

Conference Call on Tuesday, March 23, 2012 from 11am-12pm

Present: Deb Loader ([REDACTED]), Howard Croft ([REDACTED]), Tom McKay, Duffy Johnson ([REDACTED]), Christina Kelly ([REDACTED])

Conference call objectives:

- (1) Establishing a collaboration/relationship between us (Purdue) and the City of Flint,
- (2) Defining our needs based on research, data, communication etc.,
- (3) Discussing what the City of Flint hopes to get out of this study, and
- (4) Discussing methods to accomplish these goals.

City of Flint 's expectations:

- Glad to help and participate-need to develop
- We need to see what the data is though
- Land bank, Christina Kelly, will burn data on a cd and share with us
 - Water infrastructure does not overlay
 - City is okay with sharing water infrastructure data
 - Much of the data is old
- City would like to look at lower populated areas of town and examine infrastructure cost saving mechanisms there.
 - How infrastructure areas are ran through this part of town of low population
- Once we (Purdue) received data we will:
 - Examine the data we have
 - Look at the formats we have
 - Develop preliminary, paper models
- Master plan process is underway-can potentially contribute to it

Data

- Christina will send over what the land bank has
- After we identify specific data needs, email Duffy
- Look at the Youth Violence Prevention Center (try contacting Susan Samuels) and see what data they have for the city
- Power is currently supplied by Consumer's energy, but may switch to city in near future

People involved/Roles:

Exercise some patience with them-low staffed and over tasked

- From the city: Duffy Johnson
- Christina as a Liaison from the land bank
 - Christina will send over data she has
 - Email Christina our address
- Jason and would like to involve and watch what is going on chamber of commerce
- Include Deb in chain
- Justin Spring at regional chamber, infrastructure and connected to industrial site

Jan 9 2013

Flint Research Conference Call
Wednesday, January 9
10:00 a.m. – 11:30 a.m. (EST)

Conference line: [REDACTED]
Conference code: 6623822088

DRAFT

Participants

Flint

Megan Hunter, Chief Planning Officer
Daugherty Johnson, Utilities Administrator
Kay Muhammad, Transportation and Development Superintendent
Bob Case, Waste Pollution Control

Academic Team

Duly Abraham, Purdue University
Jan Beecher, Michigan State University
Kasey Faust, Purdue University
Stephen Gasteyer, Michigan State University
Shawn McElmurry, Wayne State University

EPA

Chris Choi
Jenny Delumo
Tina Rongers
Jim Van der Kloot

I. 10:00 a.m. – Brief overview of the goals of the call

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

From: "Kasey M Faust" <faustk@utexas.edu>

To: dulcy@ecn.purdue.edu, "s mcelmurry" <s.mcelmurry@wayne.edu>

Sent: Wednesday, September 30, 2015 11:50:18 AM

Subject: FW: Access your published SAGE article (automated message: please do not reply)

YA!

From: sagepub-do-not-reply@highwire.stanford.edu [<mailto:sagepub-do-not-reply@highwire.stanford.edu>]

Sent: Tuesday, September 29, 2015 12:20 AM

To: Faust, Kasey M <faustk@utexas.edu>

Cc: sage.eprints@sagepub.com

Subject: Access your published SAGE article (automated message: please do not reply)

Dear Author,

Your article is now published via our OnlineFirst service on our award-winning platform, SAGE Journals. We are pleased to provide you with online access to the full text of your article at the link below:

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Note: please do not reply to this message. Replies to this message are routed to an unmonitored mailbox. If you have questions please direct them via our Feedback page at <http://online.sagepub.com/feedback> and note the article and journal titles.

On 10/1/15, 9:02 PM, "Shawn Patrick McElmurry" <s.mcelmurry@wayne.edu> wrote:

Wonderful! This is amazing timing. I hope you two have been keeping up on the disaster that has been unfolding in Flint with their drinking water supply.

I realize I am still on the hook for paper #2. Kasey, keep bugging me. I really am trying to get to it.

Shawn

Shawn P. McElmurry, Ph.D., P.E.
Associate Professor
Wayne State University
Dept. of Civil and Environmental Engineering
2158 Engineering Building
5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]
Fax: 313-577-3881
Skype: [REDACTED]
www.eng.wayne.edu/mcelmurry

From: Dulcy M Abraham <dulcy@purdue.edu>
Sent: Wednesday, September 30, 2015 12:31 PM
To: Kasey M Faust
Cc: dulcy@ecn.purdue.edu; Shawn Patrick McElmurry
Subject: Re: Access your published SAGE article (automated message: please do not reply)

Congratulations, Kasey!

Long journey (I believe the first draft of the paper was completed in February 2014, submitted for review in May 2014, first review obtained in August 2014.....

Great to see the article in print :)

Look forward to hearing about the progress in the the water infrastructure decommissioning paper and the stormwater paper.

best wishes,
- Dulcy

From: Faust, Kasey M
Sent: Thursday, October 1, 2015 9:29 PM
To: Shawn Patrick McElmurry <s.mcelmurry@wayne.edu>
Cc: dulcy@ecn.purdue.edu; Dulcy M Abraham <dulcy@purdue.edu>
Subject: Re: Access your published SAGE article (automated message: please do not reply)

That would be great! I have meetings all morning but will be in my office after 1CST (could be noon if that happens to be an opening for you, or before 830CST). Ill have my Skype (or phone) on in the afternoon to call whenever if you happen to have a chance/free few minutes!

Kasey M. Faust

Assistant Professor
The University of Texas at Austin
Email: faustk@utexas.edu
Office: 5.438
Phone: [REDACTED]

From: Shawn Patrick McElmurry <s.mcelmurry@wayne.edu>
Date: Thursday, October 1, 2015 at 9:23 PM
To: Kasey Faust <faustk@utexas.edu>
Cc: "dulcy@ecn.purdue.edu" <dulcy@ecn.purdue.edu>, Dulcy M Abraham <dulcy@purdue.edu>
Subject: Re: Access your published SAGE article (automated message: please do not reply)

We should talk tomorrow. I'll try calling you.

Shawn P. McElmurry
Associate Professor

From: Faust, Kasey M
Sent: Thursday, October 1, 2015 9:29 PM
To: Shawn Patrick McElmurry <s.mcelmurry@wayne.edu>
Cc: dulcy@ecn.purdue.edu; Dulcy M Abraham <dulcy@purdue.edu>
Subject: Re: Access your published SAGE article (automated message: please do not reply)

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Kasey M. Faust

Assistant Professor
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Email: faustk@utexas.edu
Office: 5.438
Phone: [REDACTED]

On Oct 1, 2015 10:11 PM, "Faust, Kasey M" <faustk@utexas.edu> wrote:
I talked to the GAO on Monday. They contacted me after Chris Choi directed them my way. (I gave them your email too Dr. McElmurry, I hope that's okay). They are looking into these exact issues- a good portion of the things they were looking at were in my dissertation and papers. They followed up with this question yesterday:

What can federal agencies do to better support communities challenged by population decline in addressing their water and wastewater infrastructure needs?

I was going to right a thoughtful response tomorrow or this weekend including:

- Funding opportunities for communities
- Support for research
- Examination of current policies focusing on growth and stability

Anything else anyone could add to that? Something about institutional knowledge transfer?

Thank you!

Best,

Kasey

Kasey M. Faust

Assistant Professor

The University of Texas at Austin

Email: faustk@utexas.edu

Office: 5.438

Phone: 512-475-8059

From: Emily Garner
[mailto:elipsco1@vt.edu]
Sent: Thursday, August 20,
2015 8:51 PM
To: Marc Edwards <edwardsm@vt.edu>
Subject: RE: FW: Legionaires in Flint Hospital...they said two deaths.

I was already planning to do 16s, LP and M. avium qPCR this weekend. Is that consistent with what you are thinking? On Aug 20, 2015 9:38 PM, "Marc Edwards" <edwardsm@vt.edu> wrote:

Curt and LeAnne both confirmed this hospital is on Flint water...LeAnne said it is a block from Melissa's house, which we sampled, and I think had no chlorine in the cold?

So can someone check on that point...Meliiss'a house is close to the hospital = no chlorine?

I think we should pull out the stops to look for Lp via pPCR.

I also think this puts the health departments weird behavior today in context....

Curt says he wants to do a story on this tomorrow. Probably too ambitious on his part, but I am just passing along what is going on as it develops.

Marc

From: Curt Guyette
[mailto:cguyette@aclumich.org]
Sent: Thursday, August 20, 2015
7:11 PM
To: Marc Edwards
<edwardsm@vt.edu>
Subject: Legionaires

A nurse from McLaren hospital said there have been six recent cases of Legionaires disease with two deaths. Hospital sent notice to staff saying patients can't drink water or shower.

Sent from my iPhone

From: Shawn Patrick McElmurry [<mailto:s.mcelmurry@wayne.edu>]
Sent: Friday, October 2, 2015 8:11 PM
To: Carol Jean Miller <ab1421@wayne.edu>; Matthew Wayne Seeger <matthew.seeger@wayne.edu>;
David K. Pitts <pitts@wayne.edu>; Faust, Kasey M <faustk@utexas.edu>
Subject: Who's to blame for Flint's water crisis? Virginia Tech researcher points the finger at MDEQ | Michigan Radio

<http://michiganradio.org/post/whos-blame-flints-water-crisis-virginia-tech-researcher-points-finger-mdeq#stream/0>

Shawn P. McElmurry
Associate Professor
Wayne State University

Wayne State University

From: Faust, Kasey M
Sent: Friday, October 2, 2015 3:20 PM
To: Simpkins, Cathie <csimpkins@austin.utexas.edu>
Subject: Registering for NIH

Hello Cathie-

My name is Kasey Faust (EID: kmf838) and I am a new professor here at UT. I was directed your way to get registered for NIH grants as there may be an emergency proposal in the next month that I may be working on. It was also suggested that I discuss with you about NSF and EPA grants and what needs to occur for those as well.

Thank you, in advance, for your help with this.

Best regards,

Kasey

Kasey M. Faust

Assitant Professor
The University of Texas at Austin
Email: faustk@utexas.edu
Office: 5.438
Phone: [REDACTED]

From: Faust, Kasey M <faustk@utexas.edu>
Sent: Friday, October 2, 2015 4:37 PM
To: djohnson@cityofflint.com
Cc: Shawn Patrick McElmurry
Subject: Articles arising from shrinking cities research with Flint and introductions

Hello Mr. Johnson-

Thank you for all the help you provided me during my dissertation research on water sector challenges

in shrinking cities. Attached are two of the articles from that research project on (1) public perceptions in shrinking cities, and (2) water and wastewater issues in shrinking cities . I really appreciate the time you took to meet with me over the years.

I would also like to introduce you to Shawn McElmurry, cc'ed on this email. He is a professor at Wayne State in Detroit that is a co-author on this work. His interests also align with challenges experienced by cities in Michigan, from the water quality lens.

Thank you, again. I hope to continue to work with Flint in the future.

Best regards,

Kasey

Kasey M. Faust

Assitant Professor
The University of Texas at Austin
Email: faustk@utexas.edu
Office: 5.438
Phone: [REDACTED]

From: Shawn Patrick McElmurry [<mailto:s.mcelmurry@wayne.edu>]
Sent: Wednesday, October 07, 2015 2:53 PM
To: Mona Hanna-Attisha
Subject: Flint Drinking Water Quality

Hello Mona, I am an Associate Professor at Wayne State University that specializes in water quality and contaminant exposure. I have done a fair amount of work on Pb exposure as well as drinking water contamination. I have also done some work in Flint (see website below if you're interested).

I am reaching out to you because my colleagues and I are preparing to evaluate drinking water in Flint and would like to possible coordinate or collaborate with you. Could you give me 10 minutes of your time to discuss? I realize you're likely overwhelmed with media and other requests so please feel free to suggest at time or just call my cell anytime ([REDACTED]).

I look forward to talking with you.

Sincerely,
Shawn McElmurry

Shawn P. McElmurry, Ph.D., P.E.
Associate Professor
Wayne State University
Dept. of Civil and Environmental Engineering
2158 Engineering Building
5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]
Fax: 313-577-3881
Skype: [REDACTED]
www.eng.wayne.edu/mcelmurry

From: Mona Hanna-Attisha [<mailto:MHanna1@hurleymc.com>]
Sent: Wednesday, October 07, 2015 4:26 PM
To: Marc Edwards (edwardsm@vt.edu)
Subject: FW: Flint Drinking Water Quality

FYI this guy might email you. He has worked on flint water in the past and has maps of the infrastructure, hydraulic stuff, etc. He has also submitted a quick NSF grant to do more stuff. Seems normal, wants to collaborate. I told him you were awesome.

From: Shawn Patrick McElmurry [<mailto:s.mcelmurry@wayne.edu>]
Sent: Wednesday, October 7, 2015 4:18 PM
To: Marc Edwards <edwardsm@vt.edu>
Cc: MHanna1@hurleymc.com
Subject: Flint Water

Hello Marc, I am an Associate Professor at Wayne State University that specializes in water quality and contaminant exposure. I have done a fair amount of work on Pb exposure and have worked in Flint in the past. As a result of this past work, I have a working hydraulic model of the Flint drinking water system. I spoke to Mona today and she suggested I connect with you. I realize you're likely swamped with everything that is happening but if you have a moment I would love to discuss. Any chance you have time tomorrow afternoon (1-3pm) or Friday morning (before 10am) to talk briefly?

Thanks,
Shawn

From: Marc Edwards [<mailto:edwardsm@vt.edu>]
Sent: Wednesday, October 7, 2015 8:33 PM
To: 'Shawn Patrick McElmurry' <s.mcelmurry@wayne.edu>
Cc: 'Mhanna1@hurleymc.com' <Mhanna1@hurleymc.com>
Subject: RE: Flint Water

Saturday is open, or sometime Monday. Swamped right now.
Pick a time on those days.

From: Shawn Patrick McElmurry
Sent: Wednesday, October 7, 2015 10:53 PM
To: Marc Edwards
Subject: Re: Call me at 540 320 8740

Will do. Thanks!

From: Marc Edwards <edwardsm@vt.edu>
Sent: Wednesday, October 7, 2015 10:49 PM
To: Shawn Patrick McElmurry
Subject: Call me at 540 320 8740
When: Monday, October 12, 2015 10:00 AM-10:30 AM.
Where:

From: Shawn Patrick McElmurry [<mailto:s.mcelmurry@wayne.edu>]

Sent: Thursday, October 8, 2015 6:28 AM

To: Faust, Kasey M <faustk@utexas.edu>

Subject: Re: Articles arising from shrinking cities research with Flint and introductions

Kasey, I took a look at the epanet model of Flint you used for your dissertation. It doesn't look like it was complete, at least the one you sent me. Do you have a complete model of the system? I'm trying to get a handle on what needs to be done.

From: Faust, Kasey M

Sent: Thursday, October 8, 2015 8:38 AM

To: Shawn Patrick McElmurry <s.mcelmurry@wayne.edu>

Subject: Re: Articles arising from shrinking cities research with Flint and introductions

Yes I do- I'll have to find it on my hard drive when I get home. It's going to be in GIS however. I then exported it to EPANET. Is GIS okay with you?

I'll have to look but the data was "rough" if I remember correctly. The basics are there though- diameter, length etc,. This data was from 2011.

Shawn 10-12-15

Flint work since '10. Has hydro model.

Wetig/Coff/Brid - (Mason) Mich State

DBF. Not leadwater, nothing microbial or toxic

Help with NIEHS. Pls. \$\$\$??

Sony state gov. snowed up. "Super/MVEA. Part 6"

Call Mona. \$\$\$ Wayne. Mich - Mich State.
Out of woodwork/feeding trough yep??

From: Shawn Patrick McElmurry [mailto:s.mcelmurry@wayne.edu]

Sent: Monday, October 12, 2015 9:41 AM

To: Marc Edwards <edwardsm@vt.edu>

Subject: Re: Call me at 540 320 8740

Hey Marc, good talking to you today. I would love to continue working together on some level moving forward. As I said, please let me know when your team plans to be going back into Flint and I coordinate accordingly.

If you could send me the following information, it would be extremely helpful.

1) Map showing sampling locations

2) IRB material

Also, attached is the project summary of the NIH Rapid Response that we submitted and were asked to follow up with a full proposal. Obviously, given the dynamic situation, this will be changing but it gives you an idea of what we are doing.

Thanks,
Shawn

Shawn P. McElmurry, Ph.D., P.E.
Associate Professor
Wayne State University
Dept. of Civil and Environmental Engineering
2158 Engineering Building
5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]
Fax: 313-577-3881
Skype: [REDACTED]
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RAPID RESPONSE TO CONTAMINANTS IN FLINT DRINKING WATER

Once a robust city due to a booming automotive industry, Flint MI is now suffering a serious economic decline; so severe that it is compromising public health. The City of Flint is home to 99,002 residents, down from a peak of ~197,000 in 1960, of which 41.5% live below poverty¹. In Spring of 2015, the economic challenges facing the city ushered in major changes to Flint's municipal water system – most notably changing the source of drinking water from Lake Huron to the Flint River. Unfortunately, the Flint River suffers from the chemical legacy of years of industrial activities. As a result, drinking water quality for Flint residents has plummeted and levels of disinfection-by-products (DBPs) in the water system have skyrocketed. In addition to exposure to carcinogenic DBPs, the director of Hurley Medical Center's pediatric residency program, Dr. Mona Hanna Attisha, reports that the percentage of children with elevated blood lead (Pb) levels has more than doubled in the areas with high water Pb levels since the changes to the water system were implemented.² A lead advisory was issued by the City of Flint on September 25, 2015. *A rapid assessment of children's exposure to the complex mixture of potentially toxic chemicals present in Flint's drinking water system is critically needed to protect public health. This unforeseen man-made disaster also represents a unique research opportunity as the conditions responsible for DBPs formation and Pb dissolution would be impossible to replicate in the laboratory.* Both of these characteristics require a rapid response to address this unforeseen man-made disaster.

With the goal of assessing childhood exposure to DBPs and Pb via drinking water, the project team will: (Aim 1) clearly define exposure within Flint's drinking water system; (Aim 2) quantify the concentration of DBPs and Pb that have resulted from the change in water treatment; (Aim 3) apply a high-throughput bioassay to evaluate toxicity of complex chemical mixtures; and (Aim 4) communicate results to water utility operators, government officials (city, state, and federal), public health agencies and residents using principles of risk communication through a variety of channels including social media. These aims will be achieved through a combination of intensive field sampling paired with hydraulic and geochemical models of the drinking water system as well as rapid toxicity screening.

Our team (part of the NSF funded Water@Wayne Group) is currently working together and able to respond with this rapid assessment based on our intimate understanding of the Flint regional water system and social infrastructure. Over the last 5 years the PI (McElmurry) has conducted research focused on how to best adapt Flint's existing water infrastructure to changes in population and industrial demand. As a result of this work, *the team already possesses a complete hydraulic model of Flint's drinking water system.* We will utilize this model to guide sample collection and, along with sample results, define the route of exposure. Co-PI Miller is an expert in hydraulic modeling and has experience with the drinking water distribution system that will be used during this study. She will oversee this portion of the project with Dr. McElmurry. PI McElmurry is an expert in environmental sampling and has conducted extensive research on evaluating water quality and Pb exposure^{3,4,5}. The team will employ standard methods to quantify known DBPs and Pb present in drinking water samples as well as use advanced analytical methods to *identify unknown compounds using gas chromatography-time of flight mass spectrometry (GC-TOF)*. Because DBPs are a complex mixture of potentially toxic compounds a rapid, high-throughput approach for evaluating this hazard is required. PI McElmurry and co-PI Pitts have developed a bioassay system capable of measuring behavioral and physiological responses in *Daphnia*⁶, a NIH model organism for biomedical research and US EPA toxicity assessment^{7,8}. Although bioassay systems using other model organisms could be developed for evaluating water quality, we have already demonstrated the *ability of this method to quantify low-level, sub-lethal impacts of pollutants and pollutant mixtures*⁹ and have recently increased the assay's throughput four-fold. We will apply this technique to samples collected throughout Flint's drinking water system. Finally, translation of the results of this work will be guided by co-PI Seeger, an expert in crisis and risk communication, crisis response and agency coordination and health communication. Seeger has worked extensively with the CDC on effective risk communication strategies.

¹ US Census Bureau. <http://quickfacts.census.gov/qfd/states/26/2629000.html>

² National Public Radio, <http://www.npr.org/2015/09/29/444497051/high-lead-levels-in-michigan-kids-after-city-switches-water-source>

³ Zahran et al. (2013) Environmental Science & Technology. DOI: 10.1021/es303854c

⁴ Voice, et al. (2006) Journal of Exposure Science and Environmental Epidemiology. DOI: 10.1038/sj.jes.7500489

⁵ Niagolova, et al. (2005) Environmental Pollution. DOI: 10.1016/j.envpol.2004.08.003

⁶ Zein, et al. (2014) Environmental Toxicology and Chemistry. DOI:10.1002/etc.2404

⁷ National Institute of Health (NIH), Model organisms for Biomedical Research, <http://www.nih.gov/science/models/daphnia/>

⁸ US Environmental Protection Agency (EPA), Whole Effluent Toxicity, <http://water.epa.gov/scitech/methods/cwa/wet/>

⁹ Zein, et al. (2015) Environmental Toxicology and Chemistry. DOI: 10.1002/etc.2908

Shawn P. McElmurry, Ph.D., P.E.
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5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]
Fax: 313-577-3881
Skype: [REDACTED]
www.eng.wayne.edu/mcelmurry

From: Faust, Kasey M <faustk@utexas.edu>

Sent: Thursday, October 8, 2015 8:13 PM

To: Shawn Patrick McElmurry

Subject: Flint Data

The data I have is in GIS format from 2011. I have attached a table that I made a few years ago that I just found with the descriptions of the data I do have.

Is this the kind of data you are looking for? Do you have a few minutes to chat tomorrow about which data would be useful (it is such a large amount that I am not sure if it can all be transferred through dropbox (or chat anytime, it just sounds like a short turn around is needed... I am even in the office now until 8pm CST when my football game starts!)).

Kasey M. Faust

Assitant Professor

The University of Texas at Austin

Email: faustk@utexas.edu Office: 5.438

Phone: [REDACTED]

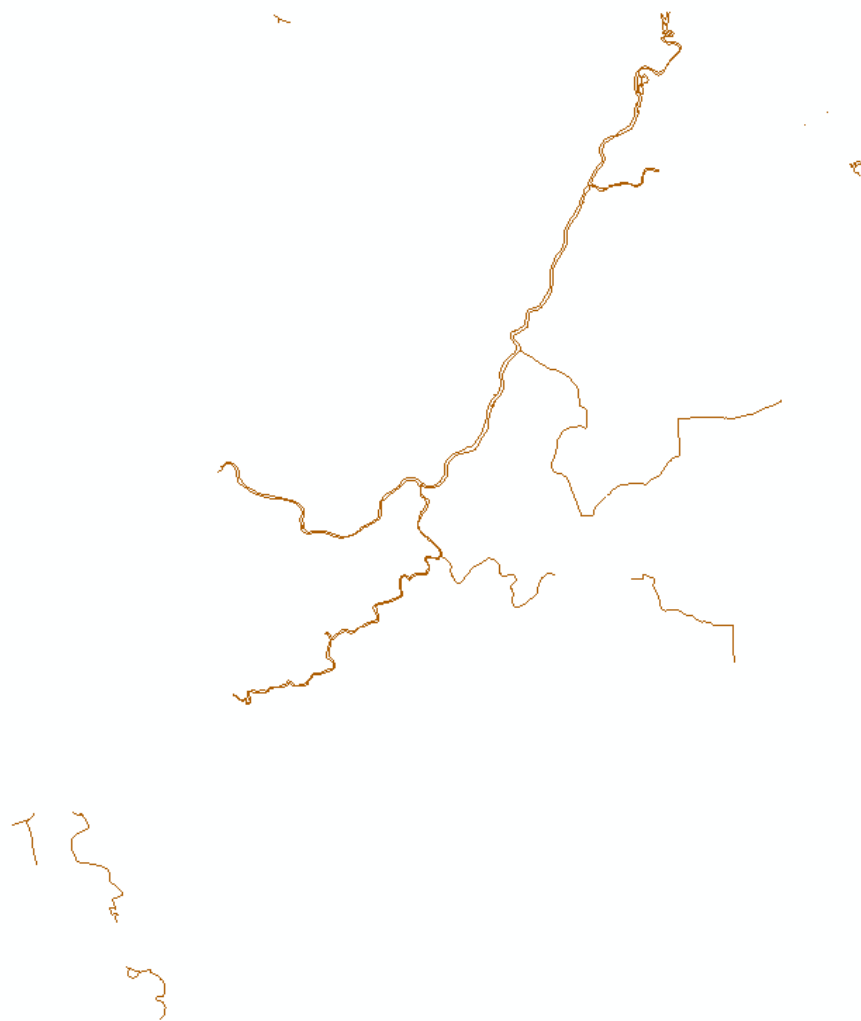
GIS data from the Land Bank

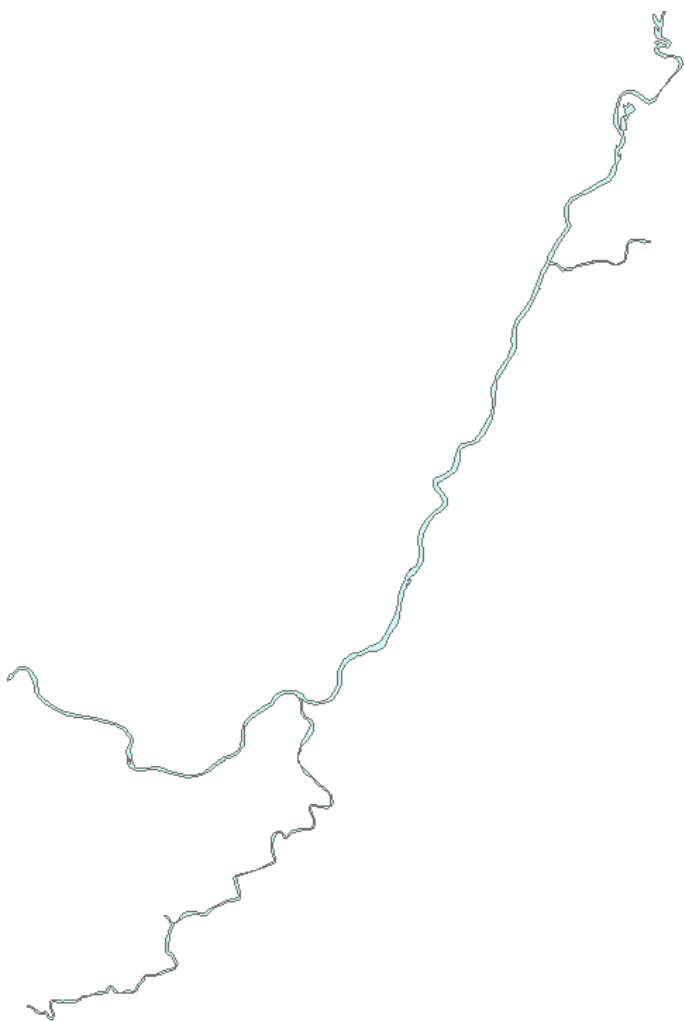
****Italicized data indicates that there is a field within the attribute table, but no data present**

Red= Do not know what information the data is providing

Notes regarding information provided in attribute field

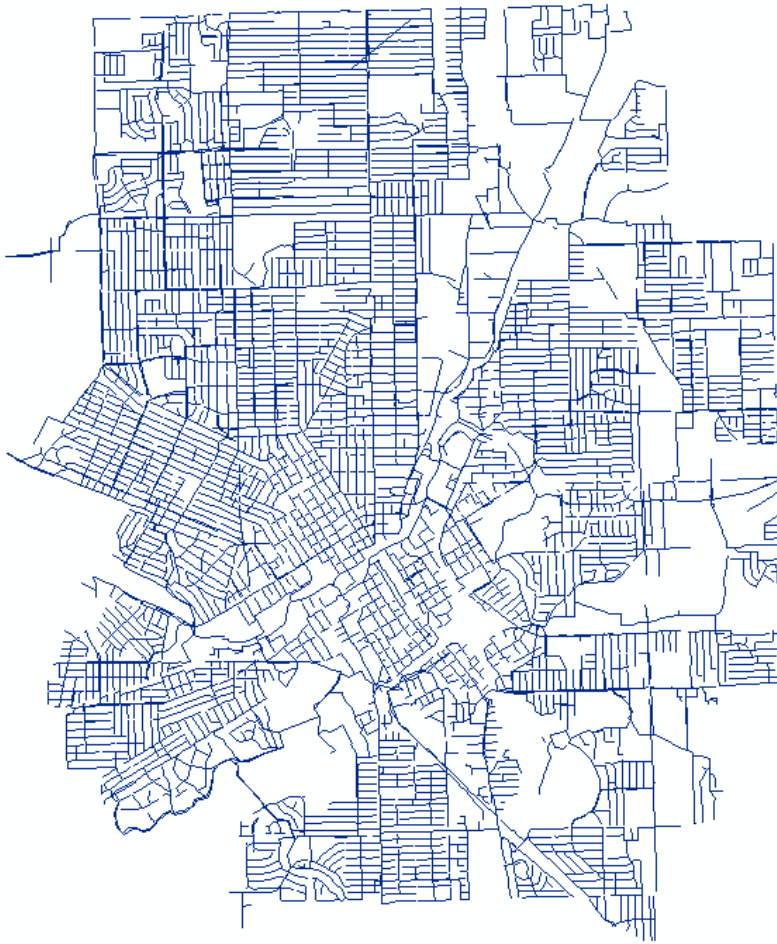
MOST CRITICAL INFRASTRUCTURE/ HYDRAULIC MODEL DATA AND ASSOCIATED MAPS REDACTED FROM THIS PACKET

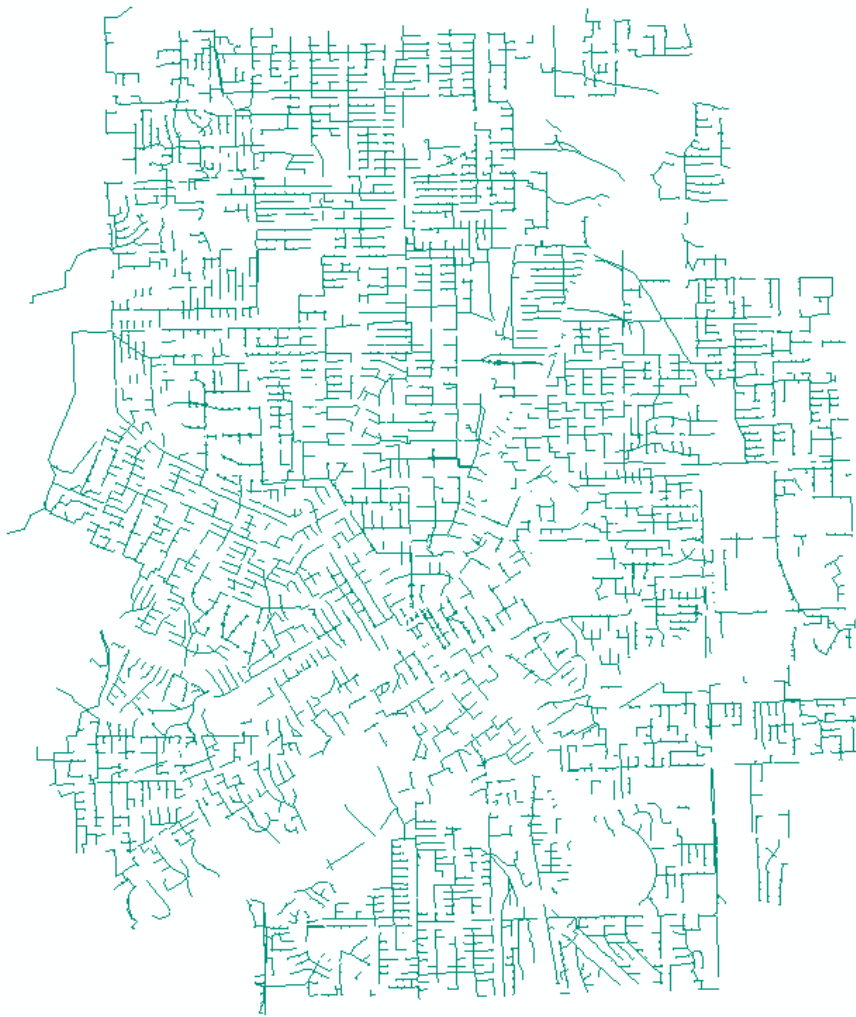




Flint's Rivers: Raster (Rivers_ Flint)
(Rivers_poly_Flint)

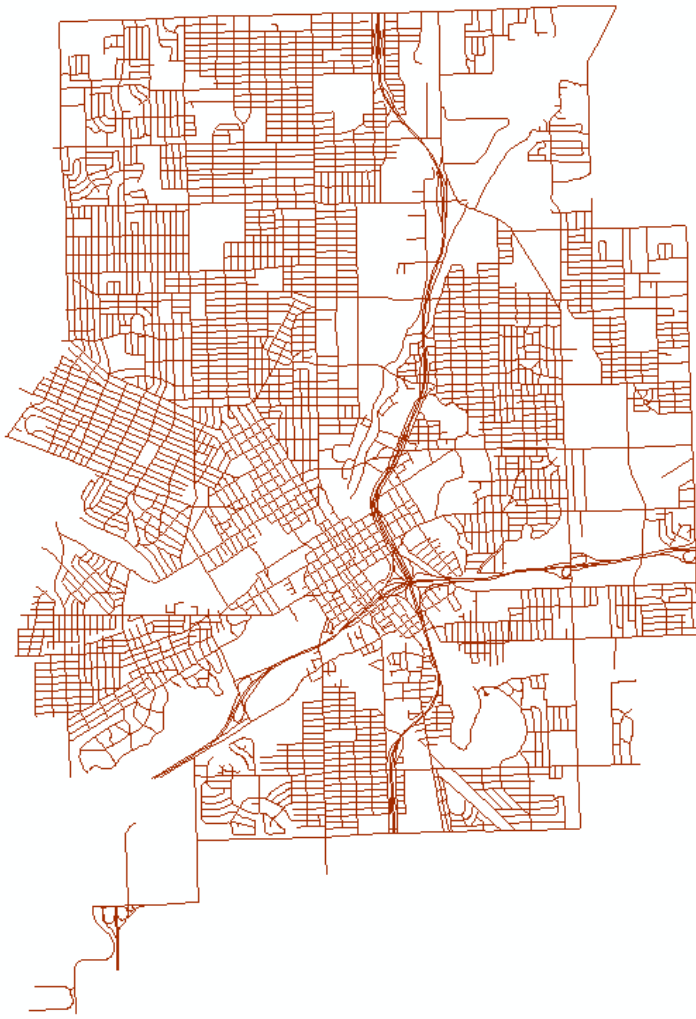
Flint's Rivers: Polygon

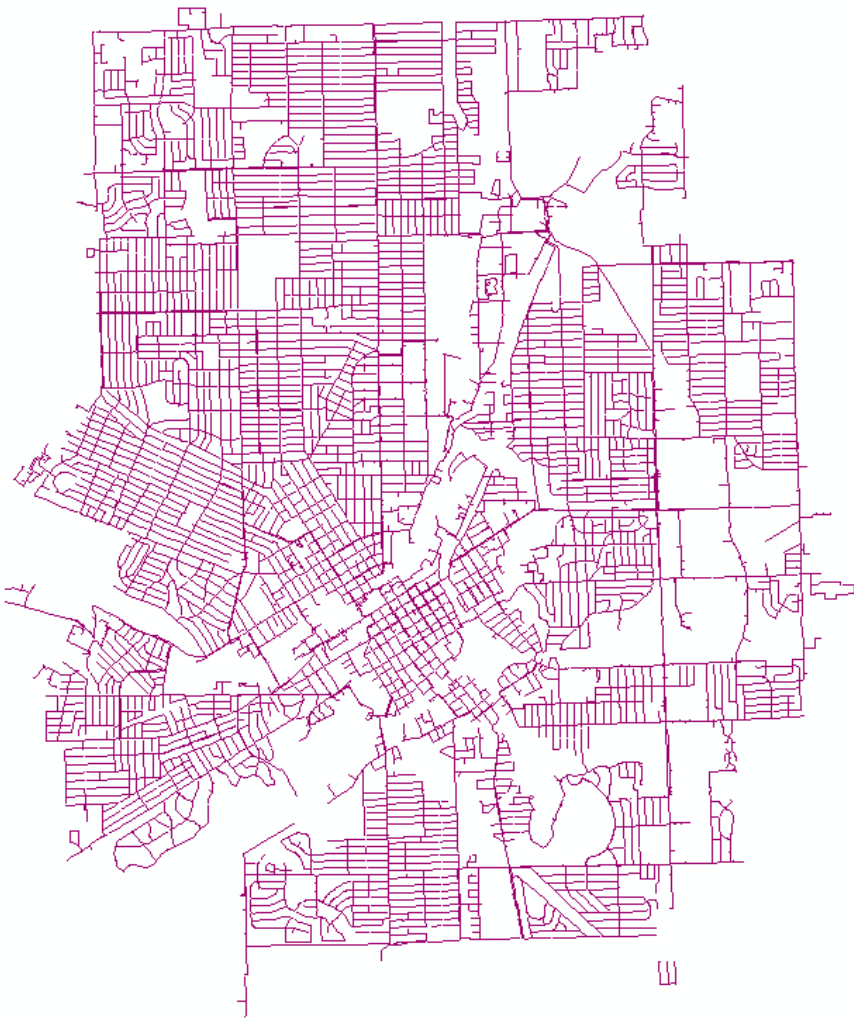




Sanitary Sewer System (Flint_-_Sanitary_Sewers)
(Flint_-_Storm_Sewers)

Storm Sewer System





Flint's Streets (Second file) (Flint_-_Streets)

Water Lines (Flint_-_Water_Lines)

From: Shawn Patrick McElmurry [mailto:s.mcelmurry@wayne.edu]
Sent: Thursday, October 8, 2015 8:26 PM
To: Faust, Kasey M <faustk@utexas.edu>
Subject: Re: Flint Data

Hey Kasey, yes, we should talk. Sorry I didn't make it before the start of your game. Watching it now too. I'll try to connect with you tomorrow.

Shawn

Shawn P. McElmurry, Ph.D., P.E.
Associate Professor
Wayne State University
Dept. of Civil and Environmental Engineering
2158 Engineering Building
5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]
Fax: 313-577-3881

From: Marc Edwards [mailto:edwardsm@vt.edu]
Sent: Monday, October 12, 2015 9:45 AM
To: 's.mcelmurry@wayne.edu' <s.mcelmurry@wayne.edu>
Subject: FW: IRB #15-752: Revision(s) to Protocol Requested

Here you go. NSF Rapid grant (we've already done everything) and the protocol, and the rejection note from our IRB telling us it is exempt and is not human subjects.
Some schools allow you to piggy back on other schools IRB, if you are collaborating and co-PIs, etc..
Marc

-----Original Message-----
From: VT IRB Administrator [mailto:irbadmin@vt.edu]
Sent: Wednesday, July 29, 2015 11:18 AM
To: Marc A Edwards; Amy Jill Pruden-Bagchi; Joseph O Falkinham III
Subject: IRB #15-752: Revision(s) to Protocol Requested

Dear Investigators:

Thank you for your New Application for the research protocol titled "Consumer sampling of homes for lead and opportunistic pathogens in water."

The IRB requires a revision/response to the following items:

1. According to the research protocol, the data being collected are water samples. Therefore, this is not human subjects research (even if you will be talking to "humans" as part of requesting the samples).

Please cancel this application and let OSP know that this is not human subjects research.

If there will be a survey or interview that accompanies the water samples about how people feel about the water issue, then there will be human subjects research. However, if it is only water samples and contact information, it is not considered human subjects research.

Respond to the above items and incorporate the changes into your online protocol, as appropriate using the IRB Protocol Management System link below:

<[REDACTED]>

Note: the use of IRB Protocol Management to submit your response is required (in other words, please do not send the revised documents directly to the IRB office).

Once the IRB receives a response to the above and approves the project application, you will receive an approval letter via email.

If you have any questions about this email, please contact the IRB Administrator at irbadmin@vt.edu.

IRB office

Interested in keeping up-to-date with the Virginia Tech IRB? Click the link below to learn more:

<http://www.irb.vt.edu/pages/events.htm>

This is an automated message from the Virginia Tech IRB Protocol Management website. Do not reply to this email. If you have any questions or concerns, please contact the IRB office at irb@vt.edu.

From: Shawn Patrick McElmurry [mailto:s.mcelmurry@wayne.edu]
Sent: Wednesday, October 14, 2015 9:59 AM
To: Mona Hanna-Attisha <MHanna1@hurleymc.com>; Marc Edwards <edwardsm@vt.edu>
Subject: Sampling

Mona and Marc, I just wanted to give you both an update regarding my progress here at WSU. I received word my IRB exemption has been approved and I should have the documents necessary to begin collected samples this weekend. I am still waiting on internal bridge funding but believe that should be made available by the end of the week too.

So, it is likely I will be sending out 2 or 3 teams of students to collect samples starting Sunday and into next week. While our focus will be on trying to characterize the water quality in the distribution system, we do have approval to collect water samples from people homes. If you can think of anyway we can best interface with your efforts please let me know.

Marc, if you have test kits you would like me to drop off at houses or split samples, I'm happy to do so.

Mona, if you have residents that want/need their water sampled, I'm happy to help.

This sampling effort is really consuming my time right now but the NIEH proposal is moving forward and I will follow up with both of you before the end of the week with more details.

Shawn

Ps. As always, feel free to call me on my cell [REDACTED] to discuss.

Shawn P. McElmurry, Ph.D., P.E. Associate
Professor
Wayne State University
Dept. of Civil and Environmental Engineering 2158
Engineering Building
5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]
Fax: 313-577-3881
Skype: [REDACTED]
www.eng.wayne.edu/mcelmurry

From: Shawn Patrick McElmurry [<mailto:s.mcelmurry@wayne.edu>]
Sent: Wednesday, October 14, 2015 10:53 PM
To: Marc Edwards
Subject: NIEHS Rapid Response Proposal

Hey Marc, when we talked last I mentioned the possibility of having you join in the NIEHS proposal I am working on. My vision for this proposal is that we will monitor water quality at strategic locations throughout the city over the year following the change back to DWSD water to evaluate how long it will take for Pb and residual chlorine to return to acceptable levels. Along with strategic locations within the system, I would like to also monitor drinking water at a few residents (maybe 20) that have reported high levels of Pb. My hope is Mona will help us recruit these residents. I think we are covered on the water chemistry but am happy to discuss.

One aspect of the proposal that we are missing is biological monitoring. I know this is something that you are interested in and working on. I currently have about \$13k (+IDC) that we could put toward this effort. I know it isn't a lot but would you be interested in joining our team and leading this part of the effort?

If so, we should discuss. We'll need to figure out hypotheses, approximately how many samples you believe we could measure, what you would be measuring, etc.

I'm swamped tomorrow but you're always welcome to give me a call on my cell [REDACTED] to discuss.

Thanks,
Shawn

Shawn P. McElmurry, Ph.D., P.E.
Associate Professor
Wayne State University
Dept. of Civil and Environmental Engineering
2158 Engineering Building
5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]
Fax: 313-577-3881
Skype: [REDACTED]
www.eng.wayne.edu/mcelmurry

From: Marc Edwards <edwardsm@vt.edu>
Sent: Wednesday, October 14, 2015 11:11 PM
To: Shawn Patrick McElmurry
Subject: RE: NIEHS Rapid Response Proposal

Hi Shawn,

Bacteria and OPPPs samples are super expensive.

For that price you could get BART tests and do some of those for microbial corrosion. LaMotte has some that are pretty good.

Our school won't touch grants less than \$25K.

Our team left today to do our microbial sampling for Legionella. We'll figure out how to pay for it later.

Best Regards,

Marc

From: Shawn Patrick McElmurry [<mailto:s.mcelmurry@wayne.edu>]
Sent: Thursday, October 15, 2015 7:11 AM
To: Marc Edwards
Subject: Re: NIEHS Rapid Response Proposal

I understand. What would you need? Not sure that I could squeeze it out of other parts of the project but would \$25k be enough to do anything interesting?

If we can't make it work, would you be willing to share the data you have already collected and provide a letter of collaboration? I'm happy to share authorship, etc.

I hear the switch over is eminent. I still believe sampling this weekend will be useful since it will take days for the system to flush out. Agree?

From: Marc Edwards <edwardsm@vt.edu>
Sent: Thursday, October 15, 2015 9:14 AM
To: Shawn Patrick McElmurry

Subject: RE: NIEHS Rapid Response Proposal

Hi Shawn,

Thank you, but I hope you understand that \$25K would not be worthwhile for me.

I support open science so I would certainly share data and authorship with you, and if you wrote a letter outlining that, I would be happy to sign it to help on your grant.

My team of a research scientist and two PhD students left yesterday morning (after I told them to forget it...) with a van load of bottles/samples to again try to do pathogen testing.

Their plan is to just do the best they can today and tomorrow. They have to return within 48 hours of the first sample for the biological samples, which given a 13 hour return trip means they only have 35 hours to sample. I guess they could Fed Ex the samples.

I also think that they probably jacked the pH up after I showed how it was plummeting.

Best Regards,

Marc

From: Shawn Patrick McElmurry [mailto:s.mcelmurry@wayne.edu]

Sent: Thursday, October 15, 2015 8:23 AM

To: Marc Edwards <edwardsm@vt.edu>

Subject: Re: NIEHS Rapid Response Proposal

I completely understand. This is the part of science/academia that I despise.

If I can be of assistance to your team please let me know.

Shawn P. McElmurry, Ph.D., P.E.
Associate Professor
Wayne State University
Dept. of Civil and Environmental Engineering
2158 Engineering Building
5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]
Fax: 313-577-3881
Skype: [REDACTED]
www.eng.wayne.edu/mcelmurry

From: Shawn Patrick McElmurry [mailto:s.mcelmurry@wayne.edu]

Sent: Friday, October 16, 2015 6:18 AM

To: djohnson@cityofflint.com

Cc: Faust, Kasey M <faustk@utexas.edu>

Subject: Re: Articles arising from shrinking cities research with Flint and introductions

Hello Mr. Johnson, I'll be in town collecting water samples Sunday and was hoping I could get sample of untreated and treated drinking water. My sample collection is in coordination with Dr. Mona Hanna-Attisha

from Hurley Medical Center; however, my focus is on understanding how the water quality in Flint has experienced since switching over from DWSD has impacted the infrastructure. Is there someone I can contact to acquire a few samples?

I'm sure you're absolutely inundated with requests so I apologize for adding to your burden. I would greatly appreciate your assistance.

Sincerely,
Shawn McElmurry

Shawn P. McElmurry, Ph.D., P.E. Associate Professor
Wayne State University
Dept. of Civil and Environmental Engineering 2158 Engineering Building
5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]
Fax: 313-577-3881
Skype: [REDACTED] www.eng.wayne.edu/mcelmurry

From: Shawn Patrick McElmurry [<mailto:s.mcelmurry@wayne.edu>]
Sent: Friday, October 16, 2015 7:04 AM
To: Mona Hanna-Attisha; Marc Edwards
Subject: Water Utility Contact

Marc and Mona, do either of you have contact info for Howard Croft? Or some other person that can help me obtain a water sample from the treatment plant on Sunday?

Looks like my contact may no longer be working for Flint.

Thanks,
Shawn

Shawn P. McElmurry, Ph.D., P.E.
Associate Professor
Wayne State University
Dept. of Civil and Environmental Engineering
2158 Engineering Building
5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]
Fax: 313-577-3881
Skype: [REDACTED]

On Fri, Oct 16, 2015 at 7:31 AM, Marc Edwards <edwardsm@vt.edu> wrote:

Hi Howard,
Shawn would like to coordinate collection of a Flint treatment plant sample. Please help him. He wants to research the change in water sources.
Marc

From: Howard Croft
[mailto:hcroft@cityofflint.com] **Sent:** Friday,
October 16, 2015 7:04 AM
To: Marc Edwards <edwardsm@vt.edu>
Cc: Shawn Patrick McElmurry <s.mcelmurry@wayne.edu>; Mona Hanna-Attisha
<MHanna1@hurleymc.com> **Subject:** Re: Water Utility Contact

Shawn,

This is Howard Croft, please feel free to contact me directly on my cell phone [REDACTED] or at my email address here.

I will attempt to assist you with your research, If you would like to come to the Treatment Plant we can quickly arrange that, simply let me know what will work best for you. It is very possible that the switch to Detroit will occur today, we are only waiting for a final contract signing which could happen this morning.

Marc,

I am looking into Flint changing test methods as you suggest, I may need some support in clearly defining the process. Mike Glasgow is out today but on Monday I will plan to reach you with him for a brief discussion.

Howard Croft
Public Works Director
City of Flint
1101 S. Saginaw Street
Flint, MI 48502
PH# [REDACTED] Ext.2043

hcroft@cityofflint.commcelmurry

On Oct 16, 2015 7:33 AM, Marc Edwards <edwardsm@vt.edu> wrote:

You can also obtain a reasonable proxy at the McDonalds that is literally across the street from the plant on the Flint River.

Marc

From: Shawn Patrick McElmurry [<mailto:s.mcelmurry@wayne.edu>]
Sent: Friday, October 16, 2015 6:48 AM
To: Marc Edwards <edwardsm@vt.edu>
Cc: 'Mona Hanna-Attisha' <MHanna1@hurleymc.com>
Subject: RE: Water Utility Contact

Thanks Marc, we'll be sure to collect a sample there.

Shawn P. McElmurry
Associate Professor
Wayne State University

Note: Yellow emphasis added.

From: Faust, Kasey M

Sent: Friday, October 16, 2015 11:31 AM

To: s.mcelmurry@wayne.edu

Subject: Follow-up about paper, data, and potential visit

Hi Dr. McElmurry-

Lots of follow-up in this email. I am going over my list and trying to make sure that I don't drop the ball on anything.

- **Water Infrastructure Paper-** I am going to start working through the top half of comments you made. Do you have any estimated time frame on when you might be able to look at the second half? (Its one of those papers I am ready to have shipped off for review once its done and not look at for awhile)
- **Data-** Did you still want to talk about the flint system data? I saw you are going out there to get some water samples and wasn't sure if infrastructure was necessarily a part of the scope of how this is developing for you. Let me know if you want to set up a quick call later this afternoon or early evening, or in the next few days.
- Will you be in town the week of thanksgiving? I am trying to coordinate a time to swing by while I am in the area, if you are around that M, T, or W.

I hope this semester is productive with a bit of relaxation!

Best,

Kasey

Kasey M. Faust

Assitant Professor

The University of Texas at Austin

Email: faustk@utexas.edu

Office: 5.438

Phone: [REDACTED]

From: Shawn Patrick McElmurry [<mailto:s.mcelmurry@wayne.edu>]

Sent: Friday, October 23, 2015 12:47 PM

To: Marc Edwards

Cc: Donnie Johnson Sackey; Matthew Wayne Seeger

Subject: Social Media Presences

Hey Marc, we were able to collect ~50 samples from around Flint on Sunday just after the water change over. Operators at the water treatment plant said there was still a mixture of DWSD and Flint water entering the distribution system but I believe some of the locations we sampled from did have DWSD water present. We found it interesting that we were unable to detect any free chlorine in about 50% of our samples. I 'm sure this is not news to you. I will follow up with other results as they become available and plan to get you a draft letter of collaboration for the NIEHS proposal I am pursing by the end of the day.

As part of the proposal we aim to communicate results to water utility operators, government officials , public health agencies and residents using principles of risk communication through a variety of channels including social media. Since you already have a social media presence (Facebook & Twitter) I am wondering how best

to coordinate. I would like to try and build, with you, on what you have done but realize you may be limited in capabilities moving forward and may welcome some collaboration. Would you be interested in:

a) working with our communication faculty (Matt Seeger and Donnie Sackey, cc'd) to possibly modify how the two sites function in relation to the study? We realize both are operating as static agents directing traffic to <http://flintwaterstudy.org/>. The flintwaterstudy site should continue to serve as a source of information but we are interested in facilitating periodic asynchronous discussions with participants about their FB posts, etc. If we go this route, one of us at WSU (likely led by Donnie) would help co-manage the site. VT would of course continue to facilitate the information posted but we could offer a deeper level of engagement.

b) or, we could make another FB site that serves some of these other functions and links to your site. If we go this route, we would like to occasionally bring in someone from your team to talk about the data you have collected and communicate through social media with members of the public.

I hope you don't think of this as me stepping on your toes. I think you guys have done a marvelous job and I only want to build from this momentum.

Thanks,

Shawn

Ps. If you would like to discuss, please feel free to give me a call (cell: [REDACTED]) anytime.

Shawn P. McElmurry, Ph.D., P.E.
Associate Professor
Wayne State University
Dept. of Civil and Environmental Engineering
2158 Engineering Building
5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]
Fax: 313-577-3881
Skype: [REDACTED]
www.eng.wayne.edu/mcelmurry

From: Marc Edwards <edwardsm@vt.edu>
Sent: Friday, October 23, 2015 12:52 PM
To: Shawn Patrick McElmurry
Cc: Donnie Johnson Sackey; Matthew Wayne Seeger
Subject: RE: Social Media Presences

I think you are basically asking to use our existing site to post our results and to interact with residents?

I don't really see a problem with that. Obviously, I won't have time/budget to coordinate or do much work on new materials.

We'd need to vet it, but our rules are pretty reasonable.

Are you asking for something else?

Marc

From: Shawn Patrick McElmurry [<mailto:s.mcelmurry@wayne.edu>]
Sent: Friday, October 23, 2015 4:33 PM
To: Marc Edwards
Cc: Donnie Johnson Sackey; Matthew Wayne Seeger
Subject: Re: Social Media Presences

Hey Marc, I think that is basically what Donnie and Matt have in mind. I just got out of a meeting with Donnie and he said he would follow up with some clarification.

Attached is a draft letter of collaboration. Obviously, feel free to edit. Otherwise, if you could return a signed letter on your letter head by the middle of next week that would be excellent.

Thanks for your assistance!

Shawn

Shawn P. McElmurry, Ph.D., P.E.
Associate Professor
Wayne State University
Dept. of Civil and Environmental Engineering
2158 Engineering Building
5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]

From: Marc Edwards [<mailto:edwardsm@vt.edu>]
Sent: Friday, October 23, 2015 4:11 PM
To: 'Shawn Patrick McElmurry' <s.mcelmurry@wayne.edu>
Cc: 'Donnie Johnson Sackey' <donnie.sackey@wayne.edu>; 'Matthew Wayne Seeger' <matthew.seeger@wayne.edu>
Subject: RE: Social Media Presences

How is this. Marc

10/23/2015

NIEHS Review Committee:

This letter acknowledges my collaboration with Dr. Shawn McElmurry from Wayne State University (WSU) as part of his proposal entitled *Rapid Response to Contaminants in Flint Drinking Water*.

Over the past year I have been working in Flint as a volunteer, and more recently as part of a National Science Foundation (NSF) funded project titled *Synergistic Impacts of Corrosive Water and Interrupted Corrosion Control on Chemical/Microbiological Water Quality: Flint, MI*. The aims of this project were to (1) compare levels of chlorine, iron, fecal indicator bacteria, opportunistic premise plumbing pathogens (OPPPs), and corrosion-inducing bacteria present in water mains of a distribution system with uncontrolled corrosion (Flint) versus surrounding cities/counties still using non-corrosive water, (2) profile OPPPs occurrence in hot and cold potable water systems at these same locations, and (3) determine if there is evidence of elevated lead in Flint homes, and, if so, forensically determine the links to iron corrosion.

Through this work we have collected over 370 samples from different locations throughout the drinking water distribution system between August 2015 to mid-October 2015, while the Flint drinking water treatment plant was supplying water from the Flint River. At each of these locations we determined concentrations of lead, iron, copper and other water quality parameters (e.g., sulfate, chloride, phosphate). In select samples we determined total trihalomethanes, pH, chlorine, temperature, corrosion-causing bacteria and OPPPs. .

My collaboration with Dr. McElmurry and his team will consist of an open sharing of data and information collected concerning the water quality and infrastructure in Flint. The data I have already collected concerning drinking water quality will be used to help develop hydraulic and geochemical models that can assist in understanding levels of lead, disinfection by products (DBPs) and other potential contaminants. Additionally, we will assist Drs. Matt Seeger and Donnie Sackey to communicate study results using principals of risk communication through a variety of channels including social media.

If you have any questions regarding my involvement, please do not hesitate to contact me at your earliest convincing.

Regards,



Marc Edwards
Charles Lunsford Professor of Civil Engineering

From: Howard Croft [mailto:hcroft@cityofflint.com] **Sent:** Wednesday, October 28, 2015 2:28 PM

To: Amy Hovey <Amy.Hovey@mail.house.gov>; Andy Leavitt <aleavitt@senatedems.org>; Anthony Chubb <achubb@cityofflint.com>; Brent Wright <bwright@cityofflint.com>; Darren Lytle <lytle.darren@epa.gov>; Dayne Walling <dwalling@cityofflint.com>; donna. cole <donna.cole@genesys.org>; dykema <dykema@mich.gov>; Eden Wells (DHHS) <wellse3@michigan.gov>; edwardsm <edwardsm@vt.edu>; George Krisztian (DEQ) <krisztian@michigan.gov>; Gerald (Jed) Natzke <gdn2@aol.com>; Howard Croft <hcroft@cityofflint.com>; James Henry <jhenry@gchd.us>; Jamie Gaskin <jgaskin@unitedwaygenesee.org>; Jason Lorenz <jlorenz@cityofflint.com>; jmikewright <jmikewright@yahoo.com>; JoAnne Herman <jherman@genesys.org>; John O'Brien <jfobrien@gcdcwws.com>; Kevin J. Keane <KEVIN.KEANE@cmsenergy.com>; Kirk Smith <ksmith@flint.org>; Larry Koehler <larry.koehler@mcc.edu>; Laura Sullivan <dr.laura2@gmail.com>; Lawrence Reynolds <LawrenceR@mottchc.org>; Lawrence Reynolds <reynolds@mottchc.org>; Michael Glasgow <mglasgow@cityofflint.com>; Schock, Michael <schock.michael@epa.gov>; Michael Wright <Wright.Michael@epa.gov>; Mike Lane <mjlane@umflint.edu>; Mike Prysby (DEQ) <prysbym@michigan.gov>; MVALACAK@gchd.us; Natasha Henderson <nhenderson@cityofflint.com>; Norb Birchmeier <nbirchm1@hurleymc.com>; Pete Levine <plevine@gcms.org>; Robert Bincsik <rbincsik@cityofflint.com>; rosejo@msu.edu; Russell Hudson <Russell.Hudson@mclaren.org>; Samir Matta <SFMatta@lan-inc.com>; Sean Kammer <skammer@cityofflint.com>; Stephen Busch (DEQ) <BUSCHS@michigan.gov>; thompsons2@michigan.gov; Warren Green <jwgreen@lan-inc.com>; Shawn McElmurry <s.mcelmurry@wayne.edu> **Subject:** TAC Team Update 10_28_15

Team,

The next Technical Advisory Meeting is set for **Wednesday November 18th 2:00 pm** at Flint City Hall. The previous date being considered was Veterans Day and we encountered several conflicts. There will be a call in number available and I will send an agenda prior to the meeting.

There is a significant amount of new information included in this weekly report and I expect that trend to continue as we move forward. Several of the items mentioned such as the specific dosing level of phosphate will become targets of discussion at this next meeting in order to thoroughly evaluate the pros and cons and to help with public information.

The testing map continues to have information added as it becomes available and on the weekly report we have inserted a data table that will be updated regularly as well. Please let me know if anyone is interested in additional data being reported.

Please be prepared to give input on the potential of a December meeting which would have to be December 9th or December 16th.

Thank you,

--

Howard Croft

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

[From attached report to this email](#)

II. New Items this week

Technical Advisory Committee Addition

I have added Professor Shawn McElmurry, An Associate Professor at Wayne State University in the Dept. of Civil and Environmental Engineering to the TAC team. Professor McElmurry contacted me a few weeks ago and visited the Water Plant and took several samples from the Flint River and the distribution system.

Professor McElmurry's team has submitted a proposal to the National Institute of Environmental Health Sciences (NIEHS) for funding to evaluate how changes in the drinking water system are impacting water quality. Their project has the following goals:

- Define exposure within Flint's drinking water system using a combined sampling and modeling approach.
- Quantify how the concentrations of DBPs and Pb change over time within the water distribution system.
- Apply a high-throughput bioassay to evaluate toxicity of complex chemical mixtures (focused on DBPs).
- Communicate results to water utility operators, government officials (city, state, and federal), public health agencies and residents using principles of risk communication through a variety of channels including social media.

Given their goals and their proximity to Flint, I believe that adding Professor McElmurry to the Technical Advisory Team will bring added evaluation and data to our cause.

Civil and environmental engineering professor conducting water tests in Flint homes

December 8, 2015

FLINT, MI -- Researchers from Wayne State University and volunteers from the United Way hit Flint's street Saturday to perform tests on residents' drinking water.

Dr. Shawn McElmurry is an Associate Professor at Wayne State University's Department of Civil and Environmental Engineering. This is the second major water sampling trip McElmurry has made to Flint since October.

McElmurry said his goal was to test more than 40 houses Saturday, Dec. 5, but he wasn't sure if researchers and volunteers would get to them all. He said he first started working with the city about four years ago to address infrastructure issues.

"I actually started working in Flint four years ago trying to address some of the infrastructure issues that occur when you have a shrinking population and deindustrialization when industry moves out but you still have that infrastructure for that large population and that big industry." McElmurry said. "That presents challenges how to manage it, not just financially, but from a water quality perspective as well as a delivery of service."

Read full MLive article

here: http://www.mlive.com/news/flint/index.ssf/2015/12/water_tests_conducted_at_flint.html

[Return to news](#)

<http://engineering.wayne.edu/news.php?id=18238&date=2015-12>



Urban Water Research - Wayne State University ▶ **Flint Water Study Updates**

December 8, 2015 · 🌐

👍 Like Page



Thank you [Virginia Tech](#) for your diligence and great work aiding with the Flint's water! Scientists from Wayne State University's Urban Watershed Research Environmental Group (UWERG) are joining the Flint community's efforts to assess the risks to residents and trace contaminants moving and interacting within the water systems. We are looking forward to joining and supporting your progress. Our initial investigation is made possible by the Wayne State University Office of the Vice President for Research and The Healthy Urban Waters Initiative funded by the Erb Family Foundation.

👍 Like

💬 Comment

➦ Share

💬 Message



👍 Julia Lead The Way Lead Poisoning Awareness Cause and Virginia Tech

On Jan 3, 2016 3:14 PM, Mona <monahannaattisha@gmail.com> wrote:

To clarify, you sent bob Scott info two years ago about seasonality of lead in water??

Mona Hanna-Attisha

On Jan 3, 2016, at 6:02 PM, Shawn Patrick McElmurry <s.mcelmurry@wayne.edu> wrote:

Over a year ago. Let me try to dig out that email when I return to work tomorrow (likely in archive folder).

Great to see you today and thanks for the thoughtful gift. And thank you for also making the introduction to your friend. Good luck at tomorrow's meeting.

Shawn P. McElmurry
Associate Professor
Wayne State University



From: Mona <monahannaattisha@gmail.com>

Sent: Sunday, January 3, 2016 6:16 PM

To: Shawn Patrick McElmurry

Subject: Re: Seasonality

Yes if you can send me the exact email with bob Scott that would be super. We assumed they were ignorant re water seasonality, but if they were not, then that is more frightening.

Elin is awesome.

Mona Hanna-Attisha

From: Shawn Patrick McElmurry <s.mcelmurry@wayne.edu>

Date: January 6, 2016 at 10:40:59 AM EST

To: Mona <monahannaattisha@gmail.com>

Subject: Re: Seasonality

Unfortunately, I can't find the original email that I sent to Robert Scott describing the seasonality of blood lead levels. However, as part of my data sharing agreement with the MDCH I always (1) provide them a review of the manuscript before submission (they don't get editorial review, I usually provide this on the same day I submit the manuscript for journal review...just a courteous review so they can see what is coming down the pipe) and (2) acknowledge their data sharing. The manuscript describing seasonality in blood lead that we are discussing was originally submitted to ES&T for review on Sept. 21, 2012. Therefore, he would have received a draft copy for review on or before this date. The manuscript was finally published on Feb. 21, 2013 (attached). I am fairly confident I would have sent him a copy of the final publication to share as well.

Additionally, we have another manuscript that is in the second round of reviews (in an environmental economics journal...review takes forever!) that is related to the first. It is attached for your review as well (please do not share). The reason I bring this up is because I exchanged emails with Robert Scott regarding this manuscript in early

Feb. 2014. Once again, per our data sharing agreement, I shared with him a copy for review before we submitted. While this manuscript doesn't address the seasonality as directly as the first, it certainly brings it up again. Anyone at MDCH that read these manuscripts should have been completely aware of seasonal variability in BLLs.

Just between you and me, I have always found Robert Scott to be very professional and helpful. However, I never got the impression that he was in anyway an epidemiologist. I believe he is just a data management person. My exchanges with him are full of *requests from above* and other constraints being forced down on him from administrators and lawyers. I can tell you his exchanges with me in the last year (I requested blood lead data again last year) have changed considerably (see excerpt of email below and notice that their Legal Office now reviews data requests).

I hope this helps.

Shawn

From: Mona [mailto:monahannaattisha@gmail.com]
Sent: Wednesday, January 06, 2016 10:47 AM
To: Marc Edwards
Subject: Fwd: Seasonality

Keep in confidence. Not a smoking gun. Sounds like bob is swamped.

Mona Hanna-Attisha

Begin forwarded message:

On Wed, Jan 6, 2016 at 11:00 AM, Marc Edwards <edwardsm@vt.edu> wrote:

Looks like seasonality of blood lead, not seasonality of blood lead from water. What am I missing? Maybe I read the e-mail wrong because I thought he said seasonality of water...which would have surprised me. Marc

From: Mona Hanna-Attisha [mailto:monahannaattisha@gmail.com]
Sent: Wednesday, January 6, 2016 12:21 PM
To: Marc Edwards <edwardsm@vt.edu>
Subject: Re: Seasonality

you are right - i just looked at the attached articles. i thought i was pretty clear in regards to lead IN WATER seasonality. Oh well.

From: Nancy Love [<mailto:nglove@umich.edu>]
Sent: Thursday, January 21, 2016 1:23 PM
To: Marc Edwards
Subject: Hope you are doing ok

Hi Marc: No need to respond. Just reaching out to say that I hope you are doing ok with all that is going on with the Flint water crisis. I have listened to your various interviews and just saw the Time magazine cover and was recalling what you went through with the Washington DC crisis. I know you are putting your all into helping to both amplify and resolve this crisis and there are so many people who want to thank you for that (myself included), but I also recall how the Washington DC incident affected your health significantly. I hope you are able to take care of yourself to avoid a repeat. Just wanted you to know I'm thinking about you, and if there is anything I can do to help then just let me know what it is.

I've been following this since last summer and used it as part of my ethics module in ENG 100 this past fall. I am in Europe this week and it is a global story. I've not tried to insert myself since there are others, such as Lut and yourself who can offer more technical expertise to the problem, but once the point-of-use filters were handed out last week, they are nearly the same as those that Terri Olson and I have been studying the last few years. We want to share our knowledge about microbial water quality issues that can crop up so the filters are managed correctly and don't cause a secondary problem. But, the priority is getting out the lead. Along those lines, you should be hearing soon from the Michigan team, which Lut is coordinating.

Take care,

Nancy

Nancy G. Love, Ph.D., P.E., BCEE

Professor, Department of Civil and Environmental Engineering

Fellow: Water Environment Federation; International Water Association; Association of Environmental Engineering and Science Professors

University of Michigan
183 EWRE Building
1351 Beal Avenue
Ann Arbor, MI 48109

Voice: [REDACTED]

nglove@umich.edu

<http://envbiotech.engin.umich.edu/>

Twitter: @Love_H2O

From: Marc Edwards [<mailto:edwardsm@vt.edu>]
Sent: Thursday, January 21, 2016 1:59 PM
To: 'Nancy Love'
Subject: RE: Hope you are doing ok

Great! Thanks...yes, it is crazy. If you want to write a blurb on the filters we can post it, but it would need to be very centered, because people are worried about everything right now....if it is normal problem it is almost like we do not want to discuss, because they are even afraid to bath or use the filters to remove the lead. The system has

completely failed them.

Best Regards,

Marc

From: Cupal, Suzanne [<mailto:scupal@gchd.us>]
Sent: Friday, October 16, 2015 11:16 AM
To: Marc Edwards <edwardsm@vt.edu>
Subject: RE: FYI.

Thank you!

Suzanne Cupal, M.P.H.
Public Health Supervisor
Genesee County Health Department
630 S. Saginaw Street
Suite 4
Flint, MI 48502
(810) 768-7970
scupal@gchd.us

From: Marc Edwards [<mailto:edwardsm@vt.edu>]
Sent: Friday, October 16, 2015 12:13 PM
To: Cupal, Suzanne
Subject: FYI.

From: Marc Edwards [<mailto:edwardsm@vt.edu>]
Sent: Friday, October 16, 2015 12:10 PM
To: 'Stephen Carmody'
Subject: RE: a question

My team is up there sampling today for opportunistic pathogens on our NSF project.
It is an important emerging problem. There are no laws on it, so it is research.
Our initial sampling did not find a worse problem in Flint than in other cities, but we are looking harder, before the switch.

We have three articles about this on our website and we are watching the problem closely. See below.
<http://flintwaterstudy.org/?s=opportunistic>

From: Stephen Carmody [<mailto:sgcarmod@umich.edu>]
Sent: Friday, October 16, 2015 11:39 AM
To: Marc Edwards
Subject: a question

Marc,

I'm at a news conference with Drs. Zigmond Kozicki and Stephanie Baiyasi.

They are calling for studies of "opportunistic pathogens" in Flint's water.

Are you aware of their research? Should I take their research seriously?

Steve Carmody
Michigan Radio

From: Cupal, Suzanne [<mailto:scupal@gchd.us>]
Sent: Monday, October 19, 2015 2:57 PM
To: Marc Edwards
Subject: Heterotropic Bacteria Testing

Marc-

Do you come back to do testing of heterotrophic bacteria? If so, what did you test for and can you share your results?

Thank you.

Suzanne

Suzanne Cupal, M.P.H.
Public Health Supervisor
Genesee County Health Department
630 S. Saginaw Street
Suite 4
Flint, MI 48502
[REDACTED]

From: Marc Edwards [<mailto:edwardsm@vt.edu>]
Sent: Monday, October 19, 2015 3:34 PM
To: 'Cupal, Suzanne' <scupal@gchd.us>
Subject: RE: Heterotropic Bacteria Testing

From: Marc Edwards [<mailto:edwardsm@vt.edu>]
Sent: Monday, October 19, 2015 3:00 PM
To: Cupal, Suzanne
Subject: RE: Heterotropic Bacteria Testing

Hi Suzanne,

Will do so as soon as we get the data. It will take a few weeks, because we do qPCR, and there are so many samples.
Plus, whatever we find will not apply to the new water!

Best Regards,
Marc

From: Cupal, Suzanne [<mailto:scupal@gchd.us>]
Sent: Monday, October 19, 2015 3:43 PM
To: Marc Edwards
Subject: RE: Heterotropic Bacteria Testing

What did you specifically test for?

Suzanne Cupal, M.P.H.
Public Health Supervisor
Genesee County Health Department
630 S. Saginaw Street
Suite 4
Flint, MI 48502
[REDACTED]
scupal@gchd.us

From: Marc Edwards [<mailto:edwardsm@vt.edu>]
Sent: Monday, October 19, 2015 3:34 PM
To: 'Cupal, Suzanne' <scupal@gchd.us>
Subject: RE: Heterotropic Bacteria Testing

Legionella and other opportunistic pathogens. Mycobacteria, etc. There are no laws on these.


From: Cupal, Suzanne [<mailto:scupal@gchd.us>]
Sent: Monday, November 30, 2015 1:27 PM
To: Marc Edwards
Cc: Henry, James
Subject: Testing

Marc-

Do you have any updates on your test results for lead and heterotrophic bacteria? We are aware that the water department will be adding phosphate soon. Do you plan on doing any testing related to phosphate levels. Do you have concerns regarding the addition of phosphates to the water?

Thank you.

Suzanne

Suzanne Cupal, M.P.H.
Public Health Supervisor
Genesee County Health Department
630 S. Saginaw Street
Suite 4
Flint, MI 48502

scupal@gchd.us

From: [Marc Edwards](#)
Sent: /12/11PM 1:44 2015
To: '[Cupal, Suzanne](#)'
Cc: '[Henry, James](#)'
Subject: RE: Testing

Hi Suzanne,

We are still working through our recent sampling data. We did find **very high** levels of Legionella Pneumophilla in two large buildings we sampled just before the switch.

We will be further testing to see if it is serogroup 1, etc.. This will take awhile.

We will be submitting a proposal for a small amount of money to continue our testing, and trying to track what happens after the switch.

Is there any documents you can give me on the high incidence of Legionnaire's disease in Flint and Genesee after the switch in water sources?

I know there are some. If so, we'd like to reference that when we write up our data next year. We'd be happy to present our results to you as well, if you are interested.

Marc

From: Cupal, Suzanne [<mailto:scupal@gchd.us>]
Sent: Friday, December 11, 2015 3:58 PM
To: Marc Edwards
Cc: 'Henry, James'
Subject: RE: Testing

Marc-

Thank you for sharing the information. I am responding on my phone as I have been at a meeting today.

Can you share the buildings or the type (nursing home, rehabilitation facility)? The results are concerning.

I cannot forward information today, but, will share when I return. We would like to speak to you. Please share your availability for a meeting. We greatly appreciate your sharing data. We need independent sources of information.

Thank you.

Suzanne

Sent from my Windows Phone

From: Marc Edwards [<mailto:edwardsm@vt.edu>]
Sent: Friday, December 11, 2015 6:49 PM
To: 'Cupal, Suzanne' <scupal@gchd.us>
Cc: 'Henry, James' <jhenry@gchd.us>
Subject: RE: Testing

I can do it semi-confidentially. We are not going to publish the names of the buildings. I can tell you the names on the phone. The results are really high.

We don't know it is serogroup 1 yet, but the high Lp is concerning.

From: Cupal, Suzanne [<mailto:scupal@gchd.us>]
Sent: Thursday, December 17, 2015 8:47 AM
To: Marc Edwards
Cc: Valacak, Mark; Henry, James
Subject: Legionella Information

For our conversation this morning.

Suzanne

Suzanne Cupal, M.P.H.
Public Health Supervisor
Genesee County Health Department
630 S. Saginaw Street
Suite 4
Flint, MI 48502
(810) 768-7970
scupal@gchd.us

Legionella Summary May 2015-November 2015

Hospital	Number of cases diagnosed	Previously admitted?*		Case Residence on City of Flint Water**
		To any hospital	To case hospital	
A	5	0	0	3
B	27	19 ⁺	18	6
C	8	0	0	0
Out of county	2	1 ⁺⁺	0	1
Total	42	20	18	10

*Hospitalization within the two weeks prior to Legionellosis illness onset

**Based on Legionella Questionnaire answer and patients address

⁺One case DX'd at Hospital B spent significant time at Hospital A during the 2 weeks prior, but was not admitted

⁺⁺ This case was previously admitted to Hospital B

On Thu, Dec 17, 2015 at 9:42 AM, Marc Edwards <edwardsm@vt.edu> wrote:

Hi everyone,

Just got off the phone with Suzane Cupal. Interesting stuff.

They feel there is a problem but they cannot work on it without permission of the state, specifically, the state has to give them permission to work with CDC.

Things did get bad enough to work with CDC, and they called in Janet Stout and are also working with Darren Lytle at EPA. At the hospital where there was problem, there is a sense that Janet and her team got it under control.

At least the numbers are much better.

There are three hospitals in Flint (yeah...so identifying two gives plausible deniability) and it is a challenge to work with them because they are in competition.

They are forming a team to look at this starting in January, and they want us to be a part of that team.

McLaren has been suffering a lot of "slow moving water" and "main breaks" this year.

In any case, it was a very positive conversation. She can me these documents and they want our data to the extent we can share.

Another thing she said was that they started questioning some thing MDEQ (or the state) was doing, and MDEQ apparently does this audit thing which scares the crap out of them because they go through all the forms and make sure they are doing everything perfect, and whenever they question the state...the state threatens to audit them to shut them up. Anyway, things are not good between them and the state.

Marc

From: Marc Edwards [<mailto:edwardsm@vt.edu>]
Sent: Thursday, December 17, 2015 11:56 AM
To: 'Otto Schwake' <ottos@vt.edu>; 'Amy Pruden' <apruden@vt.edu>
Subject: RE: Can you send to the OPPPs group

My gut says the outbreak was McLaren, and we were seeing the benefits of Janet's intervention. Everyone knows McLaren has done a lot of intervention, and that the McLaren numbers are better than they were.

They said that the state is 100% the only way to get to talk to CDC, and that they do not always have permission to talk.

Marc

From: Otto Schwake [<mailto:ottos@vt.edu>]
Sent: Thursday, December 17, 2015 12:51 PM
To: Marc Edwards; Amy Pruden
Subject: Re: Can you send to the OPPPs group

A lot of good info here. It's great to know they looked into this and actually called it an outbreak, though this is sort of a misnomer without a confirmed common community source of transmission. The document actually referred to Flint municipal water as a source, but by that definition, a lot of cities in the country are having regular outbreaks.

Interesting that they stated the outbreak was over, but there was a similar incidence this year and during the investigation period they looked into. It looks like a disproportionate amount of people this year may have gotten sick from single hospital (Hurley?). We also know for sure now that Hurley had confirmed and reported cases of legionellosis this year. The % of patients with Flint water at residences went down this year; not sure what that means.

I found a copy of their complete questionnaire; they collected specific job info and asked if the patients used water instead of washer fluid. Ask them if they could share these data with us. They have address data, but I don't believe they checked for race or poverty, this could be really interesting to look into in the future or with a follow up survey. Also, we have the capability to type our environmental strains to an extent, which may be useful if they get clinical isolates later on.

I'm not surprised that the state is wanting to hold the county health department back, but I know individual groups can call in the CDC. I thought that local agencies had jurisdiction over state departments when it came to public health issues. There might be a work around where the city, water utility, or individual hospitals could call in CDC help instead of the county health department.

I'm assuming McLaren was the hospital that had remediation performed. They actually had better flow rates than Hurley on average (but they didn't use aerators). Their contamination numbers were better than Hurley but I'm not sure I would say they problem was exactly taken care of. They still had 43/15% positivity for *Legionella*/Lp. We also had hits there >1000 GU/mL for Lp and a *Legionella* average of 1500 GU/mL.

It exciting that they want to work with us. I feel adding public health data will immensely boost the relevance of our study. If we could then work in utility data like breaks, this could turn into a precedent setting study if we pick out nice results. Let me know if there is anything you want me to do specifically in the meantime, like preparing data to share.

Otto

From: Marc Edwards [<mailto:edwardsm@vt.edu>]
Sent: Friday, December 18, 2015 2:42 PM
To: 'Cupal, Suzanne'
Subject: RE: Here you go....hope this helps.

This is the data at the worse of the two hospitals...both were bad. Marc

[The entire original message is not included.]

From: [Marc Edwards](#)
Sent: /1/10AM 1:02 2016
To: '[Cupal, Suzanne](#)'
Subject: RE: Here you go....hope this helps.

Hi Suzanne,

We are pursuing a \$3 million dollar 5 year grant from NSF, to study Legionella in building water systems amongst other issue.

Our focus is on two types of systems including 1) green cutting edge new buildings, and 2) older systems with corroded water mains.

The vast majority of the money is dedicated to training graduate students at Virginia Tech, but some of the money could be used to conduct experiments and graduate research in areas such as Flint.

We'd love to continue working on the Lp problem in Flint, but the problem is going to be finding the money to do so. This would give us a possible funding source.

Do you think GCHD would be able to write us a letter of support, and possibly put a person on our external advisory committee if we win this proposal? I could write a draft of the letter.

The external advisory committee would only meet once a year or so for a half day, and worst case someone could participate by phone.

It is very competitive but we think we have a good team, and we'd like to keep working with Flint on this important problem in the months and years ahead.

Marc

From: [Marc Edwards](#)
Sent: /1/10AM 9:16 2016
To: '[Cupal, Suzanne](#)'
Subject: RE: Here you go....hope this helps.

Will draft a letter today.

I could probably participate in a webinar, if you needed us to do so. We have done 3 Webinars on ASHRAE...mostly thinking of unintended consequences. Can't remember if I sent you the attached paper. We have two research projects with National Science Foundation and Sloan on the topic as well.

Also, I do think this possible outbreak of Legionnaires disease, qualifies as an important reason to invest in upgrading Flint's water main system.

It was bad before but it is worse now. Our working hypothesis on the NSF Rapid Grant (see attached), was that the old pipe infrastructure combined with a lack of corrosion control, would trigger a Legionella outbreak in some

buildings with the Flint River Water.

I am not sure about you, but I have been responding to a lot of phone calls from County and State agencies, asking what the cost elements are to fix this problem. Some have focused on the old pipe infrastructure, but the lead issue has been the appropriate emphasis within that.

If people were aware it was not just the lead, but it was also the waterborne disease associated with OPPPs, it could draw attention to fixing the broken water main infrastructure as a concern and cost element.

We have not discussed the Legionella problem, and would never do so without working alongside you, Mark and others at GCHD. I do think it will come out eventually anyway and maybe now is a good time.

Also, we would be willing to write a peer reviewed paper with you, if you are interested, combining our literature review and lab experiments and field data, with your epi work.

Maybe bounce some of these ideas off Mark and others.

Best Regards,

Marc

From: Cupal, Suzanne [<mailto:scupal@gchd.us>]

Sent: Sunday, January 10, 2016 10:43 AM

To: Marc Edwards

Subject: RE: Here you go....hope this helps.

Just a reminder, we are working with Darren on a data review process. Will be in touch soon about this...

We need to complete this process related to Legionella before deciding next steps.

Sent from my Windows Phone

From: [Marc Edwards](#)

Sent: /1/10AM 11:03 2016

To: '[Cupal, Suzanne](#)'

Subject: RE: Here you go....hope this helps.

Darren is a great guy. A problem is that EPA is too slow, and someone needs to get in front of this.

Whatever a normal person thinks is a reasonable response time, EPA is 100X slower than that.

Just look at Hedman vetting and editing Miguel's memo from June (see reminder below).

Next thing you know, months and months went by, and you can't possibly explain to people why it took so long to acknowledge a problem.

Then it blows up in your face. Probably Darren would be the first to admit that.

I could also talk to Eden about this. I think folks have to get very proactive on this.

If it would help at all, I could fly in and stand up with you, or whoever.

Will work on the letter.

Best Regards,

Marc

From: [Marc Edwards](#)

Sent: /1/10AM 11:12 2016

To: '[Cupal, Suzanne](#)'

Subject: RE: Here you go....hope this helps.

I have a brief window Monday 9-9:15 if that works, and a slot 2:30 pm.

Marc

From: Cupal, Suzanne [<mailto:scupal@gchd.us>]

Sent: Sunday, January 10, 2016 11:08 AM

To: Marc Edwards

Subject: RE: Here you go....hope this helps.

We are trying to get ahead of this so we can be proactive rather than reactive. We are working on this.

Definitely need a conversation to discuss. There are many concerns to share.

Sent from my Windows Phone

Sent from my Windows Phone

From: Marc Edwards

[mailto:edwardsm@vt.edu] **Sent:** Monday,
January 11, 2016 5:56 PM

To: Mona (monahannaattisha@gmail.com) <monahannaattisha@gmail.com>

Subject: FYI. Told her that the Legionella release has to get out there ASAP. She seems to be on it. Two reporters called me today.

Why the press release was finished in mid-December and is still not out, is a long story. Did you know the county is doing FOIA's of MDEQ and the City?
And Steve Busch is blowing them

off? Marc

From: Wells, Eden (DHHS) [<mailto:WellsE3@michigan.gov>]

Sent: Monday, January 11, 2016 6:43 PM

To: Marc Edwards

Subject: Re: Call me at 540 320 8720 on cell? Want to pass along concerns about something.

I have followed up with some of the things mentioned by GCHD to you that you related to me today--

GCHD had drafted a press release which they shared with the EPA for edits, which was bounced to CDC and then back to MDHHS communicable Disease Division ((CDC works with locals but always loops in state before doing so). The communicable disease epidemiologists, who helped write the Legionella report with GCHD , added minor edits to the press release and added more (or cleaned?) graphs and clearer language to the report, and provided those both back to the GCHD health officer in December. I believe I was CC'd on that email so should have that-

I remember the hoopla CDC had been concerned that they were being asked for input for a press release and that state had not been pulled in, CDC will always bounce back to the state in that regard first. In any state. However, the press release was good to go a month ago.

I have confirmed that the GCHD epid has been on a number of calls, particularly over last month or so; conference calls with MDHHS EPID , EPA and CDC on this matter- and I have been advised that she has led several of these.

Will be in this tomorrow first thing to learn more.

Eden

Sent from my iPhone

From: Marc Edwards [<mailto:edwardsm@vt.edu>]

Sent: Monday, January 11, 2016 6:50 PM

To: 'Wells, Eden (DHHS)'

Subject: RE: Call me at 540 320 8720 on cell? Want to pass along concerns about something.

Hi Eden,

Wow. Great job. Seriously.

Let me know if I can help you in any way.

The main thing is that I think it very important, that this come from someone in government. Anyone. Hopefully the press release, can be released really soon.

Best

Regards,

Marc

From: Eisner, Jennifer (DHHS) [<mailto:EisnerJ@michigan.gov>]
Sent: Wednesday, January 13, 2016 2:49 PM
To: mhanna1@hurleymc.com;
edwardsm@vt.edu **Cc:** Wells, Eden (DHHS)
Subject: Legionellosis

Dr. Hanna-Attisha and Dr. Edwards:

Dr. Wells wants to ensure you have the attached press release that will be issued shortly regarding an increase of Legionnaire's disease in Genesee County in the summers of 2014 and 2015. Also attached are the executive summary from June and the analysis.

Thank you,

Jennifer

Eisner
Public Information Officer
Michigan Department of Health and Human
Services Office: 517-241-2112 or
EisnerJ@michigan.gov
Cell: [REDACTED]

Shawn

Harvey Hollins?

Prospective LP Control. Best science.

Monitor system recovery.

Address 100% cure about disease.

Lead Shawn → Cl₂, hydromed, 8 years Flint

Only Michigan Inc. State → not me.

Very sorry. @

OK

From: Faust, Kasey M <faustk@utexas.edu>

Sent: Wednesday, January 20, 2016 3:09 PM

To: Shawn Patrick McElmurry

Subject: FW: Flint

I assume you knew about this course series, but just in case, FYI!

From: Shawn Patrick McElmurry [<mailto:s.mcelmurry@wayne.edu>]
Sent: Wednesday, January 20, 2016 2:34 PM
To: Faust, Kasey M <faustk@utexas.edu>
Subject: Re: Flint

We need to talk. Marc Edwards has already received a NSF Rapid for Flint. Can you call me to night?

Shawn P. McElmurry, Ph.D., P.E.
Associate Professor
Wayne State University
Dept. of Civil and Environmental Engineering
2158 Engineering Building
5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]
Fax: 313-577-3881
Skype: [REDACTED]
www.eng.wayne.edu/mcelmurry

From: Faust, Kasey M
Sent: Wednesday, January 20, 2016 5:15 PM
To: Shawn Patrick McElmurry <s.mcelmurry@wayne.edu>
Subject: RE: Flint

Good talking to you! And good luck juggling the negotiations etc over the next few weeks!

Quick question-

I want to start getting involved on the infrastructure side in the context of operations, maintenance, and how we rebuild the network (assuming it is needed which I think it is clear that we do need it!) Do you have any suggestions how to get integrated with everything up in Flint in the near future? The WEF is definitely one avenue but I want to start looking at this a little more immediate than a Fall proposal.

Thanks, Shawn!

Best,

Kasey

Shawn P. McElmurry, Ph.D., P.E.
Associate Professor
Wayne State University
Dept. of Civil and Environmental Engineering
2158 Engineering Building
5050 Anthony Wayne Dr.
Detroit, Michigan 48202
Phone: [REDACTED]
Fax: 313-577-3881
Skype: [REDACTED]

From: Cooper, William J. [mailto:WJCOOPER@nsf.gov]
Sent: Sunday, January 24, 2016 8:32 AM
To: Marc Edwards; Junhong Chen; Wen Zhang; Nancy Love
Cc: Bates, Sarah; Gonzalez, Cecile J
Subject: A question

Folks,

Given that Obama has now allocated \$80 M we (I) have to be strategic in what I fund. The \$80 M is mostly for infrastructure – please read the article below from “the Detroit News.”

Summary

Marc has been funded and will get an additional supplement.

Junhong has a prototype sensor for determining Pb in water and by next year hopes to role out a system for in-home use.

Wen want to look at Pb and biofilms.

Nancy wants to study point of use systems.

I want to fund you all – but is that a wise decision in light of my proposal pressure?

I’m at work and would be happy to talk to any and all and have a conference line that we could use.

Please reply to all.

Bill

Virginia Tech expert helped expose Flint water crisis

[Kim Kozlowski, The Detroit News](#) 10:24 p.m. EST January 23, 2016



Marc Edwards, Virginia Tech professor of engineering, right, and PHD research assistant Siddhartha Roy.(Photo:

AP)

Four months after Flint switched its water source from Lake Huron to the Flint River, Lee-Anne Walters' family began to experience strange health issues.

It started in August 2014 when Walters' four children and her husband got rashes on their skin and started losing hair. Then, her 15-year-old son became so nauseated, dizzy and in pain that he couldn't go to school for three weeks.

The worst of it came when one of her toddler twin sons fell behind his brother in weight and developed a bright red rash with scaly patches on his body after bathing. He was diagnosed with lead poisoning.

Walters said she repeatedly sought help from city and state officials, who told her nothing was wrong even though drinking water across the city was coming out of taps looking, smelling and tasting bad.

Then, she made a move that caused a seismic shift in Flint's water crisis: She called [Marc Edwards](#) – a Virginia Tech professor and expert on water quality. Edwards became an advocate and watchdog, presenting the science that ultimately led officials to stop using the Flint River as the city's drinking water source.

The civil engineering professor tested Walters' water last spring and found lead levels he had not seen in 25 years. In response, Edwards assembled a team of Virginia Tech researchers, traveled to Flint to test the water, set up a [website](#) and paid [\\$150,000 out of his own pocket](#) to get the work done.

He even dug up documents showing state leaders knew last summer there was lead contamination in Flint's water.

"Nobody else was listening, nobody else cared, nobody else was taking this seriously," said Walters, who met this past week with federal environmental officials in Washington about Flint's water problems. "But Marc was listening, and he was interested and concerned about what was happening. Without him, I don't think we would be where we are in this."

Edwards' work ultimately showed widespread lead contamination in Flint's water even though state leaders insisted it was safe. His work produced a domino effect: an analysis of state data done in September by Dr. Mona Hanna-Attisha of Hurley Medical Center showed elevated levels of lead in the blood of Flint children.

This prompted state officials in October to reconnect to Detroit's water system, with Lake Huron as its source. Gov. Rick Snyder apologized, the director of the Michigan Department of Environmental Quality, and officials announced a spike in Legionnaires disease cases in Genesee County during 2014-15.

In last week's State of the State speech, Snyder detailed how DEQ staff allowed the city to draw Flint River water without using corrosion controls to prevent lead-soldered pipes from leaching the toxic metal into Flint's water supply.

Hanna-Attisha said Edwards' work prompted her research.

"He was central to all of this," she said. "But he didn't have to do any of it. He volunteers his time. I have never met another person outside of my profession who cares as much about children as he does."

Many add that it was Edwards' work that brought state and national attention to the Flint crisis.

On Thursday, President Barack Obama pledged \$80 million in federal aid to Michigan, mostly to repair Flint's

water infrastructure, on top of \$5 million emergency assistance allocated earlier.

“Marc Edwards played a pivotal role in bringing this public health crisis to light,” said Curt Guyette, an investigative reporter for the American Civil Liberties Union of Michigan. “Him and his team at Virginia Tech expended an incredible amount of effort and resources to find out the truth about lead in Flint’s water and bring it to the public’s attention.”

The Virginia Tech professor emerged last April, a year after water troubles began in Flint, home to 100,000 residents. Plagued for years by other crises such as General Motors’ pullout and the nation’s highest murder rate, Flint was in the midst of a downtown resurgence when its state-appointed emergency manager recommended saving money by switching the source of its drinking water.

Years of unsuccessful attempts to negotiate better rates with the Detroit Water and Sewerage Department led officials from cash-strapped Flint to begin temporarily using the Flint River until a regional water authority was completed. When it switched over on April 30, 2014, Flint funneled the river water to the municipal treatment plant.

But unlike the water it bought from Detroit, Flint failed to use corrosion control treatments in the river water.

Soon after, residents such as Walters started to notice changes. Besides the skin rashes and hair losses, Walters was especially concerned about one of her twin boys, Gavin, then 3. He and Garrett were always in sync developmentally but suddenly Gavin wasn’t eating right or gaining the same amount of weight.

Walters suspected the water was the culprit. In early February, the city tested her water, which showed elevated iron content. Officials told her not to be concerned.

But in late February, tests showed lead in her water for the first time. The next day, she took her children to the doctor to get tested. Results showed that Gavin had lead poisoning, while two of Walters’ other children had exposure.

Concerned about other Flint children since lead poisoning can cause mental and physical impairments, Walters tried working with local, state and federal officials to pinpoint the lead. But she was frustrated by the

William J. Cooper

Program Director

Environmental Engineering Program (Room 565.49)

Division of Chemical, Bioengineering, Environmental, and Transport Systems

National Science Foundation

4201 Wilson Boulevard Arlington, VA 22230

T [REDACTED] C [REDACTED]

From: Marc Edwards <edwardsm@vt.edu>

Sent: Sunday, January 24, 2016 1:01 PM

To: Shawn Patrick McElmurry; 'Cooper, William J.'

Cc: 'Nancy Love'

Subject: Shawn

Shawn knows about projects the state of Michigan is funding. He can also tell you about the new consortium headed by Mona.

All that I know about it, is that they said anyone can get money except me!

Marc

On Jan 24, 2016 1:17 PM, "Marc Edwards" <edwardsm@vt.edu> wrote:

From: Nancy Love [mailto:nglove@umich.edu]
Sent: Sunday, January 24, 2016 1:07 PM
To: Marc Edwards
Cc: Shawn McElmurry; Cooper, William J.
Subject: Re: Shawn

Thanks, Marc.

Hi Shawn - Is there a chance to get on the phone in the next day to chat about what we have ongoing around the Flint crisis? I also need to chat with you about the AEESP 2017 biannual conference proposal due next week as well, where we are listing WSU as a partner but want to get you more involved. Theme is (appropriately): Healthy Communities!

Nancy

cell: [REDACTED]

Nancy G. Love, Ph.D., P.E., BCEE

Professor, Department of Civil and Environmental Engineering

Fellow: Water Environment Federation; International Water Association; Association of Environmental Engineering and Science Professors

University of Michigan
183 EWRE Building
1351 Beal Avenue Ann
Arbor, MI 48109

Voice: [REDACTED]

nglove@umich.edu

<http://envbiotech.engin.umich.edu/>

Twitter: @Love_H2O

From: Faust, Kasey M
Sent: Monday, January 25, 2016 9:42 AM
To: Shawn Patrick McElmurry <s.mcelmurry@wayne.edu>
Subject: Quick question about who you are working with

Hi Shawn-

Are you working with Marc Edwards on the water quality side? I had a meeting with some faculty here this morning and they suggested I connect with Marc Edwards but said that he had a tumultuous relationship with the EPA after the DC lead outbreak and wasn't sure if he was working with the city and/or EPA or not. I thought you might know and may be working with him if politically his relationships had "mended" over the years?

Thanks!

Best,

Kasey

Kasey M. Faust

Assistant Professor
The University of Texas at Austin
Email: faustk@utexas.edu
Office: 5.438
Phone: [REDACTED]

From: Shawn Patrick McElmurry [<mailto:s.mcelmurry@wayne.edu>]
Sent: Wednesday, February 10, 2016 11:07 PM
To: Marc Edwards
Subject: Re: Shawn

Hey Marc, I've tried to reach you a few times in the last week or two but you've obviously been extremely busy!

The main thing I wanted to do is thank you for sending Bill in my direction. I, along with Donnie Sackey and Nancy Love, submitted individual RAPID proposals that Bill has already said will be awarded. You may remember Donnie from my NIEHS Emergency Response proposal. His research focuses on how to improve the exchange of information between the public and scientists- something critically needed in Flint. I believe you know Nancy? Anyway, our coordinated proposals are focused on the effectiveness of PoU filters in Flint (Donnie and Laura Sullivan - communications, Nancy and Terese Olson - biological, Susan and me - chemical). My understanding is you were also awarded some additional funds? I hope so.

Regardless, I know you have worked on PoU filters and have even looked into their effectiveness in Flint. I would really like to touch base with you to make sure we are all coordinating and working together. I also realize everyone in the world is trying to get your time, particularly academics trying to get a piece of the pie! Is there a time when we could connect?

Take care,
Shawn

Ps. I didn't respond Laura's email. I understand what she was trying to say but I really appreciate what you said. It certainly articulated something I had been thinking. It also caused me to consider my own work...something I think all of us should do continuously. Many of my colleagues talked to me about it as well and everyone of them agreed with your comments. Unfortunately, the concept of a "public good" seems to be lost in many areas of our society. Thanks for bringing attention to this subject.

Shawn P. McElmurry, Ph.D.,
P.E. Associate Professor
Wayne State University
Dept. of Civil and Environmental
Engineering 2158 Engineering Building
5050 Anthony Wayne
Dr.
Detroit, Michigan
48202
Phone: [REDACTED]

Fax: 313-577-3881

Skype: [REDACTED]

www.eng.wayne.edu/mcelmurry

From: Marc Edwards
<edwardsm@vt.edu> **Sent:** Thursday,
February 11, 2016 7:51 PM **To:** Shawn
Patrick McElmurry
Subject: RE: Shawn

Yes, I pushed for all the RAPID's for you. Best of luck.

Will try to send the papers.

I have the utmost respect for all academics. What we do is hard. We have to change this system of rewards, however. It is killing science. I am just as hard on myself, as I am on everyone else.

Best Regards,

Marc

From: Shawn Patrick McElmurry
[mailto:s.mcelmurry@wayne.edu] **Sent:** Thursday, February 11,
2016 8:48 PM
To: Marc Edwards
<edwardsm@vt.edu> **Subject:** Re:
Shawn

Thanks Mark. Completely agree about the system and what it is doing.

Bill's been great and immediately awarded. And thanks for the papers.

I know your life is crazy but I would still like to talk some time. I'd like to talk about some of our results, possible pubs, future grants, etc. Certainly, next time you're in Michigan let me know and I can come to you...assuming you have 10min!

Thanks,
Shawn

Shawn P. McElmurry, Ph.D.,
P.E. Associate Professor
Wayne State University
Dept. of Civil and Environmental
Engineering 2158 Engineering Building
5050 Anthony Wayne
Dr.
Detroit, Michigan
48202
Phone: [REDACTED]
Fax: 313-577-3881
Skype: [REDACTED]
www.eng.wayne.edu/mcelmurry



I would love to work e with you again



Felt bad flint thing never panned out...so fucking political

[February 28th, 2016 Wayne State Presidents message emphasis added.](#)

We all are keenly aware of the situation in Flint, and we, like many people and institutions across the State, have had many people step up to donate, organize and volunteer to help the citizens of Flint. But as a university, we can do more, and we will soon be announcing a partnership to further help address this crisis. A research group, led by Wayne State researchers specializing in environmental engineering and public health, will conduct an independent study evaluating the possible association between changes in Flint's water system and public health, specifically the recent outbreak of Legionnaire's disease. **Wayne State is uniquely qualified to lead this investigation given its established relationships, expertise in urban water issues, and existing engineering, public health, and social science expertise. Experts from the university's Urban Watershed Environmental Research Group and the NIH-funded Center for Urban Responses to Environmental Stressors have been actively assisting Flint in the evaluation of drinking water quality. This effort is being led by Dr. Shawn McElmurry, who has been working in Flint for a number of years, most recently serving on Flint's water Technical Advisory Committee. Dr. McElmurry has led multiple sampling campaigns in Flint, and his research confirmed that low levels of chlorine residual may have created conditions that contributed to the outbreak of Legionnaire's disease recently reported. This collaboration includes Dr. Mona Hanna-Attisha, from Michigan State University's Hurley Medical Center, and Susan Masten, also from Michigan State, as well as others from Wayne State.**

PLANNING FOR ENHANCED DISEASE SURVEILLANCE AND ENVIRONMENTAL MONITORING IN FLINT, MICHIGAN

Scope of Work

The overall goal of this research led by Wayne State University (WSU), in collaboration with academic and other institutions, is to scientifically evaluate the distribution of environmental and other exposures associated with human illness in the City of Flint and Genesee County. This project will require a multi- phase and multi-disciplinary approach. The first phase (**PHASE I**) will be focused on assembling a full team of experts to properly evaluate this hypothesis and develop a detailed plan for enhanced disease and environmental surveillance that is anticipated to start on March 1, 2016.

PHASE I will consist of the following elements, with community engagement and outreach occurring throughout:

1. Engage with Flint residents, community leaders, government officials and technical experts
2. Review and fully execute data use and data sharing agreements with the Michigan DHHS, DEQ and other appropriate agencies
3. Review reports and data collected by the City of Flint, Genesee County and State of Michigan agencies including Michigan DHHS, DEQ, and other agencies as needed
4. Analyze existing data and laboratory specimens to further characterize what is known about the previous legionella cases.
5. Seek input and support from community leaders including cultural agents to maximize collaboration and partnerships with community members and identify sources of additional information in community.
6. Identify potential sources of human and environmental data for collection.
7. Develop plan for PHASE II investigation that will include human and environmental assessment.
8. Draft standard operating procedures (SOPs) for enhanced surveillance (PHASE II)
9. Complete application for institutional review (IRB) board approval for PHASE II study
10. Finalize resource and data sharing agreement with state and local governments required to complete PHASE II study
11. Finalize full team for PHASE II. This team will include additional collaborators outside the core-group of experts assembled for PHASE I. Collaborators will include others from MSU, UM and elsewhere, and may include experts from the city, county, state and federal government.

Deliverables:

- April 15, 2016 – Full plan for 2016 enhanced surveillance program. Detailed scope of work for PHASE II.
- April 29, 2016 – SOPs for enhanced surveillance

PHASE I Project Team:

- ☐ Shawn McElmurry (PI), PhD, PE. WSU. Environmental engineer specializing in urban infrastructure and human health. Dr. McElmurry will lead the project
- Paul Kilgore (co-PI), MD, MPH. Co-PI, WSU. Expertise in public health, design and conduct of epidemiologic outbreak field investigations of bacterial and viral infectious agents.

- Mark Zervos, MD (co-PI). Head, Division Infectious Diseases, Henry Ford Health System. Expertise in clinical infectious diseases, hospital epidemiology, infectious disease research.
- Laura Sullivan, PhD (co-I). Kettering. Expertise in mechanical engineering. Dr. Sullivan will lead community outreach and engagement efforts in Flint.
- Matt Seeger, PhD (Co-PI). WSU. Extensive experience with the CDC developing risk and crisis communication systems. He will assist in community engagement and dissemination.

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Shawn McElmurry

Associate Professor, Civil and Environmental Engineering College of Engineering

Phone: 313-577-3876
s.mcelmurry@wayne.edu

Areas of expertise

Environment

About

Shawn McElmurry is an environmental engineer specializing in infrastructure. He was recently tabbed to head up the efforts of the Flint Area Community Health and Environment Partnership, a research group studying the water system in Flint. His research aims to address fundamental gaps in our understanding of this field that prevent sustainable development and adversely impact human health. To this aim, he has worked on assessing the role dissolved organic carbon plays in the fate and transport of pollutants, developing novel sampling techniques and technologies that will provide new

insight into natural and engineered systems, and assessing the behavior of emerging contaminants.

Recently, McElmurry has focused on evaluating the utility of green infrastructure and how it can be used to mitigate the impact of stormwater runoff. **His research on addressing the challenges associated with decaying urban infrastructure in cities experiencing extensive population decline led McElmurry to begin working in Flint in 2010 (Faust et al. 2015). The results of this research, "Sustainability of Water and Wastewater Infrastructure in Shrinking Cities," were published in Public Works Management & Policy in 2015. In late 2015, McElmurry returned to Flint to assess the impact of changes in the source and treatment of drinking water within the city's municipal drinking water system.**

For more information, view his [faculty profile](#).

Shawn
McElmurry,
Ph.D.

Department of Civil and
Environmental Engineering, College
of Engineering, Wayne State
University

Consequences and abatement of lead in the
water supply and toxicology of petroleum coke

Paul Kilgore,
Ph.D.

Department of Pharmacy Practice,
Eugene Applebaum College of
Pharmacy and Health Sciences,
Wayne State University

Effect of environmental stressors on infectious
disease

From: edwardsm@vt.edu [mailto:edwardsm@vt.edu]
Sent: Friday, February 23, 2018 1:42 PM
To: 's.mcelmurry@wayne.edu' <s.mcelmurry@wayne.edu>
Cc: 'Mona Hanna-Attisha' <monahannaattisha@gmail.com>
Subject: Do you still stand by your statement?

Hi Shawn,

I was reviewing your court testimony, and recalled that when FACHEP was being formed, you point blank told both Mona and I, that you had been given permission by the State of Mi to hire anyone to work on the Legionella problem but me.

At the time I was somewhat surprised, but I accepted that it was the right of the state, to hire anyone that they wanted. I am now doubting the accuracy of your statement.

Do you stand by your assertion, that this is what you were told by the State of Michigan?

Marc

\$4.8M NIH grant addresses environmental influences on child health

September 28, 2016

MSU, U-M, Wayne State, Henry Ford Health System and MDHHS collaborate on initiative

EAST LANSING, Mich. — A \$4.8 million research grant awarded to Michigan State University from the National Institutes of Health (NIH) will help Michigan's top three research universities, a leading health care system and a state health agency investigate how exposure to a range of environmental factors in early development — from conception through early childhood — influences the health of children and adolescents.

Joining MSU as collaborators on the national Environmental Influences on Child Health Outcomes, or ECHO, initiative are the University of Michigan, Wayne State University, Henry Ford Health System and Michigan Department of Health and Human Services.

The grant will cover the first two-year phase of the seven-year project aiming to study factors that may influence health outcomes around the time of birth, as well as into later childhood and adolescence. Some of the health issues studied will include upper and lower airway health and development, obesity, and brain and nervous system development.

"We are very excited to be joining Michigan State University and our other partners around the state in a major effort to understand the effects of pollution, nutrition and infection on child health," said Michael Elliott, co-principal investigator and professor of biostatistics at the U-M School of Public Health and research professor at the Institute for Social Research at the University of Michigan.

He noted this diverse team of researchers will pick up where they left off with the National Children's Study to begin to better understand how to help pressing childhood health concerns such as autism spectrum disorders, low birth weight and childhood obesity.

The Michigan ECHO group is one of the study's national pediatric cohorts. Ten hospitals and 20 clinics throughout Michigan's Lower Peninsula will participate in the study.

Nigel Paneth, MSU University Distinguished Professor of epidemiology and biostatistics in the College of Human Medicine, will lead the group of five co-principal investigators.

"This all-Michigan research initiative may be the only population-based sampling of pregnant women in the ECHO study," Paneth said. "The results should provide critical information about prenatal environmental influences and the health of children, contributing to public policy formulations in maternal and child health, and ultimately improving the public health of mothers and children in Michigan.

The Wayne State University co-principal investigator is Douglas Ruden, the co-director of the Exposures Signatures Core Facility in the Center for Urban Responses to Environmental Stressors (CURES). His team will work to determine whether environmental exposures, such as lead and organic pollutants, cause changes in the "epigenome" of the DNA in the children.

"My research team has studied lead toxicity in Detroit for over 10 years and last year published a research paper in Scientific Reports that showed that grandmaternal exposure to lead can alter the DNA in the grandchildren," Ruden said. "This was the first demonstration of multi-generational effects of lead poisoning."

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Wayne State receives \$7.5 million NIH renewal for environmental center

May 2, 2017



Melissa Runge-Morris

DETROIT – Wayne State University received notice from the National Institute of Environmental Health Sciences of the National Institutes of Health of the \$7.5 million renewal for five years of the Center for Urban Responses to Environmental Stressors (CURES). The previous NIH grant for CURES totaled \$2.4 million for three years.

CURES — one of 22 P30 Core Centers funded by NIEHS — is situated in the heart of Detroit, with the goal of understanding the integrated health impacts of environmental exposures to complex chemical

and non-chemical contaminants in Detroit's urban landscape. CURES is focused on establishing a cleaner and healthier living and working environment in the city of Detroit and throughout the region.

"Modern-era" diseases such as cardiovascular disease, cancer and diabetes compromise the quality of life of residents living in an industrialized urban environment such as Detroit and are a consequence of dynamic interactions among an individual's genetic and epigenetic make-up, nutritional status and environmental stressors, which affect key cellular networks causing disease.

"Our goal is to provide leadership that will identify, evaluate and mitigate environmental health concerns in close collaboration with the community and environmental policy makers," said Melissa Runge-Morris, M.D., director of CURES and the Institute of Environmental Health Sciences at Wayne State. "Detroit has an overabundance of industrial and post-industrial environmental toxicants, socioeconomic strains, violence and decay of housing and urban infrastructure, and we have assembled a unique interdisciplinary team of established and new environmental health scientists and community partners to address major environmental health challenges facing Detroit's racially and ethnically diverse population."

Since 2014, CURES researchers and community partners have collaborated closely to respond to serious emerging health crises in and around Detroit, including the lead watershed contamination in Flint, Michigan.

"Everyone in CURES realizes that to understand and solve the complex challenges of an aging urban infrastructure coupled with untold adverse health consequences of urban 'de-industrialization' is a team effort," said Runge-Morris. "In Flint, CURES investigators Dr. Shawn McElmurry from Wayne State's Department of Civil and Environmental Engineering and Dr. Douglas Ruden from the Institute of Environmental Health Sciences have joined forces with the community. Their goal is to improve urban environmental health and safety — not just for the moment, but for our children and future generations."