



Flint WATER STUDY UPDATES MI

For The Citizens of Flint

Siddhartha Roy

September 15, 2015

Saints of God Church

Flint MI



Catie Carreras / Collegiate Times

Aug 13





Sampling Water for Lead in Flint MI - Instruction Video



Flint Water Study



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102 views



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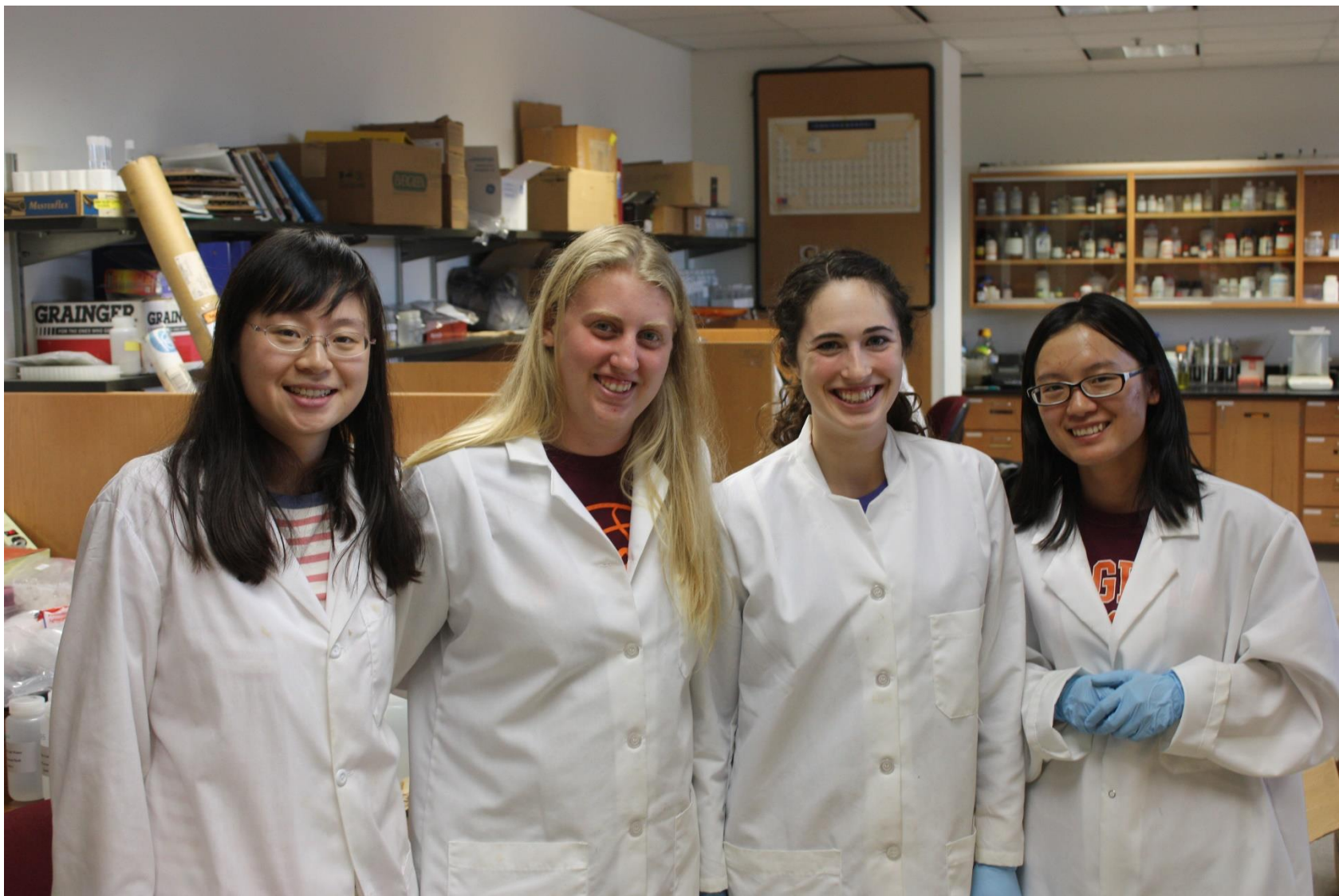


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Your sampling was better than what even the best scientists can pull off!







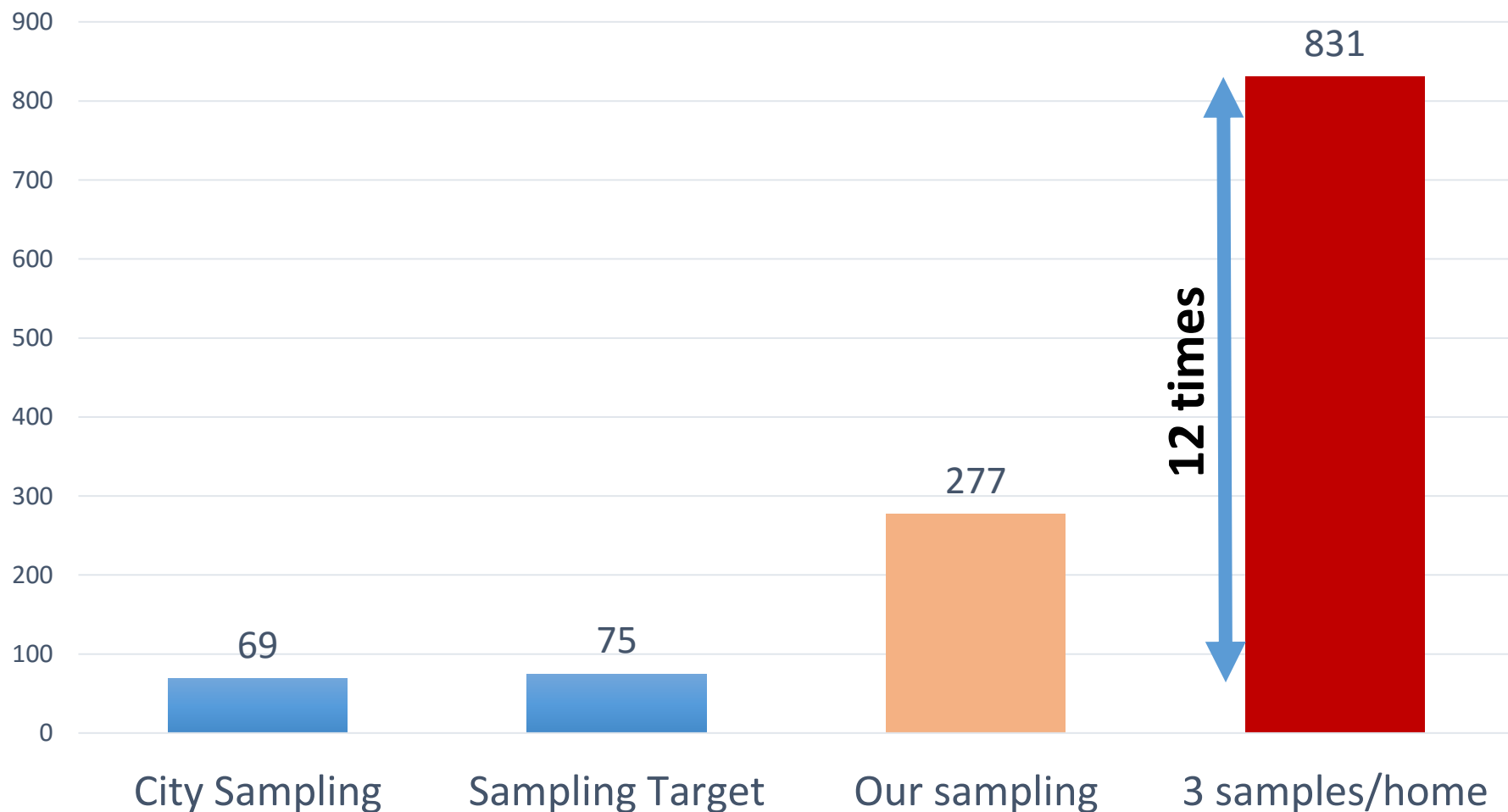




Aug 20 - Sep 8

#FlintWater sampling response from #FlintCitizenScientists

No. of samples tested for Lead



Thank You!!

Aug 17-19



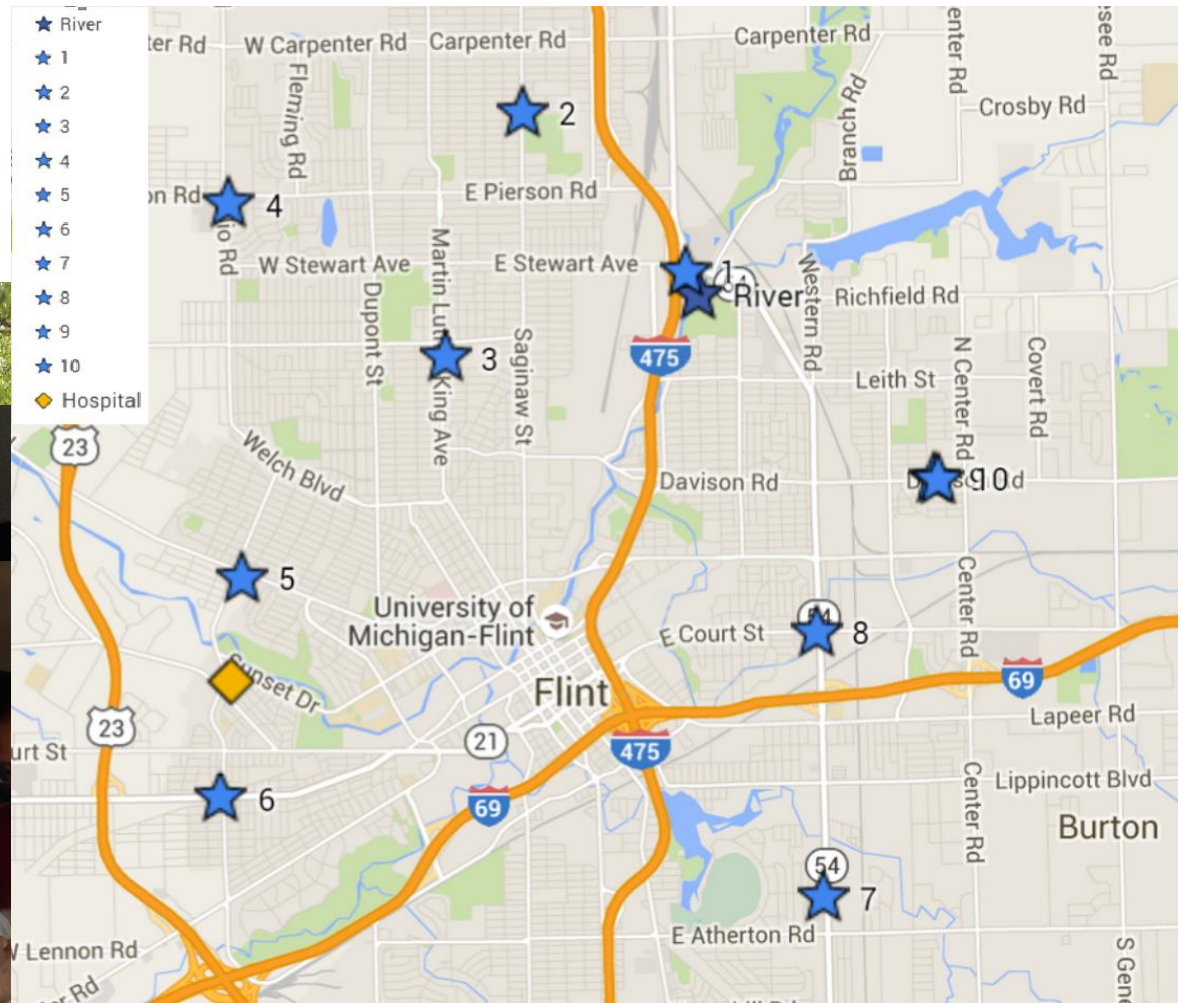
Aug 17-19

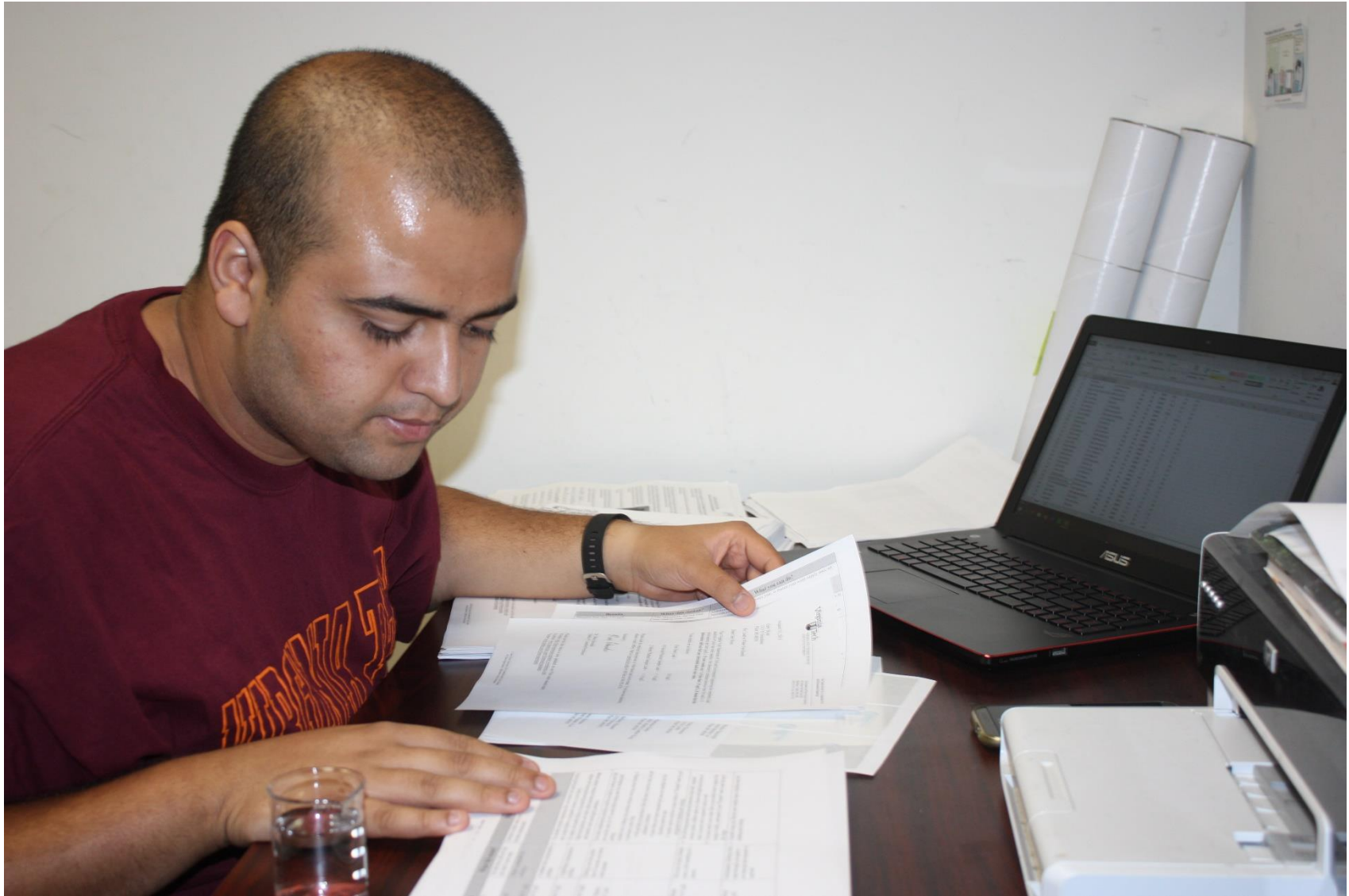


Aug 17-19



Aug 17-19

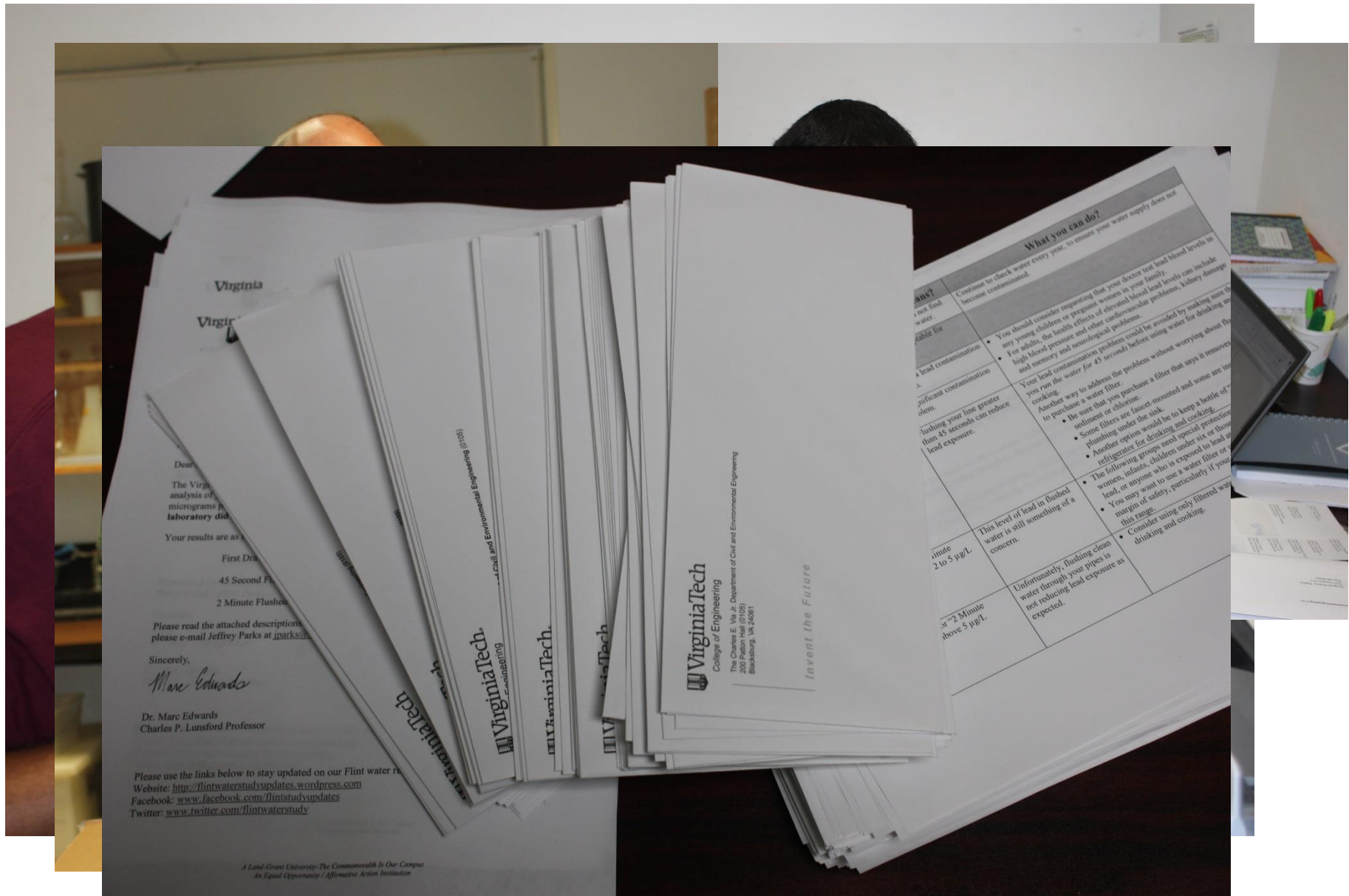




Called over 70 consumers // Some calls lasted an hour



Called over 70 consumers // Some calls lasted an hour



Called over 70 consumers // Some calls lasted an hour

Siddhartha
 Home

Page
Messages
Notifications 1
Insights
Publishing Tools
Settings
Help

THIS WEEK

3,732
Post Reach

391
Post Engagement

2 of 2

Flint Water Study Updates
Community
 Timeline

100% response rate, 6-hours response time
Respond faster to turn on the icon

178 likes +18 this week

Flint Water Study
@flintwaterstudy
 Up-to-date information on our collaborative research and citizen science work with the residents of Flint, MI in light of reported water quality issues

United States
flintwaterstudy.org

22 Photos and videos

TWEETS
108

FOLLOWERS
30

FAVORITES
1

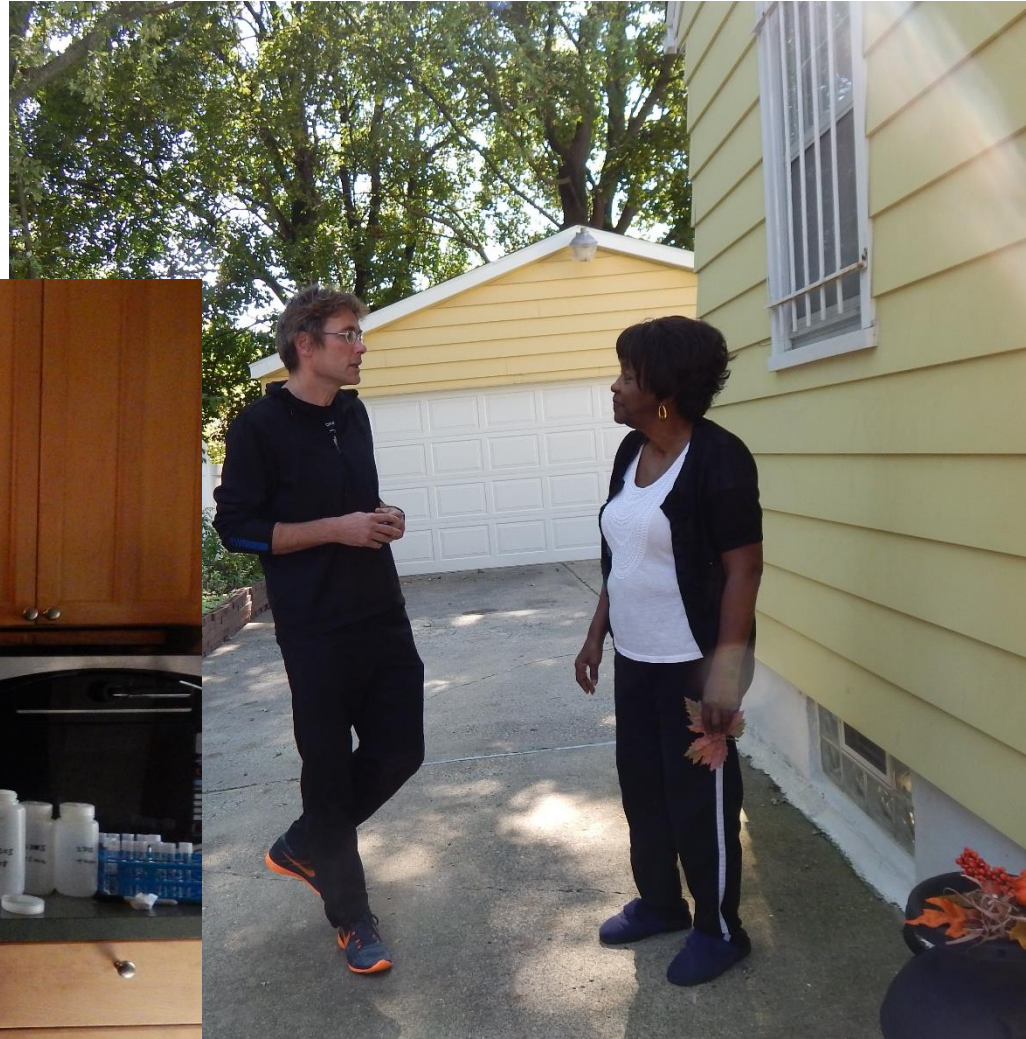
Tweets
Tweets & replies
Photos & videos

Flint Water Study @flintwaterstudy · 27m
 For the @ABC12WJRT report: We recommend National "Sanitation" Foundation certified lead filters and NOT National Science Foundation.

ABC12WJRT @ABC12WJRT · 3h
 Water researchers visit Flint homes with high lead levels: bit.ly/1M7IXn3?utm_medium=social

- ~18000 engagements via Facebook in the past 3 weeks

This Trip







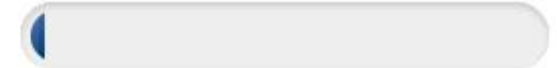
National Science Foundation
WHERE DISCOVERIES BEGIN

SafeWater4Flint



FLINT, MI

\$520 of \$25k



Raised by 11 people in 4 days

Donate Now



Flint Water Study

Marc Edwards

Flint
Water
has a
corrosive
chemistry.

Table 1. Water quality parameters for drinking water supplied in Flint, MI before and after the April 2014 switch

Parameter	Before ¹	After ²
pH	7.38	7.61
Hardness (mg/L as CaCO ₃)	101	183
Alkalinity (mg/L as CaCO ₃)	78	77
Chloride (mg/L)	11.4	92
Sulfate (mg/L)	25.2	41
CSMR ³	0.45	1.6
Inhibitor (mg/L as P)	0.35	NONE
Larson Ratio ⁴	0.5	2.3

¹Source: City of Flint Monthly Operation Report, June 2015. Available from www.cityofflint.com

²Source: DWSD 2014 Water Quality Report. Available from www.dwsd.org

³A measure of corrosivity to lead; a value > 0.5 is a critical trigger [10]

⁴A measure of corrosivity to mild steel and iron; corrosion rate increases linearly with Larson Ratio [8]

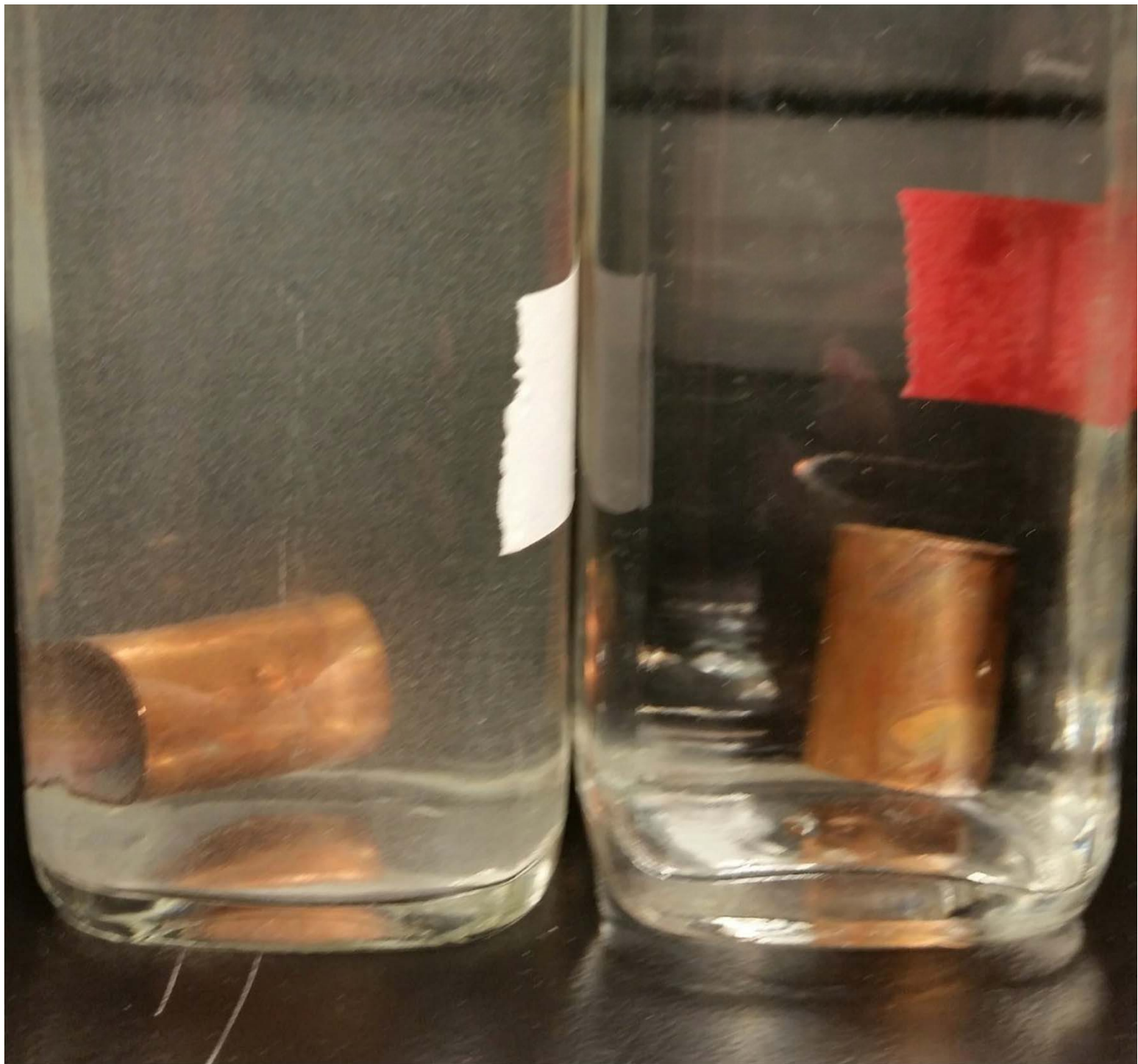
Problems of Corrosive Water

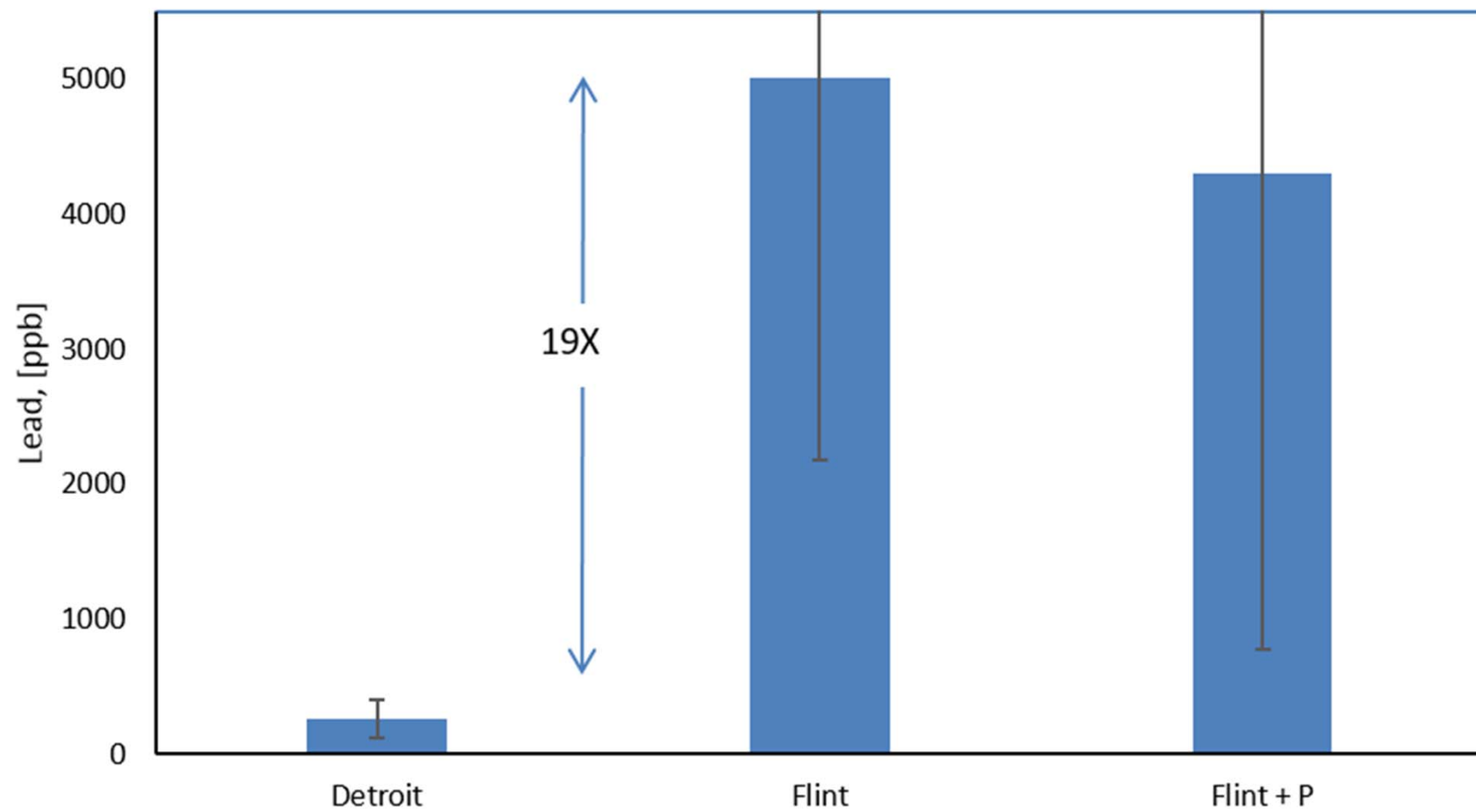
- Destroys Pipe Infrastructure



Causes
Odors,
Colors,
Bad Tastes



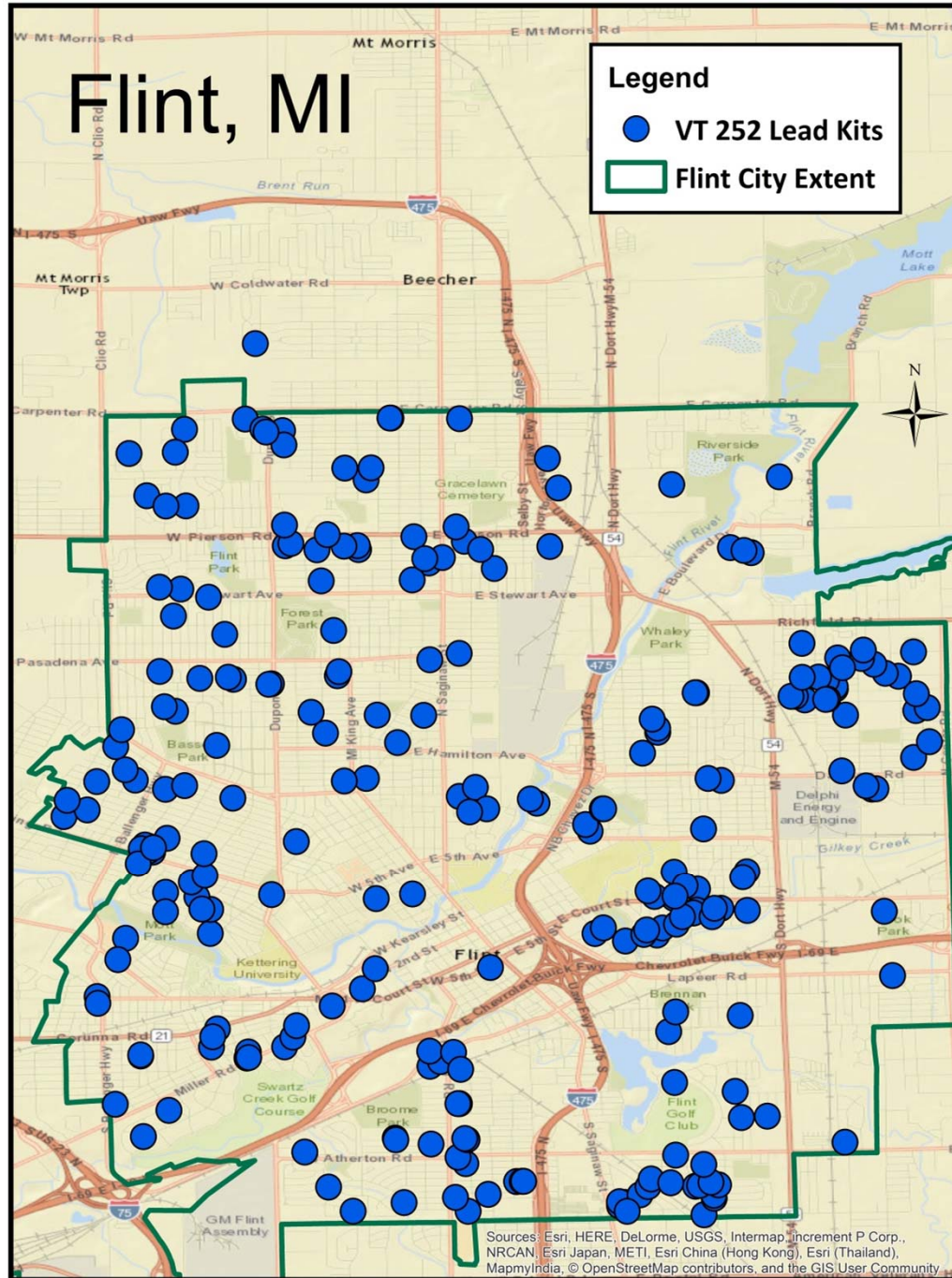




Flint, MI

Legend

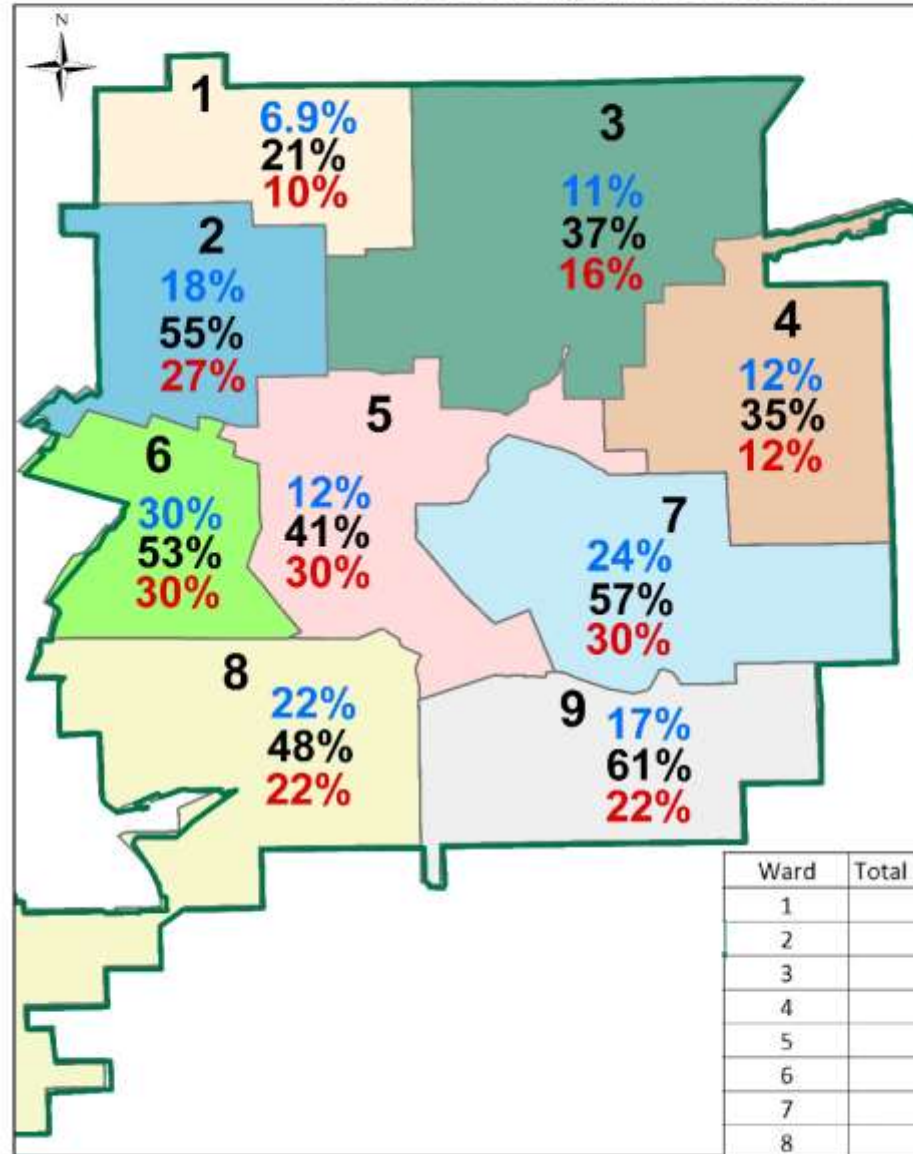
- VT 252 Lead Kits
- ▭ Flint City Extent



Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Flint, MI

Legend:
 Blue %: Percent First Draw Samples over 15 ppb
 Black %: Percent Any Samples over 5 ppb
 Red %: Percent Any Samples over 15 ppb



Ward	Total Samples
1	29
2	22
3	19
4	34
5	17
6	30
7	37
8	27
9	36
TOTAL	251

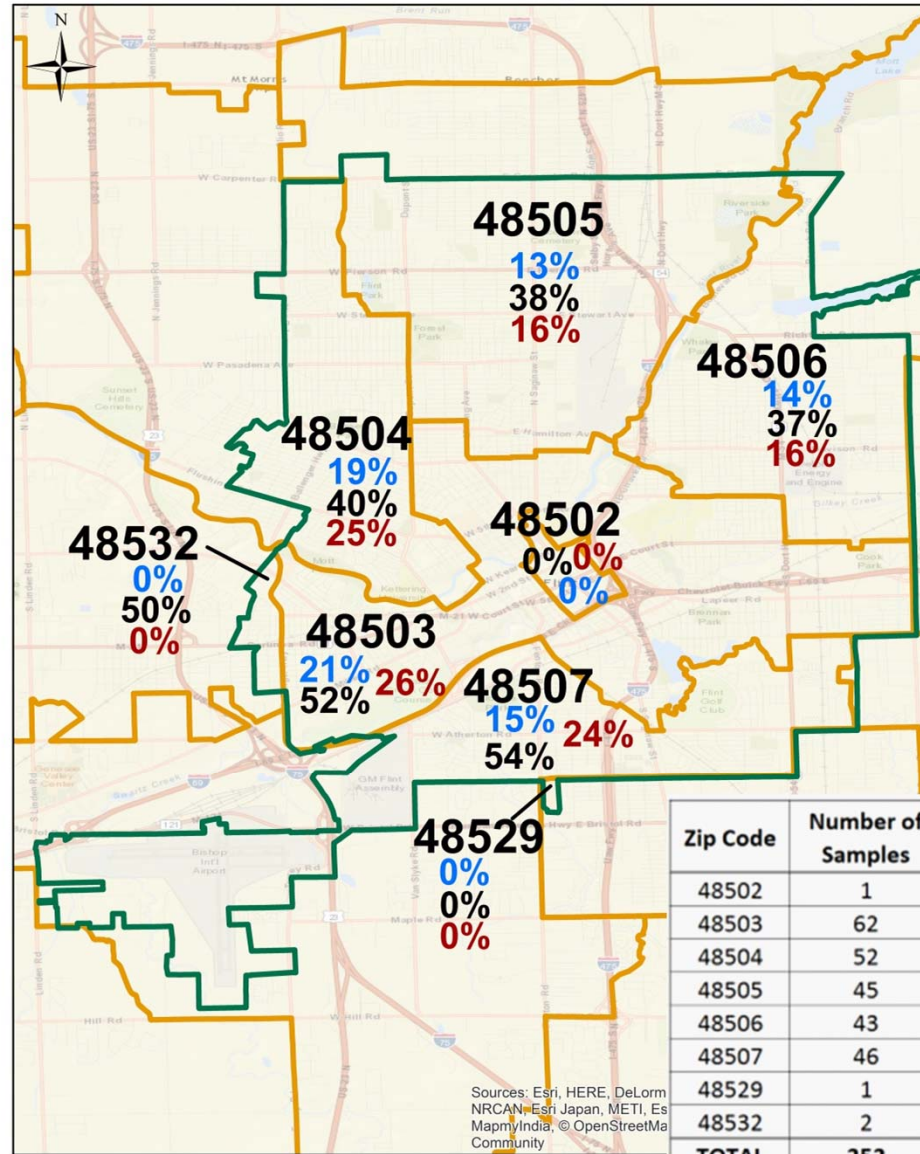
Flint, MI

Legend:

Blue %: Percent First Draw Samples over 15 ppb

Black %: Percent Any Samples over 5 ppb

Red %: Percent Any Samples over 15 ppb



Sources: Esri, HERE, DeLorm
NRCAN, Esri Japan, METI, Es
MapmyIndia, © OpenStreetMa
Community

Infants Using Reconstituted Formula Highest Risk



Until further notice, **we recommend that Flint tap water only be used for cooking or drinking if one of the following steps are implemented:**

Treat Flint tap water with a filter certified to remove lead (look for certification by the National Sanitation Foundation (NSF) that it removed lead on the label), or

Flush your lines continuously at the kitchen tap, for 5 minutes at a high flow rate (i.e. open your faucet all the way), to clean most of the lead out of your pipes and the lead service line, before collecting a volume of water for cooking or drinking. Please note that the water needs to be flushed 5 minutes every time before you collect water for cooking or drinking. For convenience, you can store water in the refrigerator in containers, to reduce the need to wait for potable water each time you need it.

At present we believe:

- Water safe for bathing and showering
 - we are not discounting problems/reports of susceptible groups with rashes
- Safe for watering plants, flushing toilets
- Brushing teeth using Flint water is low risk

Corrosion control treatment to reduce lead in Flint water.

1. Switch back to the non-corrosive Detroit water. It is our opinion, based on years of experience, that Flint's lead levels would drop markedly in about one month.

2. Add orthophosphate to Flint River water. As indicated in this work, orthophosphate will not reduce lead leaching from all lead plumbing sources. On the basis of our extensive experience, we would only expect modest improvements to water lead levels if orthophosphate was added.

3. Wait for KWA pipeline. If orthophosphate was added to water from the KWA pipeline, it would be about the same corrosivity as Detroit water (Option A). In that case, Flint residents will have to live with the very high lead in their water, until at least one month after the pipeline is connected.



National Science Foundation

Not NSF = National Sanitation Foundation (lab that certifies lead filters)

**RAPID: Synergistic Impacts of Corrosive Water and Interrupted Corrosion Control on
Chemical/Microbiological Water Quality: Flint, MI**

***“used for proposals having a severe urgency....,
including quick-response research on natural or
anthropogenic disasters and similar
unanticipated events.”***