Flint. Nothing horrific which is good. One home does not appear to have a LSL at all (Home 2). The other home (Home 1) appears to have a short LSL, consistent with the practice in Flint (curb to main only). Highest result from the LSL home (Home 1) was 22 ug/L using the standard analytical protocol. They will now get shipped to Marc Edwards at Virginia Tech to see if our protocol is missing particulate lead, which made up the majority of the lead in Ms. Walters sample results.

I forgot to mention that all along the block where Ms. Walters lives, there are patches in the street from non-water-related utility excavation right up to the curb, so fairly recent physical disturbances to Ms. Walters service line are likely. I think it was gas work, but I have to check.

Miguel A. Del Toral
Regulations Manager
U.S. EPA R5 GWDWB
77 West Jackson Blvd, (WG-15J)
Chicago, IL 60604
Phone: (312) 886-5253

From: Griffin, Sylvia
Sent: Tuesday, May 26, 2015 10:03 AM
To: Deltoral, Miguel
Cc: Wroble, Amanda
Subject: FW: 1505003 & 1505004; ICP-MS (dw) metals (Cu, Pb, Zn); Flint MI

Please see the attached final results reports. Should you have any questions regarding this transmittal, please email or call me.

Thank you.

-Sylvia
3-9073

From: Wroble, Amanda
Sent: Tuesday, May 26, 2015 9:58 AM
To: Griffin, Sylvia
Subject: 1505003 & 1505004; ICP-MS (dw) metals (Cu, Pb, Zn); Flint MI

Amanda Wroble, Ph.D.
Chemist and Sample Coordinator
USEPA Region 5 Chicago Regional Laboratory
536 S. Clark St. ML-10C
Chicago, IL 60605
(312) 353-0375



Environmental Protection Agency Region 5
Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
 Phone: (312) 353-8370 Fax: (312) 886-2591

WORK ORDER

Printed: 5/18/2015 2:55:56PM

1505003

US EPA Region 5 Chicago Regional Laboratory

Client: Water Division, Drinking Water
Project: Flint, Michigan

Project Manager: Greg Mitsakopoulos
Project Number: [none]

Report To:

Miguel Del Toral
 Water Division, Drinking Water

77 West Jackson Boulevard
 Chicago, IL 60604

Phone: (312) 886-5253
 Fax: (312) 886-2001

Date Due: Jul-12-15 15:00 (60 day TAT)

Received By: Robert Snyder

Date Received: May-11-15 10:12

Logged In By: Robert Snyder

Date Logged In: May-11-15 16:42

Samples Received at:	21.8°C
Sample tags/labels	Yes
Seals intact	Yes
Received on ice	No
Paperwork Included	Yes

Analysis	Due	TAT	Expires	Comments
1505003-01 1 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
1505003-02 2 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	pH = 7
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
1505003-03 3 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	pH = 7
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
1505003-04 4 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	pH = 7
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
1505003-05 5 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	pH = 7
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	

WORK ORDER

Printed: 5/18/2015 2:55:56PM

1505003

US EPA Region 5 Chicago Regional Laboratory

Client: Water Division, Drinking Water
Project: Flint, Michigan

Project Manager: Greg Mitsakopoulos
Project Number: [none]

Analysis	Due	TAT	Expires	Comments
1505003-06 6 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
1505003-07 7 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
1505003-08 8 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
1505003-09 9 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
1505003-10 10 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
1505003-11 11 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
1505003-12 12 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
1505003-13 13 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
1505003-14 14 [Water] Sampled May-06-15 07:20 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:20	

WORK ORDER

Printed: 5/18/2015 2:55:56PM

1505003

US EPA Region 5 Chicago Regional Laboratory

Client: Water Division, Drinking Water
Project: Flint, Michigan

Project Manager: Greg Mitsakopoulos
Project Number: [none]

Analysis	Due	TAT	Expires	Comments
1505003-15 15 [Water] Sampled May-06-15 07:25 (GMT-06:00) Central Time (US & Canada)				pH = 7
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-02-15 07:25	
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-02-15 07:25	

Reviewed By
Date

Page 1

	I	J	K	L	M	N	O	P	Q	R
1	SAMPDATE	PREPDATE	ANADATE	BATCH	METHODCODE	METHODNAME	PREPNAME	ANALYTE	CASNUMBER	SURROGATE
2	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:16:34	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
3	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:16:34	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
4	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:16:34	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
5	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:25:59	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
6	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:25:59	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
7	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:25:59	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
8	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:29:09	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
9	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:29:09	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
10	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:29:09	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
11	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:32:21	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
12	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:32:21	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
13	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:32:21	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
14	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:35:30	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
15	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:35:30	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
16	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:35:30	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
17	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:54:24	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
18	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:54:24	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
19	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:54:24	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
20	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:57:36	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
21	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:57:36	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
22	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 10:57:36	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
23	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:00:45	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
24	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:00:45	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
25	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:00:45	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
26	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:03:54	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
27	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:03:54	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
28	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:03:54	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
29	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:10:25	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
30	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:10:25	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
31	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:10:25	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
32	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:13:34	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
33	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:13:34	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
34	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:13:34	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
35	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:22:58	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
36	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:22:58	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
37	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:22:58	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
38	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:41:50	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
39	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:41:50	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
40	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:41:50	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
41	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:44:59	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
42	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:44:59	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
43	05/06/2015 07:20:00	05/18/2015 07:48:00	05/18/2015 11:44:59	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
44	05/06/2015 07:25:00	05/18/2015 07:48:00	05/18/2015 11:48:10	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
45	05/06/2015 07:25:00	05/18/2015 07:48:00	05/18/2015 11:48:10	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
46	05/06/2015 07:25:00	05/18/2015 07:48:00	05/18/2015 11:48:10	B15E026	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
47	05/11/2015 07:00:00	05/18/2015 07:50:00	05/18/2015 12:00:49	B15E027	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
48	05/11/2015 07:00:00	05/18/2015 07:50:00	05/18/2015 12:00:49	B15E027	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE

SAMPDATA

	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1	TIC	Result	DL	RL	UNITS	RPTtoMDL	BASIS	DILUTION	SPIKELEVEL	RECOVERY	UPPERCL	LOWERCL	ANALYST	PSOLIDS	LNOTE	ANOTE
2	FALSE	2.63	0.0140	0.500	ug/L	FALSE	NA	1					AW			
3	FALSE	40.7	0.0220	1.00	ug/L	FALSE	NA	1					AW			
4	FALSE	132	0.190	10.0	ug/L	FALSE	NA	1					AW			
5	FALSE	4.77	0.0140	0.500	ug/L	FALSE	NA	1					AW			
6	FALSE	44.4	0.0220	1.00	ug/L	FALSE	NA	1					AW			
7	FALSE	55.3	0.190	10.0	ug/L	FALSE	NA	1					AW			
8	FALSE	4.79	0.0140	0.500	ug/L	FALSE	NA	1					AW			
9	FALSE	39.3	0.0220	1.00	ug/L	FALSE	NA	1					AW			
10	FALSE	88.8	0.190	10.0	ug/L	FALSE	NA	1					AW			
11	FALSE	6.26	0.0140	0.500	ug/L	FALSE	NA	1					AW			
12	FALSE	66.8	0.0220	1.00	ug/L	FALSE	NA	1					AW			
13	FALSE	57.2	0.190	10.0	ug/L	FALSE	NA	1					AW			
14	FALSE	3.07	0.0140	0.500	ug/L	FALSE	NA	1					AW			
15	FALSE	272	0.0220	1.00	ug/L	FALSE	NA	1					AW			
16	FALSE	34.2	0.190	10.0	ug/L	FALSE	NA	1					AW			
17	FALSE	3.70	0.0140	0.500	ug/L	FALSE	NA	1					AW			
18	FALSE	362	0.0220	1.00	ug/L	FALSE	NA	1					AW			
19	FALSE	21.4	0.190	10.0	ug/L	FALSE	NA	1					AW			
20	FALSE	11.7	0.0140	0.500	ug/L	FALSE	NA	1					AW			
21	FALSE	331	0.0220	1.00	ug/L	FALSE	NA	1					AW			
22	FALSE	19.5	0.190	10.0	ug/L	FALSE	NA	1					AW			
23	FALSE	22.5	0.0140	0.500	ug/L	FALSE	NA	1					AW			
24	FALSE	69.9	0.0220	1.00	ug/L	FALSE	NA	1					AW			
25	FALSE	16.6	0.190	10.0	ug/L	FALSE	NA	1					AW			
26	FALSE	12.7	0.0140	0.500	ug/L	FALSE	NA	1					AW			
27	FALSE	42.5	0.0220	1.00	ug/L	FALSE	NA	1					AW			
28	FALSE	15.1	0.190	10.0	ug/L	FALSE	NA	1					AW			
29	FALSE	3.94	0.0140	0.500	ug/L	FALSE	NA	1					AW			
30	FALSE	38.4	0.0220	1.00	ug/L	FALSE	NA	1					AW			
31	FALSE	14.4	0.190	10.0	ug/L	FALSE	NA	1					AW			
32	FALSE	3.72	0.0140	0.500	ug/L	FALSE	NA	1					AW			
33	FALSE	37.5	0.0220	1.00	ug/L	FALSE	NA	1					AW			
34	FALSE	14.5	0.190	10.0	ug/L	FALSE	NA	1					AW			
35	FALSE	3.39	0.0140	0.500	ug/L	FALSE	NA	1					AW			
36	FALSE	34.8	0.0220	1.00	ug/L	FALSE	NA	1					AW			
37	FALSE	13.6	0.190	10.0	ug/L	FALSE	NA	1					AW			
38	FALSE	3.23	0.0140	0.500	ug/L	FALSE	NA	1					AW			
39	FALSE	33.1	0.0220	1.00	ug/L	FALSE	NA	1					AW			
40	FALSE	13.1	0.190	10.0	ug/L	FALSE	NA	1					AW			
41	FALSE	3.20	0.0140	0.500	ug/L	FALSE	NA	1					AW			
42	FALSE	32.8	0.0220	1.00	ug/L	FALSE	NA	1					AW			
43	FALSE	13.0	0.190	10.0	ug/L	FALSE	NA	1					AW			
44	FALSE	3.00	0.0140	0.500	ug/L	FALSE	NA	1					AW			
45	FALSE	31.4	0.0220	1.00	ug/L	FALSE	NA	1					AW			
46	FALSE	12.3	0.190	10.0	ug/L	FALSE	NA	1					AW			
47	FALSE	8.11	0.0140	0.500	ug/L	FALSE	NA	1					AW			
48	FALSE	31.1	0.0220	1.00	ug/L	FALSE	NA	1					AW			

SAMPDATA

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
1	LATITUDE	LONGITUDE	sComment	SNOTE1	SNOTE2	SNOTE3	SNOTE4	SNOTE5	SNOTE6	SNOTE7	SNOTE8	SNOTE9	SNOTE10	ANALYTEORDER
2			pH = 7											1
3			pH = 7											2
4			pH = 7											4
5			pH = 7											1
6			pH = 7											2
7			pH = 7											4
8			pH = 7											1
9			pH = 7											2
10			pH = 7											4
11			pH = 7											1
12			pH = 7											2
13			pH = 7											4
14			pH = 7											1
15			pH = 7											2
16			pH = 7											4
17			pH = 7											1
18			pH = 7											2
19			pH = 7											4
20			pH = 7											1
21			pH = 7											2
22			pH = 7											4
23			pH = 7											1
24			pH = 7											2
25			pH = 7											4
26			pH = 7											1
27			pH = 7											2
28			pH = 7											4
29			pH = 7											1
30			pH = 7											2
31			pH = 7											4
32			pH = 7											1
33			pH = 7											2
34			pH = 7											4
35			pH = 7											1
36			pH = 7											2
37			pH = 7											4
38			pH = 7											1
39			pH = 7											2
40			pH = 7											4
41			pH = 7											1
42			pH = 7											2
43			pH = 7											4
44			pH = 7											1
45			pH = 7											2
46			pH = 7											4
47			pH = 7											1
48			pH = 7											2

Page 5

[illegible]

SAMPDATA

	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
49	FALSE	64.0	0.190	10.0	ug/L	FALSE	NA	1					AW			
50	FALSE	1.46	0.0140	0.500	ug/L	FALSE	NA	1					AW			
51	FALSE	14.7	0.0220	1.00	ug/L	FALSE	NA	1					AW			
52	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
53	FALSE	1.72	0.0140	0.500	ug/L	FALSE	NA	1					AW			
54	FALSE	20.0	0.0220	1.00	ug/L	FALSE	NA	1					AW			
55	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
56	FALSE	0.933	0.0140	0.500	ug/L	FALSE	NA	1					AW			
57	FALSE	13.0	0.0220	1.00	ug/L	FALSE	NA	1					AW			
58	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
59	FALSE	0.862	0.0140	0.500	ug/L	FALSE	NA	1					AW			
60	FALSE	12.3	0.0220	1.00	ug/L	FALSE	NA	1					AW			
61	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
62	FALSE	0.795	0.0140	0.500	ug/L	FALSE	NA	1					AW			
63	FALSE	14.2	0.0220	1.00	ug/L	FALSE	NA	1					AW			
64	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
65	FALSE	0.769	0.0140	0.500	ug/L	FALSE	NA	1					AW			
66	FALSE	14.2	0.0220	1.00	ug/L	FALSE	NA	1					AW			
67	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
68	FALSE	0.691	0.0140	0.500	ug/L	FALSE	NA	1					AW			
69	FALSE	13.3	0.0220	1.00	ug/L	FALSE	NA	1					AW			
70	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
71	FALSE	0.774	0.0140	0.500	ug/L	FALSE	NA	1					AW			
72	FALSE	9.60	0.0220	1.00	ug/L	FALSE	NA	1					AW			
73	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
74	FALSE	0.715	0.0140	0.500	ug/L	FALSE	NA	1					AW			
75	FALSE	7.57	0.0220	1.00	ug/L	FALSE	NA	1					AW			
76	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
77	FALSE	0.611	0.0140	0.500	ug/L	FALSE	NA	1					AW			
78	FALSE	7.04	0.0220	1.00	ug/L	FALSE	NA	1					AW			
79	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
80	FALSE	0.655	0.0140	0.500	ug/L	FALSE	NA	1					AW			
81	FALSE	7.30	0.0220	1.00	ug/L	FALSE	NA	1					AW			
82	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
83	FALSE	0.644	0.0140	0.500	ug/L	FALSE	NA	1					AW			
84	FALSE	7.37	0.0220	1.00	ug/L	FALSE	NA	1					AW			
85	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
86	FALSE	0.631	0.0140	0.500	ug/L	FALSE	NA	1					AW			
87	FALSE	7.09	0.0220	1.00	ug/L	FALSE	NA	1					AW			
88	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
89	FALSE	0.621	0.0140	0.500	ug/L	FALSE	NA	1					AW			
90	FALSE	7.05	0.0220	1.00	ug/L	FALSE	NA	1					AW			
91	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			

SAMPDATA

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
49			pH = 7											4
50			pH = 7											1
51			pH = 7											2
52			pH = 7											4
53			pH = 7											1
54			pH = 7											2
55			pH = 7											4
56			pH = 7											1
57			pH = 7											2
58			pH = 7											4
59			pH = 7											1
60			pH = 7											2
61			pH = 7											4
62			pH = 7											1
63			pH = 7											2
64			pH = 7											4
65			pH = 7											1
66			pH = 7											2
67			pH = 7											4
68			pH = 7											1
69			pH = 7											2
70			pH = 7											4
71			pH = 7											1
72			pH = 7											2
73			pH = 7											4
74			pH = 7											1
75			pH = 7											2
76			pH = 7											4
77			pH = 7											1
78			pH = 7											2
79			pH = 7											4
80			pH = 7											1
81			pH = 7											2
82			pH = 7											4
83			pH = 7											1
84			pH = 7											2
85			pH = 7											4
86			pH = 7											1
87			pH = 7											2
88			pH = 7											4
89			pH = 7											1
90			pH = 7											2
91			pH = 7											4

[illegible]

QC DATA

	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	METHODNAME	PREPNAME	ANALYTE	CASNUMBER	SURROGATE	TIC	RESULT	DL	RL	UNITS	RPTtoMDL	BASIS	DILUTION	SOURCEID
2		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	U	0.0140	0.500	ug/L	FALSE	NA	1	
3		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	U	0.0220	1.00	ug/L	FALSE	NA	1	
4		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1	
5		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	19.3	0.0140	0.500	ug/L	FALSE	NA	1	
6		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	19.1	0.0220	1.00	ug/L	FALSE	NA	1	
7		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	19.0	0.190	10.0	ug/L	FALSE	NA	1	
8		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	2.60	0.0140	0.500	ug/L	FALSE	NA	1	1505003-01
9		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	40.9	0.0220	1.00	ug/L	FALSE	NA	1	1505003-01
10		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	131	0.190	10.0	ug/L	FALSE	NA	1	1505003-01
11		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	3.55	0.0140	0.500	ug/L	FALSE	NA	1	1505003-11
12		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	36.4	0.0220	1.00	ug/L	FALSE	NA	1	1505003-11
13		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	14.1	0.190	10.0	ug/L	FALSE	NA	1	1505003-11
14		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	22.9	0.0140	0.500	ug/L	FALSE	NA	1	1505003-01
15		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	61.0	0.0220	1.00	ug/L	FALSE	NA	1	1505003-01
16		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	153	0.190	10.0	ug/L	FALSE	NA	1	1505003-01
17		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	23.5	0.0140	0.500	ug/L	FALSE	NA	1	1505003-11
18		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	56.3	0.0220	1.00	ug/L	FALSE	NA	1	1505003-11
19		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	33.8	0.190	10.0	ug/L	FALSE	NA	1	1505003-11
20		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	U	0.0140	0.500	ug/L	FALSE	NA	1	
21		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	U	0.0220	1.00	ug/L	FALSE	NA	1	
22		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1	
23		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	19.4	0.0140	0.500	ug/L	FALSE	NA	1	
24		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	18.3	0.0220	1.00	ug/L	FALSE	NA	1	
25		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	18.6	0.190	10.0	ug/L	FALSE	NA	1	
26		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	8.13	0.0140	0.500	ug/L	FALSE	NA	1	1505004-01
27		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	31.4	0.0220	1.00	ug/L	FALSE	NA	1	1505004-01
28		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	64.7	0.190	10.0	ug/L	FALSE	NA	1	1505004-01
29		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	0.734	0.0140	0.500	ug/L	FALSE	NA	1	1505004-11
30		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	7.43	0.0220	1.00	ug/L	FALSE	NA	1	1505004-11
31		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	3.23	0.190	10.0	ug/L	FALSE	NA	1	1505004-11
32		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	28.4	0.0140	0.500	ug/L	FALSE	NA	1	1505004-01
33		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	50.7	0.0220	1.00	ug/L	FALSE	NA	1	1505004-01
34		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	84.3	0.190	10.0	ug/L	FALSE	NA	1	1505004-01
35		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	21.1	0.0140	0.500	ug/L	FALSE	NA	1	1505004-11
36		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	26.6	0.0220	1.00	ug/L	FALSE	NA	1	1505004-11
37		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	23.1	0.190	10.0	ug/L	FALSE	NA	1	1505004-11

QC DATA

	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1	SOURCERES	SPIKELEVEL	RECOVERY	RPD	UPPERCL	LOWERCL	RPDCL	ANALYST	PSOLIDS	LNOTE	ANOTE	ANALYTEORDER
2								AW				1
3								AW				2
4								AW				4
5		20.00	96.6		115	85		AW				1
6		20.00	95.4		115	85		AW				2
7		20.00	95.2		115	85		AW				4
8	2.63			1.27			20	AW				1
9	40.7			0.294			20	AW				2
10	132			0.892			20	AW				4
11	3.72			4.68			20	AW				1
12	37.5			2.94			20	AW				2
13	14.5			2.36			20	AW				4
14	2.63	20.00	101		125	75		AW				1
15	40.7	20.00	101		125	75		AW				2
16	132	20.00	105		125	75		AW				4
17	3.72	20.00	98.8		125	75		AW				1
18	37.5	20.00	93.9		125	75		AW				2
19	14.5	20.00	96.9		125	75		AW				4
20								AW				1
21								AW				2
22								AW				4
23		20.00	97.2		115	85		AW				1
24		20.00	91.6		115	85		AW				2
25		20.00	93.1		115	85		AW				4
26	8.11			0.278			20	AW				1
27	31.1			1.09			20	AW				2
28	64.0			1.01			20	AW				4
29	0.611			18.3			20	AW				1
30	7.04			5.32			20	AW				2
31	3.04			6.13			20	AW				4
32	8.11	20.00	101		125	75		AW				1
33	31.1	20.00	98.2		125	75		AW				2
34	64.0	20.00	101		125	75		AW				4
35	0.611	20.00	102		125	75		AW				1
36	7.04	20.00	97.8		125	75		AW				2
37	3.04	20.00	100		125	75		AW				4

LNOTE

	A	B
1	QUALIFIER	DESCRIPTION

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY****REGION 5 CHICAGO REGIONAL LABORATORY****536 SOUTH CLARK STREET****CHICAGO, ILLINOIS 60605**

Date: 5/26/2015

Subject: Review of Region 5 Data for Flint, Michigan

To: Water Division, Drinking Water
77 West Jackson Boulevard
Chicago, IL 60604

From: Amanda Wroble, Chemist
US EPA Region 5 Chicago Regional Laboratory

The data transmitted under this cover memo successfully passed CRL's data review procedures as documented in the current Quality Management Plan and applicable Standard Operating Procedures. In accordance with EPA's *Guidance on Environmental Data Verification and Data Validation* (Document EPA QA/G-8), CRL verified and validated the data but does not perform data quality assessment based on project plans.

This report was reviewed and the information provided herein accurately represents the analysis performed.

X _____

Please contact the analyst with any technical report issues, Amanda Wroble at (312)-353-0375 for sample project concerns, and Sylvia Griffin at (312)-353-9073 with data transmittal questions. Thank you.

Attached are Results for: Flint, Michigan

Data Management Coordinator and Date Transmitted

Analyses included in this report:

Metals ICP-MS (DW)



Environmental Protection Agency Region 5
Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan
Project Number: [none]
Project Manager: Miguel Del Toral

Reported:
May-26-15 09:43

ANALYSIS CASE NARRATIVE

GENERAL INFORMATION

CRL received 30 drinking water samples for copper, lead, and zinc analysis by inductively coupled plasma-mass spectrometry (ICP-MS) on 11 May 2015 that were assigned to work orders 1505003 and 1505004. The designated analyst for these samples, Amanda Wroble, can be reached at 312.353.0375.

The samples were received unpreserved. Therefore, 2 mL of nitric acid was added to each 1 L sample. At least twenty-four hours elapsed before subsampling began. All holding times were met.

No digestion is required for drinking water samples. Samples were analyzed in batches B15E026 and B15E027 over three runs using CRL SOP METALS001 (EPA Method 200.8), Revision 3.

Work orders 1505003 and 1505004 were analyzed together. All supporting data are filed under work order 1505003.

SAMPLE ANALYSIS AND RESULTS

The data reported herein meet the data quality objectives referenced in personal email communication with the project manager dated May 12, 2015 and the quality assurance project plan "Impacts on Lead Concentration in Drinking Water Samples Due to Sample Location and Sample Collection Protocols" dated January 20, 2011 referenced therein.

QUALITY CONTROL

All quality control audits were within CRL limits for the requested analytes or did not result in qualification of the data.



Environmental Protection Agency Region 5
Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan
Project Number: [none]
Project Manager: Miguel Del Toral

Reported:
May-26-15 09:43



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan
Project Number: [none]
Project Manager: Miguel Del Toral

Reported:
May-26-15 09:43

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
1	1505003-01	Water	May-06-15 07:20	May-11-15 10:12
2	1505003-02	Water	May-06-15 07:20	May-11-15 10:12
3	1505003-03	Water	May-06-15 07:20	May-11-15 10:12
4	1505003-04	Water	May-06-15 07:20	May-11-15 10:12
5	1505003-05	Water	May-06-15 07:20	May-11-15 10:12
6	1505003-06	Water	May-06-15 07:20	May-11-15 10:12
7	1505003-07	Water	May-06-15 07:20	May-11-15 10:12
8	1505003-08	Water	May-06-15 07:20	May-11-15 10:12
9	1505003-09	Water	May-06-15 07:20	May-11-15 10:12
10	1505003-10	Water	May-06-15 07:20	May-11-15 10:12
11	1505003-11	Water	May-06-15 07:20	May-11-15 10:12
12	1505003-12	Water	May-06-15 07:20	May-11-15 10:12
13	1505003-13	Water	May-06-15 07:20	May-11-15 10:12
14	1505003-14	Water	May-06-15 07:20	May-11-15 10:12
15	1505003-15	Water	May-06-15 07:25	May-11-15 10:12
1	1505004-01	Water	May-11-15 07:00	May-11-15 10:12
2	1505004-02	Water	May-11-15 07:00	May-11-15 10:12
3	1505004-03	Water	May-11-15 07:00	May-11-15 10:12
4	1505004-04	Water	May-11-15 07:00	May-11-15 10:12
5	1505004-05	Water	May-11-15 07:00	May-11-15 10:12
6	1505004-06	Water	May-11-15 07:00	May-11-15 10:12
7	1505004-07	Water	May-11-15 07:00	May-11-15 10:12
8	1505004-08	Water	May-11-15 07:00	May-11-15 10:12



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan

Project Number: [none]

Project Manager: Miguel Del Toral

Reported:

May-26-15 09:43

9	1505004-09	Water	May-11-15 07:00	May-11-15 10:12
10	1505004-10	Water	May-11-15 07:00	May-11-15 10:12
11	1505004-11	Water	May-11-15 07:00	May-11-15 10:12
12	1505004-12	Water	May-11-15 07:00	May-11-15 10:12
13	1505004-13	Water	May-11-15 07:00	May-11-15 10:12
14	1505004-14	Water	May-11-15 07:00	May-11-15 10:12
15	1505004-15	Water	May-11-15 07:05	May-11-15 10:12



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan
Project Number: [none]
Project Manager: Miguel Del Toral

Reported:
May-26-15 09:43

Metals by ICP-MS using EPA 200.8 (modified) US EPA Region 5 Chicago Regional Laboratory

1 (1505003-01) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	2.63			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	40.7			1.00	"	"	"	"	"
Zinc	132			10.0	"	"	"	"	"

2 (1505003-02) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	4.77			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	44.4			1.00	"	"	"	"	"
Zinc	55.3			10.0	"	"	"	"	"

3 (1505003-03) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	4.79			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	39.3			1.00	"	"	"	"	"
Zinc	88.8			10.0	"	"	"	"	"

4 (1505003-04) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	6.26			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	66.8			1.00	"	"	"	"	"
Zinc	57.2			10.0	"	"	"	"	"

5 (1505003-05) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	3.07			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	272			1.00	"	"	"	"	"
Zinc	34.2			10.0	"	"	"	"	"



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan
Project Number: [none]
Project Manager: Miguel Del Toral

Reported:
May-26-15 09:43

Metals by ICP-MS using EPA 200.8 (modified)

US EPA Region 5 Chicago Regional Laboratory

6 (1505003-06) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	3.70			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	362			1.00	"	"	"	"	"
Zinc	21.4			10.0	"	"	"	"	"

7 (1505003-07) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	11.7			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	331			1.00	"	"	"	"	"
Zinc	19.5			10.0	"	"	"	"	"

8 (1505003-08) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	22.5			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	69.9			1.00	"	"	"	"	"
Zinc	16.6			10.0	"	"	"	"	"

9 (1505003-09) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	12.7			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	42.5			1.00	"	"	"	"	"
Zinc	15.1			10.0	"	"	"	"	"

10 (1505003-10) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	3.94			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	38.4			1.00	"	"	"	"	"
Zinc	14.4			10.0	"	"	"	"	"



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan
Project Number: [none]
Project Manager: Miguel Del Toral

Reported:
May-26-15 09:43

Metals by ICP-MS using EPA 200.8 (modified) US EPA Region 5 Chicago Regional Laboratory

11 (1505003-11) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	3.72			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	37.5			1.00	"	"	"	"	"
Zinc	14.5			10.0	"	"	"	"	"

12 (1505003-12) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	3.39			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	34.8			1.00	"	"	"	"	"
Zinc	13.6			10.0	"	"	"	"	"

13 (1505003-13) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	3.23			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	33.1			1.00	"	"	"	"	"
Zinc	13.1			10.0	"	"	"	"	"

14 (1505003-14) Water Sampled: May-06-15 07:20 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	3.20			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	32.8			1.00	"	"	"	"	"
Zinc	13.0			10.0	"	"	"	"	"

15 (1505003-15) Water Sampled: May-06-15 07:25 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	3.00			0.500	ug/L	1	B15E026	May-18-15	May-18-15
Copper	31.4			1.00	"	"	"	"	"
Zinc	12.3			10.0	"	"	"	"	"



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan
Project Number: [none]
Project Manager: Miguel Del Toral

Reported:
May-26-15 09:43

Metals by ICP-MS using EPA 200.8 (modified)

US EPA Region 5 Chicago Regional Laboratory

1 (1505004-01) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	8.11			0.500	ug/L	1	B15E027	May-18-15	May-18-15
Copper	31.1			1.00	"	"	"	"	"
Zinc	64.0			10.0	"	"	"	"	"

2 (1505004-02) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	1.46			0.500	ug/L	1	B15E027	May-18-15	May-18-15
Copper	14.7			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"

3 (1505004-03) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	1.72			0.500	ug/L	1	B15E027	May-18-15	May-18-15
Copper	20.0			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"

4 (1505004-04) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	0.933			0.500	ug/L	1	B15E027	May-18-15	May-18-15
Copper	13.0			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"

5 (1505004-05) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	0.862			0.500	ug/L	1	B15E027	May-18-15	May-18-15
Copper	12.3			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan
Project Number: [none]
Project Manager: Miguel Del Toral

Reported:
May-26-15 09:43

Metals by ICP-MS using EPA 200.8 (modified) US EPA Region 5 Chicago Regional Laboratory

6 (1505004-06) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	0.795			0.500	ug/L	1	B15E027	May-18-15	May-18-15
Copper	14.2			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"

7 (1505004-07) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	0.769			0.500	ug/L	1	B15E027	May-18-15	May-18-15
Copper	14.2			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"

8 (1505004-08) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	0.691			0.500	ug/L	1	B15E027	May-18-15	May-18-15
Copper	13.3			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"

9 (1505004-09) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	0.774			0.500	ug/L	1	B15E027	May-18-15	May-18-15
Copper	9.60			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"

10 (1505004-10) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	0.715			0.500	ug/L	1	B15E027	May-18-15	May-18-15
Copper	7.57			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan
Project Number: [none]
Project Manager: Miguel Del Toral

Reported:
May-26-15 09:43

Metals by ICP-MS using EPA 200.8 (modified) US EPA Region 5 Chicago Regional Laboratory

11 (1505004-11) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	0.611			0.500	ug/L	1	B15E027	May-18-15	May-18-15
Copper	7.04			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"

12 (1505004-12) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	0.655			0.500	ug/L	1	B15E027	May-18-15	May-19-15
Copper	7.30			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"

13 (1505004-13) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	0.644			0.500	ug/L	1	B15E027	May-18-15	May-19-15
Copper	7.37			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"

14 (1505004-14) Water Sampled: May-11-15 07:00 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	0.631			0.500	ug/L	1	B15E027	May-18-15	May-19-15
Copper	7.09			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"

15 (1505004-15) Water Sampled: May-11-15 07:05 Received: May-11-15 10:12

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	0.621			0.500	ug/L	1	B15E027	May-18-15	May-19-15
Copper	7.05			1.00	"	"	"	"	"
Zinc	U			10.0	"	"	"	"	"



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan
Project Number: [none]
Project Manager: Miguel Del Toral

Reported:
May-26-15 09:43

Metals by ICP-MS using EPA 200.8 (modified) - Quality Control US EPA Region 5 Chicago Regional Laboratory

Batch B15E026 - 200.8/no digestion

Blank (B15E026-BLK1)

Prepared & Analyzed: May-18-15

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit
Lead	U			0.500	ug/L						
Copper	U			1.00	"						
Zinc	U			10.0	"						

LCS (B15E026-BS1)

Prepared & Analyzed: May-18-15

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit
Lead	19.3			0.500	ug/L	20.00		96.6%	85-115		
Copper	19.1			1.00	"	20.00		95.4%	85-115		
Zinc	19.0			10.0	"	20.00		95.2%	85-115		

Duplicate (B15E026-DUP1)

Source: 1505003-01

Prepared & Analyzed: May-18-15

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit
Lead	2.60			0.500	ug/L		2.63			1.27	20
Copper	40.9			1.00	"		40.7			0.294	20
Zinc	131			10.0	"		132			0.892	20

Duplicate (B15E026-DUP2)

Source: 1505003-11

Prepared & Analyzed: May-18-15

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit
Lead	3.55			0.500	ug/L		3.72			4.68	20
Copper	36.4			1.00	"		37.5			2.94	20
Zinc	14.1			10.0	"		14.5			2.36	20

Matrix Spike (B15E026-MS1)

Source: 1505003-01

Prepared & Analyzed: May-18-15

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit
Lead	22.9			0.500	ug/L	20.00	2.63	101%	75-125		
Copper	61.0			1.00	"	20.00	40.7	101%	75-125		
Zinc	153			10.0	"	20.00	132	105%	75-125		



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan
Project Number: [none]
Project Manager: Miguel Del Toral

Reported:
May-26-15 09:43

Metals by ICP-MS using EPA 200.8 (modified) - Quality Control US EPA Region 5 Chicago Regional Laboratory

Batch B15E026 - 200.8/no digestion

Matrix Spike (B15E026-MS2)			Source: 1505003-11		Prepared & Analyzed: May-18-15						
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Lead	23.5			0.500	ug/L	20.00	3.72	98.8%	75-125		
Copper	56.3			1.00	"	20.00	37.5	93.9%	75-125		
Zinc	33.8			10.0	"	20.00	14.5	96.9%	75-125		

Batch B15E027 - 200.8/no digestion

Blank (B15E027-BLK1)				Prepared & Analyzed: May-18-15							
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Lead	U			0.500	ug/L						
Copper	U			1.00	"						
Zinc	U			10.0	"						

LCS (B15E027-BS1)

LCS (B15E027-BS1)				Prepared & Analyzed: May-18-15							
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Lead	19.4			0.500	ug/L	20.00		97.2%	85-115		
Copper	18.3			1.00	"	20.00		91.6%	85-115		
Zinc	18.6			10.0	"	20.00		93.1%	85-115		

Duplicate (B15E027-DUP1)

Duplicate (B15E027-DUP1)			Source: 1505004-01		Prepared & Analyzed: May-18-15						
Analyte	Result	Flags / Qualifiers	MDL	Reporting		Spike	Source	%REC		RPD	
				Limit	Units	Level	Result	%REC	Limits	RPD	Limit
Lead	8.13			0.500	ug/L		8.11			0.278	20
Copper	31.4			1.00	"		31.1			1.09	20
Zinc	64.7			10.0	"		64.0			1.01	20

Duplicate (B15E027-DUP2)

Duplicate (B15E027-DUP2)		Source: 1505004-11		Prepared: May-18-15 Analyzed: May-19-15							
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit
Lead	0.734			0.500	ug/L		0.611			18.3	20
Copper	7.43			1.00	"		7.04			5.32	20
Zinc	3.23			10.0	"		3.04			6.13	20



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan
Project Number: [none]
Project Manager: Miguel Del Toral

Reported:
May-26-15 09:43

Metals by ICP-MS using EPA 200.8 (modified) - Quality Control US EPA Region 5 Chicago Regional Laboratory

Batch B15E027 - 200.8/no digestion

Matrix Spike (B15E027-MS1)			Source: 1505004-01		Prepared & Analyzed: May-18-15						
Analyte	Result	Flags / Qualifiers	MDL	Reporting		Spike	Source	%REC		RPD	
				Limit	Units	Level	Result	%REC	Limits	RPD	Limit
Lead	28.4			0.500	ug/L	20.00	8.11	101%	75-125		
Copper	50.7			1.00	"	20.00	31.1	98.2%	75-125		
Zinc	84.3			10.0	"	20.00	64.0	101%	75-125		

Matrix Spike (B15E027-MS2)			Source: 1505004-11		Prepared: May-18-15 Analyzed: May-19-15					
Analyte	Result	Flags / Qualifiers	MDL	Reporting		Spike	Source	%REC	RPD	
				Limit	Units	Level	Result	%REC	Limits	RPD
Lead	21.1			0.500	ug/L	20.00	0.611	102%	75-125	
Copper	26.6			1.00	"	20.00	7.04	97.8%	75-125	
Zinc	23.1			10.0	"	20.00	3.04	100%	75-125	



Environmental Protection Agency Region 5
Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

Water Division, Drinking Water
77 West Jackson Boulevard
Chicago IL, 60604

Project: Flint, Michigan
Project Number: [none]
Project Manager: Miguel Del Toral

Reported:
May-26-15 09:43

Notes and Definitions

U Not Detected
NR Not Reported



Environmental Protection Agency Region 5
Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
 Phone: (312) 353-8370 Fax: (312) 886-2591

WORK ORDER

Printed: 5/18/2015 2:56:59PM

1505004

US EPA Region 5 Chicago Regional Laboratory

Client: Water Division, Drinking Water
Project: Flint, Michigan

Project Manager: Greg Mitsakopoulos
Project Number: [none]

Report To:

Miguel Del Toral
 Water Division, Drinking Water

77 West Jackson Boulevard
 Chicago, IL 60604

Phone: (312) 886-5253
 Fax: (312) 886-2001

Date Due: Jul-12-15 15:00 (60 day TAT)

Received By: Robert Snyder

Date Received: May-11-15 10:12

Logged In By: Robert Snyder

Date Logged In: May-11-15 17:00

Samples Received at: 22°C
 Sample tags/labels: Yes
 Seals Intact: Yes
 Received on ice: No
 Paperwork Included: Yes

Analysis	Due	TAT	Expires	Comments
1505004-01 1 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time (US & Canada)				pH = 7
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
1505004-02 2 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time (US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
1505004-03 3 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time (US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
1505004-04 4 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time (US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
1505004-05 5 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time (US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	

WORK ORDER

Printed: 5/18/2015 2:56:59PM

1505004

US EPA Region 5 Chicago Regional Laboratory

Client: Water Division, Drinking Water
Project: Flint, Michigan

Project Manager: Greg Mitsakopoulos
Project Number: [none]

Analysis	Due	TAT	Expires	Comments
1505004-06 6 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
1505004-07 7 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
1505004-08 8 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
1505004-09 9 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
1505004-10 10 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
1505004-11 11 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
1505004-12 12 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
1505004-13 13 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
1505004-14 14 [Water] Sampled May-11-15 07:00 (GMT-06:00) Central Time				
(US & Canada)				pH = 7
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:00	

WORK ORDER

Printed: 5/18/2015 2:56:59PM

1505004

US EPA Region 5 Chicago Regional Laboratory

Client: Water Division, Drinking Water
Project: Flint, Michigan

Project Manager: Greg Mitsakopoulos
Project Number: [none]

Analysis	Due	TAT	Expires	Comments
1505004-15 15 [Water] Sampled May-11-15 07:05 (GMT-06:00) Central Time (US & Canada)				pH = 7
Metals ICP-MS (DW)	Jul-12-15 12:00	60	Nov-07-15 07:05	
Metals ICP (DW)	Jul-12-15 12:00	60	Nov-07-15 07:05	

Reviewed By

Date

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Tuesday, June 02, 2015 8:18 AM
To: Busch, Stephen (DEQ);Prysby, Mike (DEQ);Cook, Pat (DEQ)
Cc: Benzie, Richard (DEQ);Philip, Kris (DEQ);Shekter Smith, Liane (DEQ)
Subject: FW: Ms. Walters' Follow-up sampling results
Attachments: 1505006 FINAL EXCEL 28 May 15 1621.xls; 1505006 FINAL May 28 15 1621.PDF; 1505006_work order.pdf

FYI from Miguel.

From: Deltoral, Miguel
Sent: Thursday, May 28, 2015 5:49 PM
To: Poy, Thomas
Cc: Bair, Rita; Damato, Nicholas; Porter, Andrea; Crooks, Jennifer
Subject: Ms. Walters' Follow-up sampling results

Attached are the results from Ms. Walters' testing following the replacement of her service line. Lead levels look good and copper is less than 1/2 the action level through the new copper service line.

The first 15 samples were the sequential samples (kitchen tap to water main) which came back fine. Sample 16 is the bathroom tap which came back fine. Samples 17 and 18 were from the hot water heater where one result was high, likely from residual particulate lead from before the service line work.

Miguel A. Del Toral
Regulations Manager
U.S. EPA R5 GWDWB
77 West Jackson Blvd, (WG-15J)
Chicago, IL 60604
Phone: (312) 886-5253

From: Griffin, Sylvia
Sent: Thursday, May 28, 2015 04:29 PM
To: Deltoral, Miguel
Cc: Wroble, Amanda
Subject: FW: 1505006; ICP-MS metals (DW) (Cu, Pb, Zn); Flint, MI

Please see the final results report. Should you encounter any problems with this transmittal, please email or give me a call.

Thank you.

-Sylvia

From: Wroble, Amanda
Sent: Thursday, May 28, 2015 4:26 PM
To: Griffin, Sylvia
Subject: 1505006; ICP-MS metals (DW) (Cu, Pb, Zn); Flint, MI

Amanda Wroble, Ph.D.
Chemist and Sample Coordinator
USEPA Region 5 Chicago Regional Laboratory
536 S. Clark St. ML-10C
Chicago, IL 60605
(312) 353-0375

[illegible]

	I	J	K	L	M	N	O	P	Q	R
1	SAMPDATE	PREPDATE	ANADATE	BATCH	METHODCODE	METHODNAME	PREPNAME	ANALYTE	CASNUMBER	SURROGATE
2	05/13/2015 09:00:00	05/19/2015 15:10:00	05/19/2015 16:15:59	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
3	05/13/2015 09:00:00	05/19/2015 15:10:00	05/19/2015 16:15:59	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
4	05/13/2015 09:00:00	05/19/2015 15:10:00	05/19/2015 16:15:59	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
5	05/13/2015 09:00:00	05/19/2015 15:10:00	05/19/2015 16:25:17	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
6	05/13/2015 09:00:00	05/19/2015 15:10:00	05/19/2015 16:25:17	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
7	05/13/2015 09:00:00	05/19/2015 15:10:00	05/19/2015 16:25:17	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
8	05/13/2015 09:01:00	05/19/2015 15:10:00	05/19/2015 16:28:26	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
9	05/13/2015 09:01:00	05/19/2015 15:10:00	05/19/2015 16:28:26	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
10	05/13/2015 09:01:00	05/19/2015 15:10:00	05/19/2015 16:28:26	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
11	05/13/2015 09:01:00	05/19/2015 15:10:00	05/19/2015 16:31:33	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
12	05/13/2015 09:01:00	05/19/2015 15:10:00	05/19/2015 16:31:33	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
13	05/13/2015 09:01:00	05/19/2015 15:10:00	05/19/2015 16:31:33	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
14	05/13/2015 09:02:00	05/19/2015 15:10:00	05/19/2015 16:34:42	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
15	05/13/2015 09:02:00	05/19/2015 15:10:00	05/19/2015 16:34:42	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
16	05/13/2015 09:02:00	05/19/2015 15:10:00	05/19/2015 16:34:42	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
17	05/13/2015 09:02:00	05/19/2015 15:10:00	05/19/2015 16:53:20	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
18	05/13/2015 09:02:00	05/19/2015 15:10:00	05/19/2015 16:53:20	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
19	05/13/2015 09:02:00	05/19/2015 15:10:00	05/19/2015 16:53:20	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
20	05/13/2015 09:03:00	05/19/2015 15:10:00	05/19/2015 16:56:25	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
21	05/13/2015 09:03:00	05/19/2015 15:10:00	05/20/2015 09:47:43	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
22	05/13/2015 09:03:00	05/19/2015 15:10:00	05/19/2015 16:56:25	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
23	05/13/2015 09:03:00	05/19/2015 15:10:00	05/19/2015 16:59:33	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
24	05/13/2015 09:03:00	05/19/2015 15:10:00	05/20/2015 09:50:52	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
25	05/13/2015 09:03:00	05/19/2015 15:10:00	05/19/2015 16:59:33	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
26	05/13/2015 09:04:00	05/19/2015 15:10:00	05/19/2015 17:02:40	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
27	05/13/2015 09:04:00	05/19/2015 15:10:00	05/20/2015 09:53:58	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
28	05/13/2015 09:04:00	05/19/2015 15:10:00	05/19/2015 17:02:40	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
29	05/13/2015 09:04:00	05/19/2015 15:10:00	05/19/2015 17:05:48	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
30	05/13/2015 09:04:00	05/19/2015 15:10:00	05/19/2015 17:05:48	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
31	05/13/2015 09:04:00	05/19/2015 15:10:00	05/19/2015 17:05:48	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
32	05/13/2015 09:05:00	05/19/2015 15:10:00	05/19/2015 17:08:54	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
33	05/13/2015 09:05:00	05/19/2015 15:10:00	05/19/2015 17:08:54	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
34	05/13/2015 09:05:00	05/19/2015 15:10:00	05/19/2015 17:08:54	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
35	05/13/2015 09:05:00	05/19/2015 15:10:00	05/19/2015 17:18:14	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
36	05/13/2015 09:05:00	05/19/2015 15:10:00	05/19/2015 17:18:14	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
37	05/13/2015 09:05:00	05/19/2015 15:10:00	05/19/2015 17:18:14	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
38	05/13/2015 09:07:00	05/19/2015 15:10:00	05/19/2015 17:21:20	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
39	05/13/2015 09:07:00	05/19/2015 15:10:00	05/19/2015 17:21:20	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
40	05/13/2015 09:07:00	05/19/2015 15:10:00	05/19/2015 17:21:20	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
41	05/13/2015 09:07:00	05/19/2015 15:10:00	05/19/2015 17:40:00	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
42	05/13/2015 09:07:00	05/19/2015 15:10:00	05/19/2015 17:40:00	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
43	05/13/2015 09:07:00	05/19/2015 15:10:00	05/19/2015 17:40:00	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
44	05/13/2015 09:08:00	05/19/2015 15:10:00	05/19/2015 17:43:09	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
45	05/13/2015 09:08:00	05/19/2015 15:10:00	05/19/2015 17:43:09	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
46	05/13/2015 09:08:00	05/19/2015 15:10:00	05/19/2015 17:43:09	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
47	05/13/2015 20:15:00	05/19/2015 15:10:00	05/19/2015 17:46:16	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
48	05/13/2015 20:15:00	05/19/2015 15:10:00	05/19/2015 17:46:16	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE

SAMPDATA

	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1	TIC	Result	DL	RL	UNITS	RPTtoMDL	BASIS	DILUTION	SPIKELEVEL	RECOVERY	UPPERCL	LOWERCL	ANALYST	PSOLIDS	LNOTE	ANOTE
2	FALSE	1.30	0.0140	0.500	ug/L	FALSE	NA	1					AW			
3	FALSE	13.1	0.0220	1.00	ug/L	FALSE	NA	1					AW			
4	FALSE	70.9	0.190	10.0	ug/L	FALSE	NA	1					AW			
5	FALSE	0.687	0.0140	0.500	ug/L	FALSE	NA	1					AW			
6	FALSE	20.1	0.0220	1.00	ug/L	FALSE	NA	1					AW			
7	FALSE	23.2	0.190	10.0	ug/L	FALSE	NA	1					AW			
8	FALSE	3.01	0.0140	0.500	ug/L	FALSE	NA	1					AW			
9	FALSE	141	0.0220	1.00	ug/L	FALSE	NA	1					AW			
10	FALSE	76.8	0.190	10.0	ug/L	FALSE	NA	1					AW			
11	FALSE	1.76	0.0140	0.500	ug/L	FALSE	NA	1					AW			
12	FALSE	336	0.0220	1.00	ug/L	FALSE	NA	1					AW			
13	FALSE	45.4	0.190	10.0	ug/L	FALSE	NA	1					AW			
14	FALSE	1.17	0.0140	0.500	ug/L	FALSE	NA	1					AW			
15	FALSE	419	0.0220	1.00	ug/L	FALSE	NA	1					AW			
16	FALSE	32.2	0.190	10.0	ug/L	FALSE	NA	1					AW			
17	FALSE	1.03	0.0140	0.500	ug/L	FALSE	NA	1					AW			
18	FALSE	463	0.0220	1.00	ug/L	FALSE	NA	1					AW			
19	FALSE	24.8	0.190	10.0	ug/L	FALSE	NA	1					AW			
20	FALSE	0.800	0.0140	0.500	ug/L	FALSE	NA	1					AW			
21	FALSE	529	0.220	10.0	ug/L	FALSE	NA	10					AW			
22	FALSE	19.6	0.190	10.0	ug/L	FALSE	NA	1					AW			
23	FALSE	0.666	0.0140	0.500	ug/L	FALSE	NA	1					AW			
24	FALSE	554	0.220	10.0	ug/L	FALSE	NA	10					AW			
25	FALSE	14.9	0.190	10.0	ug/L	FALSE	NA	1					AW			
26	FALSE	3.07	0.0140	0.500	ug/L	FALSE	NA	1					AW			
27	FALSE	571	0.220	10.0	ug/L	FALSE	NA	10					AW			
28	FALSE	11.6	0.190	10.0	ug/L	FALSE	NA	1					AW			
29	FALSE	3.93	0.0140	0.500	ug/L	FALSE	NA	1					AW			
30	FALSE	345	0.0220	1.00	ug/L	FALSE	NA	1					AW			
31	FALSE	10.3	0.190	10.0	ug/L	FALSE	NA	1					AW			
32	FALSE	1.94	0.0140	0.500	ug/L	FALSE	NA	1					AW			
33	FALSE	233	0.0220	1.00	ug/L	FALSE	NA	1					AW			
34	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
35	FALSE	1.17	0.0140	0.500	ug/L	FALSE	NA	1					AW			
36	FALSE	171	0.0220	1.00	ug/L	FALSE	NA	1					AW			
37	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
38	FALSE	0.864	0.0140	0.500	ug/L	FALSE	NA	1					AW			
39	FALSE	139	0.0220	1.00	ug/L	FALSE	NA	1					AW			
40	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
41	FALSE	0.670	0.0140	0.500	ug/L	FALSE	NA	1					AW			
42	FALSE	110	0.0220	1.00	ug/L	FALSE	NA	1					AW			
43	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
44	FALSE	0.505	0.0140	0.500	ug/L	FALSE	NA	1					AW			
45	FALSE	91.5	0.0220	1.00	ug/L	FALSE	NA	1					AW			
46	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1					AW			
47	FALSE	5.52	0.0140	0.500	ug/L	FALSE	NA	1					AW			
48	FALSE	29.7	0.0220	1.00	ug/L	FALSE	NA	1					AW			

SAMPDATA

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
1	LATITUDE	LONGITUDE	sComment	SNOTE1	SNOTE2	SNOTE3	SNOTE4	SNOTE5	SNOTE6	SNOTE7	SNOTE8	SNOTE9	SNOTE10	ANALYTEORDER
2														1
3														2
4														4
5														1
6														2
7														4
8														1
9														2
10														4
11														1
12														2
13														4
14														1
15														2
16														4
17														1
18														2
19														4
20														1
21														2
22														4
23														1
24														2
25														4
26														1
27														2
28														4
29														1
30														2
31														4
32														1
33														2
34														4
35														1
36														2
37														4
38														1
39														2
40														4
41														1
42														2
43														4
44														1
45														2
46														4
47														1
48														2

SAMPDATA

	A	B	C	D	E	F	G	H
49	Water Division, Drinking Water	Flint, Michigan	[none]	US EPA Region 5 Chicago Regional Laboratory	16	1505006-16	Water	Water
50	Water Division, Drinking Water	Flint, Michigan	[none]	US EPA Region 5 Chicago Regional Laboratory	17	1505006-17	Water	Water
51	Water Division, Drinking Water	Flint, Michigan	[none]	US EPA Region 5 Chicago Regional Laboratory	17	1505006-17	Water	Water
52	Water Division, Drinking Water	Flint, Michigan	[none]	US EPA Region 5 Chicago Regional Laboratory	17	1505006-17	Water	Water
53	Water Division, Drinking Water	Flint, Michigan	[none]	US EPA Region 5 Chicago Regional Laboratory	18	1505006-18	Water	Water
54	Water Division, Drinking Water	Flint, Michigan	[none]	US EPA Region 5 Chicago Regional Laboratory	18	1505006-18	Water	Water
55	Water Division, Drinking Water	Flint, Michigan	[none]	US EPA Region 5 Chicago Regional Laboratory	18	1505006-18	Water	Water

SAMPDATA

	I	J	K	L	M	N	O	P	Q	R
49	05/13/2015 20:15:00	05/19/2015 15:10:00	05/19/2015 17:46:16	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
50	05/13/2015 20:16:00	05/19/2015 15:10:00	05/19/2015 17:49:26	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
51	05/13/2015 20:16:00	05/19/2015 15:10:00	05/19/2015 17:49:26	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
52	05/13/2015 20:16:00	05/19/2015 15:10:00	05/20/2015 09:57:07	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE
53	05/13/2015 21:19:00	05/19/2015 15:10:00	05/19/2015 17:52:29	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Lead	7439-92-1	FALSE
54	05/13/2015 21:19:00	05/19/2015 15:10:00	05/19/2015 17:52:29	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Copper	7440-50-8	FALSE
55	05/13/2015 21:19:00	05/19/2015 15:10:00	05/19/2015 17:52:29	B15E029	Metals ICP-MS (DW)		200.8/no digestion	Zinc	7440-66-6	FALSE

SAMPDATA

	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
49	FALSE	71.3	0.190	10.0	ug/L	FALSE	NA	1					AW			
50	FALSE	31.7	0.0140	0.500	ug/L	FALSE	NA	1					AW			
51	FALSE	70.4	0.0220	1.00	ug/L	FALSE	NA	1					AW			
52	FALSE	883	1.90	100	ug/L	FALSE	NA	10					AW			
53	FALSE	9.74	0.0140	0.500	ug/L	FALSE	NA	1					AW			
54	FALSE	35.0	0.0220	1.00	ug/L	FALSE	NA	1					AW			
55	FALSE	346	0.190	10.0	ug/L	FALSE	NA	1					AW			

SAMPDATA

	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV
49														4
50														1
51														2
52														4
53														1
54														2
55														4

QC DATA

	A	B	C	D	E	F	G	H
1	LABNAME	LABSAMPID	QCTYPE	MATRIX	PREPDATE	ANADATE	BATCH	METHODCODE
2	US EPA Region 5 Chicago Regional Laboratory	B15E029-BLK1	Blank	Water	05/19/2015 15:10:00	05/19/2015 16:09:45	B15E029	Metals ICP-MS (DW)
3	US EPA Region 5 Chicago Regional Laboratory	B15E029-BLK1	Blank	Water	05/19/2015 15:10:00	05/19/2015 16:09:45	B15E029	Metals ICP-MS (DW)
4	US EPA Region 5 Chicago Regional Laboratory	B15E029-BLK1	Blank	Water	05/19/2015 15:10:00	05/19/2015 16:09:45	B15E029	Metals ICP-MS (DW)
5	US EPA Region 5 Chicago Regional Laboratory	B15E029-BS1	LCS	Water	05/19/2015 15:10:00	05/19/2015 16:12:54	B15E029	Metals ICP-MS (DW)
6	US EPA Region 5 Chicago Regional Laboratory	B15E029-BS1	LCS	Water	05/19/2015 15:10:00	05/19/2015 16:12:54	B15E029	Metals ICP-MS (DW)
7	US EPA Region 5 Chicago Regional Laboratory	B15E029-BS1	LCS	Water	05/19/2015 15:10:00	05/19/2015 16:12:54	B15E029	Metals ICP-MS (DW)
8	US EPA Region 5 Chicago Regional Laboratory	B15E029-DUP1	Duplicate	Water	05/19/2015 15:10:00	05/19/2015 16:19:06	B15E029	Metals ICP-MS (DW)
9	US EPA Region 5 Chicago Regional Laboratory	B15E029-DUP1	Duplicate	Water	05/19/2015 15:10:00	05/19/2015 16:19:06	B15E029	Metals ICP-MS (DW)
10	US EPA Region 5 Chicago Regional Laboratory	B15E029-DUP1	Duplicate	Water	05/19/2015 15:10:00	05/19/2015 16:19:06	B15E029	Metals ICP-MS (DW)
11	US EPA Region 5 Chicago Regional Laboratory	B15E029-DUP2	Duplicate	Water	05/19/2015 15:10:00	05/19/2015 17:12:04	B15E029	Metals ICP-MS (DW)
12	US EPA Region 5 Chicago Regional Laboratory	B15E029-DUP2	Duplicate	Water	05/19/2015 15:10:00	05/19/2015 17:12:04	B15E029	Metals ICP-MS (DW)
13	US EPA Region 5 Chicago Regional Laboratory	B15E029-DUP2	Duplicate	Water	05/19/2015 15:10:00	05/19/2015 17:12:04	B15E029	Metals ICP-MS (DW)
14	US EPA Region 5 Chicago Regional Laboratory	B15E029-MS1	Matrix Spike	Water	05/19/2015 15:10:00	05/19/2015 16:22:16	B15E029	Metals ICP-MS (DW)
15	US EPA Region 5 Chicago Regional Laboratory	B15E029-MS1	Matrix Spike	Water	05/19/2015 15:10:00	05/19/2015 16:22:16	B15E029	Metals ICP-MS (DW)
16	US EPA Region 5 Chicago Regional Laboratory	B15E029-MS1	Matrix Spike	Water	05/19/2015 15:10:00	05/19/2015 16:22:16	B15E029	Metals ICP-MS (DW)
17	US EPA Region 5 Chicago Regional Laboratory	B15E029-MS2	Matrix Spike	Water	05/19/2015 15:10:00	05/19/2015 17:15:10	B15E029	Metals ICP-MS (DW)
18	US EPA Region 5 Chicago Regional Laboratory	B15E029-MS2	Matrix Spike	Water	05/19/2015 15:10:00	05/19/2015 17:15:10	B15E029	Metals ICP-MS (DW)
19	US EPA Region 5 Chicago Regional Laboratory	B15E029-MS2	Matrix Spike	Water	05/19/2015 15:10:00	05/19/2015 17:15:10	B15E029	Metals ICP-MS (DW)

QC DATA

	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	METHODNAME	PREPNAME	ANALYTE	CASNUMBER	SURROGATE	TIC	RESULT	DL	RL	UNITS	RPTtoMDL	BASIS	DILUTION	SOURCEID
2		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	U	0.0140	0.500	ug/L	FALSE	NA	1	
3		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	U	0.0220	1.00	ug/L	FALSE	NA	1	
4		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	U	0.190	10.0	ug/L	FALSE	NA	1	
5		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	18.9	0.0140	0.500	ug/L	FALSE	NA	1	
6		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	18.9	0.0220	1.00	ug/L	FALSE	NA	1	
7		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	18.9	0.190	10.0	ug/L	FALSE	NA	1	
8		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	1.28	0.0140	0.500	ug/L	FALSE	NA	1	1505006-01
9		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	13.0	0.0220	1.00	ug/L	FALSE	NA	1	1505006-01
10		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	70.9	0.190	10.0	ug/L	FALSE	NA	1	1505006-01
11		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	1.94	0.0140	0.500	ug/L	FALSE	NA	1	1505006-11
12		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	237	0.0220	1.00	ug/L	FALSE	NA	1	1505006-11
13		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	8.23	0.190	10.0	ug/L	FALSE	NA	1	1505006-11
14		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	21.2	0.0140	0.500	ug/L	FALSE	NA	1	1505006-01
15		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	32.9	0.0220	1.00	ug/L	FALSE	NA	1	1505006-01
16		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	92.3	0.190	10.0	ug/L	FALSE	NA	1	1505006-01
17		200.8/no digestion	Lead	7439-92-1	FALSE	FALSE	22.1	0.0140	0.500	ug/L	FALSE	NA	1	1505006-11
18		200.8/no digestion	Copper	7440-50-8	FALSE	FALSE	256	0.0220	1.00	ug/L	FALSE	NA	1	1505006-11
19		200.8/no digestion	Zinc	7440-66-6	FALSE	FALSE	28.8	0.190	10.0	ug/L	FALSE	NA	1	1505006-11

QC DATA

	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
1	SOURCERES	SPIKELEVEL	RECOVERY	RPD	UPPERCL	LOWERCL	RPDCL	ANALYST	PSOLIDS	LNOTE	ANOTE	ANALYTEORDER
2								AW				1
3								AW				2
4								AW				4
5		20.00	94.4		115	85		AW				1
6		20.00	94.6		115	85		AW				2
7		20.00	94.5		115	85		AW				4
8	1.30			1.77			20	AW				1
9	13.1			0.326			20	AW				2
10	70.9			0.0163			20	AW				4
11	1.94			0.129			20	AW				1
12	233			1.76			20	AW				2
13	8.14			1.11			20	AW				4
14	1.30	20.00	99.6		125	75		AW				1
15	13.1	20.00	99.2		125	75		AW				2
16	70.9	20.00	107		125	75		AW				4
17	1.94	20.00	101		125	75		AW				1
18	233	20.00	115		125	75		AW				2
19	8.14	20.00	103		125	75		AW				4

LNOTE

	A	B
1	QUALIFIER	DESCRIPTION



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone: (312) 353-8370 Fax: (312) 886-2591

WORK ORDER

Printed: 5/20/2015 8:35:08AM

1505006

US EPA Region 5 Chicago Regional Laboratory

Client: Water Division, Drinking Water
Project: Flint, Michigan

Project Manager: Greg Mitsakopoulos
Project Number: [none]

Report To:

Miguel Del Toral
Water Division, Drinking Water

77 West Jackson Boulevard
Chicago, IL 60604

Phone: (312) 886-5253
Fax: (312) 886-2001

Date Due: Jul-15-15 15:00 (60 day TAT)

Received By: Robert Snyder

Date Received: May-14-15 11:00

Logged In By: Robert Snyder

Date Logged In: May-14-15 16:20

Samples Received at: 17.9°C
Sample tags/labels: Yes
Seals Intact: Yes
Received on ice: No
Paperwork Included: Yes

Analysis	Due	TAT	Expires	Comments
----------	-----	-----	---------	----------

1505006-01 1 [Water] Sampled May-13-15 09:00 (GMT-06:00) Central Time (US & Canada)

Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:00	pH = 6
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:00	pH = 6

1505006-02 2 [Water] Sampled May-13-15 09:00 (GMT-06:00) Central Time (US & Canada)

Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:00	pH = 6
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:00	pH = 6

1505006-03 3 [Water] Sampled May-13-15 09:01 (GMT-06:00) Central Time (US & Canada)

Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:01	pH = 6
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:01	pH = 6

1505006-04 4 [Water] Sampled May-13-15 09:01 (GMT-06:00) Central Time (US & Canada)

Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:01	pH = 6
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:01	pH = 6

1505006-05 5 [Water] Sampled May-13-15 09:02 (GMT-06:00) Central Time (US & Canada)

Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:02	pH = 6
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:02	pH = 6

WORK ORDER

Printed: 5/20/2015 8:35:08AM

1505006

US EPA Region 5 Chicago Regional Laboratory

Client: Water Division, Drinking Water
Project: Flint, Michigan

Project Manager: Greg Mitsakopoulos
Project Number: [none]

Analysis	Due	TAT	Expires	Comments
1505006-06 6 [Water] Sampled May-13-15 09:02 (GMT-06:00) Central Time (US & Canada)				
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:02	pH = 6
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:02	pH = 6
1505006-07 7 [Water] Sampled May-13-15 09:03 (GMT-06:00) Central Time (US & Canada)				
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:03	pH = 6
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:03	pH = 6
1505006-08 8 [Water] Sampled May-13-15 09:03 (GMT-06:00) Central Time (US & Canada)				
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:03	pH = 6
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:03	pH = 6
1505006-09 9 [Water] Sampled May-13-15 09:04 (GMT-06:00) Central Time (US & Canada)				
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:04	pH = 6
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:04	pH = 6
1505006-10 10 [Water] Sampled May-13-15 09:04 (GMT-06:00) Central Time (US & Canada)				
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:04	pH = 6
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:04	pH = 6
1505006-11 11 [Water] Sampled May-13-15 09:05 (GMT-06:00) Central Time (US & Canada)				
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:05	pH = 6
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:05	pH = 6
1505006-12 12 [Water] Sampled May-13-15 09:05 (GMT-06:00) Central Time (US & Canada)				
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:05	pH = 6
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:05	pH = 6
1505006-13 13 [Water] Sampled May-13-15 09:07 (GMT-06:00) Central Time (US & Canada)				
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:07	pH = 6
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:07	pH = 6
1505006-14 14 [Water] Sampled May-13-15 09:07 (GMT-06:00) Central Time (US & Canada)				
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:07	pH = 6
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:07	pH = 6

WORK ORDER

Printed: 5/20/2015 8:35:08AM

1505006

US EPA Region 5 Chicago Regional Laboratory

Client: Water Division, Drinking Water
 Project: Flint, Michigan

Project Manager: Greg Mitsakopoulos
 Project Number: [none]

Analysis	Due	TAT	Expires	Comments
1505006-15 15 [Water] Sampled May-13-15 09:08 (GMT-06:00) Central Time (US & Canada)				
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 09:08	pH = 6
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 09:08	pH = 6
1505006-16 16 [Water] Sampled May-13-15 20:15 (GMT-06:00) Central Time (US & Canada)				
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 20:15	pH = 6
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 20:15	pH = 6
1505006-17 17 [Water] Sampled May-13-15 20:16 (GMT-06:00) Central Time (US & Canada)				
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 20:16	pH = 6
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 20:16	pH = 6
1505006-18 18 [Water] Sampled May-13-15 21:19 (GMT-06:00) Central Time (US & Canada)				
Metals ICP (DW)	Jul-15-15 12:00	60	Nov-09-15 21:19	pH = 6
Metals ICP-MS (DW)	Jul-15-15 12:00	60	Nov-09-15 21:19	pH = 6

Reviewed By

Date

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Tuesday, June 02, 2015 8:28 AM
To: Busch, Stephen (DEQ); Prysby, Mike (DEQ); Cook, Pat (DEQ)
Cc: Benzie, Richard (DEQ); Philip, Kris (DEQ); Shekter Smith, Liane (DEQ)
Subject: April 27 Flint Sampling Update from Miguel

Mea culpa.... I totally missed this email. Just saw it today. You already know the general information, but here is directly from Miguel.

Jennifer

From: Deltoral, Miguel
Sent: Monday, April 27, 2015 6:53 AM
To: Poy, Thomas
Cc: Porter, Andrea; Bair, Rita; Crooks, Jennifer
Subject: Flint Sampling Update

Good morning, Tom

Just an update on the Flint sampling so folks know what's going on. As we had initially discussed, the only way to really see what the lead levels are throughout and where the lead is actually coming from at Ms. Walters' place is to do sequential sampling prior to the removal of the LSL. I spoke to Ms. Walters and she said that the water was shut off inside her home, so it can actually be turned back on, so Jennifer and I picked up sample bottles from the R5 office and we will be dropping them off at Ms. Walters place today on the way home from the MDEQ RTCR meeting. Pat Cook has confirmed that following the disconnection from Detroit, Flint has not been operating any corrosion control treatment, which is very concerning given the likelihood of LSLs in the city. We do not know how many LSLs there are in Flint and according to Ms. Walters, neither does the city. She said that they do not know where any LSLs are, based on their records, so other than what appears to be a very long one at Ms. Walters' place, we don't have confirmation of any others at this point. Since they were used extensively here in R5, it is likely there are more. No idea how many, though.

Marc Edwards (from Virginia Tech) was kind enough to offer to analyze this round of samples so she will shipping the samples to Marc for analysis. I asked that he measure phosphate as well, so that we have some data on that. As we discussed, R5 will send an additional set of bottles to Ms. Walters for the follow-up monitoring once the LSL is removed. I spoke to Mike Prysby on Friday and he said that the city was going to remove the LSL fully this Wednesday. I also brought a camera with me and will take some pictures while we are at Ms. Walters place as well.

Apparently, according to Ms. Walters, the water director appears to be telling residents that the high lead from Ms. Walters residence is from the internal plumbing and that a reporter she was talking to, as well as others, has confirmed that this is what residents are being told. Ms. Walters indicated that the line coming into the home appears to be galvanized pipe. If this is true, it is possible that her portion of the service line, from the home to the property line, is not lead and that the city-owned portion of the service line is the only source of lead here. The sample results should help to clarify where the lead is coming from.

Call me on the cell if you need to:

PPI

Miguel A. Del Toral

Regulations Manager
U.S. EPA R5 GWDWB
77 West Jackson Blvd, (WG-15J)
Chicago, IL 60604
Phone: (312) 886-5253

From: Crooks, Jennifer <crooks.jennifer@epa.gov>
Sent: Thursday, July 16, 2015 8:50 AM
To: Busch, Stephen (DEQ); Prysby, Mike (DEQ); Cook, Pat (DEQ)
Cc: Philip, Kris (DEQ)
Subject: FW: Flint Water Question from a Pregnant Flint Resident

FYI---our response to a citizen complaint from Flint.
 Jennifer

From: Mona Munroe-Younis [mailto:mona.m.younis@gmail.com]
Sent: Thursday, July 16, 2015 7:45 AM
To: Bair, Rita
Cc: Crooks, Jennifer; Deltoral, Miguel; Harris, Kimberly; Porter, Andrea
Subject: RE: Flint Water Question from a Pregnant Flint Resident

Hi Rita,

Thank you very much for your detailed response. It is helpful and I appreciate it greatly.

All the best,
 Mona

On Jul 14, 2015 5:22 PM, "Bair, Rita" <bair.rita@epa.gov> wrote:

We are responding to your email of July 11, 2015 to Miguel Del Toral. He is out of the office today, but has provided the following information to your lead questions. Overall, he agrees with Marc's responses on the water filter. Filters that are certified to remove lead are typically designed to remove 99 percent of the lead. They are also designed with additional capacity as a safety measure, but you should still change the filter in accordance with the manufacturer's instructions. If you identify elevated lead levels from other taps that do not have water filters, we suggest either adding a filter to those, such as the bathroom tap, or only using the filtered tap water for consumption.

If you are still interested in having your water tested you should use a laboratory that has been certified by the State for drinking water analyses (a list is available from the following link: http://www.michigan.gov/deq/0,4561,7-135-3307_4131_4156-36940--,00.html). Please note that a first-draw sample, regardless of pre-flushing, is best for identifying lead that comes from the faucet and other in-home piping or fittings close to the faucet. First-draw sampling does not give a good indication of the lead contribution from sources further from the faucet (i.e. lead service line, leaded brass meter, etc.). Information for residents about first-draw sampling instructions can be found on the last page of the 2006 memo on aerators and LCR sampling at the following link: http://www.epa.gov/ogwdw/lcrmr/pdfs/memo_tapsamples-aerators_10202006.pdf. In addition, below are two graphics from our Region 5 website with information about how to identify if you have a lead service line coming into your home and for faucets that do not have filters on them, how to clean the aerators.

Regarding your TTHM question, EPA has considered developmental and reproductive risks from multiple intake routes of exposure (e.g., ingestion, inhalation, and dermal) in our 2006 Disinfectants and Disinfection Byproducts (DBPR) rule. Some studies did suggest associations between TTHM exposure and various adverse reproductive and development health effects. However, studies available overall showed inconsistent results. As such, our Agency could not conclude whether exposure to TTHMs could cause adverse reproductive/developmental health effects. However, we did note in our findings that there was the potential for concern.

Currently, we are in the process of re-evaluating our DBPR rules and considering new toxicological data regarding reproductive and developmental health effects. Until our evaluation is complete, pregnant women can elect to take additional precautionary measures such as taking shorter showers, venting the room while showering/bathing, and not ingesting water with high TTHM concentrations.

We hope this information is helpful to you.

Rita D. Bair

Section 2 Chief

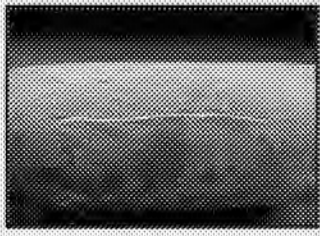
Ground Water and Drinking Water Branch

USEPA-Region 5

phone: (312) 886-2406

fax: 312-692-2132

What do lead service lines that look like?



Lead service lines are generally a dull gray color and are very soft. You can identify them easily by carefully scratching with a key. If the pipe is made of lead, the area you've scratched will turn a bright silver color. Do not use a knife or other sharp instrument and take care not to puncture a hole in the pipe.



Lead service lines can be connected to the residential plumbing using solder and have a characteristic solder "bulb" at the end, a compression fitting, or other connector made of galvanized iron or brass/bronze.



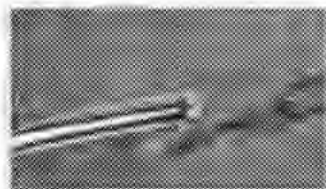
Lead service lines often end just inside the front or side wall of the home, but may extend further into the building as shown, where the lead service line comes out of the basement floor to the water meter and then back into the floor, continuing further into the building.



If your home has a water meter, your water meter may be in your home or "meter pit" or "meter vault" as shown above.

Cleaning aerators

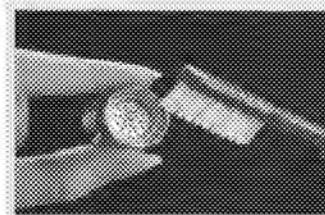
Many taps have an aerator as part of the faucet assembly. Aerator screens are not intended to remove contaminants in water, but may trap sediment or debris as water passes through the faucet. Lead-bearing sediment may end up in drink water from physical corrosion of leaded solder and can build up in the aerator over time.



1. Remove the aerator by twisting off with hands or pliers.



2. One or more parts are contained within the aerator. Note the order and orientation of the parts as you remove them.



3. Rinse the pieces with water and brush off the debris. For deposits that are difficult to remove, soak the parts in water for a few minutes and scrub with a toothbrush. Backwashing aerator components is also an effective cleaning method for many aerator types. Hold the removed aerator upside down under flowing water to backwash screens and mesh filters.



4. Reassemble the aerator and screw it back onto the faucet and hand-tighten. If any parts are cracked or broken, replace them. If a washer has hardened, it should be replaced.

From: Mona Munroe-Younis [mailto:mona.m.younis@gmail.com]
Sent: Saturday, July 11, 2015 5:57 PM
To: deltoral.miguel@epa.gov; edwardsm@vt.edu
Subject: Flint Water Question from a Pregnant Flint Resident

Dear Dr. Edwards and Dr. Del Toral,

Thank you for the work you have already done in my city to protect families from water contaminant exposure. I am a Flint resident, pregnant with my first child, and therefore advised to drink a whopping 10-16 cups of water each day. I am writing to see if you can shed some light or point me to another source for answers regarding water testing and the safest option for staying hydrated.

If your wife or sister or friend were living in Flint and pregnant, what course of action would you recommend she take? Here is my situation:

- A little background: Prior to becoming pregnant, I installed a pur advanced water filter on our kitchen faucet and always use it when drinking from the tap, which I do frequently. (According to the pur website, the filter is said to filter out 70+ chemicals. Recently, I contacted the company to request more information on exactly what chemicals are filtered and up to what level, and am awaiting their reply.) When using the filter, the water is crystal clear, free of the river smell and without the slight yellow tinge that we sometimes have coming out of the tap (unlike in our bathroom sink which I use to brush my teeth...). I was compelled to purchase the filter because my legs began to swell after Flint changed to the river water, and after installing the filter this problem went away. I even tested the difference by drinking filtered water some days (consistently no swelling) and and unfiltered water others (consistent swelling) for a week or two. I understand the swelling to be the result of sodium chloride in our water which is corrosive enough to make GM stop using Flint water in their local plant (http://www.mlive.com/news/flint/index.ssf/2014/10/general_motors_wont_use_flint.html)
- Given your findings of high levels of lead in some residents' water, my husband strongly believes that I should cease drinking all Flint water and drink bottled water instead. However, I have read extensively about safety concerns of plastic-bottled water (chemists who work with plastics avoid drinking it) and this does not seem to be a safer option despite frequent bottled water drives organized by well-meaning activists across Flint.
- I would like to test our house's tap water with and without the kitchen filter using an independent lab, but my husband thinks this will be a futile effort because we have no reliable way of knowing if the results on one day will be consistent with results on other days, such as if the City of Flint were doing some special change to the water treatment procedure. Would testing multiple times across several weeks be sufficient to address this possibility? If so, how many times and at what interval would you

recommend testing, and can you recommend a testing lab? If a high level of lead is discovered, who should we contact to determine where the lead is coming from as a next step?

- According to the consultant that Erin Brockovich sent to Flint earlier this year (http://www.mlive.com/news/flint/index.ssf/2015/02/tthm_how_worried_should_flint.html), total trihalomethanes (TTHM) in the water are dangerous to pregnant women through inhalation exposure during hot showers. (And pregnant women tend to appreciate long, hot showers because our backs are constantly aching!) At this point, the lead issues seem more frightening, though we are considering investing in a costly whole-house water filtration system to deal with both. How can we determine the relative risk to pregnant women for lead in the water vs. TTHMs? I suppose that could differ from house to house. What sort of whole-house filtration would you recommend?
- Are there any other considerations that you think I should keep in mind?

Even for those residents who are privileged to be educated and able to afford water filtration devices, the public water issues we are living with are confounding. The information we receive about our public water supply tends to be fragmented and coming from local public officials who have an interest in downplaying public concerns. In the meantime, it is very difficult to make truly informed decisions about our health.

Thank you in advance for any insights you can share and helping to give my baby a good start in life. I understand if you need to respond as a fellow resident of the world and as experts in general rather than as affiliates of the organizations in which you are employed.

Thank you much,

Mona Munroe-Younis

2721 Indian Bow Trail, Flint, MI 48507

(810) 845-4633

From: Benzie, Richard (DEQ)
Sent: Tuesday, September 29, 2015 6:29 PM
To: Busch, Stephen (DEQ)
Cc: Philip, Kris (DEQ); Cook, Pat (DEQ); Shekter Smith, Liane (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: Flint Briefing - Draft 9-29-15
Attachments: Flint Briefing - Draft 9-29-15.dotx

Steve,

Here's an updated version where I deleted some things, corrected others, changed the order of a couple of things and inserted the last section that I think is particularly applicable in Flint.

This is a draft. Please do not distribute or cite it elsewhere. If you see something that is wrong or you know something else should be included, let me or Steve know before 9 AM tomorrow.

Richard

Meeting/ Policy Briefing Template

Policy or Meeting Topic**Staff Lead**

(This is the person the Governor can email/ call with questions)

Purpose of Meeting/ Policy Paper**Decision Points****Deadlines****Recommendation****Key Stakeholders Positions**

EO:

Dept:

Legislature:

Outside Interest:

Current Press/ Communications**Executive Summary****Background/ Attachments****Background of the Lead/Copper Regulations for Drinking Water and the city of Flint**

The U.S. EPA promulgated a treatment technique rule for control of lead and copper (Lead/Copper Rule or LCR) in drinking water in 1991. The purpose of this rule was to control the corrosive properties of drinking water to minimize the amount of lead and copper that would dissolve in the water and be transported to the customer. As such, the monitoring scheme was based upon sampling a statistically significant number of residences containing leaded plumbing materials as a measure of successful water treatment efficacy. The monitoring scheme was not intended to represent human intake, and health studies undertaken in recent years do not show a direct correlation between water sampling results and the blood lead concentrations measured in children.

The LCR also recognized that the primary source of lead exposure is not from drinking water. The largest sources of lead exposure are from lead containing dust in homes that have lead paint and from

Meeting/ Policy Briefing Template

lead contaminated soils along major traffic arteries where deposition of automobile exhaust historically occurred when gasoline contained lead. Furthermore, the primary sources of lead in drinking water are plumbing materials containing lead that are not under the control or ownership of the public water system. The LCR is an attempt to reduce the leaching of lead (and copper) from these plumbing materials.

During the twenty-five years of implementation of the LCR, some requirements have been declared unconstitutional; EPA has revised the regulation (in 2000) and provided hundreds of pages of guidance; states have had to make several implementation adjustments to make it function successfully; and most recently, EPA created a LCR Workgroup under the National Drinking Water Advisory Council (NDWAC) to provide recommendations for further LCR modifications. This workgroup just issued their final report that is now being studied by EPA, states and the regulated community. The LCRWG specifically recommends that EPA revise the LCR to require proactive lead service line replacement programs, strengthen optimal corrosion control treatment (OCCT), modify monitoring requirements, and establish a health-based household action level for lead, among others.

It is noteworthy that the LCRWG report did not include a recommendation to change the sampling protocol despite industry wide recognition of the challenging aspect of relying upon nonprofessional homeowners to conduct compliance monitoring as well as concerns that have been voiced about capturing representative exposure levels. The next step will depend upon EPA, which must now promulgate revised federal regulations if they wish to implement any of these recommendations.

Despite the LCR shortcomings, MDEQ compliance data show significant reductions in drinking water lead levels have been achieved through a combination of the following lead control initiatives:

- corrosion control treatment;
- removal of lead in plumbing systems and plumbing products;
- reduction of lead content in plumbing materials;
- lead service line replacements;
- revision of electrical grounding codes; and
- application of flushing principles by informed consumers in high risk locations.

As for Flint, the city has never exceeded the lead action level, either as a customer of Detroit or as an independent system for the year and a half. However, after switching sources (Lake Huron to the Flint River) and treatment methods (chemical softening of the river) in early 2014, the city conducted two 6-month rounds of full monitoring to determine if they were providing OCCT. When the results of the second round were available this past July, the 90th percentile value was calculated. While the city was in compliance with the action level of 15 parts per billion of lead, the city's 90th percentile values for both rounds were above the level of 5 parts per billion at which they could be deemed optimal.

Under the regulatory framework, the city would have as much as 2 years to study, recommend and install OCCT. As a result of the adverse publicity, they are accelerating plans to install OCCT before the end of 2015. Complicating matters are the plans for the city to switch sources again in 2016 when they will be connected to a new 60-mile pipeline from Lake Huron, at which time the current intake in the Flint River will return to a standby mode. When this next switch occurs, the city will be required to continue OCCT, and another two rounds of full monitoring will again be conducted by the city.

Meeting/ Policy Briefing Template

Finally, the LCRWG report acknowledged certain concepts underlie their recommendations for possible revisions to the LCR. The following list contains some of these concepts that seem particularly pertinent in Flint:

- There is no safe level of lead. Lead can pose health risks to anyone, but there are heightened risks for pregnant woman, infants and children with both acute and chronic exposures.
- Lead-bearing plumbing materials in contact with drinking water pose a risk at all times, not just when there is a lead action level (LAL) exceedance.
- The presence of lead-bearing materials in premise plumbing raises issues about what systems can implement in customers' homes.
- Effective elimination of leaded materials in contact with water and minimization of exposure to lead in drinking water is a shared responsibility. PWSs, consumers, building owners, public health officials and others each have important roles to play.
- Proactive action is needed to remove the sources of lead, with appropriate incentives both for PWSs and their customers needed to encourage such action.
- Creative financing mechanisms also will be needed to achieve this goal for all individuals potentially exposed to lead, regardless of race, ethnicity or income. Leaving a lead service line in place because a low-income resident does not have the means to pay raises serious questions of disparate impact and environmental justice.
- The public plays a critical role in protecting their families' health by reducing exposure to lead and copper, and informing the public enables them to be effective participants in implementing their share of the responsibility.

From: Busch, Stephen (DEQ)
Sent: Wednesday, September 30, 2015 7:09 AM
To: Benzie, Richard (DEQ)
Cc: Philip, Kris (DEQ); Cook, Pat (DEQ); Shekter Smith, Liane (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: RE: Flint Briefing - Draft 9-29-15
Attachments: Flint Briefing - Draft 9-30-2015.dotx.docx

I made edits last night to try and get closer to one page. The content was a bit heavy on regulations and I have reordered things to line up the regulatory aspect with what has occurred with the City.

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

From: Benzie, Richard (DEQ)
Sent: Tuesday, September 29, 2015 6:29 PM
To: Busch, Stephen (DEQ)
Cc: Philip, Kris (DEQ); Cook, Pat (DEQ); Shekter Smith, Liane (DEQ); Devereaux, Tracy Jo (DEQ)
Subject: Flint Briefing - Draft 9-29-15

Steve,

Here's an updated version where I deleted some things, corrected others, changed the order of a couple of things and inserted the last section that I think is particularly applicable in Flint.

This is a draft. Please do not distribute or cite it elsewhere. If you see something that is wrong or you know something else should be included, let me or Steve know before 9 AM tomorrow.

Richard

Meeting/ Policy Briefing Template

Policy or Meeting Topic

City of Flint and Lead Concerns in Customer Tap Water

Staff Lead**Purpose of Meeting/ Policy Paper****Decision Points****Recommendation****Key Stakeholders Positions**

EO:

Dept:

Legislature:

Outside Interest:

Current Press/ Communications**Executive Summary****Background/ Attachments**

Lead can pose health risks to anyone, but there are heightened risks for pregnant women, infants, and children. Lead in drinking water is regulated under the Safe Drinking Water Act. As there is no safe level of exposure to lead, EPA has established a non-enforceable goal of zero for lead concentrations in drinking water. For most contaminants, EPA sets an enforceable regulation, a maximum contaminant level (MCL), based on this goal. However for lead, EPA instead established a treatment technique rather than an MCL because the source of lead contamination in drinking water is most often a result from corrosion of plumbing materials belonging to water system customers and not under the ownership or control of the public water system.

This is also the case in the City of Flint. Water from the City of Flint Water Treatment Plant using the Flint River has been analyzed and shown to contain no detectable level of lead. However, in a 2011 EPA survey, the City of Flint reported that approximately 18,000 out of 33,000 total active service connections used lead service line materials. As more than half of the City's 550 miles of water mains are more than 75 years old, the use of lead material in service connections was common at that time. The City owns a small portion of each service connection from the public water main to a curb stop valve at the edge of the Right-of-Way. The remaining portion is owned by, and the responsibility of each individual water customer.

Therefore, the treatment technique regulation for lead, the Lead and Copper rule (LCR), requires water systems to control the corrosivity of their water. The regulation also requires systems to collect tap samples from sites served by the system that are more likely to have plumbing materials containing lead. If more than 10% of tap water samples exceed the lead action level (AL) of 15 parts per billion (ppb), then water systems are required to take additional actions which can include:

- Taking further steps to optimize their corrosion control treatment (for water systems serving 50,000 people that have not fully optimized their corrosion control).
- Educating the public about lead in drinking water and actions consumers can take to reduce their exposure to lead.

Meeting/ Policy Briefing Template

- Replacing the portions of lead service lines under the water system's control if ongoing lead AL exceedance occurs following implementation of optimized corrosion control treatment (OCCT).

The City of Flint has conducted lead monitoring at customer taps since 1992 and has never exceeded the 15 ppb lead AL, either as a customer of the Detroit Water and Sewerage Department (DWSD), or while operating the Flint Water Treatment Plant (WTP) using the Flint River. Following this May 2014 change from DWSD to the Flint WTP using the Flint River, the City conducted two six month periods of expanded lead monitoring at customer taps to demonstrate their lime softening treatment process optimized corrosion control. This sampling concluded on June 30, 2015. While both periods continued to comply with the lead AL, lead levels did not demonstrate OCCT, and the City must now install additional treatment to meet this optimization requirement.

Under LCR requirements, the City could take up to 4 years to study, recommend, install, and implement treatment. However, the City has committed to an accelerated schedule in order to implement treatment as soon as possible. The Flint WTP is expected to start using a new water source, Lake Huron from the Karegnondi Water Authority, in late 2016. When this occurs the Flint WTP will continue to provide OCCT, and again conduct two six month periods of expanded monitoring in compliance with LCR requirements.

OCCT will help minimize, but cannot eliminate lead exposure from customer tap water. Removal of lead materials is the only means to eliminate such exposure. However, replacement is a shared responsibility between the City and its customers, as research has shown that partial lead service line replacement can increase rather than decrease lead exposure. At an estimated average cost of \$4,000 to replace each service line, the total cost to complete such work could easily exceed \$60 million and would likely take many years to complete. At this time any effort by the City of Flint to replace lead service lines would be voluntary since the City continues to comply with the LCR lead AL.

In addition, it is widely recognized that drinking water is not a primary source of lead exposure and poisoning. Recent health studies show no direct correlation between water sampling results and blood lead level concentrations measured in children.

EPA promulgated the LCR in 1991 and revised the regulation in 2000 and 2007. A long term revision to the LCR is currently underway. A national workgroup in August provided a report with recommendations for revisions to the LCR. It is worth noting that this report's recommendations did not include changes to existing LCR sample collection protocols, despite concerns by some organizations that these protocols do not capture representative exposure levels. EPA must now consider whether to promulgate any of these recommended changes into law.

From: Benzie, Richard (DEQ)
Sent: Thursday, October 01, 2015 6:57 PM
To: Bloemker, Jon (DEQ); Donaldson, Kristina (DEQ); Lachance, Amy (DEQ); Thomas, Chuck (DEQ); Philip, Kris (DEQ)
Subject: FW: [DEQ] Michigan leaders to announce action plan for Flint drinking water

FYI -- This is where we will be Friday afternoon.

From: Thelen, Mary Beth (DEQ)
Sent: Thursday, October 01, 2015 5:48 PM
To: Busch, Stephen (DEQ); Benzie, Richard (DEQ); Krisztian, George (DEQ); Sygo, Jim (DEQ); Pallone, Maggie (DEQ)
Cc: Devereaux, Tracy Jo (DEQ); Shekter Smith, Liane (DEQ); Shaler, Karen (DEQ); Feuerstein, Heather (DEQ); Thelen, Mary Beth (DEQ)
Subject: FW: [DEQ] Michigan leaders to announce action plan for Flint drinking water

For Friday.

From: Michigan Department of Environmental Quality [<mailto:MIDEQ@govsubscriptions.michigan.gov>]
Sent: Thursday, October 01, 2015 5:22 PM
To: Thelen, Mary Beth (DEQ)
Subject: [DEQ] Michigan leaders to announce action plan for Flint drinking water

Having trouble viewing this email? [View it as a Web page.](#)



Oct. 1, 2015

Michigan leaders to announce action plan for Flint drinking water

Friday, Oct. 2 at 1:30 p.m.

Local, state and federal leaders will host a press conference to announce a comprehensive action plan for addressing drinking water concerns in Flint. Participants will include:

- Harvey Hollins, Director of the Office of Urban Initiatives for Gov. Rick Snyder
- Dan Wyant, Director for the Michigan Department of Environmental Quality
- Nick Lyon, Director for the Michigan Department of Health and Human Services
- Dr. Eden Wells, Chief Medical Executive for the Michigan Department of Health and Human Services
- Dayne Walling, Mayor of Flint

- Other local, state and federal officials

Location:

Kettering University, Innovation Center

1300 Bluff St.

Flint, MI 48504

This is a media event open to credentialed news media only. Media who plan to attend this event should RSVP by noon Friday. Contact Rosemarie Olszewski at 517-284-6700 or olszewski@michigan.gov.

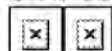


Questions?

Contact Us

Ph: 800-862-9278

STAY CONNECTED

**SUBSCRIBER SERVICES**

Manage Preferences | Unsubscribe All | Subscription Help

This email was sent to thelenr2@michigan.gov using GovDelivery, on behalf of: Michigan Department of Environmental Quality, Constitution Hall, 525 West Allegan Street, PO Box 30473, Lansing, MI 48909 • 800-862-9278