Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 5/15/2018 8:43:43 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Sawyers, Andrew [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=49214552a00b4ab7b168ec0edba1d1ac-Sawyers, Andrew]; Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]
Subject: FW: AWWA Utility Advisory - Deadline extended for WIFIA letter of interest submissions

From: AWWA Public Affairs [mailto:publicaffairs@awwa.org]
Sent: Tuesday, May 15, 2018 4:35 PM
To: Tracy Mehan <tmehan@awwa.org>
Subject: AWWA Utility Advisory - Deadline extended for WIFIA letter of interest submissions

Having trouble viewing the email below? Please click here.
Note: To ensure delivery to your inbox please add publicaffairs@awwa.org to your address book.

American Water Works Association

ALERT!
TO UTILITY MEMBERS

Utility Advisory

Who: U.S. EPA
What: Deadline extended for WIFIA letter of interest submissions
When: July 31

As noted in a recent AWWA advisory, the U.S. Environmental Protection Agency issued a notice of funding availability for the second round of loans under the Water Infrastructure Finance and Innovation Act (WIFIA) program.

The deadline to submit a letter of interest to EPA to apply for a WIFIA loan has been extended to July 31.

In a press release on this announcement, EPA Administrator Scott Pruitt said, "By extending the deadline to apply for a WIFIA loan, even more entities will be able to bring critical water infrastructure improvements to their communities, including projects that keep lead and other contaminants out of drinking water."

Acquiring a WIFIA loan is a two-step process. First, utilities or entities send EPA a letter of interest. That triggers a dialogue with EPA infrastructure finance staff. Then EPA invites select utilities or entities to proceed to the formal application phase. There are no fees for the letters of interest, but there are fees for the application. Therefore, EPA only invites utilities or entities to proceed to

application if it feels they are certain to obtain the loan.

EPA is hosting upcoming information sessions on the WIFIA program; the next one is on May 30 at 2 p.m. ET. EPA's WIFIA website also has helpful information available on the program.

The WIFIA program just closed on its first loan, a $135.4 million loan to King County, Wash. to help finance its Georgetown Wet Weather Treatment Station. Eleven more WIFIA loan applications are expected to close this year.

AWWA Delivers Valuable Member Benefits

Members receive news and information, periodicals and Section membership, as well as discounts on technical resources, conferences and other online learning opportunities. Learn more.

Comments or questions? Email service@awwa.org.
We welcome your thoughts and suggestions.

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 6/11/2018 5:19:09 PM
To: Tracy Mehan [tmehan@awwa.org]
Subject: Fwd: Press Release on Senate Farm Bill
Attachments: 061118SenateFarmBillintroduced.docx

FYI

GTM

Get Outlook for Android

From: Amber Wilson
Sent: Monday, June 11, 2018 10:09:54 AM
To: Tracy Mehan
Subject: RE: Draft Release on Senate Farm Bill

Hi Tracy,

Here you go – it's attached.

Amber

Amber Wilson
Communications Specialist, American Water Works Association
Direct Ex. 6
awilson@awwa.org | www.awwa.org

From: Tracy Mehan
Sent: Monday, June 11, 2018 8:21 AM
To: Amber Wilson <awilson@awwa.org>
Subject: Re: Draft Release on Senate Farm Bill

Amber, please send me a final copy when you have it. Thanks.

Tracy

Get Outlook for Android

From: Amber Wilson
Sent: Monday, June 11, 2018 7:19:44 AM
To: Greg Kail
Cc: Tracy Mehan
Subject: Re: Draft Release on Senate Farm Bill

Thanks, Greg. I'll distribute this this morning. Safe travels.

Sent from my iPhone

On Jun 11, 2018, at 7:15 AM, Greg Kail <GKail@awwa.org> wrote:

Thanks, Tracy. Amber, please give the release a once over and send when ready. I am available for about an hour if you have questions.

Sent from my iPhone

On Jun 11, 2018, at 8:12 AM, Tracy Mehan <tmehan@awwa.org> wrote:

> Go forth and do good!
>
> Thx.
>
> Tracy
>
> Get Outlook for Android

From: Greg Kail
Sent: Monday, June 11, 2018 6:25:09 AM
To: Tracy Mehan
Cc: Amber Wilson
Subject: Fwd: Draft Release on Senate Farm Bill

Tracy, with your approval on the quote, we will finalize and send. Thx.

Sent from my iPhone

Begin forwarded message:

> **From:** Tommy Holmes <THolmes@awwa.org>
> **Date:** June 11, 2018 at 6:14:37 AM MDT
> **To:** Pelham Straughn <pstraughn@9bgroup.com>
> **Cc:** Greg Kail <GKail@awwa.org>, David White <dwhite@9bgroup.com>, Tracy Mehan <tmehan@awwa.org>, Nate Norris <NNorris@awwa.org>, Adam Carpenter <acarpenter@awwa.org>, Wendi Wilkes <WWilkes@awwa.org>, Steve Via <SVia@awwa.org>, Amber Wilson <awilson@awwa.org>, Deirdre Mueller <dmueller@awwa.org>
> **Subject: Re: Draft Release on Senate Farm Bill**
>
> Greetings from BWI Airport.
> Looks great! Glad we're getting this out quickly.
>
> Thanks all!
> Tommy
>
> Tommy Holmes
> Legislative Director
> American Water Works Association
> 1300 Eye St. NW
> Suite 701W
> Washington, DC. 20005
> Ex. 6
> Tholmes@awwa.org

On Jun 11, 2018, at 8:12 AM, Pelham Straughn <pstraughn@9bgroup.com> wrote:

I agree Greg. This is really good.

> On Jun 11, 2018, at 12:46 AM, Greg Kail <GKail@awwa.org> wrote:
>
> Dave, Tracy, Tommy and other interested parties,
>
> First, nice job on the release, Dave!
>
> Please see the attached version. I made a couple of slight adjustments here and there. Please review to ensure I didn't accidentally change meaning, track and edits and return.
>
> The most notable change is that I attribute the quote to Tracy rather than David LaFrance. It seems more appropriate and credible to have Tracy's voice behind these quotes than David's. Thanks all.
>
> Greg Kail
>
> Director of Communications, AWWA
>
> Direct Ex. 6 | Mobile Ex. 6
>
> -----Original Message-----
>
> From: Tommy Holmes
>
> Sent: Sunday, June 10, 2018 10:20 AM
>
> To: Greg Kail <GKail@awwa.org>; David White <dwhite@9bgroup.com>
>
> Cc: Tracy Mehan <tmehan@awwa.org>; Nate Norris <NNorris@awwa.org>; Adam Carpenter <acarpenter@awwa.org>; Wendi Wilkes <WWilkes@awwa.org>; Steve

Via <SVia@awwa.org>; Pelham Straughn <pstraughn@9bgroup.com>

Subject: RE: Draft Release on Senate Farm Bill

Amen!

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

From: Greg Kail

Sent: Sunday, June 10, 2018 11:38 AM

To: David White <dwhite@9bgroup.com>

Cc: Tracy Mehan <tmehan@awwa.org>; Tommy Holmes <THolmes@awwa.org>; Nate Norris <NNorris@awwa.org>; Adam Carpenter <acarpenter@awwa.org>; Wendi Wilkes <WWilkes@awwa.org>; Steve Via <SVia@awwa.org>; Pelham Straughn <pstraughn@9bgroup.com>

Subject: Re: Draft Release on Senate Farm Bill

This is great, Dave. Appreciate it. I'll intend on getting David's quotes approves and make any edits/additions in time to distribute Monday.

Sent from my iPhone

> On Jun 9, 2018, at 7:28 PM, Dave White <dwhite@9bgroup.com > wrote:
>
> Greetings, AWWA Team! Attached is a draft news release for your consideration. Please let either of us know if you have any questions or wish to discuss.

We hope you are enjoying the Conference.

With every best wish,

Dave and Pelham

<DRAFT June 11th press release- 2.0.docx>

American Water Works Association

Dedicated to the World's Most Important Resource ®

<gk DRAFT June 11th press release- 2.0.docx>

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American Water Works Association

AWWA cheers measures in Senate Farm Bill that aim to protect drinking water sources

June 11, 2018

(DENVER) – The American Water Works Association, the largest association of water professionals in the world, today applauded the U.S. Senate Agriculture Committee for introducing a bipartisan Farm Bill on Friday that recognizes the importance of protecting drinking water sources from nutrient runoff.

AWWA singled out Chairman Pat Roberts, Ranking Member Debbie Stabenow, and Sen. Sherrod Brown for their commitment to protecting source water. The bill, the Agriculture Improvement Act of 2018, includes several key measures advanced by AWWA over the past two years.

The bill was introduced just days before an estimated 12,000 water professionals will gather in Las Vegas, Nevada, for AWWA's Annual Conference and Exposition (ACE18), which runs today through Thursday. Source water protection is among the key areas of focus at the conference.

The downstream and public health benefits of conservation programs funded through the Farm Bill are extremely important to all Americans who depend on clean drinking water. The bill includes an important recognition and emphasis of source water protection across the working lands programs in the conservation title. It expands opportunities for the Natural Resources Conservation Service (NRCS) to work with water systems and authorizes increased incentives for farmers who employ practices that benefit downstream water quality and quantity.

The bill makes a strong commitment to overall conservation by maintaining funding at current levels. It also makes an added funding commitment to the Regional Conservation Partnership Program (RCPP) and emphasizes source water protection in the program.

"We appreciate the work the Senate Agriculture Committee accomplished," said Tracy Mehan, AWWA executive director of government affairs. "Our hope is to work with the committee as the bill works its way through the legislative process to include a reservation of funds for source water protection as is included in Rep. Marcia Fudge's bill, the Collaborative Water and Soil Enhancement Act of 2018, and in the

House version of the Farm Bill."

AWWA began to engage in the Farm Bill process over two years ago to bring more attention to the issue of protecting sources of drinking water through conservation practices funded by the Farm Bill. "We believe it's important for USDA to emphasize protection of drinking water sources as part of its overall water quality and water quantity mission," Mehan said.

AWWA created a whiteboard animation video to more clearly illustrate how the Farm Bill's conservation programs are key to protecting drinking water sources. It is available on AWWA's YouTube channel.

###

Established in 1881, the American Water Works Association is the largest nonprofit, scientific and educational association dedicated to managing and treating water, the world's most important resource. With approximately 51,000 members, AWWA provides solutions to improve public health, protect the environment, strengthen the economy and enhance our quality of life.

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 5/29/2018 5:04:56 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Drinkard, Andrea [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=808a6b7b65bf447f93dad2f510feaf61-ADRINKAR]; David LaFrance [dlafrance@awwa.org]; Greg Kail [GKail@awwa.org]
CC: Keli Jackson [KJackson@awwa.org]
Subject: RE: Planning for American Water Works Association Annual Conference

Do we have a call today? I am holding.

Tracy

-----Original Appointment-----
From: Ross, David P [mailto:ross.davidp@epa.gov]
Sent: Friday, May 18, 2018 8:22 AM
To: Ross, David P; Tracy Mehan; Drinkard, Andrea; David LaFrance
Cc: Keli Jackson
Subject: FW: Planning for American Water Works Association Annual Conference
When: Tuesday, May 29, 2018 1:00 PM-1:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: 3219A Call in # Ex. 6 passcode Ex. 6

-----Original Appointment-----
From: Ross, David P [mailto:ross.davidp@epa.gov]
Sent: Thursday, May 17, 2018 8:03 AM
To: Ross, David P; Drinkard, Andrea; David LaFrance
Cc: Keli Jackson
Subject: Planning for American Water Works Association Annual Conference
When: Tuesday, May 29, 2018 1:00 PM-1:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: 3219A Call in # Ex. 6 passcode Ex. 6

Keli Jackson
Executive Administrator, AWWA | **Direct** Ex. 6

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 8/14/2018 1:53:04 PM
To: Wildeman, Anna [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=05dd0af69bfa40429e438b7646502b99-Wildeman, A]
CC: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Patricia Chism [pchism@awwa.org]; Penman, Crystal [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=93662678a6fd4d4695c3df22cd95935a-Penman, Crystal]
Subject: Re: Safe Drinking Water Act

Thanks, Anna. Steve via and Kevin Morley at my office will join us if that is possible. Thank you.

Tracy

Get Outlook for Android

From: Wildeman, Anna <wildeman.anna@epa.gov>
Sent: Tuesday, August 14, 2018 8:47:29 AM
To: Tracy Mehan
Cc: Ross, David P; Patricia Chism; Penman, Crystal
Subject: RE: Safe Drinking Water Act

Hi Tracy,
Thanks for the note. Let's find some time to talk. I'd like to give you an idea of my portfolio and we can see where we overlap. I've copied Crystal Penman on this email, she can help get something in the calendar.
Best,
Anna

From: Tracy Mehan [mailto:tmehan@awwa.org]
Sent: Monday, August 13, 2018 4:09 PM
To: Wildeman, Anna <wildeman.anna@epa.gov>
Cc: Ross, David P <ross.davidp@epa.gov>; Patricia Chism <pchism@awwa.org>
Subject: Safe Drinking Water Act

Dear Anna,

I trust you are settling into your position in OW including matters pertaining to the Safe Drinking Water Act.

David had indicated that you were the "go to" person on substantive policy matters. With that in mind, I wanted to let you know that my staff and I would be happy to drop by at any mutually convenient time to provide an overview of the perspective of the American Water Works Association (AWWA) on any number of pending issues: perchlorate, lead and copper, PFOS/PFOA, WOTUS etc.

AWWA www.awwa.org has 50,000 individual members and 4,000 utility members. Our top 400 utilities serve approximately 80 percent of the U.S. population.

Should this be helpful to you, Patty Chism of my office can coordinate calendars here with yours. I will be out of town most of this week, but Patty is available to work on scheduling.

Thank you for your interest. I look forward to meeting you in person.

Sincerely,

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)
(cell)

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Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 8/13/2018 8:08:36 PM
To: Wildeman, Anna [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=05dd0af69bfa40429e438b7646502b99-Wildeman, A]
CC: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Patricia Chism [pchism@awwa.org]
Subject: Safe Drinking Water Act

Dear Anna,

I trust you are settling into your position in OW including matters pertaining to the Safe Drinking Water Act.

David had indicated that you were the "go to" person on substantive policy matters. With that in mind, I wanted to let you know that my staff and I would be happy to drop by at any mutually convenient time to provide an overview of the perspective of the American Water Works Association (AWWA) on any number of pending issues: perchlorate, lead and copper, PFOS/PFOA, WOTUS etc.

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Thank you for your interest. I look forward to meeting you in person.

Sincerely,

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)
(cell)

Message

From: Sawyers, Andrew [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=49214552A00B4AB7B168EC0EDBA1D1AC-SAWYERS, ANDREW]
Sent: 6/18/2018 7:14:54 PM
To: Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Tracy Mehan [tmehan@awwa.org]
CC: David LaFrance [dlafrance@awwa.org]; Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Kurt Vause Ex. 6 ; Barb Martin [bmartin@awwa.org]; svia@awwa.org [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=837e1d66b58a4ea99e240f18e13c4c86-svia@awwa.org]; Tommy Holmes [THolmes@awwa.org]; Mclain, Jennifer [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=2bc5b268184348bbb383a56b0042b603-Jennifer Mclain]; Tiago, Joseph [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=73efdbd1bc1f45ba8fc76ceecc3ce5dc-Tiago, Joseph]
Subject: RE: Thank you

Thanks for the important dialogue.

Andrew

From: Grevatt, Peter
Sent: Monday, June 18, 2018 2:02 PM
To: Tracy Mehan <tmehan@awwa.org>; Sawyers, Andrew <Sawyers.Andrew@epa.gov>
Cc: David LaFrance <dlafrance@awwa.org>; Ross, David P <ross.davidp@epa.gov>; Kurt Vause Ex. 6 ; Barb Martin <bmartin@awwa.org>; svia@awwa.org; Tommy Holmes <THolmes@awwa.org>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>
Subject: RE: Thank you

Our pleasure – Thanks for a great meeting Tracy & Company!

From: Tracy Mehan [mailto:tmehan@awwa.org]
Sent: Monday, June 18, 2018 1:34 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Sawyers, Andrew <Sawyers.Andrew@epa.gov>
Cc: David LaFrance <dlafrance@awwa.org>; Ross, David P <ross.davidp@epa.gov>; Kurt Vause <Ex. 6 >; Barb Martin <bmartin@awwa.org>; svia@awwa.org; Tommy Holmes <THolmes@awwa.org>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Tiago, Joseph <Tiago.Joseph@epa.gov>
Subject: Thank you

Peter and Andrew,

Thank you, once again, for your many appearances at ACE '18 and, in Peter's case, the Water Utility Council meeting among others while you were in Las Vegas. We are most grateful for your generous expenditure of time and expertise for the benefit of our members. As always, you offered wise and thoughtful observations on all things pertaining to water, wastewater and infrastructure finance.

We also appreciate the support of all your colleagues participating including those staffing all the booths in the exhibition hall. We are pleased to partner with everyone at EPA, especially the Office of Water team.

All the best.

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)
(cell)

Message

From: Adam Krantz [AKrantz@nacwa.org]
Sent: 4/30/2018 6:53:42 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]
Subject: Request for brief chat about the Blending Rulemaking

David – I was hoping we could have a brief, one-on-one chat about the issue of blending and some things I'd like to share with you on this front as you go forward. A phone call is fine. We can set something up or you can call my cell-phone whenever you get a minute. My cell is Ex. 6 Thanks in advance, Adam.

Adam Krantz | CEO
NACWA | 1816 Jefferson Place, NW | Washington, DC 20036
Ex. 6 (ofc) | akrantz@nacwa.org | www.nacwa.org

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 8/9/2018 3:19:54 PM
To: Tracy Mehan [tmehan@awwa.org]
Subject: FW: Nothing regulated under the Safe Drinking Water Act since 1996?
Attachments: Safe Drinking Water Regulations since 1996.docx

Dear Colleagues,

You may recall that I addressed this question back in May and welcomed in put on our research addressing what AWWA staff perceived as a an urban legend of sorts. We thank all of you who took the time to communicate your ideas, criticisms, feedback, etc. We have now come up with a second, expanded draft document which continues the discussion, a copy of which is attached for your review and comment.

Among the interesting factoids are these:

*Since 1996 the we calculate the total regulatory burden for post-1996 SDWA regulations is $2.8 billion each year.

"No other federal environmental statute managed by the U.S. Environmental Protection Agency has promulgated as many standards targeting the same regulated entities over this period." Again, we welcome your feedback to help us groundtruth this claim.

*EPA has also published 15 drinking water health advisories, some of which, functionally, have regulatory impact.

*There have been five rulemakings to collect data.

*See the argument that most delay or lack of regulatory activity is due to insufficient resources as documented by the Association of State Drinking Water Administrators (last page of attachment).

Again, your comments, criticisms, data and overall input is most welcome as we try to improve upon this analysis. Let us hear from you. Thank you.

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)

Attachment

From: Tracy Mehan
Sent: Thursday, May 17, 2018 12:54 PM
To: Tracy Mehan <tmehan@awwa.org>
Subject: Nothing regulated under the Safe Drinking Water Act since 1996?

Dear Colleagues,

I have heard it said, often, around town that EPA has not done any regulation of drinking water since the 1996 reauthorization of the Safe Drinking Water Act other than arsenic. I have asked my staff to look into this claim. While we are still researching the question, and want to add some regulatory cost figures to the inventory, a preliminary, i.e, tentative, list of regulations issued under the SDWA, since 1996, looks like this:

*Arsenic Rule
*Radionuclides Rule
*Backwash Recycle Rule
*Stage 1 Disinfectants and Disinfection Byproducts Rule
*Stage 2 Disinfectants and Disinfection Byproducts Rule
*Interim Enhanced Surface Water Treatment Rule
*Long-Term 1 Enhanced Surface Water Treatment Rule
*Long-Term 2 Enhanced Surface Water Treatment Rule
*Groundwater Rule
*Revised Total Coliform Rule

These are now part of a list of 97 (by my count) parameters or contaminants regulated under Safe Drinking Water Act. In addition, we have seen several (many?) Health Advisories issues that often have the impact of de facto regulations, e.g, PFAS.

I will be reporting further on our research. But it seems that the idea that nothing has been regulated under the SDWA, since '96, is a bit of an overstatement. In the meantime, if I am missing something, or have made an error, please let me hear from you (I will be out of the office on vacation until May 29th).

Thanks.

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)

Regulating Drinking Water Quality in the United States

The 1996 Safe Drinking Water Act Amendments established regulatory framework that more than any of the other current federal environmental statutes in the United States transparently considers the available science, public health benefit, and the cost of rule implementation. In keeping with the Pareto Principle, the Amendments did a few things, very well. First it set the stage for the rapid development of a list of regulations for which there was an ample body of evidence to begin the rulemaking process and secondly, it established very clear criteria and expectations for rulemakings.

In the wake of the 1996 Amendments EPA has promulgated eleven regulations for the express purpose of improving the quality of water systems provide consumers. Those rules include:

1. Arsenic Rule
2. Radionuclides Rule
3. Filter Backwash Recycle Rule
4. Stage 1 Disinfectants and Disinfection Byproducts Rule
5. Stage 2 Disinfectants and Disinfection Byproducts Rule
6. Interim Enhanced Surface Water Treatment Rule
7. Long-Term 1 Enhanced Surface Water Treatment Rule
8. Long-Term 2 Enhanced Surface Water Treatment Rule
9. Ground Water Rule
10. Lead and Copper Rule Short-Term Revisions
11. Revised Total Coliform Rule

Based on EPA estimates, these rules represent a total regulatory implementation burden of $2.8 billion each year. While the arsenic rule was specific to arsenic and the "enhanced" SWTRs were nominally to regulate *Cryptosporidium*, the SWTRs, FBRR, DBP rules, GWR, and Revised TCR establish more stringent performance criteria through treatment techniques that reduce risks from hundreds of pathogens and disinfection byproducts.

Rule	Year	Named Contaminants	Annual Burden ($million, 2017)[+]
Stage 1 Disinfectants and Disinfection Byproducts Rule	1998	TTHM, HAA5, Bromate, Chlorate	$728
Interim Enhanced Surface Water Treatment Rule	1998	*Cryptosporidium*	$299
Lead and Copper Rule Minor Revisions*	1999	Lead, Copper	--
Radionuclides Rule	2000	radium-226, radium-228, gross alpha, beta particle and photon activity, uranium	$220
Arsenic Rule	2001	Arsenic	$129
Filter Backwash Recycle Rule	2001	*Cryptosporidium*	$7.2
Long-Term 1 Enhanced Surface Water Treatment Rule	2002	*Cryptosporidium*	$44.8
Lead and Copper Rule Minor Clarifications	2004	Lead, Copper	--

Stage 2 Disinfectants and Disinfection Byproducts Rule	2006	TTHM, HAA5	$254
Long-Term 2 Enhanced Surface Water Treatment Rule	2006	*Cryptosporidium*	$150.5
Ground Water Rule	2006	Fecal contamination (i.e., bacteria, viruses, and *Cryptosporidium*)	$62.3
Lead and Copper Rule Short-Term Revisions	2007	Lead, Copper	$6.3
Revised Total Coliform Rule	2012	E. coli	$23.8

Note:* Burden, $926 million annually, reflects 1991 rule as implemented post-1999 revision.
Note: + EPA annual burden estimate adjusting to 2017 dollars based on ENR CCI.

No other federal environmental statute managed by the U.S. Environmental Protection Agency has promulgated as many standards targeting the same regulated entities over this period. And this list is limited to the list of regulations that target delivered water quality. By comparison, under the Clean Air Act the list of new hazardous air pollutants has decreased by four contaminants since 1996, and only one new contaminant is being considered for listing.[1] Under the Resource Conservation and Recovery Act, there were no new regulations to manage additional hazardous substances rather the focus has been on the applicability and application of the existing risk management targets.[2,3]

In 1996 – early 2018 timeframe EPA published 15 drinking water health advisories. A number of these advisories complement primary standards, but not all. While not strictly regulatory requirements, health advisories have implications. Most recently in 2015 and 2016, health advisories for microcystins, cylindrospermopsin, perfluorooctanoic acid, and perfluorooctanesulfonate, which are all identified as having semi-acute health effects for children at very low concentrations in water, have led to numerous water systems taking water supplies off-line, modifying treatment, expanding monitoring, and taking other steps. In 1998 the advisory for Methyl tertiary butyl ether and again in 2008 the advisory for perchlorate had similar impacts on the drinking water sector.

Over this same period, EPA has promulgated five rulemakings to collect data to support regulatory decision-making. Occurrence data is already compiled for more than 80 contaminants and data is being gathered now for an additional 30 contaminants.

Rule	**Year**	**Number of Named Analytes**	**Estimated Burden** (million $)
Information Collection Rule	1996	27	$129
Unregulated Contaminant Monitoring Rule 1	1999	26	NA
Unregulated Contaminant Monitoring Rule 2	2007	25	$44.4
Unregulated Contaminant Monitoring Rule 3	2012	30	$69.8
Unregulated Contaminant Monitoring Rule 4	2016	30	$97.2

[1] USEPA, Initial List of Hazardous Air Pollutants with Modifications, https://www.epa.gov/haps/initial-list-hazardous-air-pollutants-modifications#mods

[2] USEPA, Resource Conservation and Recovery Act Timeline, https://www.epa.gov/rcra/resource-conservation-and-recovery-act-timeline

[3] ATSDR has developed or updated 164 minimal risk levels for use by RCRA and CERCLA program between 1996 and May 2018. https://www.atsdr.cdc.gov/mrls/pdfs/atsdr_mrls.pdf one or more of which may be monitored and managed at individual clean-up sites.

Note: The ICR required sampling for 27 contaminants, as well as an extensive list of supporting analytes, ancillary data, and treatment studies from 500 large water systems.
Note: NA, available historical information are not sufficient to prepare a complete estimate.

With the data available from UCMR and the peer reviewed literature EPA has prepared three regulatory determination rulemakings. And, through those rulemakings identified 24 contaminants that were initially believed to be present at a level that might warrant regulations, none but perchlorate has warranted further warrant further action.[4] EPA did issue guidance for *Acanthamoeba* particularly for contact lens wearers.

While perchlorate is the only contaminant for which EPA made a positive regulatory determination, the process established in the 1996 Amendments has not only focused the sector's attention on contaminants for which there is a scientific basis to consider regulation, not just with respect to the 80 contaminants investigated in the UCMR process, but also the more than 100 contaminants that are identified every five years through the contaminant candidate list process. The CCL process, which utilizes a protocol developed with the assistance of the National Academy of Sciences and the National Drinking Water Advisory Council evaluates the available information on occurrence and health effects for thousands of chemicals and hundreds of microbes. The current CCL4 includes 97 chemicals or chemical groups and 12 microbial contaminants.

Contaminant Candidate List 4

Chemicals	Equilin	o-Toluidine
1,1-Dichloroethane	Erythromycin	Oxirane, methyl
1,1,1,2-Tetrachloroethane	Estradiol (17-beta estradiol)	Oxydemeton-methyl
1,2,3-Trichloropropane	Estriol	Oxyfluorfen
1,3-Butadiene	Estrone	Perfluorooctanesulfonic acid (PFOS)
1,4-Dioxane	Ethinyl estradiol (17-alpha ethynyl estradiol)	Perfluorooctanoic acid (PFOA)
17alpha-estradiol	Ethoprop	Permethrin
1-Butanol	Ethylene glycol	Profenofos
2-Methoxyethanol	Ethylene oxide	Quinoline
2-Propen-1-ol	Ethylene thiourea	RDX (Hexahydro-1,3,5-trinitro-1,3,5-triazine)
3-Hydroxycarbofuran	Formaldehyde	sec-Butylbenzene
4,4'-Methylenedianiline	Germanium	Tebuconazole
Acephate	HCFC-22	Tebufenozide
Acetaldehyde	Halon 1011 (bromochloromethane)	Tellurium

[4] Regulatory Determinations 3 (dimethoate, 1,3-dinitrobenzene, terbufos, and terbufos sulfone); Regulatory Determinations 2 (Boron, Dacthal mono-acid (MTP) degradate, Dacthal di-acid (TPA) degradate, 1,1-Dichloro-2,2-bis(p-chlorophenyl) ethylene (DDE), 1,3-Dichloropropene (Telone), 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, s-Ethyl propylthiocarbamate (EPTC), Fonofos, Terbacil, 1,1,2,2-Tetrachloroethane); Regulatory Determinations 1 (*Acanthamoeba*, Aldrin, Dieldrin, Hexachlorobutadiene, Manganese, Metribuzin, Naphthalene, Sodium, Sulfate)

Acetamide	Hexane	Thiodicarb
Acetochlor	Hydrazine	Thiophanate-methyl
Acetochlor ethanesulfonic acid (ESA)	Manganese	Toluene diisocyanate
Acetochlor oxanilic acid (OA)	Mestranol	Tribufos
Acrolein	Methamidophos	Triethylamine
Alachlor ethanesulfonic acid (ESA)	Methanol	Triphenyltin hydroxide (TPTH)
Alachlor oxanilic acid (OA)	Methyl bromide (bromomethane)	Urethane
alpha-Hexachlorocyclohexane	Methyl tert-butyl ether (MTBE)	Vanadium
Aniline	Metolachlor	Vinclozolin
Bensulide	Metolachlor ethanesulfonic acid (ESA)	Ziram
Benzyl chloride	Metolachlor oxanilic acid (OA)	**Microbes**
Butylated hydroxyanisole	Molybdenum	Adenovirus
Captan	Nitrobenzene	Caliciviruses
Chlorate	Nitroglycerin	*Campylobacter jejuni*
Chloromethane (Methyl chloride)	N-Methyl-2-pyrrolidone	Enterovirus
Clethodim	N-nitrosodiethylamine (NDEA)	*Escherichia coli* (0157)
Cobalt	N-nitrosodimethylamine (NDMA)	*Helicobacter pylori*
Cumene hydroperoxide	N-nitroso-di-n-propylamine (NDPA)	Hepatitis A virus
Cyanotoxins	N-Nitrosodiphenylamine	*Legionella pneumophila*
Dicrotophos	N-nitrosopyrrolidine (NPYR)	*Mycobacterium avium*
Dimethipin	Nonylphenol2	*Naegleria fowleri*
Diuron	Norethindrone (19-Norethisterone)	*Salmonella enterica*
Equilenin	n-Propylbenzene	*Shigella sonnei*

Today more than ever, the concept of science-based regulatory policy is a topic of discussion. In crafting the 1996 SDWA, Congress described the fundamental decision criteria for sound rulemaking in a way that focuses public resources on the best risk reduction opportunities and does so based on the best available science. When evaluating whether to regulate, EPA must ask and answer three key questions: (1) is the contaminant likely to occur in drinking water, (2) is the contaminant likely to pose a risk to public health, and (3) is there a meaningful opportunity for risk reduction. And, EPA must not only answer these questions but substantiate the basis for the rulemaking (1) using best available science and (2) enumerating both quantifiable and nonquantifiable costs and benefits. When setting a regulatory standard benefit-cost and feasibility must be taken into account when considering regulatory alternatives.

Beyond the water quality regulations, there have been federal regulations that establish standards for public notification, requirements for routine consumer confidence reports, and structure variances and

exemptions. In addition to federal requirements, state requirements also continue – back flow prevention, operator certification, water loss control, water supply plans, and other initiatives.

While we most often focus on water systems when we think about SDWA implementation. *Insufficient Resources for State Drinking Water Programs Threaten Public Health*, a report prepared by the Association of State Drinking Water administrators illustrates that appropriately targeting regulatory activity is important, because available resources are limited and need to be focused where they provide the most public health protection. The last edition of this report in 2014 documented a yearly shortfall of at least $230 million between program needs and available resources available in state primacy agencies.

There are opportunities for additional risk reduction in the drinking water sector. First and foremost is addressing pressing needs for infrastructure investment. With an estimated trillion dollar 20-year capital investment need to assure that the current water supply is reliable, it is danger that inadequate investment will ultimately lead to public health risk. We know that when funding is not adequate to support utility operations, shortcomings in ongoing maintenance can occur. Adequate ongoing attention to reservoirs, water treatment plants, and distribution system facilities are an essential aspect of managing infrastructure renewal costs, they contribute to maintaining the quality and reliability of water service. We saw in Flint, MI that a failure to invest in facilities and personnel ultimately led to a crisis in water quality, a loss of public confidence, and potentially illness and death in the community.

Message

From: Sawyers, Andrew [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=49214552A00B4AB7B168EC0EDBA1D1AC-SAWYERS, ANDREW]
Sent: 5/9/2018 12:29:35 PM
To: Tracy Mehan [tmehan@awwa.org]; Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Hall, Lynda [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=bc410640384b4ba0a158573d17f88fb9-LHall02]; Flahive, Katie [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3ca49eade624827a8a65281b7bffe9c-KFlahive]
Subject: RE: 'Farm Runoff in U.S. Waters Has Hit Crisis Levels. Are Farmers Ready to Change?' via Civil Eats

Thanks Tracy

From: Tracy Mehan [mailto:tmehan@awwa.org]
Sent: Wednesday, May 09, 2018 7:17 AM
To: Ross, David P <ross.davidp@epa.gov>; Sawyers, Andrew <Sawyers.Andrew@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Hall, Lynda <Hall.Lynda@epa.gov>; Flahive, Katie <Flahive.Katie@epa.gov>
Subject: 'Farm Runoff in U.S. Waters Has Hit Crisis Levels. Are Farmers Ready to Change?' via Civil Eats

Farm Runoff in U.S. Waters Has Hit Crisis Levels. Are Farmers Ready to Change? - https://civileats.com/2018/05/08/farm-runoff-in-us-waters-has-hit-crisis-levels-are-farmers-ready-to-change/

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Message

From: David LaFrance [dlafrance@awwa.org]
Sent: 5/9/2018 2:50:44 AM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]
CC: Keli Jackson [KJackson@awwa.org]; Greg Kail [GKail@awwa.org]
Subject: Planning for American Water Works Association Annual Conference
Attachments: FW: David Ross Q&A

Dear Mr. Ross:
Thank you for making the time to attend the upcoming American Water Works Association Annual Conference (ACE18) in Las Vegas. I look forward to meeting you in person and it will be an honor to share the stage with you on Tuesday, June 12.

My hope is our Tuesday session will allow:

- you to lend your voice to some important water issues
- water utility leaders to know you better
- the audience ask questions that they may have

I have attached a set of draft questions as a starting point for our conversation. Please feel free to review and edit. There are more questions than we will have time for but this will give us something from which to start. The setting for our session is designed to be—what I call--a causal conversation about important topics. The stage set up is simply--you and me in some comfortable chairs with some microphones.

If it is possible to have a brief phone call that might help us coordinate. I have copied my assistant Keli on this email in the hopes that your assistant and mine can find a time that works for both of us. I have also included AWWA's Director of Communications, Greg Kail.

If I can be of any help in advance of our meeting, please feel free to contact me. All of my contact information is below.

David B. LaFrance
CEO
American Water Works Association
6666 West Quincy Ave., Denver, CO 80235 USA
Direct Ex. 6 **Mobile** Ex. 6
dlafrance@awwa.org | www.awwa.org

Message

From: Greg Kail [GKail@awwa.org]
Sent: 5/7/2018 5:55:20 PM
To: David LaFrance [dlafrance@awwa.org]
Subject: FW: David Ross Q&A
Attachments: David Ross Q&A draft.docx

Here they are, David.

Greg Kail
Director of Communications, AWWA
Direct Ex. 6 | Mobile Ex. 6

From: Greg Kail
Sent: Tuesday, May 1, 2018 4:43 PM
To: Tracy Mehan <tmehan@awwa.org>; Steve Via <svia@awwa.org>
Subject: David Ross Q&A

Tracy and Steve,

I brought some proposed questions to David LaFrance today for the David Ross interview at ACE. Tracy, you'll see yours included within the attached. David also added in one or two. I'll also probably run them past Barb Martin.

There are a total of seven, which should be enough. The whole session is an hour, and it begins with an intro and then there's a Q&A with the audience.

I have two asks:

1. Can you look over the questions and make edits, additions or subtractions? Are these appropriate for an AA? Broad enough?
2. What is the proper protocol for putting these in front of him in advance? Should David do that as a way of introducing himself? Is it better if you provide the questions and make an intro to David?

Thanks much.

Greg Kail
Director of Communications, American Water Works Association
Direct Ex. 6 | Mobile Ex. 6
gkail@awwa.org | www.awwa.org

David Ross Event

Tuesday, May 1, 2018
12:12 PM

What Utilities Need to Know about EPA Priorities

1. David, can you tell us a little bit about yourself what kinds of things you worked on in Wisconsin and elsewhere relating to water?

2. I read an article recently in which you were quoted as saying "aging infrastructure is priority 1, 2 and 3" for EPA when it comes to water. The respondents to our annual State of the Water Industry would agree. Do you feel like we are making adequate progress in renewing water infrastructure, and what can EPA do to help communities address the issue?

3. Given your experience in both state and federal environmental protection roles, what's the right way for EPA to engage with states and local communities as it considers regulations?

4. Administrator Pruitt has talked about using a lot of WIFIA funds for lead service line removals. How do you see this working and what will it do to the overall structure of the program, i.e. support for large-scale infrastructure investments?

5. We live in a time when many voices say the standards under the Safe Drinking Water Act are not strong enough to protect public health. How can EPA and utilities communicate drinking water risks in a way that produces the appropriate level of concern?

6. Water quality concerns can arise after water has left the water system. There is increasing concern about Legionnaires' disease outbreaks. How does EPA view the water utilities' role in keeping water safe after it has left the water system?

7. Let's shift a bit and talk about source water protection. AWWA has been advocating strongly for measures that encourage collaboration between utilities and farmers to reduce nutrient runoff. Do you see a role for Clean Water Act programs in providing source water protection for drinking water sources?

8. On Thursday, I will be interviewing some of the water sector's leaders about concerns on water affordability during the Water Utility Issues Forum. What factors should be top of mind for utilities when they consider the affordability of water?

9. Is there anything else you'd like to add before we take some questions from the audience?

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 3/27/2018 4:33:59 PM
To: Tiago, Joseph [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=73efdbd1bc1f45ba8fc76ceecc3ce5dc-Tiago, Joseph]
CC: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Dennis, Allison [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=9bf7959058b241fab18e564e9c957b56-ADennis]; Drinkard, Andrea [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=808a6b7b65bf447f93dad2f510feaf61-ADRINKAR]; Penman, Crystal [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=93662678a6fd4d4695c3df22cd95935a-Penman, Crystal]; svia@awwa.org [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=837e1d66b58a4ea99e240f18e13c4c86-svia@awwa.org]; Barb Martin [bmartin@awwa.org]; Patricia Chism [pchism@awwa.org]
Subject: RE: Peter Grevatt's Participation at ACE '18

Dear Joe,

Regarding Peter Grevatt and ACE '18, here is what we have on tap for him (if it aligns with his thinking).

These are events that we are Peter Grevatt has been invited to be engaged in:

1. *Partnership for Safe Water luncheon: Tue 6/12, 11:30-12:30PM, Mandalay Bay-South Seas AB*

2. *Partnership for Safe Water Reception: Mon 6/11, 7:00-9:00PM, location TBD*

3. *Session TUE07 – Water Policy for Utility Managers (DC Office session) Peter Grevatt is speaking 2:30 – 3:00 pm EPA's Water Policy Priorities*

4. *Session WED35 – Innovation Initiative: State of the Innovation State. Peter Grevatt part of a panel (Roundtable discussion with USEPA: Peter Grevatt, facilitated by David LaFrance), 1:45 – 2:45 PM*

Additional requests of Peter are that he:

1. Be prepared to participate in David Ross's stead at the Water Utility Council meeting: Thursday, 6/14, 8:30 – 9:30 (if Ross will not be at ACE on Thursday) if the AA is unavailable. We assume Peter will be there in either case.

2. Be prepared to stand in for David Ross Interview with David LaFrance: Tuesday, June 12th, from 1- 2 pm (if Ross does not attend ACE)

I hope this covers all the issues for you and Peter. We appreciate EPA's participation in ACE '18.

Thank you.

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs

American Water Works Association
Ex. 6 (direct)

From: Tiago, Joseph [mailto:Tiago.Joseph@epa.gov]
Sent: Friday, March 23, 2018 1:12 PM
To: Tracy Mehan <tmehan@awwa.org>
Subject: Peter Grevatt's Participation at ACE18 Activities

Good afternoon Tracy,

I am coordinating Peter's participation to the various activities happening at AWWA ACE18 in June. I noticed that Peter participated in some activities in previous years on the first day (Monday) and I do not have any information on when these will occur this year. For example:

- Partnership for Safe Water Reception
- Partnership for Safe Water Annual Awards Luncheon

I also understand that you may have scheduled him to participate in some sessions/discussions. I am unable to find this information on the website.

Is it possible on your end to share with me the list of events that you anticipate Peter will be participating in this year? I want to ensure that his travel arrangements are made to allow him to fully participate in the conference.

I appreciate your help and I am happy to coordinate with your staff as you see fit, or if there's a detailed agenda you can share that'd work too.

Thank you so much,

Joe Tiago

Special Assistant

EPA Office of Ground Water and Drinking Water

(202) 564-0340

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 3/27/2018 4:15:51 PM
To: Dennis, Allison [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=9bf7959058b241fab18e564e9c957b56-ADennis]; Drinkard, Andrea [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=808a6b7b65bf447f93dad2f510feaf61-ADRINKAR]
CC: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Tiago, Joseph [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=73efdbd1bc1f45ba8fc76ceecc3ce5dc-Tiago, Joseph]; Penman, Crystal [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=93662678a6fd4d4695c3df22cd95935a-Penman, Crystal]; Barb Martin [bmartin@awwa.org]; svia@awwa.org [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=837e1d66b58a4ea99e240f18e13c4c86-svia@awwa.org]; Patricia Chism [pchism@awwa.org]
Subject: RE: ACE '18 David Ross

Including Andrea Drinkard per Allison's message.

Tracy

From: Tracy Mehan
Sent: Tuesday, March 27, 2018 12:04 PM
To: 'dennis.allison@epa.gov' <dennis.allison@epa.gov>
Cc: Ross, David P <ross.davidp@epa.gov>; 'Grevatt, Peter' <Grevatt.Peter@epa.gov>; 'Tiago, Joseph' <Tiago.Joseph@epa.gov>; 'Penman, Crystal' <Penman.Crystal@epa.gov>; Barb Martin <bmartin@awwa.org>; Steve Via <svia@awwa.org>; Patricia Chism <pchism@awwa.org>
Subject: ACE '18 David Ross

This is the first of two emails regarding scheduling at ACE '18. This one pertains to David Ross. The second will be relative to Peter Grevatt.

We will NOT be able to shift the Water Utility Council meeting from Thursday. So we will look for other opportunities, outside of ACE, to introduce him to the WUC at another time and place.

Here is a proposed itinerary for David Ross while he is at ACE '18:

*Participate in a one-on-one interview with AWWA CEO David LaFrance on Tuesday, June 12th, from 1-2pm Las Vegas time.

*There would also be time during the day for David Ross to tour the Exhibition Hall floor. We would be delighted to arrange an escort.

*Peter Grevatt is scheduled to speak at the Safe Drinking Water Partnership Program Luncheon from 11:30am to 12:30pm. David Ross could join David LaFrance and Peter for lunch, meet many water utility leaders and then head over to the one-on-one.

*We would be happy to schedule other engagements or meetings for David Ross once we get a firm read on his arrival/departure days and times.

I hope this helps. We look forward to your response to these ideas at your earliest convenience.

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 3/2/2018 11:50:03 AM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]
Subject: Re: Federal government closed

Hah! Look forward to talking by phone, David.

Tracy
Ex. 6 (cell)

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From: Ross, David P <ross.davidp@epa.gov>
Sent: Friday, March 2, 2018 6:48:02 AM
To: Tracy Mehan
Cc: Penman, Crystal; Patricia Chism
Subject: Re: Federal government closed

So apparently we are closed. I need to figure out what that means for my day and getting in and out of building. I guess we can postpone but I will call you later once I figure out what is going on. We may be destined never to meet Tracy!

Sent from my iPhone

On Mar 2, 2018, at 6:37 AM, Tracy Mehan <tmehan@awwa.org> wrote:

> David, I see the federal government is closed today. Our office follows the same policy. So I guess we're going to have to reschedule our meeting. Maybe we should consider a breakfast option sometime. All the best.
>
> If by chance you are coming in, please respond to this email or call me on my cell phone at Ex. 6 Ex. 6 Thank you.
>
> Tracy
>
> Get Outlook for Android

For more information please visit http://www.symanteccloud.com

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Message

From: Mike Keegan [keegan@ruralwater.org]
Sent: 3/14/2018 7:47:25 PM
To: McMillin, Neal (Wicker) [Neal_McMillin@wicker.senate.gov]; Cantor, Chloe (Wicker) [Chloe_Cantor@wicker.senate.gov]; Brooks, Wes (Rubio) [Wes_Brooks@rubio.senate.gov]; Nicholas, Romel (Hatch) [romel_nicholas@hatch.senate.gov]; Mykel_Wedig@burr.senate.gov
CC: Kirby Mayfield [kmayfield@msrwa.org]; Gary Williams [Gary.Williams@frwa.net]; Paul Fulgham [pfulgham@tremontoncity.com]; Scott Anderson [sanderson@woodscross.com]; Dale Pierson [dale.pierson@rwau.net]; Vern Steel [steel@rwau.net]; Daniel Wilson [danielwilson@ncrwa.com]; Wilmer Melton [wmelton@kannapolisnc.gov]; Jerry Couri [JerryCouri@mail.house.gov]; Olsen, Elizabeth (EPW) [Elizabeth_Olsen@epw.senate.gov]; Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Elmer Ronnebaum [krwa@krwa.net]; matt [matt@nrwa.org]
Subject: Rural Water request for EPA to allow for regulatory/unfunded-mandate relief to rural and small communities

Romel, Neal, Chloe, Mykel and Brooks: Thank you for your assistance with our request for EPA to allow for regulatory/unfunded-mandate relief to rural and small communities.

History: This Senate effort was initiated in 2015 by Senator Wicker who initially inquired to EPA (6/11/15), subsequently with Senator Hatch (1/11/18), and the electronic mail correspondence from Senators Burr and Rubio. We are very appreciative.

Recently, the Agency has replied that, *"EPA will continue to discuss the important issue of electronic delivery of certain public notices... as resources allow,"* (3/13/18, EPA to Senator Hatch).

We wanted you to know that it appears the Agency has previously determined that the relief we are requesting is authorized. In the EPA response to Senator Wicker (8/5/16), EPA finds that, *"Tier 2 requires mail or direct delivery with the bill and a method to notify those who do not receive a bill or do not have service connection addresses (such as renters, apartments, nursing homes, etc.). Posting on the internet is allowed as one of the methods to reach those consumers."*

However, the relief is not being realized by small and rural communities because the Agency has not updated their January 3, 2013 Policy Memorandum which is the declaratory federal document that state regulators use to extend reporting relief and for public notice regulations interpretation.

We believe the resources required to allow for the relief are minimal. Thank you for your very helpful assistance.

Mike Keegan, *Analyst*
National Rural Water Association
Washington, DC

Message

From: Ross, David P [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=119CD8B52DD14305A84863124AD6D8A6-ROSS, DAVID]
Sent: 3/2/2018 11:41:04 AM
To: Tracy Mehan [tmehan@awwa.org]
CC: Penman, Crystal [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=93662678a6fd4d4695c3df22cd95935a-Penman, Crystal]; Patricia Chism [pchism@awwa.org]
Subject: Re: Federal government closed

I don't think we are closed. In any event, I'm planning on being in the office.

Sent from my iPhone

On Mar 2, 2018, at 6:37 AM, Tracy Mehan <tmehan@awwa.org> wrote:

> David, I see the federal government is closed today. Our office follows the same policy. So I guess we're going to have to reschedule our meeting. Maybe we should consider a breakfast option sometime. All the best.
>
> If by chance you are coming in, please respond to this email or call me on my cell phone at 703-850-9401. Thank you.
>
> Tracy
>
> Get Outlook for Android

Message

From: Mike Keegan [keegan@ruralwater.org]
Sent: 2/22/2018 8:25:56 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]
CC: peck.greg@epa.gov; Clifford, Brian (EPW) [Brian_Clifford@epw.senate.gov]; Elizabeth (EPW) Fox [Elizabeth_Fox@mail.house.gov]; Gary Williams [Gary.Williams@frwa.net]; Paul Fulgham [pfulgham@tremontoncity.com]; Steve Fletcher [steve@netwitz.net]; Sam Wade [sam@nrwa.org]; matt [matt@nrwa.org]
Subject: National Rural Water Association memorandum to the Honorable David Ross
Attachments: NRWA CWSRF eligibility 2 22 2018.pdf

Please find the attached National Rural Water Association memorandum to the Honorable David Ross (Assistant Administrator for Water) requesting the Agency to interpret the Federal Water Pollution Control Act to allow non-profit wastewater
utilities to be eligible for state revolving funds financial assistance.

Thank you for your consideration.

Mike Keegan, *Analyst*
National Rural Water Association
Washington, DC

cc:
U.S. House of Representatives Committee on Transportation and Infrastructure
U.S. Senate Committee on Environment and Public Works

NATIONAL
RURAL WATER
ASSOCIATION
America's Largest Utility Membership

TO: The Honorable David Ross
Assistant Administrator for Water
U.S. Environmental Protection Agency
FROM: National Rural Water Association (contact: Mike Keegan, Analyst)
DATE: February 22, 2018
RE: State Revolving Fund Eligible for Non-profit Wastewater Utilities

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Headquartered in Duncan (Oklahoma), the National Rural Water Association (NRWA) is the non-profit association of the federated state rural water associations with a combined membership of over 30,000 small and rural communities. NRWA is the country's largest water utility association and the largest community-based environmental organization. State Rural Water Associations are non-profit associations governed by elected board members from the membership. Our member utilities have the very important public responsibility of complying with all applicable U.S. Environmental Protection Agency (EPA) regulations and for supplying the public with safe drinking water and sanitation every second of every day.

Thanks to financial assistance from state Clean Water State Revolving Funds, small and rural communities have made great advancements in their standard of living over the last 30 years through enhancements to their public sewer or wastewater systems. However, many small and rural communities who desperately need financial assistance from the Clean Water State Revolving Funds are not eligible because they are technically not incorporated as a "municipality." This subcategory of small and rural communities is incorporated as non-profit districts, rural wastewater utilities, and other organizational forms that are substantially equivalent to municipal wastewater utilities for purposes of public wastewater service. Non-profit wastewater utilities are all owned and controlled by the members through elected governing boards. Many are incorporated as 501(c)12 cooperatives and assigned that designation after close review and approval by U.S. Internal Revenue Service review of limiting articles of incorporation and bylaws. Many states have determined them to be similar to municipalities and granted them sales and Ad Valorem tax exemptions.

We believe that the Federal Water Pollution Control Act's (FWPCA) limitation of state revolving funds to *"to any municipality or intermunicipal, interstate, or State agency for construction of publicly owned treatment works,"* (33 USC § 1383(c)(1)) should be interpreted to limit funding to corporate or for-profit wastewater utilities and not wastewater utilities that are non-profit and locally governed by their ratepayers in a similar manner to municipalities.

NRWA urges you to modify your interpretation of the FWPCA to allow for non-profit wastewater utilities to be eligible for state revolving funds financial assistance. If your interpretation of the statute concludes that this request is not an authorized activity, we urge you to request legislative modifications to the FWPCA in Congress that will allow for this category of wastewater utilities to be eligible for federal financial assistance.

Thank you for your consideration. We are eager to answer any questions on this issue.

The National Rural Water Association is the country's largest public drinking water and sanitation supply organization with over 30,000 members. Safe drinking water and sanitation are generally recognized as the most essential public health, public welfare, and civic necessities.

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 2/22/2018 7:33:30 PM
To: Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]
CC: Kurt Vause [Ex. 6]; svia@awwa.org [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=837e1d66b58a4ea99e240f18e13c4c86-svia@awwa.org]; Patricia Chism [pchism@awwa.org]; Tiago, Joseph [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=73efdbd1bc1f45ba8fc76ceecc3ce5dc-Tiago, Joseph]; Mason, Paula [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=24b12492eca747deb3d9d36d2d14ce04-pmason]
Subject: RE: AWWA Fly-In and Water Utility Council meeting, April 19-20

Thanks, Peter. We will work to accommodate your and David's schedule. Appreciate your willingness to keep the WUC informed.

Tracy

From: Grevatt, Peter [mailto:Grevatt.Peter@epa.gov]
Sent: Wednesday, February 21, 2018 8:01 AM
To: Tracy Mehan <tmehan@awwa.org>; Ross, David P <ross.davidp@epa.gov>
Cc: Kurt Vause <[Ex. 6]>; Steve Via <SVia@awwa.org>; Patricia Chism <pchism@awwa.org>; Tiago, Joseph <Tiago.Joseph@epa.gov>; Mason, Paula <Mason.Paula@epa.gov>
Subject: RE: AWWA Fly-In and Water Utility Council meeting, April 19-20

Thanks Tracy. I'll be glad to join again this year. The 19th is the better day for me.

From: Tracy Mehan [mailto:tmehan@awwa.org]
Sent: Tuesday, February 20, 2018 12:22 PM
To: Ross, David P <ross.davidp@epa.gov>
Cc: Grevatt, Peter <Grevatt.Peter@epa.gov>; Kurt Vause <[Ex. 6]>; svia@awwa.org; Patricia Chism <pchism@awwa.org>
Subject: AWWA Fly-In and Water Utility Council meeting, April 19-20

Dear David,

This April AWWA will host another Fly-In for our volunteers to allow them to visit their elected representatives on the Hill. As part of the week's activities, our Water Utility Council (WUC) will be meeting on April 19-20.

We would like to invite you and Peter to address the WUC on either day as fits your calendar. Peter has spoken to the WUC often, and I know Kurt Vause, our WUC Chair, and the other members of that body would look forward to hearing from you too.

We are of course working on the ACE program in June, and your formal invitation for that event; but this would be an early opportunity to interact with AWWA's top policy-setting body.

If you can see your way through to meeting with the WUC in April, we can pin down details later.

Thank you for your interest.

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)
(cell)

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American Water Works Association
Dedicated to the World's Most Important Resource ®

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 2/28/2018 3:29:25 PM
To: Tracy Mehan [tmehan@awwa.org]
Subject: from Politico

Cornyn: Infrastructure bill may not happen this year: Sen. John Cornyn told reporters Tuesday that passing an infrastructure bill by the end of the year will be a tough task because lawmakers are tackling many other priorities and "don't have much time."

Message

From: Adam Carpenter [acarpenter@awwa.org]
Sent: 8/1/2018 6:23:22 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Sawyers, Andrew [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=49214552a00b4ab7b168ec0edba1d1ac-Sawyers, Andrew]
Subject: AWWA Comments on NEPA Implementing Regulations
Attachments: 20180801_NEPA_Implementing_Regs.pdf

Good afternoon:

Please see the attached comments on CEQ-2018-001 (Procedural Provision of National Environmental Policy Act), which were just submitted to Regulations.gov.

Recognizing that these comments are in response to a proposed CEQ policy, we felt given the water-related emphasis of our comments that it was important that you know of them. Please do not hesitate to reach out to us if you have any questions or if there's anything else I can do to be of assistance.

Sincerely,

Adam Carpenter
Manager - Energy and Environmental Policy
American Water Works Association
Direct Ex. 6
acarpenter@awwa.org | www.awwa.org

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August 1, 2018

Edward A. Boling
Associate Director for the National Environmental Policy Act
Council on Environmental Quality
730 Jackson Place NW
Washington, DC 20503

Re: Implementation of Procedural Provisions of National Environmental Policy Act (CEQ-2018-0001)

Dear Mr. Boling:

The American Water Works Association (AWWA) appreciates the opportunity to comment on the advanced notice of proposed rulemaking titled "implementation of procedural provisions of National Environmental Policy Act," published in the Federal Register on June 20, 2018. AWWA's members which includes water systems that supply drinking water, wastewater treatment, and storm water management to much of the U.S. population are both subject to NEPA reviews and beneficiaries of the NEPA review process.

Importance of NEPA in the protection of water resources and public health

The National Environmental Policy Act plays an important role in protecting water resources. Tens of millions of people obtain their drinking water from a source originating on federal lands or managed through federal projects. The NEPA process helps to ensure that the protection of drinking water sources is considered when major federal actions may impact these resources. Public review helps to ensure that potentially impacted water utilities have an opportunity to participate and raise concerns if needed. Protecting sources of drinking water is a vital part of public health protection.

Assuring a strong NEPA process helps to ensure transparent and accountable decision-making in major federal actions and must be maintained. Water utilities are both infrastructure project proponents, constructing water infrastructure projects to protect public health and the environment, and stakeholders, pushing to mitigate the potential of other projects to negatively impact water quality and public health. In this respect, our sector is especially suited to comment on the balance between expedited review and strong environmental protections.

Value of reasonable streamlining of review and permitting processes

Given an estimated water infrastructure investment need of $1 trillion over the next 25 years, there is a need for an effective and efficient permitting process. Water infrastructure projects that do require additional review could benefit from streamlining. While large water projects must overcome numerous

hurdles, including financing, governance decisions, permitting, and procurement logistics, the NEPA process is not an insignificant task and it can be a difficult process to navigate for some projects.

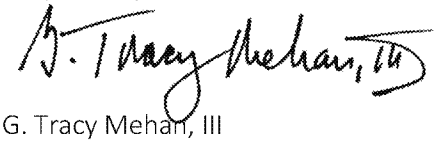
As CEQ conducts its review, AWWA recommends that the Agency keep the following overarching concerns in mind:

1. Modifications to existing procedures to speed up timelines or reduce implementation burden should not sacrifice adequate review of the proposed action and alternatives or compliance with other environmental laws, particularly measures that protect drinking water sources and public health.
2. Policies that improve the efficiency of existing processes, such as improving the delivery and review of Environmental Assessments and Environmental Impact Statements, are likely to be more readily implemented than substantive changes in requirements.
3. A streamlined NEPA approach should ensure that the appropriate data is available to support all the necessary evaluations that occur under NEPA. By clearly articulating what evaluations are necessary and the associated data expectations, it would be possible to reduce what currently appear to be conflicting or redundant expectations.
4. Current federal practice recognizes state NEPA-like statutes. Similarly, it is possible for a streamlined NEPA approach to recognize previously collected and submitted data that meets appropriate criteria. The current process must clearly state what those criteria should be.
5. NEPA is not a permitting process in its own right. There are individual federal and state statutory requirements for permits, regulatory compliance, and administrative procedures that impact the design and construction of infrastructure. Revising NEPA procedures alone will not eliminate the need for complying with other federal and state requirements.
6. Substantive change in any federal regulatory process cannot occur without adequate notice and comment per the Administrative Procedures Act. Such notice and comment must include a clear description of the anticipated regulatory changes. This ANPRM does not include proposed regulatory changes so this notice does not meet the due-diligence requirements of APA for substantial changes in NEPA procedures.

AWWA commends CEQ for engaging stakeholders through this ANPRM. How to best improve on the current NEPA process and implement any proposed revisions is a topic that deserves active and ongoing stakeholder dialogue. AWWA would appreciate any opportunity to be a part of such a stakeholder process.

We appreciate the opportunity to provide comment on this matter. Please feel free to contact myself or Adam Carpenter at AWWA (202-628-8303, acarpenter@awwa.org) if you have any questions regarding these comments.

Respectfully,



G. Tracy Mehan, III
Executive Director of Government Affairs
American Water Works Association

cc: David Ross, EPA OW
Peter Grevatt, EPA OW/OGWDW
Andrew Sawyers, EPA OW/OWM

About AWWA:
AWWA is an international, nonprofit, scientific and educational society dedicated to providing total water solutions assuring the effective management of water. Founding 1881, the Association is the largest organization of water supply professionals in the world. Our membership includes nearly 4,200 utilities that supply roughly 80 percent of the nation's drinking water and treat almost half of the nation's wastewater. Our over 50,000 total memberships represent the full spectrum of the water community: public water and wastewater systems, environmental advocates, scientists, academicians, and others who hold a genuine interest in water, our most important resource. AWWA unites the diverse water community to advance public health, safety, the economy, and the environment.

Message

From: Adam Carpenter [acarpenter@awwa.org]
Sent: 8/1/2018 6:20:08 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Sawyers, Andrew [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=49214552a00b4ab7b168ec0edba1d1ac-Sawyers, Andrew]; Orme-Zavaleta, Jennifer [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=3c5a111dc377411595e5b24b5d96146b-Orme-Zavaleta, Jennifer]; Burneson, Eric [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=2cacb9a8d49f49af80531e9e2ccb9018-eburneso]
Subject: AWWA Comments on Transparency in Regulatory Science
Attachments: 20180801_Transparency_in_Rulemakings.pdf

Good afternoon:

Please see the attached comments on EPA-HQ-OA-2018-0259 (Transparency in Regulatory Science), which were just submitted to Regulations.gov.

Please do not hesitate to reach out to us if you have any questions or if there's anything else I can do to be of assistance.

Sincerely,

Adam Carpenter
Manager - Energy and Environmental Policy
American Water Works Association
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August 1, 2018

Office of the Science Advisor
Environmental Protection Agency
1200 Pennsylvania Ave NW
Washington, DC 20460

Re: Comments on *Strengthening Transparency in Regulatory Science* (EPA-HQ-OA-2018-0259)

Dear Mr. Sinks:

The American Water Works Association (AWWA) appreciates the opportunity to comment on the advanced notice of proposed rulemaking titled "Strengthening Transparency in Regulatory Science," published in the Federal Register on April 30, 2018. AWWA supports transparency in all Environmental Protection Agency actions (both regulatory and non-regulatory), including the data and information used to inform EPA decision-making. In taking steps to improve the transparency of current EPA rulemaking processes, it is important that the Agency address the following: EPA's statutory obligations, transparency of influential (pivotal) decision-making processes, and the public and business communities' right to privacy.

EPA must meet statutory requirements

The Safe Drinking Water Act requires that regulatory decisions be based upon "*(i) the best available, peer-reviewed science and supporting studies conducted in accordance with sound and objective scientific practices; and (ii) data collected by accepted methods or best available methods (if the reliability of the method and the nature of the decision justifies use of the data).*" (Sec. 1412 (b)(3)(A)). Other environmental statues have similar provisions. Should EPA finalize the "Strengthening Transparency in Regulatory Science" rule, the Agency must meet this statutory obligation with respect to setting regulatory requirements under SDWA, and EPA must assure that the rule does not interfere with the use of the best available science. EPA is required to utilize the best available science whenever the Agency makes a regulatory decision. EPA clearly contemplated using the "best available science" even when the underlying data was not publicly available (i.e., proposed §30.9). This provision may be used extensively as the research community transitions to meet new expectations for data access and transparency from scientific journals, funding organizations, and government agencies. How determinations under this section would be made warrants an extensive discussion with stakeholders so that the Agency has a full understanding of how to best utilize this embedded discretionary authority.

AWWA has long requested transparency in EPA decisions

AWWA has commented previously on numerous regulatory actions and policy decisions, requesting greater transparency in EPA's decision-making process. How EPA decides which studies and models to utilize, what assumptions or safety factors to incorporate, and which data is of adequate quality to support decision-making is critical to science-based decision-making. Section 30.1 of the proposed rule clearly speaks to this need, *"... ensure that the regulatory science underlying its actions is publicly available in a manner sufficient for independent validation."*

To illustrate the importance of transparency within EPA's process, we have reviewed prior comments for examples. Attachment A includes a partial list of instances where greater transparency in EPA's decision-making process would have informed interested stakeholders and facilitated more effective information exchange.

AWWA recommends that EPA refocus the proposal on transparency in decision-making broadly, as openness and reproducibility of key influential decision points in a regulatory analysis can be much more significant than the availability of individual data points. Again, the experience of the engaged stakeholder community in a discussion of how to best focus efforts to improve transparency in Agency decision-making would be most effectively gathered through a collaborative stakeholder process.

EPA's own research

One way EPA could increase transparency in its decisions would be to focus on setting standards for the public disclosure of its own research and models. Currently, Agency staff seek to verify the quality of their work through publication in peer-reviewed journals and through small-group, peer-review processes. What is often lacking is the reproduction of model decision logic and external user testing of Agency models. By setting an appropriate 'high bar' for transparency in its own data and processes, EPA can be an example to others whose research is conducted elsewhere.

Evolving open data access policies

Open data access principles are increasingly an expected element of modern research. Investigators, whether funded by federal agencies or by private philanthropic organizations, such as the Bill and Melinda Gates Foundation, have clear expectations for open access to final data from the research they fund. [i, ii] There is likewise a growing expectation for open data access in the peer-review, scientific publication process. However, open access policy is still maturing. In 2013, the federal emphasis was on simple public access to published research results. Today, open access repositories for actual data from research studies are becoming more common. Importantly, practices are evolving at different speeds in different research disciplines. Different fields of study face different data constraints, that is, the form (e.g., numeric, image, etc.), volume (e.g. megabytes, terabytes, etc.), utility, and protected status (e.g., personal or business confidential information) of the data researchers generate. Not unimportant is the level of funding available to support research; some fields are lucky to have funding to support essential work, while other topics receive a continuous and substantial funding stream that can support ancillary research infrastructure, such as data systems to support open access to data.

As open access principles will take years to fully integrate into practice, EPA will need to (1) apply reasonable expectations for data availability from historical studies given accepted practice at the time, (2) determine how it will assess research from projects that are underway now as EPA itself is changing its policies, and (3) set achievable expectations appropriate to different fields of research given unique constraints during the transition process. Given past Office of Management and Budget guidelines and the historic focus on peer-review not only at EPA but in scientific research broadly, EPA will need to rely heavily on peer-review rather than public access to underlying datasets for many key science-policy decisions for the immediately foreseeable future. As mentioned above, this emphasizes the need for EPA to engage stakeholders in a productive dialogue on how to implement this policy, including how to transition from current practice to the new policy.

Stakeholder engagement

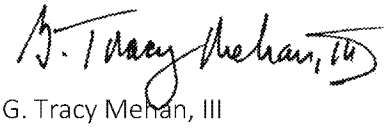
AWWA sought an extension to the comment period for this notice in order to provide useful insights on the proposed rule. Providing recommendations on this proposal was difficult. The proposal, is worded in very broad terms and is not accompanied by any supporting guidelines to inform detailed evaluation. For example, proposed §30.9 provides for EPA Administrator authority to exempt research studies from the public data requirements on a case-by-case basis. The docket does not include documentation describing the protocol EPA would follow or factors that are critical for making such a decision under this section.

AWWA strongly supports using the best science to support regulatory decisions. Decisions intended to assure public health and safety require a high standard of care. It is also prudent to be sure that limited Agency and stakeholder resources are applied effectively. Toward that end, the proposed rule was not accompanied by an analysis of the costs and associated benefits of the proposed policy change. Preparing a clear description of how the new policy would be implemented would provide a basis for evaluation of implementation costs and hurdles both for EPA and those effected by the rule requirements. With this assessment in hand, it would be possible on at least a qualitative basis to describe the associated cost-benefit.

AWWA strongly recommends that EPA engage stakeholders to discuss how to best implement, and as necessary, refine this proposed rule prior to publishing a final rule. The quality of the science used to support EPA decisions is one of the most important organizational principles underpinning the soundness of Agency rules and the Agency's credibility. At present, AWWA, and likely many other stakeholders, do not understand how the proposed rule would in fact be implemented. This lack of clarity is best resolved before EPA finalizes the rule.

We appreciate the opportunity to provide comment on this matter. Please feel free to contact myself or Adam Carpenter at AWWA (202-628-8303, acarpenter@awwa.org) if you have any questions regarding these comments.

Respectfully,



G. Tracy Mehan, III
Executive Director of Government Affairs
American Water Works Association

cc: David Ross, OW
Peter Grevatt, OW/OGWDW
Andrew Sawyers, OW/OWM
Jennifer Orme-Zavaleta, ORD
Eric Burneson, OW/OGWDW

Attachments: 1

About AWWA: AWWA is an international, nonprofit, scientific and educational society dedicated to providing total water solutions assuring the effective management of water. Founding 1881, the Association is the largest organization of water supply professionals in the world. Our membership includes nearly 4,200 utilities that supply roughly 80 percent of the nation's drinking water and treat almost half of the nation's wastewater. Our over 50,000 total memberships represent the full spectrum of the water community: public water and wastewater systems, environmental advocates, scientists, academicians, and others who hold a genuine interest in water, our most important resource. AWWA unites the diverse water community to advance public health, safety, the economy, and the environment.

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[1] 2011, Bill & Melinda Gates Foundation's Data Access Principles. https://docs.gatesfoundation.org/documents/faq.pdf.

[1] 2013, Increasing Access to the Results of Federally Funded Scientific Research, https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/ostp_public_access_memo_2013.pdf.

Attachment A. Prior AWWA Comments Noting the Importance of Transparency

Date	Docket or Comment Link	Subject	Description
12/08/2017	EPA-HQ-OW-2015-0714-0010	Verbal comment to National Drinking Water Advisory Council	States that health advisories should be developed to meet transparency and other requirements of "economically significant guidance documents"
11/20/2017	EPA-HQ-OW-2016-0438	Perchlorate Maximum Contaminant Level Goal	Noted that the instructions for running the model referenced in this process were insufficient to reproduce and lacked rationale on the parameter values used
10/31/2017	EPA-HQ-OA-2017-0533	EPA 2018-2022 Strategic plan	Welcomes EPA's commitment to transparency in Objective 2.2
10/06/2017	EPA-HQ-OW-2016-0439	Perchlorate peer-review	Requests that peer-reviewers for perchlorate peer review panel be provided with all comments on charge questions for adequate transparency
03/14/2017	EPA-HQ-OW-2016-0715	Water Quality Criteria for Microcystins and Cylindrospermopsin	References 2015 AWWA letter to EPA Office of Policy on the need for transparency in health advisories by using "significant guidance" methodology
02/09/2016	EPA-HQ-OW-2015-0218	Unregulated Contaminant Monitoring Rule 4	Indicated that important portions of rule scope lacked transparency by being in footnotes
08/18/2014	EPA-HQ-OPPT-2011-1019	ANPR on Hydraulic Fracturing Chemicals and Mixtures in TSCA	Requests a transparent database of hydraulic fracturing chemicals and mixtures in response to ANPR
07/10/2012	Letter to SAB (no docket)	SAB Panel on Perchlorate	States that EPA limited time for public input at past perchlorate meetings prevented appropriate transparency with the public and among SAB members
03/09/2012	Letter to Administrator (no docket)	Release of Non-OCA data	States that EPA's current practice (as of writing) strikes an appropriate balance between transparency and security in non-OCA data, and discourages publication online
01/27/2012	EPA-HQ-ORD-2011-0895	Ground Water Investigation, Pavilion WY	Requests transparency in EPA study results and transparency in hydraulic fracturing chemicals
09/06/2011	Letter to Office of Science Advisory (no docket)	Scientific Integrity Policy	States that the EPA should explain how it will promote public access to EPA information and that EPA should not

Date	Docket or Comment Link	Subject	Description
			use draft status as a reason to withhold data and information
05/02/2011	EPA-HQ-OW-2009-0090-0080	UCMR3 Notice	Summarized lack of transparency in the "Technical Basis for the Lowest Concentration Minimum Reporting Level (LCMRL) Calculator," used to set UCMR3 MRLs; References prior AWWA comment on the lack of transparency in why groups of compounds were included in the UCMR3 over others that were on the CCL3
11/09/2010	EPA–HQ–OW–2010–068	2011 Drinking Water Infrastructure Needs Survey Agency Collection	States that more transparency in use of information was needed to justify certain information EPA requested in the survey to utilities
07/07/2009	Letter to Administrator (no docket)	Guidelines for Preparing Economic Analyses	Summarizes issues with past EPA Economic Analyses, including lack of both key citations and listing results from intermediate steps
06/09/2009	Letter to SAB Committee (no docket)	Revised Total Coliform Rule	States that transparency in the cost-benefit analysis of the RTCR should include describing underlying and simplifying assumptions
06/01/2009	Letter to SAB Committee (no docket)	Science Integration for Decision Making	Summarizes issues with past EPA Economic Analyses, including lack of both key citations and listing results from intermediate steps
04/17/2009	Letter to Assistant Administrator ORD (no docket)	IRIS Evaluation of Inorganic Arsenic	Requests that the EPA provide opportunity for public comment, engage the Science Advisory Board, and allow for internal review of the arsenic risk assessment to increase transparency
03/16/2009	Letter to OIRA OMB (no docket)	Federal Regulatory Review	States support for EPA's use of transparency and reproducibility in the regulatory process, including transparency in methods, stakeholder communication, and cost-benefit analyses

Date	Docket or Comment Link	Subject	Description
05/21/2008	EPA-HQ-OW-2007-1189	CCL 3 Draft	Notes that the CCL docket's length relative to the comment period, lack of post-scoring by outside experts, and lack of justification for changing of some scores does not contribute to transparency; suggests all materials used for CCL3 be publicly available in docket and suggests a document in the docket with listed experts will increase transparency
07/02/2007	EPA-HQ-OW-2007-0068-016	Regulatory Determinations Regarding Contaminants on CCL 2	States that EPA needs to raise the level of transparency in decision logic for regulatory determinations
06/11/2007	EPA–HQ–OW–2006–0958	Expedited Approval of Test Procedures	Recommends the EPA provide for peer-review and comment opportunities in its expedited method approval process
06/11/2007	Letter to OIRA OMB (no docket)	OMB Cost Benefit Regulations	Identified transparency issues with LT2 Rule economic analysis, including obscurity of presentation and model assumptions, and with EPA's use and analysis of ICR Data in the Stage 2 DBP Rule
03/12/2007	OMB-2007-0003-0001	OMB Report on Costs and Benefits of Federal Regulations	States that EPA should clearly state the intermediate results of a CBA estimation
06/21/2005	Letter to OIRA OMB (no docket)	Draft 2005 Report to Congress on the Costs and Benefits of Federal Regulations	Summarizes issues with past EPA Economic Analyses, including lack of both key citations and listing results from intermediate steps
06/23/2004	EPA-HQ-ORD-2004-0004-0016	Examination of EPA Risk Assessment Principles and Practices	States that EPA should reveal quantitative impacts of its assumptions on risk outcomes to be transparent
06/01/2004	EPA-HQ-OW-2003-0028-0020	CCL 2 Notice	States that use of expert judgment to automate contaminants should be documented
01/09/2004	EPA-HQ-OW-2002-0039-0562	LT2 Enhanced Surface Water Treatment Rule	Identified transparency issues with LT2 Rule economic analysis, including obscurity of presentation and model assumption and lack of approaches and results for r estimates used in the analysis

Date	Docket or Comment Link	Subject	Description
07/16/2003	EPA-HQ-OW-2003-0013-0011	Information Collection Request (ICR)	States EPA's methods for determining distribution of utilities required to prepare a emergency response plan and for determining how CWS burden costs were offset by grant money lacked transparency
02/03/2003	Letter to OIRA OMB (no docket)	Draft 2003 Report to Congress on the Costs and Benefits of Federal Regulations	Summarizes issues with past EPA Economic Analyses, including lack of both key citations and listing results from intermediate steps
08/02/2002	EPA-HQ-OW-2002-0021	Priority Contaminants for CCL	States that the EPA decision process and relevant criteria for narrowing the CCL was not transparent
07/03/2002	EPA-HQ-OPP-2002-0026-0001	Revised Human Health Risk Assessment for Atrazine	Indicated that lack of access to monitoring program data for review by the EPA prevented full public review
06/17/2002	EPA-HQ-OW-2002-0012	2002 Results of EPA's Review of Existing Drinking Water Standards	States that tables essential to understanding the agency's decision logic should be made available in the Federal Register notice and that summary of the Bayesian analysis was inadequate
05/28/2002	Letter to OIRA OMB (no docket)	Draft 2002 Report to Congress on the Costs and Benefits of Federal Regulations	States that data quality reviews are a more transparent avenue to address EPA's analyses than public comments
03/28/2002	Letter to NCEA (no docket)	Perchlorate Environmental Contamination: Toxicological Review Draft	States more transparency in risk characterization required more thorough explanation of diet in toxicological studies
10/31/2001	EPA-HQ-OW-2001-0001	NRDWR: Arsenic	Recommends EPA present information in reproducible, transparent methods in Notice of Data Availability on upcoming arsenic regulation
08/15/2001	Letter to OIRA OMB (no docket)	2001 Draft Report to Congress on the Costs and Benefits of Federal Regulations	States OMB should ensure the EPA follow CBA guidelines, including transparency, full disclosure, and replicability in CBAs
12/31/2000	EPA-HQ-OW-2001-0001-0096	NPDRWR: Radon-222	Identified transparency issues, including lack of consistency in concepts applied in the CBA of the radon rule

Date	Docket or Comment Link	Subject	Description
08/09/2000	EPA-HQ-OW-2002-0043-0020	NPDWR: Ground Water Rule	States that EPA was not transparent in failing to provide a GWR workshop summary to stakeholders and that the Regulatory Impact Analysis (RIA) was not clear in describing methodologies
06/09/2000	EPA-HQ-OW-2002-0008-0001	NPDWR: LT1 Enhanced Surface Water Treatment and Filter Backwash Recycle Rule	States that the Regulatory Impact Analysis (RIA) had critical inconsistencies in approach and methodologies
01/31/2000	EPA-HQ-OPP-2000-00625	OPP Policy Issues Papers Related to the Food Quality Protection Act	States that the EPA should be transparent by defining strategies and methodologies used for estimating aggregate exposure and risk assessment
04/12/1999	EPA-HQ-OW-2002-0046-0001	Radon in Drinking Water Health Risk Reduction and Cost Analysis (HRRCA)	Requests that the certain support documents be released before the proposed rule so that HRRCA could be reviewed
09/15/1998	Letter to the Tolerance Reassessment Committee (no docket)	Tolerance Reassessment Advisory Committee	States support for EPA's transparency in EPA's process on tolerance assessment and determining individual pesticide tolerances

Message

From: Pat Sinicropi [psinicropi@watereuse.org]
Sent: 3/16/2018 2:48:52 PM
To: Tracy Mehan [tmehan@awwa.org]; Amber Kim [AKim@watereuse.org]; MMeeker WERF [mmeeker@werf.org]; Pawlow, Jon [Jon.Pawlow@mail.house.gov]; Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Mclain, Jennifer [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=2bc5b268184348bbb383a56b0042b603-Jennifer Mclain]; Sawyers, Andrew [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=49214552a00b4ab7b168ec0edba1d1ac-Sawyers, Andrew]
Subject: RE: For your information

Thanks Tracy – this standard will no doubt help further the ability of communities to adopt DPR, should this be the direction that works for them.

Best, Pat

From: Tracy Mehan <tmehan@awwa.org>
Sent: Friday, March 16, 2018 10:11 AM
To: Pat Sinicropi <psinicropi@watereuse.org>; Amber Kim <AKim@watereuse.org>; MMeeker WERF <mmeeker@werf.org>; Pawlow, Jon <Jon.Pawlow@mail.house.gov>; Ross, David P <ross.davidp@epa.gov>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Sawyers, Andrew <Sawyers.Andrew@epa.gov>
Subject: For your information

Connections Story

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New direct potable reuse standard on horizon

March 15, 2018

By Ann Espinola

As utilities in water-stressed areas throughout North America consider implementing direct potable reuse technology, AWWA is preparing to publish the industry's first-ever DPR standard.

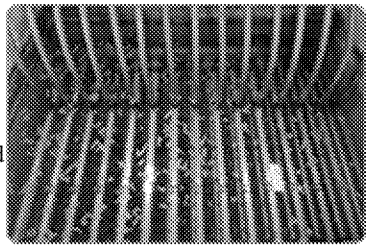
"It's a utility management standard, so it gives practices that a good utility will have in place to manage their DPR system," said Paul Olson, AWWA's senior manager of standards. "It covers the whole intake to delivery."

Most standards take three to five years to develop, but the DPR standard was considered a "high priority" of the Association and accelerated due to the membership's intense interest and the absence of federal regulations guiding the technology, Olson said. It took about two years to complete.

Publication of the *Direct Potable Reuse Program Operation and Management* standard is expected in June and will be the Association's 180th standard. For more than a century, AWWA has developed voluntary standards of minimum requirements, materials, equipment, and practices used in water treatment supply. They are used worldwide by manufacturers, distributors, and facilities to ensure the highest quality products and services.

The DPR standard was developed by a 31-member committee that included Daniel Nix, water operations manager in Wichita Falls, Texas, home to the second DPR facility in the United States. During a catastrophic drought in July 2014, Wichita Falls implemented a DPR project that ran more than a year "without a single incident or having to shut down a single time," Nix said. "It really did extend our water supply."

Nix, pictured above, said the new standard will be a game changer in how reuse is applied across North America.



"I wish I'd had this standard when we were implementing our project," Nix said. "That's one of the reasons I very quickly volunteered for the committee and was a staunch supporter of moving forward. I didn't want other reuse systems coming up behind us to experience the same issues and lack of standards we did.

"The standard sets the criteria that we believe as an industry would lead to a safe and resilient system that would prevent failure of the reuse system."

Standard details

DPR has two distinct forms:

* Advanced treated water is produced in an advanced water treatment facility and is introduced into the raw water supply immediately upstream of a drinking water treatment facility; and
* An advanced water treatment facility delivers treated water directly to a public water system's treated water conveyance or distribution system

By definition, the new standard covers DPR that is advanced treated water as part of the potable water supply without the use of an environmental buffer and with or without retention in an engineered storage buffer.

It addresses several key areas: planning for DPR, communications and outreach, management programs, source water, and operations, among others.

One of the most important recommendations for utilities, Nix said, is to develop, implement, and maintain critical control points for each treatment facility in the DPR project. A plan should be developed to monitor treatment processes, critical control points, and water quality parameters to ensure treatment goals are achieved, according to the standard.

"I think that's key and critical to this standard, that you have to do a little bit more evaluation of your processes and know where those critical control points are and be able to respond to any problems in those areas," Nix said.

In planning for DPR, a multi-barrier approach should be used in the design and selection of treatment approaches and processes, according to the standard.

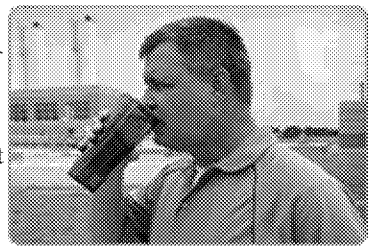
In addition, "Adequate failure response time to ensure the advanced treated water meets all water quality requirements shall be part of the design and selection of treatment approaches and processes for DPR…The inclusion of an engineered storage buffer in a treatment train for potable reuse should be considered to enhance failure response capabilities."

One section gives utilities guidance on developing a communications plan about the project and the merits of DPR. A key to success of any potable reuse program is public acceptance -- without it, decision-makers are reluctant to approve these projects.

"Key components of this program should include the purpose and need for direct potable reuse, effectively communicating the value and safety of direct potable reuse, DPR water quality, and delivering early and consistent messages," the standard reads.

The new standard is an industry consensus document and includes committee input from the water industry including the WateReuse Association and Water Environment Federation, said Dawn Flancher, AWWA's senior manager for technical and research programs.

Next steps



The draft of the standard has been approved by AWWA's Standards Council and Board of Directors, as well as the American National Standards Institute, which signifies that it meets the institute's essential requirements for openness, balance, consensus, and due process.

The DPR committee met in January at the International Symposium on Potable Reuse, Nix said, and agreed that the next step is tocreate a standard for indirect potable reuse. Olson said work on an IPR standard will begin at the Association's annual conference in June in Las Vegas.

As for the DPR standard, it ultimately achieves AWWA's mission of protecting public health, Nix said.

"This gives any municipality or water district that wants to pursue direct potable reuse a standard, so that they can say, 'I have to do A-B-C-D if I want to get to the end product,'" Nix said. "It lets them know they're doing it right."

Special thanks to Torin Halsey and the* Times Record News *in Wichita Falls for providing photos for this story.

Do you have a comment or story idea for* Connections*? Please contact Ann Espinola at aespinola@awwa.org or at 303-734-3454.

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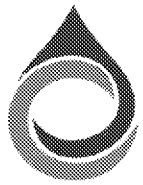
Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 2/26/2018 2:31:41 PM
To: Tracy Mehan [tmehan@awwa.org]
Subject: Joint Letter in support of greater appropriations for water-related research
Attachments: Water Sector Letter to Appropriations_ FINAL_signed_with_Logos (002) re Research.pdf

All the water associations signed on to this. FYI.

GTM



February 23, 2018

The Honorable Lisa Murkowski
Chairman
Senate Appropriations Subcommittee
Interior, Environment and Related Agencies
S-128, U.S. Capitol Building
Washington, D.C. 20510

The Honorable Tom Udall
Ranking Member
Senate Appropriations Subcommittee on
Interior, Environment and Related Agencies
S-128, U.S. Capitol Building
Washington, D.C. 20510

The Honorable Ken Calvert
Chairman
House Appropriations Subcommittee
Interior, Environment and Related Agencies
2007 Rayburn House Office Building
Washington, D.C. 20515

The Honorable Betty McCollum
Ranking Member
House Appropriations Subcommittee on
Interior, Environment and Related Agencies
2007 Rayburn House Office Building
Washington, D.C. 20515

RE: FY 2019 Funding for National Priorities Water Research

Dear Chairwoman Murkowski and Ranking Member Udall/Chairman Calvert and Ranking Member McCollum,

Over the last five years, the Committee's support of the National Priorities Water Research program has advanced the science of priority research topics through applied, extramural research projects. This successful program provides direct benefit to water sector utilities through increased knowledge, tools, and models that can improve public health outcomes and lower costs for municipalities. However, more funding is needed. Today, we urge Congress to increase funding for the National Priorities Water Research grant program to $20 million for fiscal year 2019. The increase in funding

for this competitive grant program will support transformative research approaches that will enable the water sector to respond to current and future challenges.

Since 2012, Congress supported the National Priorities Water Research grant program by providing approximately $4 million in EPA's Science and Technology Account. Extramural research enables Federal agencies to focus research on the most pressing national needs of the water sector. In the past two years, Congress has appropriated between $600–$700 million for EPA research. However, less than 15% of EPA's Science and Technology Account funding is dedicated to water-related research and less than 1% of these funds supports the National Priorities Water Research grant program and results in applied research for water utilities.

The water sector is experiencing a marked transformation. Impacted by global trends including changing weather patterns, water scarcity, population shifts, and an aging infrastructure, Mazar's USA Water Group is projecting that more than 50% of U.S. water utilities are predicting a yearly increase of more than 5% for new capital expenditures on infrastructure. Research aimed at cost-effective solutions to these water sector challenges can increase our understanding and also lead to: smarter investment in water infrastructure and transformative technologies; improved methods to mitigate health risks; preservation of watersheds and enhancement to the environment; development and deployment of water reuse technologies that can transform water resource management; and enhanced practices in the energy/water nexus. The water sector needs a strong Federal partner to support the essential water focused research that is required to proactively face the challenges faced by water managers throughout the world.

Our sector is taking the lead by directly funding research and development through its non-profit Water Research Foundation, supporting new technology launching platforms such as the Leaders Innovation Forum for Technology (LIFT) and Utility of the Future, and by pursuing new funding mechanisms like green bonds or public-private partnerships. Notwithstanding these efforts, significant needs go unmet.

A recently completed survey of public wastewater utilities found that the total budget for shovel-ready research and development projects was $150 million. Needs were identified in the areas of energy recovery, phosphorus recovery, nutrient recovery, intelligent water systems, and post-treatment. Similarly, drinking water utilities have identified priority research needs including; waterborne pathogens in distribution systems, lead and copper management, perfluoroalkyl substances and other emerging contaminants, harmful algal blooms and cyanotoxins, and disinfection byproducts. The sector estimates that it will require an additional $150 million to begin to research these drinking water topics.

However, the combined estimated $300 million is only a small snapshot of the entire water sector's real research, development, and demonstration needs. This estimate represents the current research need to allow the sector to respond to immediate regulatory, human health, and infrastructure pressures. Future investment in early-stage, transformative technologies is also needed to allow the sector to grow and adapt. National Priorities Water Research not only benefits the water sector, it also benefits the economy. A recent report from the Value of Water Campaign shows that water infrastructure innovation and investment has the potential to add $220 billion and support 1.3 million jobs.

We urge you to continue to support and grow the National Priorities Water Research Grant program. This important program is the main source of federal funds that supports collaborative, extramural, cost-shared partnerships with non-profit, water-sector research institutions that address the water sector's research needs. We ask Congress, through increased research funding and programmatic support, to bolster our efforts to develop innovative technologies and transformative solutions to our national water challenges and to fund the National Priorities Water Research Program at $20 million in fiscal year 2019. Thank you for your consideration.

Sincerely,

Melissa L. Meeker
Co-Chief Executive Officer
The Water Research Foundation

Robert C. Renner, BCEE
Co-Chief Executive Officer
The Water Research Foundation

David LaFrance
Chief Executive Officer
American Water Works Association

Eileen J. O'Neill, Ph.D.
Executive Director
Water Environment Federation

Adam Krantz
Chief Executive Officer
National Association of Clean Water Agencies

Diane VanDe Hei
Chief Executive Officer
Association of Metropolitan Water Agencies

Radhika Fox
Chief Executive Officer
US Water Alliance

Patricia Sinicropi
Executive Director
WateReuse

Vanessa M. Leiby
Executive Director
Water and Wastewater Equipment
Manufacturers Association

Christopher H. Franklin
Chairman, CEO and President, Aqua America
President, National Association of Water
Companies

Message

From: Mike Keegan [keegan@ruralwater.org]
Sent: 3/9/2018 8:40:58 PM
To: Bowles, Jack [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=78e63acc248f41328768db82d95464c3-JBOWLES]
CC: gravett.peter@epa.gov; Hanson, Andrew [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=976b280c3eaf4e50b91a25d75466cf3c-Hanson, Andrew]; Burneson, Eric [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=2cacb9a8d49f49af80531e9e2ccb9018-eburneso]; Mushkolaj, Iliriana [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b34069dfe39f42558d945790f32112fc-Mushkolaj,]; Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Paul Fulgham [pfulgham@tremontoncity.com]; Sam Wade [sam@nrwa.org]; matt [matt@nrwa.org]; Steve Fletcher [steve@netwitz.net]; svia@awwa.org [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=837e1d66b58a4ea99e240f18e13c4c86-svia@awwa.org]; Roberson, Alan [aroberson@asdwa.org]
Subject: Re: SAVE the DATE: U.S. EPA UMRA/Federalism Consultation for the Lead and Copper in Drinking Water Rule
Attachments: NRWA Lead and Copper Rule Federalism Consultation 3 8 2018.pdf

Thank you for providing the National Rural Water Association the opportunity to comment on the Long-Term Lead and Copper Rule Federalism Consultation (comments attached).

Sincerely,

Mike Keegan, *Analyst*
National Rural Water Association
Washington, DC

On Wed, Mar 7, 2018 at 5:31 PM, Bowles, Jack <Bowles.Jack@epa.gov> wrote:

> HI Mike,
>
> Submitting NRWA's comments on March 9 is no problem. Thank you for taking the time and effort to gather your folks' comments and get them through your Board of Directors. We look forward to your submission.
>
> Best Regards,
>
> *Jack Bowles*
>
> Director of State & Local Relations
>
> U.S. Environmental Protection Agency
>
> 202-564-3657 (office) | Ex. 6 (mobile)

From: Mike Keegan [mailto:keegan@ruralwater.org]
Sent: Wednesday, March 07, 2018 4:53 PM
To: Bowles, Jack <Bowles.Jack@epa.gov>; gravett.peter@epa.gov
Cc: Hanson, Andrew <Hanson.Andrew@epa.gov>
Subject: Re: SAVE the DATE: U.S. EPA UMRA/Federalism Consultation for the Lead and Copper in Drinking Water Rule

Thank you for your assistance. Is it possible for NRWA to submit LCR Federalism comments on March 9, 2018, or that the 60 day period for submitting comments be interpreted to extend until March 9, 2018. We have a previously scheduled board of directors' meeting on the 9th, which will include review and approval of our draft comments.

Mike Keegan, *Analyst*

National Rural Water Association

Washington, DC

On Thu, Dec 14, 2017 at 11:32 AM, Bowles, Jack <Bowles.Jack@epa.gov> wrote:

Dear State and Local Colleagues:

Protecting children's health is one of EPA's highest priorities and the agency continues to engage with stakeholders and assess recommendations from leading experts on ways to improve the health protections provided by the Lead and Copper Rule. A next step is for EPA to engage with state and local officials to allow for meaningful and timely input on potential rule revisions We therefore are pleased to invite you to participate in our UMRA/Federalism Consultation meeting on January 8, 2018. The input that you and your members provide will help ensure that any potential revisions to the lead and copper rule address the concerns and issues of our state and local partners. Thank you for your continued engagement with EPA as we all work together to protect human health by assuring safe drinking water. Please see the attached invitation letter for more information on this consultation and the rulemaking.

SAVE THE DATE

What: **Unfunded Mandates Reform Act/Federalism Consultation to discuss Potential Revisions to the Lead and Copper in Drinking Water Rule**

When: **Monday, January 8, 2018**

2:00 – 4:00 p.m. EST

Where: **William Jefferson Clinton Building – EAST**

Room 2123

1201 Constitution Avenue, NW, Washington, DC

RSVP to Hanson.Andrew@epa.gov if you plan to attend.

Best Regards and Happy Holidays,

Jack Bowles

Director of State & Local Relations

U.S. Environmental Protection Agency

202-564-3657 (office) Ex. 6 (mobile)

NATIONAL
RURAL WATER
ASSOCIATION
America's Largest Utility Membership

TO: U.S. Environmental Protection Agency
Docket ID No. EPA-HQ-OW-2018-0007
FROM: National Rural Water Association (contact: Mike Keegan, Analyst)
DATE: March 8, 2018
RE: Long-Term Lead and Copper Rule Federalism Consultation

Thank you for the opportunity to comment on regulatory revisions to the drinking water Lead and Copper Rule (LCR) under the Agency's Executive Order 13132, "Federalism" consultation.

*Headquartered in Duncan (Oklahoma), the **National Rural Water Association** (NRWA) is the nonprofit association of the federated state rural water associations with a combined membership of over 30,000 small and rural communities. NRWA is the country's largest water utility association and the largest community-based environmental organization. State Rural Water Associations are non-profit associations governed by elected board members from the membership. Our member utilities have the very important public responsibility of complying with all applicable U.S. Environmental Protection Agency (EPA) regulations and for supplying the public with safe drinking water and sanitation every day.*

We appreciate the many opportunities the Agency has provided to all stakeholders to participate in the crafting of revisions to the LCR such as providing comments, numerous substantive discussions, and many formal public consultations. In addition to this latest opportunity for public input, NRWA participated in the November 2011, Federalism Consultation, the August 2015 Lead and Copper Working Group to the National Drinking Water Advisory Council (LCRWG), and the December 2015 deliberations of the National Drinking Water Advisory Council (NDWAC). The Agency's outreach effort for seeking public and stakeholder participation for crafting revisions to the LCR is likely the broadest and most transparent process conducted for any federal National Primary Drinking Water Regulation to date. NRWA supports the August 2015 recommendations supported by the majority of participants on LCRWG that were subsequently endorsed by the NDWC (December 15, 2015). We believe our comments today are consistent with the LCRWG recommendations.

NRWA shares the EPA's goal of eliminating all lead from the public's drinking water. Local governments and state governments exist solely to protect and assist their citizens. The provision of safe drinking water is perhaps the most elemental purpose of local government. Every one of the approximately 68,122 U.S. public drinking water supplies that are regulated under the LCR has a unique set of vulnerabilities and challenges. If you apply a uniform regulatory standard to mandate protection in all of them, you will not only fail to address the greatest risks in many communities, but you will force many other communities to implement unnecessary regulations that fail to address their threats. We believe the current LCR can be modified to result in enhanced public health protection and drinking water safety.

Rural and small communities support the Administration's two principled objectives in reforming federal regulations: (1) respecting the decisions of the people as reflected in their local governments (including when it is in conflict with federal unfunded mandates) under the concept of *"cooperative federalism,"* and (2) respecting the authority of Congress by administering enacted statutes within the authority granted by Congress.

> *"As the Administrator of the Environmental Protection Agency, I am a firm believer in EPA's mission to protect human health and the environment and am committed to helping provide future generations with a better and healthier environment. I also firmly believe that federal agencies exist to administer the law. Congress passes statutes, and those statutes outline the responsibilities and work that EPA must do. Any action by EPA that exceeds the authority granted to it by Congress, by definition, cannot be consistent with the Agency's mission… EPA can accomplish a lot when the Agency focuses on working cooperatively with the states and tribes to improve health and the environment. It is essential for the federal government, state governments, and tribal governments to work together to provide the environmental protection that our laws demand and that the American people deserve. I strongly support cooperative federalism, and make every effort to partner with EPA's counterparts in state, local, and tribal governments to further these goals."*
>
> **Administrator Scott Pruitt**
> **Before the Subcommittee on Interior, Environment, and Related Agencies, U.S. House of Representatives**
> **June 15, 2017**

The reason local governments support cooperative federalism is because federal regulations, while well-intentioned, may have an adverse effect on public health. Some federal regulations may include mandates that local communities and consumers pay the cost of federal compliance that they don't believe is resulting in the most beneficial public health or environmental policy. This dynamic is especially acute and problematic for economically disadvantaged populations. This is the case under the current LCR.

- Communities are conducting repeated and complicated samplings in local homes that have for decades tested negative for lead and where the local water utility has no lead service lines.
- Local residents find the current in-home sampling overly complicated and arbitrary which results in local resistance and unwillingness to participate in lead drinking water sampling. The success of any drinking water safety program is dependent on local support.
- Communities are mandated to pay for very costly replacement of portions of lead service lines that are resulting in increased exposure to lead in drinking water.
- Communities are required to introduce additional chemicals to their public's drinking water when they are not persuaded there is a correlating public health benefit and when they believe there were less costly and more protective options (that are not permitted under the LCR).

The National Rural Water Association is the country's largest public drinking water and sanitation supply organization with over 30,000 members. Safe drinking water and sanitation are generally recognized as the most essential public health, public welfare, and civic necessities.

- Communities are mandated into federal compliance schemes when the federal drinking water program can't tell the public the one thing it wants to know -- how much lead in drinking water is unsafe? Instead, federal agencies say the obvious, that no amount of lead in your water is good and impose a highly convoluted standard (action level) of 15 parts per billion on a certain percentage of the homes tested. Is the 15 parts per billion level measuring safety? That is what is implied. Is a 15.5 parts per billion level unsafe… for children… for a one-time drink of that water? Should a family feel safe with water tested at 14.9 parts per billion level?

NRWA supports the Agency's concept of *"shared responsibility"* among federal, state, and local governments - and the public. Any new LCR should be fundamentally modified to reflect this principle. Unfortunately, much of the local opposition to the current rule is based on its arbitrary and uniform mandates that result in many communities believing many of the rule's requirements are unnecessary or diverting the community from implementing the most effective policy from preventing lead in drinking water. To ensure the greatest possible future success and the greatest possible public health protection, any new rule should be a shared responsibility, meaning local governments and local populations should agree the resulting policies are necessary, tailored to local conditions, and result in a commensurate public health benefit. This intergovernmental collaborative should be incorporated into the details of the rule in: monitoring schemes, lead service line replacement plans, efficacy of corrosion control treatment, public education, remedies to high household tap samples, and the provision of pitcher filters to certain customers. In all of these key rule elements, provisions should be included to ensure any uniform federal remedy does not usurp any solution that is preferable by the local citizens and more protective of public health.

Specific Shared Responsibility Opportunities to Improve the LCR

- **Sampling**: Local governments should have the authority to develop locally supported and tailored in-home tap sampling schemes. Later in these comments, we argue that the current in-home tap sampling scheme exceeds the authority provided to the Agency under the Safe Drinking Water Act (SDWA). EPA's responsibility should be limited to sampling guidance, technical and education information. Local governments can better craft monitoring plans and schedules based on local preference including sampling during day-time hours, targeting schools for testing, varied aerator removal, targeting homes with children such as daycare centers, resistance of homeowner participation, sampling flushed water samples versus first draw, historically negative sampling results, findings of no potential lead sources (plastic pipe systems), etc.

- **Decouple Tap Sampling from Utility Compliance**: Allow utility compliance (primarily corrosion control treatment) to be tested through water quality parameter sampling within the public water system. Results from in-home tap sampling should be used for a catalogue of response options that target the causes of elevated sampling results at the specific site including the following: possible replacement of

lead service lines in the home, assessment of in-home plumbing fixtures, notification and assistance of additional governmental service agencies, etc.

- **Lead Service Line Replacement**: Any mandatory policy for the replacement of lead service lines should respect local ordinances and property rights; homeowners should not be mandated to modify their private property if they believe it is not affordable and community taxpayers should not be required to pay for an individual property owner's plumbing upgrades (transfer public funds to private use). Any mandatory replacement policy should have special affordability considerations for situations where the replacement is cost-prohibitive in economically disadvantaged communities without a finding of elevated lead in drinking water levels.

- **Public Education and Pitcher Filters**: Local governments should be granted authority to modify public notice and educational material to reflect local conditions and risk communications. Our concern is the current EPA information is unnecessarily alarming the public regarding the safety of their drinking water. Many violations of EPA standards are not necessarily an indication of unsafe drinking water (i.e. a temporary exceedance for a small fraction of a part per million that is causing the public to stop drinking their water and not trust their local government). The information provided to the public needs to be commensurate with any public health risk from the drinking water. Some states have been compelled to issue additional public notices to warn consumers of the significance of EPA mandated warnings. More and better tailoring of public information would make for a better educated public. Also, local governments should have the flexibility to decide when providing individual customers with a pitcher filter is necessary. EPA guidance on the use of pitcher filters would be helpful and welcome.

- **Intergovernmental Cooperation**: Create a new process or guidance to encourage multi-government contribution to crafting lead in drinking water prevention initiatives, locally supported monitoring schemes, educating vulnerable populations, and response actions when sampling detects elevated lead levels in drinking water. The LCRWG presented a number of recommendations to further "cooperation with state, county and local health departments to promote an integrated approach to childhood lead poisoning screening, prevention, and protection that emphasizes drinking water and its potential as a primary lead source (e.g. infants dependent on reconstituted formula)." We endorse this concept of a new intergovernmental cooperation.

Regarding principle of respecting the authority of Congress by administering enacted statutes within the authority granted by Congress, we respectfully urge the Agency to consider if the existing LCR's mandate that allows for the effects of a private homeowner's plumbing (i.e. a kitchen faucet) on the water passing through that fixture should result in very burdensome and possibly unrelated requirements on the utility (i.e. treatment installation or adjustments, removal of underground water lines, and alarming public notices) as authorized under the SDWA. We understand the Agency believes it has statutory authority to regulate utilities' water as it relates to the safety of the water that comes from a customer's tap. However, under the existing LCR, the Agency does not

make any finding of contamination or adverse effect on the health of persons before the reaction with homeowner's private public fixtures as required by the SDWA. Additionally, the SDWA limits EPA's authority to regulate the quality of drinking water *"in the water in public water systems."* We believe the current LCR regulatory nexus between the results of tap sampling (when EPA has made no finding of contamination or any adverse effect on the water leaving the public water systems) and correlating mandates on the greater community exceeds the authority provided under the SDWA.

We urge the Agency to craft a new rule that decouples the regulatory requirements on water utilities from results of tap sampling. The results of tap samples should be used for every community to implement a locally-tailored lead reduction plan that corresponds to the risk in that particular community. This will result in greater potential to reduce lead in drinking water by allowing for more community involvement and responsibility in sampling and remediation, better use of local limited resources, and remediation plans that are more targeted to local conditions.

We do believe that EPA has the authority to regulate the quality of the water within the public water systems as it relates to the potential for lead occurrence at the tap through water quality parameters, corrosion control treatment, and each community's historic tap sampling results.

Thank you for the opportunity to comment and participate. We are very appreciative of the Agency's many public outreach opportunities. We believe that our recommendations will result in a better federal lead rule and greater public health protection by recognizing the need for the public to support and participate in their local government and accept responsibility for its operation. We need to acknowledge that with respect to the crisis in Flint, Michigan, the current LCR was unable to prevent it, and unable to tell us whether Flint violated the federal lead standard while delivering alarming amounts of lead to citizens in their water. Additionally, it is a case where no one knows what level of government is to blame. We believe our recommendations will begin to correct the status quo by granting additional authority and responsibility to the people. Flint should serve as a wake-up call for the public as the guarantor of the safety of their public drinking water through their local governments. The public owns and operates their public drinking water supply and is ultimately responsible for its safety.

The National Rural Water Association is the country's largest public drinking water and sanitation supply organization with over 30,000 members. Safe drinking water and sanitation are generally recognized as the most essential public health, public welfare, and civic necessities.

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 7/5/2018 4:53:06 PM
To: Tracy Mehan [tmehan@awwa.org]
Subject: New article on forests and water quality from Journal AWWA
Attachments: Claggett_et_al-2018-Journal_-_American_Water_Works_Association.pdf

FYI.

GTM

SALLY CLAGGETT AND ROBERT MORGAN

USFS Looks to the Future in Upcoming *Forests to Faucets* Analysis

AS THE WORLD'S URBAN FOOTPRINT EXPANDS AND THE CLIMATE CHANGES, THE US DEPARTMENT OF AGRICULTURE FOREST SERVICE WILL UPDATE ITS 2011 STUDY TO CLARIFY THE CONNECTION BETWEEN WATERSHED HEALTH AND DRINKING WATER SUPPLIES.

The connection between forests and water quality and streamflow has been recognized for ages. More than 2,000 years ago, Plato observed that cutting mountain forests dried up the springs and floods carried the soil to the sea, "leaving the land nothing but skin and bone" (de la Crétaz & Barten 2007). This is somewhat self-evident—urban areas and farmland are used more intensively and therefore discharge more soil and pollutants—but a wealth of research also strongly supports the fact that trees and forests improve water by filtering runoff, recharging groundwater, and regulating the timing and magnitude of streamflows (Holmes et al. 2018, Binder et al. 2017, de la Crétaz & Barten 2007, Brown & Binkley 1994). Forests are the original water treatment facility (see the sidebar starting on page 43), and they naturally provide myriad benefits (e.g., clean air, recreational enjoyment, wildlife habitat).

Land-use decisions related to water will become more important as the earth becomes more populated. In the United States, populations continue to grow, which means a larger urban footprint and more water needed for agricultural, industrial, and household uses in the country. So as pressure for clean water increases, land conversion and climate change also apply pressure on the resource (Sun et al. 2008). As the US Department of Agriculture Forest Service (USFS) and partners embark on an update to the 2011 *Forests to Faucets* analysis, the aim is to promote better understanding of the connection between

Layout imagery courtesy of Sally Claggett

natural landscapes, water quality, and water availability with an eye to the future.

FOREST FRAGMENTATION

Forests have a unique and significant role in the water cycle (Figure 1). Day after day, evaporation moves water from oceans and land up to the sky. When this water precipitates back to land, it can recharge groundwater or run off into streams, but the majority returns to the atmosphere through plant evapotranspiration in the unending hydrological cycle (Pimentel et al. 2004). Forests transpire more water because of their large biomass and deep roots. Perhaps most important, mountainous regions—which are primarily forested—receive a disproportionate amount of precipitation. More than 50% of the water supply in the United States originates on forest lands; this increases to 65% in the West (Furniss et al. 2010).

Forests cover roughly one-third of the conterminous United States (a.k.a. the Lower 48). By 2060, forests are projected to shrink by 16 million to 34 million acres because of urbanization (USDA 2012). Most forests in the United States (~56%) are privately owned (Butler et al. 2010). These predominantly family-owned forests (i.e., not owned by a corporation) consist of smaller tracts (50 acres or less), and there is increasing pressure to fragment these lands into even smaller parcels. Fragmentation of forests will continue to compromise their ability to function (USDA 2012). Privately owned forests provide the vast majority of water supplied to population centers in the South and Northeast (USDA 2014).

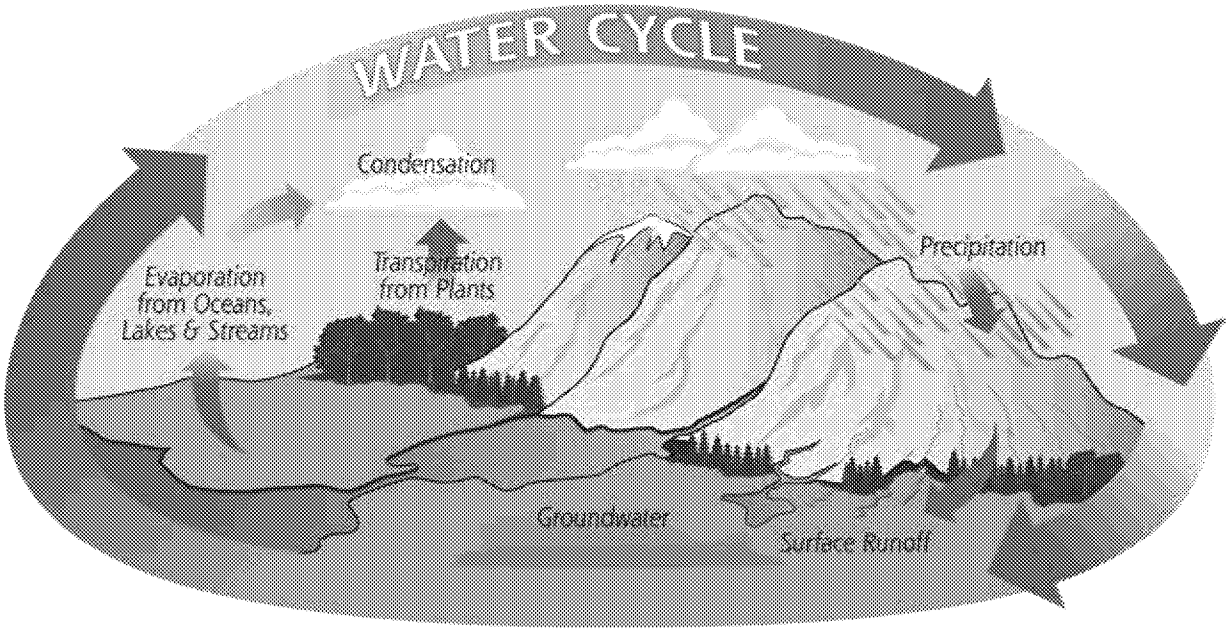
Across the West, insect epidemics, drought, and a loss of markets have put forests at higher risk for wildfires. Exacerbating these issues, fuel has been building up in most parts of the country—an unintended result of decades of fire suppression—making fires larger and more severe, which can destroy water quality. The American Forest Foundation released a report in 2015 that showed at least one-third of forests in key drinking water watersheds are at high risk of wildfire and are privately owned. Private landowners may want to manage their land to protect against fire or other threats, but 77% of landowners cited the high cost of management as a barrier (American Forest Foundation 2015). Without resources for the landowner, public benefits from private forests will continue to erode.

Upland forests are not the only land use beneficial to water quality; natural areas (e.g., grasslands, chaparral, sagebrush) are also important. Riparian areas and wetlands provide critical filtering of water pollutants coming off of farms, ranches, and developed areas.

INCREASING THREATS

USFS's new analysis will focus on surface-water supplies, which are the source of most (about 77%) drinking water in the United States (USEPA 2008). Surface water (e.g., streams, ponds, reservoirs) is naturally affected by topography, land use, soil, and other physical features;

FIGURE 1 An illustration showing the importance of topography in the water cycle



Source: NASA

Because mountainous regions are mostly forested, more than 50% of the water supply in the United States originates on forest lands.

compared with groundwater, it is more easily contaminated by pathogens and pollutants because of its accessibility. In addition, surface waters face challenges such as harmful algal blooms that typically do not affect groundwater quality. Threats to surface-water quality are often exacerbated by human activity and warmer water temperatures. *Threats on Tap,* a recent report by the Natural Resources Defense Council, details widespread concern that the Safe Drinking Water Act is not keeping up with enforcement of emerging, widespread contaminants, including some, such as harmful algal blooms, that are increasing because of climate change (Fedinick et al. 2017).

Upstream forests that provide source water protection should enable cost savings for downstream water utilities by reducing treatment requirements. In a recent study, Warziniack et al. (2017) found that, on average, water treatment plants with lower sediment and lower total organic carbon in their source water have lower treatment costs, supporting earlier work by Ernst (2004) on the importance of source water protection for water utilities. In addition, better-quality water in the influent may reduce the formation potential of disinfection byproducts and their associated risks to public health, as well as reduce waste streams and other operational burdens.

Threats to forests include conversion to other land uses, wildfire, invasive pests, and other climate-induced stresses such as increased temperatures and inconsistencies in water availability as mentioned previously. Climate change can alter a forest's ability to regulate water flows (Bergkamp et al. 2003), exacerbating the issue of water stress. Another exacerbating issue is forest fragmentation, which is accelerating in most regions (Furniss et al. 2010). These compounding threats to forests make future modeling vital.

WATER STRESS

Communities exert a large, consistent demand for water—a resource that may be seasonal and weather-dependent—and most have felt the stress of water shortages. Water stress is likely to worsen with the now-familiar double whammy of population growth and climate change. It can be evaluated by looking at water supply and water demand at the watershed level. USFS's new national *Forests to Faucets* analysis uses a simple model—the Water Supply Stress Index (WaSSI)—to simulate water supply stress across the United States. The water supply stress for a watershed is defined as the ratio of water

Forests reduce the flow and runoff energy that can cause scouring to streams and stream banks. *Photo courtesy of Sally Claggett*

How Forests Clean Water

Trees are nature's water filtration systems; they purify the water that eventually flows through our faucets. Naturally vegetated and forested areas reduce adverse impacts on water quality from impervious areas and agriculture, keeping watersheds cleaner.

Water cycling through forests can be simplified into two distinct paths, both of which improve water quality. The "downward" path starts with precipitation; evapotranspiration powers the "upward" path. The strong pumping action fueled by photosynthesis draws water up to the tree canopy, where it is transpired. But not all the water drawn up by the trees is released through evapotranspiration; some travels back down through the phloem—distributing carbohydrates made during photosynthesis—and out through trees' roots, influencing the surrounding soil.

PHYSICAL PROCESSES

Treetops intercept rain and snow, which trickle down stems and trunks to the forest floor. At this point, the forest–water interaction already has begun to reduce

continued, p. 44

demand to water supply: WaSSI = D/S, where D is water demand (i.e., the total water withdrawal from different water users as defined by the US Geological Survey [USGS], which conducts a water use survey every five years), and S is water supply (i.e., the streamflow at each watershed plus the groundwater withdrawal from USGS).

USFS's modeling system tracks water supply monthly for all 2,100 larger sub-watersheds (Hydrologic Unit Code 8) in the United States. Climate change and precipitation variability are the major drivers of water supply. Factors that affect water demand include population growth, crop irrigation water use, socioeconomic change, and associated energy demand.

The nexus of land use/forests, populations, and water supply is of primary interest as the USFS undertakes its next national *Forests to Faucets* analysis (see the sidebar on page 45).

The purpose of this project is to quantify, rank, and illustrate the direct geographic connection between forests, surface drinking water supplies, and populations that depend on them.

How Forests Clean Water *(continued)*

runoff. The humus layer on the forest floor acts like a sponge. From the tree canopy to the topsoil, up to 18 in. of precipitation can be absorbed. The mature forest soil layers—including their abundant carbon—physically hold water between the soil particles, which allows further infiltration and adsorption by roots.

Unlike other types of land cover, forests have little surface erosion, and therefore less sediment is transported to surface water. Forests also reduce the flow and runoff energy that can cause scouring to streams and stream banks—a common source of sediment in developed areas.

BIOCHEMICAL PROCESSES

Forest soil hosts microbes that interact with pollutants, changing their chemistry and improving water quality. An example of the yeoman's work these microbes can accomplish in healthy forest soils is denitrification, in which excess nitrogen compounds such as nitrate are converted and released as inorganic nitrogen gas, the most common compound in the atmosphere.

Water is absorbed by roots into the woody structure of the tree through osmosis. This movement is supercharged by evapotranspiration, which exerts a pull strong enough to get water and nutrients 200 vertical feet or more up into the crown of the tallest trees. Forests use external nutrients (i.e., from soil, atmospheric deposition, or dissolved in storm runoff) for growth and cellular processing. A tree's trunk is full of porous tissue called xylem, which acts as a system of straws that run up and down the tree. Sap or water molecules can travel through this tissue, but it forms a barrier that filters larger molecules. Xylem thus removes bacteria and contaminants such as excess nutrients (e.g., nitrates and phosphates), metals, pesticides, chemical solvents, oils, and hydrocarbons.

Fast-growing trees, such as cottonwood, are deliberately used to clean contaminated groundwater through the natural phytoremediation process. Certain chemicals are broken down, degraded, and lost to the atmosphere through transpiration and volatilization.

Nonforest vegetation also transpires, but the biomass and longevity of trees makes their transpiration more substantial in cycling water and nutrients.

SCOPE OF STUDY

The national *Forests to Faucets* version 2.0 (referred to as F2F2) will build upon the original *Forests to Faucets* analysis (Weidener & Todd 2011) by updating that study's base data layers for the continental United States and by forecasting new threats. The F2F2 analysis, which is still in the production phase, aims to promote better understanding of the connection between watershed health and drinking water supplies. F2F2 will take a closer look at current and projected hydrologic systems and water stress. The analysis will be based on a series of biophysical and demographic data layers using the 12-digit Hydrologic Unit Code (HUC12) watershed as its base unit.

The United States is divided and subdivided into successively smaller hydrologic units that are classified into four levels: regions, sub-regions, accounting units, and cataloging units (USGS 2018). The hydrologic units are arranged or nested within each other from the largest geographic area (regions) to the smallest geographic area (cataloging units). Each hydrologic unit is identified by a unique HUC consisting of two to eight digits based on the four levels of

classification in the hydrologic unit system.

There are more than 88,000 HUC 12s watersheds in the continental United States, and their average size is roughly 35 mi^2. Analysis at this scale provides information useful for states, counties, water utilities, and large land-management units such as national forests, while allowing for standardized comparisons in different areas. The HUC12 scale is useful for evaluating risk factors since the spatial importance of these risks is often lost when summarized at larger scales. Also, this scale helps watershed managers target problem areas, which is an improvement over a shotgun approach.

The F2F2 analysis can be thought of in three parts. The first part will be an analysis of an HUC12 watershed's inherent ability to produce clean water based largely on land use. In the *Forests, Water and People* analysis (Barnes et al. 2009), this was called "Ability to Produce Clean Water" and was not specific to drinking water. However, most watersheds that have a stake in drinking water protection also support a high proportion of at-risk aquatic biodiversity, providing opportunities for joint benefits from water quality protection (USDA 2012).

The second part of the F2F2 analysis will look at which HUC12 watersheds are the most important to surface drinking water users. To determine these watersheds, flow is modeled upstream of source water intakes to indicate how that water has been influenced by upstream watersheds. The "importance factor" is directly tied to the approximate number of people who depend on that water source for their drinking water.

The third aspect will allow the user to weigh various threats to the quality and quantity of surface drinking water. They include threats to forests (e.g., forest loss or damage from fire or pathogens) and threats to water supply (i.e., using the WaSSI tool). Climate change is considered in both threat categories. Threats will also be forecast for two future time steps (i.e., 2040 and 2090) when data are available.

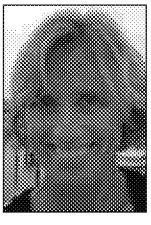
Results of the F2F2 analysis are intended to help planners, land managers, water resource managers, and anyone concerned with water supplies make critical land-use decisions. The end goal is to have a dynamic and interactive Internet presence to convey the various outcomes of the F2F2 analysis depending on users' needs. Current and future (projected) land-use statistics will be generated for each HUC12. The data produced by this assessment could also be used to identify opportunities for market-based approaches to sustain clean water production.

On the whole, the F2F2 project will provide a broad view of land-use characteristics and water supply threats to watersheds that feed surface drinking water sources. It does not displace the need for local land-use data, local knowledge, or different analyses of hydrologic regimes. However, F2F2 will be useful for long-range planning, municipal education, and prioritization of regional water needs, including indicating where alternative water supplies may be needed. It will help land management decision-makers know where practices may affect water needs, either positively or negatively.

Sample Questions the National *Forests to Faucets* 2.0 Analysis Will Address

- Which sub-watersheds have an inherent ability to produce clean water based on their land-use characteristics? Conversely, which watersheds are likely candidates for watershed restoration to provide higher-quality water?
- What is the relative importance of each sub-watershed in my state for providing drinking water to downstream consumers?
- How many US surface drinking water consumers/water supply utilities depend on public forest lands for water supply? How many depend on unprotected private forest land?
- Which water supply watersheds are likely to be most affected by development/land-use change throughout the United States over the next 20-plus years?
- What threats other than development (e.g., wildfire, invasive pests, water yield change because of climate change) do water supply watersheds face, and to what extent are they likely to be a concern?

ABOUT THE AUTHORS



Sally Claggett (to whom correspondence may be addressed) is program coordinator for the US Forest Service, 410 Severn Ave., Ste. 209, Annapolis, MD 21403 USA; sclaggett@fs.fed.us. *(Readers can contact her with any feedback on this project, including whether this analysis will be valuable for utilities and any potential applications or pitfalls.) She has 16 years of experience working in watershed forestry as a USFS liaison to the Chesapeake Bay Program. Claggett earned a master of science degree from the University of Oregon, Eugene,*

Ore., and a bachelor of arts degree from the University of Colorado, Boulder, Colo. **Robert Morgan** *is an ecological engineer in Springdale, Ark., who retired from the Beaver Water District.*

https://doi.org/10.1002/awwa.1114

Threats to forests include conversion to other land uses, wildfire, invasive pests, and other climate-induced stresses.

Trees and forests improve water by filtering runoff, recharging groundwater, and regulating the timing and magnitude of streamflows. *Photo courtesy of Sally Claggett*

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- Protecting Forested Watersheds Is Smart Economics for Water Utilities. Gartner, T.; Mehan, G.T. III; Mulligan, J.; Roberson, J.A.; Stangel, P.; & Qin, Y., 2014. *Journal AWWA*, 106:9:54.

These resources have been supplied by *Journal AWWA* staff. For information on these and other AWWA resources, visit www.awwa.org.

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 3/7/2018 7:14:15 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Forsgren, Lee [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=a055d7329d5b470fbaa9920ce1b68a7d-Forsgren, D]; Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Sawyers, Andrew [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=49214552a00b4ab7b168ec0edba1d1ac-Sawyers, Andrew]; Nagle, Deborah [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=33888a2bbe8f48aeb4ad9cc54259fb4e-dnagle]
Subject: FW: The Water Research Foundation Integration Update

From: The Water Research Foundation [mailto:newssplash@waterrfnews.org]
Sent: Wednesday, March 07, 2018 2:01 PM
To: Tracy Mehan <tmehan@awwa.org>
Subject: The Water Research Foundation Integration Update

View this mailing online

News Splash

March 7, 2018

Since October 2017, when the Boards of the Water Research Foundation and the Water Environment & Reuse Foundation voted to integrate the two organizations into one superior research foundation, great strides have been made in bringing the two operations together. Much of this success has been the result of having both CEOs working

together cooperatively to implement the merger with progress made toward full integration of our Denver and Alexandria operations.

With the integration well under way, the Board of Directors has begun to focus on our long-term future. We recognize that the ultimate success of the merged organization is largely dependent on a strong CEO to lead the Foundation in 2019 and beyond.

After reflection on the best interests of the Foundation and recognition that the remaining transition issues can be managed efficiently with a single CEO, Melissa Meeker has decided to move on to other opportunities, effective at the end of April.

The Board is grateful for Melissa's leadership and commitment to making the integration of these two great Foundations a reality. Her leadership during the negotiations and merger process has been key to our success to date. We expect to keep in touch with Melissa as a key player in the water community and we all wish Melissa great success in her next endeavor.

We are most fortunate to maintain the accomplished leadership of Rob Renner who will continue as CEO through the remaining transition period. We owe Rob our sincerest gratitude for his leadership in making the merger happen and his selfless commitment to the long-term success of the integrated Foundation. The Board has every confidence in Mr. Renner's proven leadership, commitment and expertise as the advantages of the merger are realized and solidified.

After much consideration and discussion, the Board has decided to begin the process of recruiting our next CEO to lead a unified Foundation forward in 2019 and beyond. We are hopeful our search will be complete by late 2018 or early 2019. We are confident that we will find the right leadership to fully realize the potential benefits of the newly merged Foundation in 2019 and beyond.

We remain excited about The Water Research Foundation's future. Thanks to our terrific staff and to our subscribers for their continued support and volunteerism as we advance the study of One Water.

Sincerely,

Charles M. Murray
Fairfax Water
WRF Co-Chairman
cmurray@fairfaxwater.org

Kevin L. Shafer
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The Water Research Foundation
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Message

From: Chris Hornback [CHornback@nacwa.org]
Sent: 4/19/2018 8:18:50 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]
CC: Adam Krantz [AKrantz@nacwa.org]
Subject: Thank you

Dave – Thank you again for participating in the Fly-In program earlier this week. It meant a lot to our members and those of the other sponsoring organizations that you were willing to not only address the group but to also give them a chance to engage with you directly through Q&A.

We look forward to working with you on many fronts and please don't hesitate to contact Adam or I. For better or for worse, our combined 34+ years at NACWA have given us our fair share of perspective on the issues facing the water sector and we are here as a resource.

-Chris

Chris Hornback | Deputy Chief Executive Officer | National Association of Clean Water Agencies (NACWA)
(O) Ex. 6 | (M) Ex. 6 | chornback@nacwa.org

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 7/3/2018 4:30:51 PM
To: Tracy Mehan [tmehan@awwa.org]
Subject: Happy 4th of July!

https://spectator.org/39296_searching-paul-revere/

Searching for Paul Revere.

Tracy Mehan

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 7/3/2018 2:14:15 PM
To: Tracy Mehan [tmehan@awwa.org]
Subject: from Bloomberg

Water from an emergency reserve, for use during drought conditions.
Photographer: David McNew/Getty Images
News

Senate Water Bill Would Blow Hole in Deficit, Budget Agency Says

Posted June 29, 2018, 6:37 PM
By David Schultz

- Analysis finds Senate water bill to boost deficit more than $3 billion
- Republicans say provisions will be fixed before bill lands on floor

A landmark water resources bill in the Senate would blow a hole in the federal deficit, Congress' nonpartisan economic analysts said June 29.

However, the bill is still primed for an easy passage through the chamber because its budget-busting sections will be rewritten before the legislation reaches the Senate floor, Republican staffers told Bloomberg Environment.

The water resources legislation, S. 2800, won approval from the Senate Environment and Public Works committee last month on a unanimous 21-0 vote. If the committee-approved legislation is enacted, it would boost the deficit by more than $3 billion over the next decade, according to an analysis by the nonpartisan Congressional Budget Office.

The lion's share of this $3 billion would come from a section of the bill that would dramatically expand a new program at the Environmental Protection Agency that provides low-cost loans for water infrastructure projects.

The CBO found that expanding this program would lead cities and towns to issue many more tax-exempt bonds than they otherwise would have, which would deprive federal coffers of more than $2.6 billion in revenues over the next decade.

About $378 million of the deficit spending would come from mandatory reimbursements that the Army Corps of Engineers would have to pay to states, municipalities, and other third parties who work on federal water infrastructure projects.

Rewrites Coming

Environment and Public Works aides told Bloomberg Environment this water loan section of the bill would be rewritten before the bill is taken up on the Senate floor to make the legislation deficit-neutral. The staffers also said the bill is still on track to retain the bipartisan support it enjoyed in the committee and that it will likely make it to the floor before Labor Day.

Congress typically passes a water resources bill every other year. These bills contain lists of which mega-projects the Army Corps of Engineers can proceed on, and also often include significant changes to water policies.

Before 2014, Congress passed only one water resources bill in 14 years. Lawmakers on the committees that handle infrastructure in both the House and the Senate have frequently expressed a desire to get the water resources process back on track.

The House cleared its own version of the water resources bill earlier this month on a 408-2 vote. The CBO's estimate of that bill, H.R. 8, found that it would generate only $5 million in deficit spending over the next decade.

The White House has said it would sign the House bill into law, but has not commented on the Senate's version.

To contact the reporter on this story: David Schultz in Washington at dschultz@bloombergenvironment.com

To contact the editor responsible for this story: Rachael Daigle at rdaigle@bloombergenvironment.com

Message

From: Chris Hornback [CHornback@nacwa.org]
Sent: 6/19/2018 3:19:00 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]
Subject: Stoner/Beauvais Memo Update?

Dave – I understand your team is considering an update to the 'Stoner/Beauvais' memo or perhaps something new along those lines.

We'd appreciate an opportunity to talk about some thoughts we have on content, especially on water quality partnerships and trading and how to encourage/incentivize utilities to work more with Ag.

Let me know who the point person is and I'll reach out to them directly.

Thanks,
Chris

Chris Hornback | Deputy Chief Executive Officer | National Association of Clean Water Agencies (NACWA)
(O) Ex. 6 | **(M)** Ex. 6 | **chornback@nacwa.org**

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 6/19/2018 4:09:58 PM
To: Tracy Mehan [tmehan@awwa.org]
Subject: Presentation on San Diego's P3 Project
Attachments: Maureen Stapleton Presentation re San Diego P3 Project.pdf

Dear Colleague,

Given your interest in innovative infrastructure finance, I thought you might find the attachment of interest. It is a presentation by Maureen Stapleton, General Manager, San Diego County Water Authority, on their massive P3 (public-private partnership) initiative, a $1 billion investment in the Carlsbad desalination project. This presentation was made at ACE '18 for a panel on "Everything You Wanted to Know About P3s but Were to Afraid to Ask."

Thank you for your interest.

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)
(cell)

Attachment

AWWA ACE 18
Public–Private Partnerships

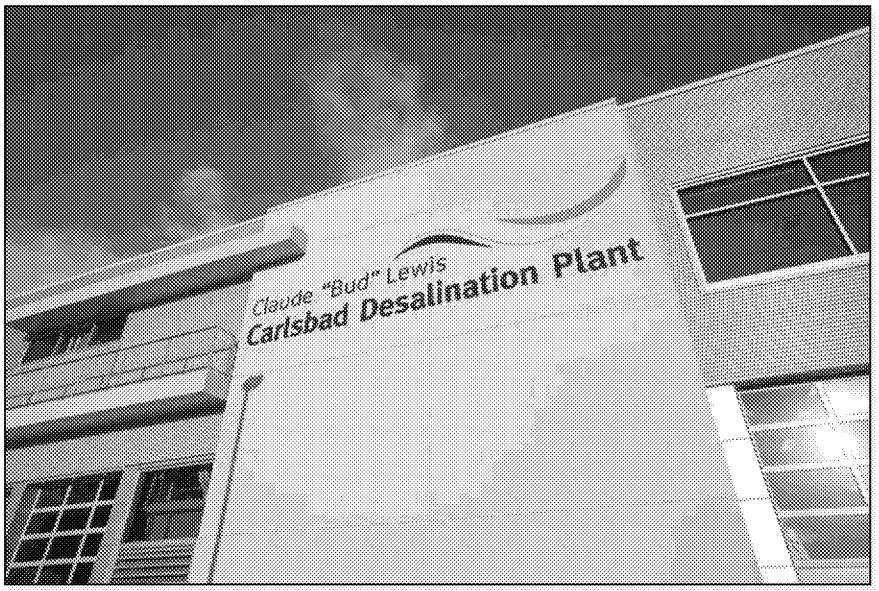
Maureen A. Stapleton, General Manager

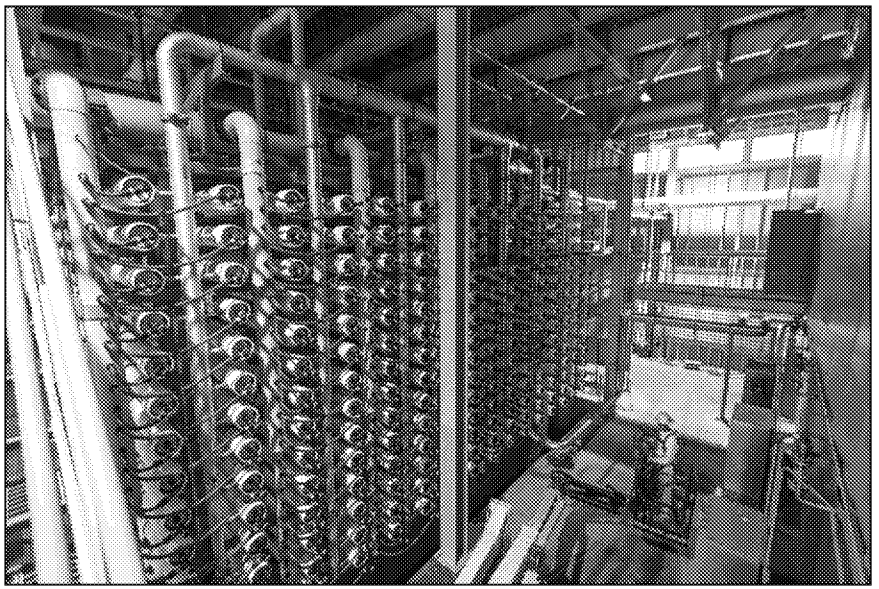
June 12, 2018

San Diego County Water Authority

Carlsbad Desalination Project

- $1 billion investment
- 50 MGD capacity – Up to 56,000 AF/year
- Designed, built, owned and operated by private developer (Poseidon Water)
- 30-year Water Purchase Agreement
- Water Authority takes ownership at end of agreement term.

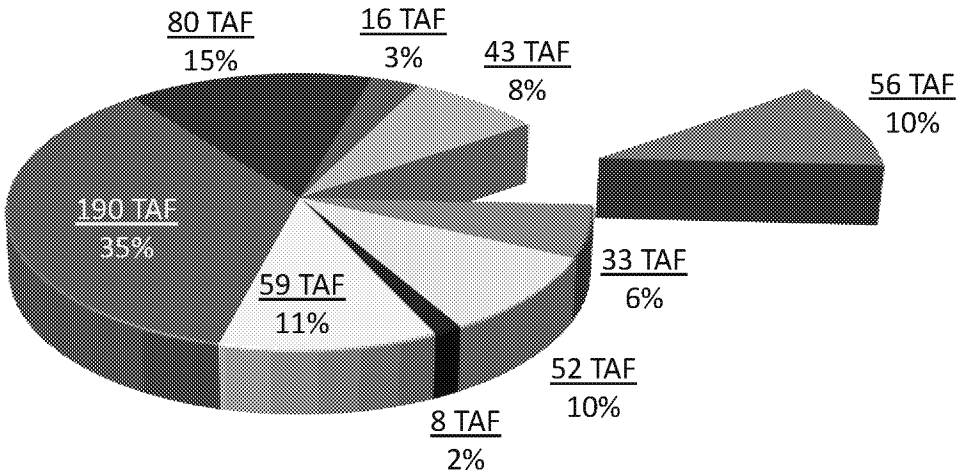




San Diego County Water Authority

Increasing San Diego County's Water Supply Reliability through Supply Diversification

2020



- Metropolitan Water District
- San Luis Rey Water Transfer
- Groundwater
- Imperial Irrigation District Transfer
- Recycled Water
- Local Surface Water
- All American & Coachella Canal Lining
- Seawater Desalination
- Potable Reuse

(TAF=Thousand Acre-Feet)

Considerations in determining the project approach

- Who has the expertise to accomplish the project?
  - Public? Private? Both?

- What risk(s) is the agency willing to take?
  - Permitting
  - Legal challenges
  - Financing
  - Construction costs and potential overruns
  - Design, Operations and Performance

San Diego County Water Authority

Challenges to the Desalination Project P3

- Resistance to a privately-owned base water supply project
- "Profiteer" issue
- Complexity of project and need to cover ALL aspects of project in the contract
- Impact on agency staff and workload
- Potential limitation of number of bidders
- Transparency, transparency, transparency

San Diego County Water Authority

Deciding Factors for the Desalination Project P3

- Little in-house expertise in desalination within the agency
- Numerous permit risk and legal challenges
- Significant outside financial investment obtained and off-public balance sheet
- Quicker project delivery
- Relief from potential operational challenges
- Protection from financial impact of non-performance
- Guaranteed maintenance schedule per the contract

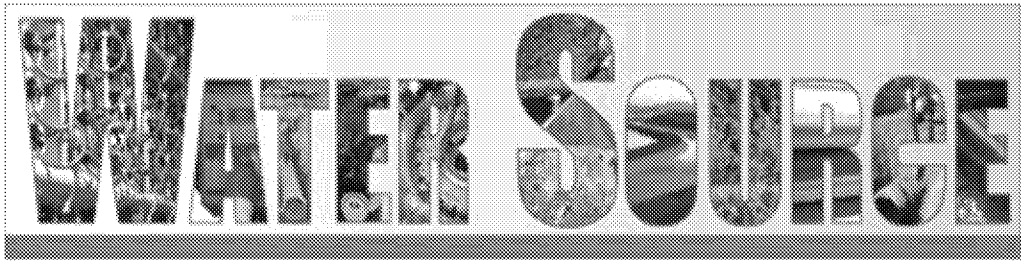
San Diego County Water Authority

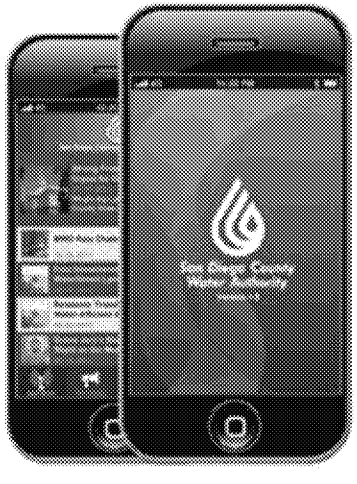
The Carlsbad Project: A Successful Public Private Partnership (P3)

- ***Risk Transfer*** to Poseidon/Contractor team
- ***Price certainty*** throughout Water Purchase Agreement term
- ***Buy-out provisions*** after 10 years of operation
- ***Transfer to public ownership*** at the end of the 30 year agreement

San Diego County Water Authority

Stay in Touch with the Water Authority





sdcwa.org/mobile-news-app

CITIZENS WATER ACADEMY

San Diego County Water Authority

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WaterAuthority

www.sdcwa.org

Message

From: Ross, David P [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=119CD8B52DD14305A84863124AD6D8A6-ROSS, DAVID]
Sent: 2/12/2018 12:58:06 PM
To: Tracy Mehan [tmehan@awwa.org]
CC: Penman, Crystal [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=93662678a6fd4d4695c3df22cd95935a-Penman, Crystal]; Patricia Chism [pchism@awwa.org]
Subject: Re: Home sick today

Sorry to hear that Tracy. Feel better! We'll find some time when you are back on your feet.

Dave

Sent from my iPad

On Feb 12, 2018, at 7:33 AM, Tracy Mehan <tmehan@awwa.org> wrote:

> David,
>
> With deep regrets, I must ask that we reschedule our meeting today. I came home from California last night very sick. I had hoped a good night's sleep would get me back in the game, but alas, I'm pretty bad this morning. I don't want to infect anyone.
>
> I will ask Patty to get together with Crystal to come up with a new date. In the meantime, we are working on the letter of Invitation for our national convention in June in Las Vegas. Thank you for your understanding.
>
> Tracy Mehan
> Ex. 6 cell
>
> Get Outlook for Android

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 3/1/2018 10:00:00 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]
CC: David LaFrance [dlafrance@awwa.org]; Penman, Crystal [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=93662678a6fd4d4695c3df22cd95935a-Penman, Crystal]; Keli Jackson [KJackson@awwa.org]; Barb Martin [bmartin@awwa.org]; Patricia Chism [pchism@awwa.org]
Subject: Formal invitation letter to ACE '18
Attachments: ACE 18 Invitation Ross EPA_Final.pdf

David,

Attached please find a letter from AWWA CEO David LaFrance inviting you to participate in ACE '18 in Las Vegas and suggesting a format for your interaction with our members.

Thank you for your consideration. It will be great to introduce you to our membership.

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)
(cell)

Attachment

American Water Works Association
Dedicated to the World's Most Important Resource™

Government Affairs Office
1300 Eye Street NW
Suite 701W
Washington, DC 20005-3314
T 202.628.8303
F 202.628.2846

March 1, 2018

David Ross, Assistant Administrator
USEPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N. W.
Washington, DC 20460

Dear Assistant Administrator Ross:

On behalf of the American Water Works Association (AWWA), I would like to invite you to join me for a public dialogue during AWWA's Annual Conference & Exposition (ACE '18). The Conference will be held June 11-14, 2018, at the Mandalay Bay Resort & Hotel in Las Vegas, Nevada.

If you are available, on Tuesday afternoon, June 12, 2018, I invite you to participate in a discussion forum session, running from 1:00 to 2:00 p.m. This forum is proposed as a one on one interview with myself focused on the water sector's needs, the Agency's activities, and what the future holds for the water industry. Additionally, if your schedule allows, we invite you to speak with our Water Utility Council, AWWA's policy setting body for its Board of Directors, on Thursday morning, June 14, 2018, at 8:30 a.m.

Should your schedule allow for additional time spent at the conference, we are happy to recommend and accompany you in attending the most appropriate activities that highlight the work that AWWA and its volunteers are conducting to support the water sector.

AWWA is the world's largest educational and scientific organization dedicated to the promotion of safe drinking water, and the AWWA annual conference attracts more than 12,000 members from across North America. The association's 52,000 members work as community water providers, federal and state regulators, engineers, academics, and scientists. Our 4,000 utility members serve 80 percent of the U.S. population. AWWA has proudly sponsored many of the educational programs, invested in research, and developed much of the scientific and technical information used to improve the quality of the water we drink.

We would be honored by your attendance at our annual conference and look forward to hearing your perspective on actions and initiatives underway at the Agency that support the water sector. AWWA will be happy to waive the conference registration fee for your attendance. I would very much appreciate your earliest possible response so that we can plan accordingly. If you or your staff have any questions, please do not hesitate to contact me or Barbara Martin, Director of Engineering and Technical Services (bmartin@awwa.org or Ex. 6.

Thank you for your consideration of this invitation, and we hope to see you at AWWA's Annual Conference in June.

Sincerely,

David LaFrance
CEO
American Water Works Association

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 2/2/2018 10:23:52 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]
CC: Penman, Crystal [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=93662678a6fd4d4695c3df22cd95935a-Penman, Crystal]; David LaFrance [dlafrance@awwa.org]; Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Kurt Vause [Ex. 6]
Subject: RE: ACE '18 in Las Vegas, NV, June 11-14

That is great, David. Thanks for getting back to me so quickly. We will follow through with the letter and work out details with you later. Have a great weekend.

Tracy

Get Outlook for Android

From: Ross, David P <ross.davidp@epa.gov>
Sent: Friday, February 2, 2018 5:21:47 PM
To: Tracy Mehan
Cc: Penman, Crystal; David LaFrance; Grevatt, Peter; Kurt Vause
Subject: RE: ACE '18 in Las Vegas, NV, June 11-14

Tracy,

I apologize for having to delay our meeting, as I am really looking forward to working with you and AWWA in my time here at EPA. Thank you for the invitation to join AWWA at its annual conference in June. I am available that week and have instructed my team to put a hold on those dates for now. I would welcome a chance to engage with Mr. LaFrance in a forum discussion, as I find those moments more interesting and informative for the participants in the audience. We'll work out the details, but for now, please plan on my participation in some capacity. Thanks for the invite!

Dave

From: Tracy Mehan [mailto:tmehan@awwa.org]
Sent: Friday, February 2, 2018 9:55 AM
To: Ross, David P <ross.davidp@epa.gov>
Cc: Penman, Crystal <Penman.Crystal@epa.gov>; David LaFrance <dlafrance@awwa.org>; Grevatt, Peter <Grevatt.Peter@epa.gov>; Kurt Vause <[Ex. 6]>
Subject: ACE '18 in Las Vegas, NV, June 11-14

Dear David,

I look forward to rescheduling our meeting and hope to catch up with you soon. In the meantime, I wanted to alert you to AWWA's Annual Conference & Exposition 2018 (ACE '18) in Las Vegas, NV, June 11-14.

Our CEO, David LaFrance, will be sending you a formal invitation for this event which usually draws 12,000+ members from all across the water sector. If you can see your way through to joining us, we could schedule opportunities for you to provide our membership with a sense of your priorities, etc., for the Office of Water and the drinking water program in particular.

For instance, if you were available June 13-14, our CEO could engage you in forum discussion. You could also speak with our Water Utility Council, AWWA's policy setting body for its Board of Directors (Peter Grevatt has appeared before them several times). But we can certainly work with you to accommodate your very busy schedule. We would be happy to comp registration if that is appropriate.

Thank you for your interest.

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)
(cell)

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American Water Works Association
Dedicated to the World's Most Important Resource ®

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 2/2/2018 2:55:06 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]
CC: Penman, Crystal [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=93662678a6fd4d4695c3df22cd95935a-Penman, Crystal]; David LaFrance [dlafrance@awwa.org]; Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Kurt Vause [kurt.vause1@gmail.com]
Subject: ACE '18 in Las Vegas, NV, June 11-14

Dear David,

I look forward to rescheduling our meeting and hope to catch up with you soon. In the meantime, I wanted to alert you to AWWA's Annual Conference & Exposition 2018 (ACE '18) in Las Vegas, NV, June 11-14.

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For instance, if you were available June 13-14, our CEO could engage you in forum discussion. You could also speak with our Water Utility Council, AWWA's policy setting body for its Board of Directors (Peter Grevatt has appeared before them several times). But we can certainly work with you to accommodate your very busy schedule. We would be happy to comp registration if that is appropriate.

Thank you for your interest.

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)
(cell)

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 3/9/2018 5:35:12 PM
To: Penman, Crystal [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=93662678a6fd4d4695c3df22cd95935a-Penman, Crystal]; Mayer, Lauren [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=7e806d6189b44868a53ff4bdce1af43e-Mayer, Laur]
CC: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Sawyers, Andrew [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=49214552a00b4ab7b168ec0edba1d1ac-Sawyers, Andrew]; svia@awwa.org [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=837e1d66b58a4ea99e240f18e13c4c86-svia@awwa.org]; Tommy Holmes [THolmes@awwa.org]; Barb Martin [bmartin@awwa.org]
Subject: Invitation Forms for David Ross, Assistant Administrator for Water, US EPA
Attachments: OW Speaker Request Form_Ross0612.docx; OW Speaker Request Form_Ross0419 AWWA WUC.docx; OW Speaker Request Form_Ross0614 AWWA WUC.docx

Dear Crystal and Lauren,

Attached are three (3) different forms relative to our recent invitations to Mr. Ross. One (1) is for ACE '18. The other two (2) are for our Water Utility Council which meets in April during Water Week and on the Thursday of ACE '18 in Las Vegas.

Please let me know if you require any further information.

Thanks, again.

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)
(cell)

Attachments

Event Information Form

This form has been designed to assist in planning participation in events and activities.
This is not a confirmation of attendance.

Basic Background

Name of Event	American Water Works Association Spring Water Utility Council Meeting
Sponsoring Organization	American Water Works Association
Date of Event	Thursday, April 19, 2018
Time of Event	1:00 p.m. 4/19 to 1:15 p.m. 4/20
Deadline for Acceptance	March 30
Speaker Requested	David Ross
Expected time of remarks or participation by EPA official	1:30 - 3:00 p.m. 4/19
Location (please include city/town and street address)	Wick Hotel, 1143 New Hampshire Ave., NW, Washington, DC
Directions to the event (if appropriate, please also include relevant information about parking, the specific building, and best entrance to use)	Will be provided
Where to meet POC	Hotel lobby

Commented [A1]: Is this reasonable?

Event Description and Role of the EPA official

Brief description or outline of the event	The event is a 1 ½ hour discussion with AWWA's Water Utility Council on the Office of Water's policy agenda.
Brochure, invitation and/or other event material(s)	No other materials.
Agenda and order of speakers and biography/information of other speakers	Draft agenda is attached.
Name of person introducing EPA official	Tracy Mehan, AWWA's Executive Director of Government Affairs, will introduce David Ross.
Basic information about the role of the EPA official at the event. (For example, will they serve as a keynote speaker? Participate on a panel? Take part in a press conference? Tour a facility?)	David Ross is requested to participate in a discussion of policy priorities for the Office of Water. Mr. Ross would make introductory remarks and the balance of the hour would be spent in discussion. At present Office of Water directors, Peter Grevatt and Andrew Sawyers, and are available to attend with Mr. Ross.
If the EPA official is a featured speaker, which topic(s) should they address and how long?	Opening remarks 10 – 20 minutes. Topics of interest include infrastructure investment, regulatory activities, public confidence in water service, and community-level affordability of water service.
What rules would the audience like to hear about?	Revisions to the Lead and Copper Rule (LCR), the Fourth Regulatory Determinations, Perchlorate
Will there be time for Q&A? If so, who will be moderating?	After Mr. Ross's initial remarks, the balance of the hour would be open discussion with Council members.

Do you have a sense of the types of questions that may be asked?	Anticipate questions about specific rules (such as LCR), infrastructure funding, affordability, and EPA regulatory priorities.
Recommendations on the use of visuals/PowerPoint. Should the EPA official plan on using a PowerPoint Presentation?	No PowerPoint presentation is required.
What is the physical layout of the room (e.g. size, and format of the interaction; podium, seated in armchair dialogue, or at a table, etc.)	Hollow square with ancillary seating for spectators from the conference.

About the Audience

Please tell us about the make-up of the audience for the event:	The participants consist primarily of representatives from drinking water utilities. The Water Utility Council is a 27-member committee responsible for AWWA's federal water policy activities.
Expected number in attendance at the event	<50
Is the event open to press?	Yes

Contact Information

Your name:	Tracy Mehan
Telephone Number:	Ex. 6
Mailing Address:	1300 Eye Street NW, Suite 701W Washington DC 20005
E-Mail Address:	tmehan@awwa.org
Cell Phone Number:	Ex. 6
Best way to reach you at the event?	Cell Phone

EPA Contact Person

Allison Dennis, Deputy Communications Director: 202-564-1985
Lauren Mayer, ORISE: 202-564-0408

Draft Agenda
Fly-In/Water Utility Council Meeting
April 19-20, 2018

Wink Hotel, 1143 New Hampshire Ave NW, Washington, D.C.

Thursday, April 19

7:30	**WUC Executive Committee** Room *Kurt Vause, Chair*
Noon-1:00	**WUC Opening Lunch / Fly-In Concluding Lunch** Room
1:00	**1. Water Utility Council Welcome and Introductions** Room *Kurt Vause, Chair*
1:10	**2. Presidential Officer's Report** *AWWA President-Elect David Rager*
1:20	**3. Review and Approval of the Consent Agenda** A. Highlights of Council Summit Meeting B. Record of Decisions C. Treasurer's Report D. Roadmap Summary of Status E. Information items
1:30	**4. Conversation with EPA** *David Ross (invited)* *Peter Grevatt* *Andrew Sawyers*
3:00	**5. 2017 Hurricane Season After Action Report** *Kevin Morley*
3:30	**Break**
3:45	**6. Legislative Agenda** *A. Administration Infrastructure Proposal* *Michael Patella, EOP/CEQ (invited)* B. Infrastructure Finance – WIFIA and SRF Status and Update *Tommy Holmes* C. Farm Bill Outlook *Pelham Straughn (confirmed)*

5:00	**7. Fly-In Recap and Next Steps** *David Weihrauch, Oxford; Tommy Holmes, AWWA*
5:30	**Wrap Up** *Kurt Vause, Chair*
6:00	**Dinner for WUC** Room

Friday, April 20

7:30 a.m.	**Continental Breakfast** Room
8:00	**Call to Order** Room *Kurt Vause, Chair*
8:10	**8. Election of WUC Vice-Chair**
8:30	**9. State Revolving Loan Fund Project Update and Discussion** *Charlie Maddox and Tim Wilson* *Carolyn Gillette, ERG*
9:30	**Break**
9:45	**10. Emerging Issues** *Tracy Mehan*
10:00	**11. Regulatory Outlook** A. Lead Service Line Replacement B. Perchlorate C. PFAS D. Premise Plumbing E. Outstanding items not otherwise addressed *Staff*
10:45	**11. Opportunities for Lead Risks Reduction at Community Level** *Propose to invite Rebecca Morley (Author of Pew Report on Lead), Surili Patel (APHA), Amanda Reddy (National Center for Healthy Housing), Jennifer Li (NACCHO) (invited)*
11:45	**12. Federal Budget Priorities in Resource Constrained Times** *Staff*
12:15	**Working Lunch – Any Outstanding Other Business Items**

1:15 **13. Concluding Remarks and Adjourn**
Kurt Vause, Chair

Event Information Form

This form has been designed to assist in planning participation in events and activities.
This is not a confirmation of attendance.

Basic Background

Name of Event	ACE18 – American Water Works Association Annual Conference and Exposition 2018
Sponsoring Organization	American Water Works Association
Date of Event	Tuesday, June 12, 2018
Time of Event	1:00-2:00 pm
Deadline for Acceptance	March 30
Speaker Requested	David Ross
Expected time of remarks or participation by EPA official	1:00-2:00 pm
Location (please include city/town and street address)	Mandalay Bay Convention Center 3950 S. Las Vegas Blvd. Las Vegas, NV 89119
Directions to the event (if appropriate, please also include relevant information about parking, the specific building, and best entrance to use)	Will be provided
Where to meet POC	TBD – will be provided with instructions

Event Description and Role of the EPA official

Brief description or outline of the event	The event is a one-hour interview with AWWA's CEO, David LaFrance to discuss EPA's perspective on relevant topics in the water sector.
Brochure, invitation and/or other event material(s)	General ACE18 conference information is available at: https://www.awwa.org/conferences-education/conferences/annual-conference.aspx
Agenda and order of speakers and biography/information of other speakers	The interviewer will be AWWA's CEO, David LaFrance.
Name of person introducing EPA official	Tracy Mehan, AWWA's Executive Director of Government Affairs, will introduce David Ross.
Basic information about the role of the EPA official at the event. (For example, will they serve as a keynote speaker? Participate on a panel? Take part in a press conference? Tour a facility?)	David Ross is requested to participate in a one-on-one interview with AWWA's CEO, David LaFrance. This interview will be open to all ACE18 conference attendees.
If the EPA official is a featured speaker, which topic(s) should they address and how long?	Featured topics include specific regulations, infrastructure funding, affordability, small system capacity building, and EPA regulatory priorities. *A list of questions will be provided to David Ross in advance of the event.*
What rules would the audience like to hear about?	Lead and Copper Rule (LCR), Perchlorate, EPA's 4th regulatory determinations proposal
Will there be time for Q&A? If so, who will be moderating?	After the one-on-one discussion with the CEO, there will be time for approximately 15-20 minutes of audience Q&A. This session is anticipated to be

	moderated by Tracy Mehan, Barbara Martin (AWWA Director of Engineering and Technical Services), and/or Steve Via (AWWA Director of Government Affairs).
Do you have a sense of the types of questions that may be asked?	Anticipate questions about specific rules (such as LCR), infrastructure funding, affordability, and EPA regulatory priorities.
Recommendations on the use of visuals/PowerPoint. Should the EPA official plan on using a PowerPoint Presentation?	No PowerPoint presentation is required.
What is the physical layout of the room (e.g. size, and format of the interaction; podium, seated in armchair dialogue, or at a table, etc.)	David Ross and David LaFrance will be seated for an armchair dialogue. Microphones and tap water will be provided.

About the Audience

Please tell us about the make-up of the audience for the event:	The audience is anticipated to consist primarily of representatives from drinking water utilities, consultants, service providers, government officials, and students.
Expected number in attendance at the event	Approximately 200
Is the event open to press?	Yes

Contact Information

Your name:	Barbara Martin
Telephone Number:	Ex. 6
Mailing Address:	6666 W. Quincy Ave. Denver, CO 80235
E-Mail Address:	bmartin@awwa.org
Cell Phone Number:	Ex. 6
Best way to reach you at the event?	Cell Phone

EPA Contact Person

Allison Dennis, Deputy Communications Director: 202-564-1985
Lauren Mayer, ORISE: 202-564-0408

Event Information Form

This form has been designed to assist in planning participation in events and activities.
This is not a confirmation of attendance.

Basic Background

Name of Event	ACE18 – American Water Works Association Annual Conference and Exposition 2018
Sponsoring Organization	American Water Works Association
Date of Event	Tuesday, June 14, 2018
Time of Event	7:30 a.m. -1:15 p.m.
Deadline for Acceptance	March 30
Speaker Requested	David Ross
Expected time of remarks or participation by EPA official	8:30 -9:30 a.m.
Location (please include city/town and street address)	Mandalay Bay Convention Center 3950 S. Las Vegas Blvd. Las Vegas, NV 89119 Room: South Seas D (on Level 3, South Conv. Center)
Directions to the event (if appropriate, please also include relevant information about parking, the specific building, and best entrance to use)	Will be provided
Where to meet POC	South Seas D (on Level 3, South Conv. Center)

Commented [A1]: Is this reasonable?

Event Description and Role of the EPA official

Brief description or outline of the event	The event is a one-hour discussion with AWWA's Water Utility Council on the Office of Water's policy agenda.
Brochure, invitation and/or other event material(s)	General ACE18 conference information is available at: https://www.awwa.org/conferences-education/conferences/annual-conference.aspx
Agenda and order of speakers and biography/information of other speakers	Draft agenda is attached.
Name of person introducing EPA official	Tracy Mehan, AWWA's Executive Director of Government Affairs, will introduce David Ross.
Basic information about the role of the EPA official at the event. (For example, will they serve as a keynote speaker? Participate on a panel? Take part in a press conference? Tour a facility?)	David Ross is requested to participate in a discussion of policy priorities for the Office of Water. Mr. Ross would make introductory remarks and the balance of the hour would be spent in discussion.
If the EPA official is a featured speaker, which topic(s) should they address and how long?	Opening remarks 10 – 20 minutes. Topics of interest include infrastructure investment, regulatory activities, public confidence in water service, and community-level affordability of water service.
What rules would the audience like to hear about?	Revisions to the Lead and Copper Rule (LCR), the Fourth Regulatory Determinations, Perchlorate

Will there be time for Q&A? If so, who will be moderating?	After Mr. Ross's initial remarks, the balance of the hour would be open discussion with Council members.
Do you have a sense of the types of questions that may be asked?	Anticipate questions about specific rules (such as LCR), infrastructure funding, affordability, and EPA regulatory priorities.
Recommendations on the use of visuals/PowerPoint. Should the EPA official plan on using a PowerPoint Presentation?	No PowerPoint presentation is required.
What is the physical layout of the room (e.g. size, and format of the interaction; podium, seated in armchair dialogue, or at a table, etc.)	Hollow square with ancillary seating for spectators from the conference.

About the Audience

Please tell us about the make-up of the audience for the event:	The participants consist primarily of representatives from drinking water utilities. The Water Utility Council is a 27-member committee responsible for AWWA's federal water policy activities.
Expected number in attendance at the event	Approximately <50
Is the event open to press?	Yes

Contact Information

Your name:	Tracy Mehan
Telephone Number:	Ex. 6
Mailing Address:	1300 Eye Street NW, Suite 701W Washington DC 20005
E-Mail Address:	tmehan@awwa.org
Cell Phone Number:	Ex. 6
Best way to reach you at the event?	Cell Phone

EPA Contact Person

Allison Dennis, Deputy Communications Director: 202-564-1985
Lauren Mayer, ORISE: 202-564-0408

Draft Agenda
Water Utility Council Meeting
June 14, 2018

Mandalay Bay Convention Center, 3950 S. Las Vegas Blvd., Las Vegas, NV

7:30 a.m.	**Continental Breakfast**
8:00	**Call to Order** *Kurt Vause, Chair*
8:10	**1. Water Utility Council Welcome and Introductions** *Kurt Vause, Chair*
8:15	**2. Review and Approval of the Consent Agenda** A. Minutes of the March Meeting B. Record of Decisions C. Treasurer's Report D. Information Items *Kurt Vause, Chair and Staff*
8:20	**3. Presidential Officer's Report** *AWWA President-Elect David Rager*
8:30	**4. EPA** *David Ross (Invited)*
9:30	**6. Following Through on NAPA Report** *Tracy Mehan and Adam Krantz, NACWA (invited)*
10:00	**5. Updates** A. Legislative Developments B. Regulatory Activity C. Programmatic Work Program *Committee Chairs and Staff*
10:30	**Break**
10:45	**7. Addressing Legionella** *WITAF Contractor*
11:15	**7. Cybersecurity, Making the Case to GMs** *WITAF Contractor*
11:45	**6. Initial 2019 WITAF Budget Framework** *Staff*

12:15 p.m.	**8. Member Recognition** *Kurt Vause, Chair*
12:30	**9. Concluding Remarks and Adjourn** *Kurt Vause, Chair*
12:45	**Lunch**

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 2/20/2018 5:22:23 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]
CC: Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Kurt Vause [Ex. 6]; svia@awwa.org [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=837e1d66b58a4ea99e240f18e13c4c86-svia@awwa.org]; Patricia Chism [pchism@awwa.org]
Subject: AWWA Fly-In and Water Utility Council meeting, April 19-20

Dear David,

This April AWWA will host another Fly-In for our volunteers to allow them to visit their elected representatives on the Hill. As part of the week's activities, our Water Utility Council (WUC) will be meeting on April 19-20.

We would like to invite you and Peter to address the WUC on either day as fits your calendar. Peter has spoken to the WUC often, and I know Kurt Vause, our WUC Chair, and the other members of that body would look forward to hearing from you too.

We are of course working on the ACE program in June, and your formal invitation for that event; but this would be an early opportunity to interact with AWWA's top policy-setting body.

If you can see your way through to meeting with the WUC in April, we can pin down details later.

Thank you for your interest.

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)
(cell)

Message

From: Sam Wade [sam@nrwa.org]
Sent: 2/23/2018 3:34:19 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]
CC: peck.greg@epa.gov; Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]; Sawyers, Andrew [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=49214552a00b4ab7b168ec0edba1d1ac-Sawyers, Andrew]
Subject: Meeting Request
Attachments: David Ross, EPA.docx

Dear Mr. Ross:

The National Rural Water Association would like to request a meeting to introduce ourselves and discuss the current direction of the Agency as it relates to rural and small systems and our mutual goals. National Rural Water is comprised of 49 state offices that cover all 50 states with 30,000 water and wastewater utility members.

We would invite you to meet at our DC office, our National Headquarters in Duncan, Oklahoma, your office or any location that fits your schedule.

Please feel free to contact me with any questions or areas for discussion. Thank you for your consideration,

Sam Wade
CEO, National Rural Water Association
Sam@nrwa.org
Cell: Ex. 6

NATIONAL
RURAL WATER
ASSOCIATION
NRWA *America's Largest Utility Membership*
2915 S. 13th Street, Duncan, OK 73533
580.252.0629 | nrwa.org

February 23, 2018

David Ross
Deputy Administrator for Water
USEPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Avenue, NW
Mail Code: 4104M
Washington, DC 20460

Reference: National Rural Water Association

Dear Mr. Ross,

The National Rural Water Association would like to request a meeting to introduce ourselves and discuss the current direction of the Agency as it relates to rural and small systems and our mutual goals. National Rural Water is comprised of 49 state offices that cover all 50 states with 30,000 utility members.

We would invite you to meet at our DC office, our National Headquarters in Duncan, Oklahoma, your office or any location that fits your schedule.

Please feel free to contact me with any questions or areas for discussion.

Thank you for your consideration,

Sam Wade
CEO, National Rural Water Association
2915 S. 13th
Duncan, Oklahoma 73533
Sam@nrwa.org
Cell: **Ex. 6**

[PAGE * MERGEFORMAT]

Message

From: Tracy Mehan [tmehan@awwa.org]
Sent: 3/6/2018 5:40:19 PM
To: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]
CC: Penman, Crystal [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=93662678a6fd4d4695c3df22cd95935a-Penman, Crystal]; svia@awwa.org [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=837e1d66b58a4ea99e240f18e13c4c86-svia@awwa.org]; Patricia Chism [pchism@awwa.org]
Subject: Two invitations

David,

I hope we did not confuse things with two (2) different invitations we have sent you.

The first was for ACE '18 involving a program with our CEO on Tuesday of that week in June. If you were to stay the whole week, you are also invited to meet with our Water Utility Council (WUC) which meets on Thursday, June 14th that same week.

In addition, we have invited you to address the same Water Utility Council at its April 19th meeting, here in Washington at the Wink Hotel, the same session at which Peter and Andrew will be speaking too. We could also have you on April 20th if that was necessary to accommodate your schedule.

So the immediate question is: which WUC meeting (or both or neither) might you be able to attend? If it is the April 19th session, it would be helpful to know soon since we need to get the agenda out to the WUC members.

I hope this helps. Thanks, again.

Tracy

G. Tracy Mehan, III
Executive Director, Government Affairs
American Water Works Association
Ex. 6 (direct)
(cell)

Message

From: Steve Via [SVia@awwa.org]
Sent: 3/8/2018 8:07:55 PM
To: Grevatt, Peter [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=d3caa0c39ebe44cb9d3ae44da7543733-Grevatt, Peter]
CC: Ross, David P [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=119cd8b52dd14305a84863124ad6d8a6-Ross, David]; Bowles, Jack [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=78e63acc248f41328768db82d95464c3-JBOWLES]; Burneson, Eric [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=2cacb9a8d49f49af80531e9e2ccb9018-eburneso]; Christ, Lisa [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=10dbd8e424704e43b5a50f74a4dac626-lchrist]; Hanson, Andrew [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=976b280c3eaf4e50b91a25d75466cf3c-Hanson, Andrew]; Helm, Erik [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=8c6770ef5bb04224a198d70b5988b765-Ehelm]; Mushkolaj, Iliriana [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=b34069dfe39f42558d945790f32112fc-Mushkolaj,]; Tracy Mehan [tmehan@awwa.org]
Subject: Long-Term Lead and Copper Rule Federalism Consultation (Docket ID No. EPA-HQ-OW-2018-0007)
Attachments: 2018 03 08 AWWA LT LCR EPA Federalism Comments.pdf

Flag: Follow up

Good afternoon,

Thank you for providing the American Water Works Association the opportunity to participate in the Long-Term Lead and Copper Rule Federalism Consultation. AWWA's comments have been submitted to the docket and a copy is attached for your convenience. Please feel free to let us know if AWWA can be of additional assistance.

Best regards,
Steve Via

Steve Via
Director of Federal Relations
American Water Works Association
1300 Eye Street NW, Suite 701W
Washington, DC 20005-3314
Office 202.628.8303 | **Direct** Ex. 6
Cell Ex. 6 | **Fax** 202.628.2846
svia@awwa.org | www.awwa.org

American Water Works Association

Dedicated to the World's Most Important Resource

Government Affairs Office
1300 Eye Street NW
Suite 701W
Washington, DC 20005-3314
T 202.628.8303
F 202.628.2846

March 8, 2018

Peter Grevatt
Director, OGWDW
USEPA Headquarters
Mail Code: 4601M
1200 Pennsylvania Avenue, N. W.
Washington, DC 20460

RE: Long-Term Lead and Copper Rule Federalism Consultation (Docket ID No. EPA-HQ-OW-2018-0007)

Dear Mr. Grevatt,

The American Water Works Association appreciates the opportunity to participate in the U.S. Environmental Protection Agency's 2018 federalism consultation on potential long-term revisions to the Lead and Copper Rule. The body of research and experience with lead has grown since the initial federalism consultation on Long-Term Lead and Copper Rule in 2011, and AWWA commends the Agency for its decision to undertake this second consultation.

The primary mission of community water systems is to protect the health of the people they serve. Revisions to the LT-LCR should advance strong customer protections today while we work for a future where lead is no longer in contact with the water we drink. Systems must provide this protection within the means provided by their communities and the constraints of what is operationally and financially feasible. AWWA recommends that the revised LT-LCR result in water systems engaging in:

1. **Development of an inventory of lead service lines**: The inventory should begin with an estimate of the number of lead service lines in each system's service area based on the information available and improve over time through ongoing water system operations, improved detection technology, and community engagement.

2. **Development of plans for the complete removal of lead service lines through a long-term, shared commitment** – Replacing remaining lead service lines is an important, societal undertaking and will require long-term commitments from many partners and a recognition of shared responsibility. Lead service line replacement strategies must consider other water and non-water improvements and customer affordability challenges. Locally developed programs, responsive to local circumstances, are essential. Communities will need to navigate numerous legal and implementation challenges that require time and resources in the face of competing demands.

3. **Application of process control to reduce corrosivity of water reaching customers' homes:** Corrosion control should be robust, and deviations from target conditions should trigger investigation and corrective steps.

4. **Public outreach on lead risk and lead risk mitigation:** Systems should actively and transparently communicate with their customers, particularly customers with lead service lines, about lead risks and steps households can take to evaluate and reduce lead in drinking water.

The proposed LT-LCR is more than a decade in preparation for at least two reasons. First, managing lead in water involves many challenging policy decisions. And second, the science is still evolving to support those decisions. Many of the issues utilities face, in particular how to control particulate lead release, remain poorly understood. Consequently, to move forward quickly, the LT-LCR revisions must focus on improvements to the current rule that provide cost-effective risk reduction with minimal risk of unintended consequences or misallocation of resources.

The LT-LCR revisions represent an opportunity for meaningful health risk reduction by further reducing lead materials in contact with drinking water, encouraging water systems to enhance current corrosion control practice, and bolstering ongoing public education on lead in drinking water. One of the significant developments since the 2011 federalism consultation was the National Drinking Water Advisory Council recommendations. The NDWAC recommendations provide a sound starting point for the LT-LCR revisions, though more recent information should also be considered. Key aspects of rule revisions that can be drawn from the NDWAC report in the near term include:

Individuals and communities need to be empowered to act – Blood lead levels in the U.S. population continue to decline. Still, communities need to better understand lead risks from all sources, including potential exposure from water. Individuals should be empowered to take effective steps to protect their households, and communities should seek to integrate lead risk reduction activities.

Fully removing all lead service lines will require a long-term, shared commitment – Neither individual homeowners nor water systems alone can remove lead service lines. Replacement is a shared responsibility among utilities, customers, government at all levels and other community partners. It will require a long-term commitment and policies to accelerate removal through opportunities such as property transfers. Communities will need to navigate numerous legal and implementation challenges that require time and resources in the face of competing demands. Customers and utilities will face affordability challenges. Locally developed programs, responsive to local circumstances, considering opportunities to reduce lead exposure from all sources, will be essential.

Corrosion control should be carefully evaluated, and if modified, changes should be based on system-specific information using sound process-control practices and system-specific studies -- Each system has specific local water quality and treatment characteristics, so the nation's water supplies are not amenable to a one-size-fits all approach to treatment selection. One thing that has become clear since the initial promulgation of the LCR is that unintended consequences of treatment changes can be catastrophic. The lesson of the successful implementation of the Long Term 2 Enhanced Surface Water Treatment Rule and revised Total Coliform Rule is that tailoring actions to the particulars of each local system yields public health protection at an appropriate cost. Ongoing process control for corrosion control should be robust and trigger investigation and corrective steps, by:

1. Integrating system-specific water quality parameter monitoring with other ongoing distribution system and water treatment process control monitoring.
2. Applying statistical process control strategies to ensure noncorrosive water reaches customers.
3. Flagging deviations from target water quality conditions for investigation and corrective actions.

Corrosion control is a practical, effective and long-term action available to reduce exposure to lead. AWWA encourages EPA to focus on providing utilities the tools, knowledge, and flexibility to select appropriate corrosion control practices for their individual local water quality and treatment characteristics.

The NDWAC recommendations were substantial, and it is not clear if EPA can propose a rule that addresses all of them by August 2018, the anticipated date for a proposal. NDWAC recommendations the Agency has not yet shown that it can complete in a timely manner include:

1. Identify a level of lead in drinking water of public health concern (i.e., NDWAC's proposed household action level).
2. Substantiate the benefit of revising the rule with respect to copper.
3. Identify corrosion control changes that will reduce lead levels further for systems already reliably below the action level while also not leading to undesirable unintended consequences.
4. Dramatically change the method in which tap samples are collected.

As EPA pointed out in its October 2016 white paper, the elements of the LCR are very intertwined. The information available to the public, including EPA's January 8 briefing, do not describe potential rule revision options. Consequently, it is not clear how EPA intends to maintain a balance between the rule elements.

AWWA appreciates the outreach EPA is undertaking to involve states and local government. Actual rule implementation and the burdens associated with it will fall in part on water systems, local communities and state regulators, and more importantly, on individual households. AWWA urges EPA to organize one or more stakeholder meetings that allow the experiences and concerns of advocates for impacted households to be better understood.

AWWA is fully committed to educating systems on the current and revised LCR, assisting systems with evaluating and improving their corrosion control practices, promoting public communications on lead, and advancing full lead service line replacement practice nationwide. Attached are more detailed comments addressing the questions posed by the Agency in its Federalism briefing and comments prepared by Dr. Crawford-Brown on development of a health-based lead concentration of concern. If the EPA LT-LCR team has any questions regarding these comments or would like to become more engaged in our outreach efforts, please contact me or Steve Via at 202.628.8303.

Best regards,

G. Tracy Mehan, III
Executive Director – Government Affairs

cc: David Ross
Jack Bowles
Eric Burneson
Lisa Christ
Andrew Hanson
Eric Helm

Iliriana Mushkolaj

Attachments: 1

Who is AWWA

The American Water Works Association (AWWA) is an international, nonprofit, scientific and educational society dedicated to providing total water solutions assuring the effective management of water. Founded in 1881, the Association is the largest organization of water supply professionals in the world. Our membership includes more than 4,000 utilities that supply roughly 80 percent of the nation's drinking water and treat almost half of the nation's wastewater. Our 51,000-plus total membership represents the full spectrum of the water community: public water and wastewater systems, environmental advocates, scientists, academicians, and others who hold a genuine interest in water, our most important resource. AWWA unites the diverse water community to advance public health, safety, the economy, and the environment.

Attachment 1

Addressing Questions Posed in Federalism Consultation
Long-Term Lead and Copper Rule Federalism Consultation

(Docket ID No. EPA-HQ-OW-2018-0007)

prepared by

American Water Works Association

for the

U.S. Environmental Protection Agency

submitted

March 8, 2018

CONTENTS

Addressing Questions Posed in Federalism Consultation

Introduction

Revisions to the Lead and Copper Rule should advance strong customer protections today while we work for a future where lead is no longer in contact with the water we drink.

Systems must provide this protection within the means of the communities they serve and within the practical limitations of what is operationally feasible. AWWA suggests that the revised LT-LCR include the following elements:

1. Development of an inventory of lead service lines.
    - Be based initially on available information.
    - Improve over time through ongoing water system operations and community engagement.
2. Development of a strategy for lead service line removal.
    - Develop and initiate in a timely fashion and proceed at a community-specific pace.
    - Recognize that shared responsibility is necessary for successful, sustainable lead service line replacement initiatives.
    - Follow ANSI/AWWA C810-17, Replacement and Flushing of Lead Service Lines.
3. Application of process control to reduce corrosivity of water reaching customers' homes.
    - Implementing changes in corrosion control based on system-specific information using sound process-control practices and system-specific studies.
    - Integrating system-specific water quality parameter monitoring with other ongoing distribution system and water treatment process control monitoring.
    - Applying statistical process control strategies to ensure noncorrosive water reaches customers' services.
    - Flagging deviations from target water quality conditions for investigation and corrective actions.
4. Public outreach on lead risk and lead risk mitigation.
    - Actively and transparently communicating with their customers, particularly customers with lead service lines, about lead risks and steps they can take to evaluate and reduce lead in drinking water in their home.

The Safe Drinking Water Act provides a sound decision-making framework. Revision of the Lead and Copper Rule is challenging, and the selected solution will have implications for community water systems of all sizes in every state. Which and how many sources of lead are present in the plumbing of a home depend on historical development patterns in that community, not whether the community today is large or small, urban or rural, poor or affluent. Moreover, as we seek to further reduce lead exposures, this rulemaking encounters larger societal questions such as who has a duty to pay for achieving lead risk reduction and when does a public entity like a water system have the right to intrude on private property. The Safe Drinking Water Act allows the Agency to make tough policy decisions, but it also sets the expectations that such decisions will be based on sound science and reflect opportunities for achieving meaningful risk reduction in a cost-effective manner.

Community Water Systems efforts already substantially control lead exposure through drinking water. The next step in additional risk reduction must be financially prudent and not create unintended consequences. In its most recent Six-Year Review data call in, EPA compiled more than 808,000 sample values from 42

states for the period 1998 to 2005.[1] AWWA's initial analysis of that data reflects data from approximately 23,100 CWSs serving a combined population of 167 million with LCR data in the database for 2003 to 2005 (for CWSs serving populations >500 using surface or groundwater sources). We found that there were 4,100 systems serving an estimated 23.2 million people where all observed values were less than 1 µg/L, and 90% of systems serving more than 10,000 persons have median lead levels below 5 µg/L.

Compliance data is a limited sample and the sampling protocol and sample pool are not representative of community wide exposure, but the Six-Year Review dataset illustrates that nationwide the water supply community is providing water with low lead concentrations. The question at hand is what is the prudent next step to take to further advance lead risk reduction.

Lead is a multi-exposure pathway challenge. Drinking water is one of many potential sources of exposure to lead. The multi-media nature of lead exposure reduction complicates public education and communication. It also involves numerous responsible parties, many of which are not engaged through the LCR. While the burden of lead health risk should not fall disproportionately on any one group, neither should the burden for achieving lead risk reduction. There is a shared responsibility which is both essential to success and complicates finding timely and affordable solutions.

Reasonable action now is needed. It is desirable but unrealistic to achieve zero exposure to lead in a short period of time. Thus, significant reduction in risk are the appropriate goal. By continuing to debate instead of acting on reasonable rule strategies, as outlined by the National Drinking Water Advisory Council, we continue to delay achieving these risk reductions.

Technical capacity must be built. Nationally, after an initial surge in capacity following promulgation of the LCR, the expert capacity in corrosion control treatment selection has not been adequately developed through academia, maintained in the water system or consulting engineering community, or retained in the regulatory community. EPA and AWWA have roles in supporting the rebuilding of this expertise in the sector. The public health community must also be engaged and educated about lead in water.

Research is needed to support major changes in corrosion control practice aimed at small incremental improvements without causing unwanted unintended consequences. To move forward quickly the LT-LCR revisions must focus on improvements to the current rule that provide cost-effective risk reduction with minimal risk of unintended consequences or significant misallocation of scarce resources for individual homeowners, water systems, or the communities water systems serve.

Lead Service Lines

The most significant barriers to full lead service line replacement are (1) divided ownership / responsibility and (2) the cost of replacement. In drafting the rule revisions, EPA must recognize the limitations these two factors have on (1) the quality of data available to guide action, (2) allocation of the cost of replacement, and (3) the time required for all lead service lines to be fully removed. AWWA is actively engaging its members to foster advancing full lead service line replacement. EPA should avoid setting unrealistic regulatory expectations or creating bureaucratic obstacles to community-specific solutions.

[1] Note, the Six-Year lead concentration data reflects first-draw samples following at least a 6-hour period of stagnation. Samples are taken from homes that are prone to higher levels of lead, e.g., lead service line, older brass, and copper with lead solder plumbing.

Create an Inventory

An important step in creating a future without lead in contact with drinking water rests on developing a sound understanding of the locations of lead service lines in communities. Having an inventory aids in developing a strategy for removing those lines during ongoing main replacement, service line repairs, home remodeling and sale, home rentals and focused outreach and engagement of households with lead services.

An exact inventory describing the use of lead pipes under both water utility and customer ownership is not feasible. At present, estimates of the number of lead service lines in community water systems in the United States range between 6.1 and 10 million. These lead service lines exist within a larger universe of service lines totaling 96.7 million. These estimates are imperfect, and there are anecdotal reports of underestimates and overestimates from individual systems. Where systems are excavating to identify lead service lines (currently being tested as a tool of last resort for confirming the presence of a lead service line), systems are noting that fewer than expected numbers of lead lines are found.

While research is ongoing, at present there is not an accepted field procedure for identifying if a service line is made of lead without physically seeing the whole line. This is important in several respects. These lines are very old and have been repaired; such repairs may have removed portions of an existing lead line. Also, if EPA includes lead goosenecks within the definition of lead service lines for purposes of an inventory, visual inspection requires digging down to the water main, which is often in the street. An exact inventory would necessitate certain knowledge about all 96.7 million service connections in the United States, not simply the 6.1–10 million that are more likely to be lead. Moreover, while lead service lines are typically measured in tens of feet in length, goosenecks are, by definition, typically less than 3 feet long (both Mueller and Hayes goosenecks were manufactured at lengths of 18, 24, 30 and 36 inches in length).[2, 3, 4]

An exact inventory is not, however, needed for the tasks at hand (i.e., guiding sampling efforts, targeting communication initiatives, preparation for construction activities, and tracking elimination of lead services). Therefore, it is important that inventory development move forward with the tools at hand, recognizing their weaknesses. Moreover, use of ongoing activities to improve the lead service line inventory can be framed as a win-win opportunity for such activities as automated meter reading installations, identification of gutter – stormwater connections, backflow prevention device inspection and other initiatives.

If EPA were to craft regulatory language requiring utilities to prepare lead service line inventories, the Agency would need to recognize several challenges:

1. Lead service lines were installed during the 1800s and early – mid 1900s. Consequently, the primary record of installed material selection, tap cards, are decades if not a century or more old. In subsequent years, there have been changes in practice that impact the fidelity of the data, loss of records, and unrecorded changes in installed materials as repairs and other construction have occurred.
2. Service lines are owned in part by the water system and in part by the customer in most communities. Customers do not always advise the water system of improvements to the portion of the service line the customer owns. In many communities, plumbers have not been an active

[2] Mueller Company. Catalog, November 1, 1961, p. 4-3.
[3] Hayes Water Service Products Catalog, p. 18.
[4] Lead Industries Association, Lead in Modern Plumbing, p. 8.

stakeholder in lead service line identification, homeowner awareness or updating utility service line material records.

3. Not all community water systems are villages, towns, or cities where the water system service area is the same as a municipal subdivision. "Municipal" records used to compile an inventory (e.g., building and plumbing permits, tax records, mapping, etc.) will be harder to compile in rural areas served through public service authorities and areas served by investor-owned water companies). Even where the water system and municipal government are the same, there are often extra-territorial service areas where the water system is not able to rely on other municipal departments within the same government entity.
4. Absent the threat of loss of water service, water systems do not have the authority to require customers to cooperate in acquiring data about the service line material on the customer's property. Turning off water presents a health and public safety concern. There are also concerns about social inequity where water shutoffs disproportionately impact segments of a community's households.
5. While water system staff sometimes enter customer premises (e.g., to set or repair meters, respond to water quality complaints, etc.), such contact is minimized for the convenience of customers and for the safety of water system staff (e.g., need for a two-person crew and customer scheduling).
6. Systems are transitioning to new asset management platforms that will, over time, facilitate infrastructure renewal, including lead service line replacement. As EPA is aware from its own software platform transitions, these transitions can complicate data acquisition and present unanticipated challenges that effect timely delivery of expected products.
7. Current technologies used to examine service lines that are buried under yards, sidewalks, and streets requires excavation. Excavation only allows inspection of the exposed pipe length, is costly, and has its own associated risks including the integrity of service lines that are not lead and unnecessarily disturbed.

Given these limitations, it is important that EPA rule requirements and associated guidance set reasonable expectations that:

1. Allow the development of the initial inventory based on existing records, historical practice and utility field experience.
2. Provide sufficient time to allow the initial inventory to be developed, recognizing that in many communities, utilities will be supplementing in-house records with data from other departments and oftentimes other entities.
3. Expect that the inventory will be improved over time as additional information can be incorporated through ongoing water system activities (e.g., meter replacement, water quality visits, etc.) and community outreach (e.g., home inspections when buildings are sold, instructions to homeowners, plumbing permits).[5]
4. Expect that water systems will have practices in place to appropriately address previously unrecognized lead service lines when they are discovered.
5. Improve public information and education so that homeowners can be active stakeholders.
6. Utilize opportunities like the sanitary survey for the primacy agency to review the system's practices to maintain and improve the inventory.

[5] Example customer outreach, "Help us update our records," DC Water, Available 1/25/2018 at https://www.dcwater.com/servicemap.

Public access to information, including the presence / absence of lead service lines, is important to advancing replacement and a natural part of public outreach. Rule requirements for public access should assist property owners without creating unintended harm. EPA may be contemplating a requirement that water systems make inventories publicly available (e.g., on the water utility website, through a database query, or other means). Data compiled by municipal water systems, including information on service lines on private property, may be subject to freedom of information requests. Investor-owned water systems are not necessarily subject to FOIA. Some systems have encountered legal concerns when considering releasing what can be viewed as private information.[6]

Since water systems do not typically own the whole service line and since it may be impossible to determine the material of the whole length of the line, water systems cannot make absolute, always-current statements about the status of a home's service line. Systems that provide a map or database that allows public searches of this data typically use a strong disclaimer statement to users.[7] Some have posed the idea of a state-based or national repository of service line material inventory. The above described data quality and liability considerations are similarly challenges to building such a repository. The burden on EPA, states, and water systems to develop and keep such a data system current warrants careful consideration. On first reflection, managing this data at the local level appears to be the more immediate opportunity for advancing lead service line replacement and educating customers.

FULL LEAD SERVICE LINE REPLACEMENT

Fully removing lead service lines will require a long-term, shared commitment. Water systems and their customers will not be able to replace lead service lines overnight. It will take time to complete a robust inventory, prioritize lead service line replacement among other water system improvements (and other non-water system needs in the community), and identify funding mechanisms to assist in payment for the work. Communities will need to navigate numerous legal and implementation challenges that require time and resources in the face of competing demands. Customers will face affordability challenges. Locally developed programs, responsive to local circumstances, will be essential, and shared federal and state support also will be necessary to facilitate fully removing lead services.

Reducing environmental exposures is a long-term, challenge that must address multiple paths of exposure. EPA has no means at present to understand if a community would benefit most by expanding its lead paint abatement program, targeting lead sources in rental housing, removing lead service lines, or pursuing other sources of lead. This point is best described by other participants in the federalism consultation. From the viewpoint of a water system, this balance must be struck locally so that the water system receives the support and coordination needed from all the partners it needs to effectively engage customers in full lead service line replacement.

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[6] Association of Metropolitan Water Agencies, State FOIA Laws: A Guide to Protecting Sensitive Water Security Information, July 2002, Available 1/25/2018 at https://deq.utah.gov/Permits/drinkingwater/docs/2014/07Jul/StateFOIA.pdf.

[7] Example disclaimer, "DISCLAIMER: The maps provided by the Boston Water and Sewer Commission (BWSC) are based on property surveys conducted during the installation of the Automated Meter Reading system, as well as information directly provided by customers and acquired during physical inspections. BWSC does not guarantee the accuracy of these records and maps, which shall be used for the sole purpose of providing property owners and residents with information regarding their private water services, and not for any commercial, legal or other use. These records will be updated on a monthly basis, or at such alternate times as BWSC designates. BWSC reserves the right to alter, amend or terminate at any time the display of these maps and records." Boston Water and Sewer Commission, Available 1/26/2018 at http://www.bwsc.org/COMMUNITY/lead/leadmaps.asp#TOP_PAGE.

ANSI/AWWA C810-17, Replacement and Flushing of Lead Service Lines should be incorporated by reference as the protocol for lead service line replacement. AWWA developed a management standard for when a water system anticipates or incidentally encounters lead service lines in the course of construction.[8] This standard addresses identification of lead services, notification of impacted customers, and protective measures to reduce the potential for exposure to lead due to the replacement. As with all ANSI standards, C810-17 was developed by a committee selected with a balance of perspectives in mind and was made available for public comment. This standard will be reviewed periodically and improved based on system experience and new research. It is worthwhile to note, that "*The National Technology Transfer and Advancement Act of 1995 directs [federal] agencies to use voluntary consensus standards in lieu of government-unique standards except where inconsistent with law or otherwise impractical.*"[9] EPA Region 5 has recommended the City of Flint, Michigan follow C810-17 when replacing lead service lines.

EPA should not make replacing all lead service lines in a specific timeframe a rule requirement. AWWA is actively urging its members to integrate lead service line replacement into their current distribution system operations and capital programs now, because it is going to take a substantial, long-term effort to replace the 6.1 – 10 million installed lead services. The NDWAC recommendation, which AWWA endorsed, recognized the challenges associated with setting a fixed deadline and focused on establishing strategies to move forward with available authorities and funding. AWWA is urging systems to start as soon as possible to work with the communities they serve to develop a local strategy and begin to fully remove lead service lines. These community-specific strategies consider local circumstances, particularly locally-appropriate approaches to shared responsibility for accomplishing full replacements. There are numerous potential strategies for funding full service line replacement; developing state and local policies to address this challenge of paying for full replacement will take time and solutions will need to be locally appropriate.[10]

In contemplating a timeframe for completing all lead service line replacements, it is important to look at the housing sector for the frequency with which opportunities to engage homeowners arise. Nationwide, approximately 5.4 million existing homes were sold in 2016, and a similar level of sales occurred in 2017.[11] In 2013 the National Association of Home Builders estimated that the typical buyer of a single-family home can be expected to stay in a home approximately 13 years.[12] It is also worth noting that 35% of households in the U.S. rent rather than own their home.[13] The U.S. Census tracks how frequently people move in the U.S. Looking at data from 2013 and 2014, 24.5% of all people living in renter-occupied housing units lived elsewhere one-year prior.[14] As expected, the Census data illustrates that renters move much more frequently than people in owner-occupied housing (roughly 5 times as often).

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[8] AWWA, ANSI/AWWA C810-17, Replacement and Flushing of Lead Service Lines, Available 1/26/2018 at https://www.awwa.org/store/productdetail.aspx?productid=65634922.

[9] EPA Website, Available 1/26/2018 at https://19january2017snapshot.epa.gov/data-standards/federal-national-and-international-data-standards_.html.

[10] Environmental Financial Advisory Board, Financing Lead Risk Reduction, October, 2017, Available 02/22/2018 at .

[11] Lawrence Yun, Residential Real Estate Economic Issues and Trends Forum at the REALTORS® Conference & Expo in Chicago, IL, November 3, 2017, Available 1/26/2018 at https://www.nar.realtor/presentations/november-2017-economic-housing-outlook-lawrence-yuns-presentation-slides .

[12] National Association of Home Builders, Latest Calculations Show Average Buyer Expected to Stay in a Home 13 Years, 2013.

[13] U.S. Census, 2016 American Community Survey, 1-Year Estimates, US Census Bureau. Updated 9/2017 (Note, 53% of households that live in rental housing rent structures with 4 or fewer units).

[14] U.S. Census, Press Release. U.S. Mover Rate Remains Stable at About 12 Percent Since 2008, Census Bureau Reports, January 2015. Available 02/21/2018 at https://www.census.gov/newsroom/press-releases/2015/cb15-47.html.

The Census's mover rate for people living in owner-occupied housing units of 5.0 percent is also comparable to the HAHB typical expected stay statistic.

Opportunities to replace lead service lines require coordination with state and local government beyond the water department / separate utility associated with changes in housing and other events include:

1. Identification/confirmation and replacement at time of title transfer.
2. Identification/confirmation and replacement at as a condition of occupancy post vacancy.
3. Identification/confirmation and replacement prior to rental.
4. Identification/confirmation and replacement as a condition of water service (initial turn on for a new customer or return to service if there is lapse in service).
5. Identification/confirmation and replacement in conjunction with a major remodeling of a current structure.
6. Identification/confirmation and replacement in conjunction with main replacement.
7. Identification/confirmation and replacement rather than repair following a leak or break.
8. Integrating lead service line identification and removal into lead-free facility approval processes for businesses seeking an operating license (including childcare facilities).

The average useful life of water mains varies with the material, the method of manufacture, and the conditions where the pipe is installed.[15] The oldest cast iron mains are quite long-lived with average useful life of about 120 years, while cast iron from the 1920s is expected to fail 20 years more quickly, and pipes installed post-World War 2 are expected to last just 75 years.[16] What is important to note is that the rehabilitation and replacement of these mains is a demographic echo of their initial investment. Today, in 2018, water system capital programs are at the beginning of the resulting wave of capital infrastructure re-investment.[17]

Service lines have a finite useful life, and as older lines fail, there is an opportunity to replace them completely. Lead service lines frequently do not fail for decades, but since those lines were often installed more than 70 years ago, failures are increasingly likely.[18]

Another opportunity for lead service line identification and replacement exists when plumbers engage with homeowners for routine work. Hot water heaters, for example, have a useful life of 8 – 12 years,[19] and installing a new one typically involves a visit from a plumber.

Lead service line replacement programs entail:

1. Identifying and actively engaging homeowners with lead service lines to coordinate full lead service line replacement.
2. Actively coordinating with other utilities engaged in infrastructure renewal (e.g., wastewater, stormwater, electric, gas, telephone, cable, etc.).

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[15] AWWA, Buried No Longer: Confronting America's Water Infrastructure Challenge, 2012. Available 02/21/2018 at http://www.awwa.org/portals/0/files/legreg/documents/buriednolonger.pdf.

[16] AWWA, Dawn of the Replacement Era: Reinvesting in Drinking Water Infrastructure. 2001.

[17] AWWA, Buried No Longer: Confronting America's Water Infrastructure Challenge, 2012. Available 02/21/2018 at http://www.awwa.org/portals/0/files/legreg/documents/buriednolonger.pdf.

[18] Lee, Juneseok; Meehan, Myles. Survival Analysis of US Water Service Lines Utilizing a Nationwide Failure Data Set. Journal AWWA, Vol. 109, Number 9: 13-21. September 2017.

[19] DOE, 2010 Water Heater Market Profile, U.S. Department of Energy. September 2010.

3. Timing construction to reduce disturbing neighborhoods and respond to local policies that prohibit construction in recently repaved roads.[20, 21]
4. Doing service line replacements concurrent and preferably in coordination with other capital infrastructure investment (e.g., replacing mains that have high break rates, repairs to improve water quality or reduce water loss and maintain pressure etc.).
5. Replacing service lines as part of a community's efforts to revitalize its economy and jobs base (e.g., new or renovated facilities to deliver adequate water supply to new or expanding businesses).

If EPA evaluates lead service line replacement over a specific period of time, it must account for the cost and economic consequences of the timeframe selected. The shorter the period of time, the greater the burden associated with the above elements. There are also secondary impacts, including:

1. Increased failures of other infrastructure and consequent economic harm to the community as other necessary infrastructure improvements are delayed.
2. Disruption and potentially repeated and protracted disruption of neighborhoods and business districts as lead service line replacement would be occurring increasingly on a schedule separate from ongoing capital projects.
3. There is a practical limit as to how many streets can be disrupted in a community at any one time.
4. Larger numbers of households facing the prospect of immediately bearing the cost of replacing the portion of the service line they own. As a consequence, a larger number of households would not have access to financial assistance programs, given limited resources for these programs (or if assistance programs are expanded to meet the required pace, there would be an associated impact on fiscal health of the community).
5. Setting an arbitrary deadline of any length will be a disincentive to action in communities where the goal is unrealistically short given local circumstances, and also where a lengthy timeframe is not needed.

A recurring top concern in AWWA surveys of water sector leaders is the ability to convince ratepayers to fund infrastructure renewal and replacement.[22] An important aspect of building ratepayer trust is establishing a systematic process for prioritized infrastructure investments, or in other words, asset management.

It is also worthwhile to consider the overall management of drinking water infrastructure. EPA has described best practices for asset management as a core element of timely renewal of drinking water infrastructure.[23] An embedded tenet of asset management is the development of a system-specific path from the current state to the desired level of service, considering both the conditions of existing assets and the community's ability to find funding mechanisms -- particularly raising water rates.

One of the purposes of this consultation is to consider the unfunded mandate implications of the proposed rule. While EPA may identify some funding, such as through the state revolving loan fund, that can assist in replacing lead service lines, the demand for SRF funds is already larger than the available state and federal loan dollars. In 2017, total disbursements from state drinking water SRFs total less than

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[20] Sacramento County, Available 02/15/2018 at http://www.sacdot.com/Pages/Trenchingandroadcutmoratorium.aspx

[21] City of Portland, Available 02/15/2018 at https://www.portlandoregon.gov/article/437990.

[22] AWWA, 2017 State of the Water Industry Report. April 2017.

[23] EPA, Asset Management: A Best Practices Guide, April 2008, Available 1/26/2018 at https://www.epa.gov/sustainable-water-infrastructure/asset-management-water-and-wastewater-utilities.

$3 billion dollars. So, if all SRF funds were applied to lead service line replacement without respect how much SRF funds were available in any one state vs another, it would take 10 – 16 years to replace the estimated 6.1 – 10 million lead service lines. Importantly, the SRF is almost always a loan, meaning that the households in a community ultimately pay for the lead service line replacement program, with associated interest.

None of the existing federal or state infrastructure funding programs (e.g., SDWA SRF, Community Development Block Grant, Rural Utility Service, etc.) are positioned to provide grant programs sufficient to meet the $30–50 billion expense often cited for replacing existing lead lines in their entirety.

PARTIAL LEAD SERVICE LINE REPLACEMENT

The current LCR requirement to conduct lead service line replacement should be removed.[24] The most important change with respect to lead service line replacement that EPA can make in the LCR revisions is to change the regulatory construct from punitive to one of building capacity. The current rule requirements replacing lead service lines at a time when corrosion control is either not in place or not optimal. The timeframe for action in this provision is such that partial replacements are an inevitable result. As previously stated, the LCR revisions should reflect the NDWAC recommendation that water systems develop a proactive replacement strategy and work with their communities and other partners to implement that strategy.

It is important that practice in the sector emphasize full lead service line replacement but recognize that partial replacement will occur. In developing AWWA C810-17, the consensus view was reached that it was possible to reduce the number of partial lead service line replacements but there are multiple scenarios where partial replacements will continue to occur, and remain in place for indeterminant periods of time. A few example situations include:

1. An after-hours repair that disturbs a lead service line (e.g., a main or service line repair that occurs outside of typical work hours so as to reduce disturbance to community, provide access to personnel or equipment, etc.).
2. An emergency repair that disturbs a lead service line (e.g., a main or service line repair where water leakage presents a hazard to life or property).
3. A lead service line is recognized during ongoing work and the affected property owner is not available to coordinate full replacement.
4. A partial replacement by a customer's plumber occurs and the water system must schedule and mobilize equipment to address the utility portion.
5. The customer's plumber must schedule or re-schedule replacement of the customer's portion of a lead service line.
6. A customer does not want to or cannot afford to participate in a full-lead service line replacement.

EPA should use the rulemaking to emphasize full lead service line replacement as a routine practice. In lieu of full replacement, there should be a record explaining that either (1) the customer was unwilling or unable to pursue full replacement or (2) the status of the pending actions that will ultimately lead to full replacement. When partial replacement occurs, there is an opportunity for recurring customer notification of the need to complete the lead service line replacement.

Water systems are not the only utilities with buried infrastructure. Electric, sewer, gas, cable, telephone, stormwater, and fiber lines are installed, repaired, and replaced by other utilities and their contractors.

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[24] 40 CFR Part 141.84

To the extent possible, utilities coordinate so that one does not harm the others installed assets. Water systems can provide other utilities with standard operating procedures for how to coordinate around lead service lines, but the rule should recognize that the water system has limited influence over other utilities and their contractors.

PITCHER FILTERS POST LEAD SERVICE LINE REPLACEMENT

A single-choice risk mitigation measure should not be written into regulation. No other federal SDWA regulation specifies a single-choice treatment option. This is a deliberate policy because situation-specific solutions are necessary. An apt comparison for pitcher filters is the specific risk mitigation used following a nitrate maximum contaminant level violation. While states will often advise the use of bottle water with such a violation, other options like the use of an RO device maybe a better solution for some households.

This observation applies equally to plumbed in POU devices.

Pitcher filters are only one of several risk reduction options after lead service line replacement. AWWA Standard C810-17 includes (1) flushing (i.e., running water through) the new or replaced service line immediately after installation, (2) flushing the water lines in the home, and (3) providing instructions to the occupant to flush taps used for drinking or cooking periodically. The standard also recognizes that some situations may warrant using point-of-use filters, or customers may desire to use POU filters.

A number of systems have distributed pitcher filters after either exceeding the lead action level or as part of lead service line replacement protocols. To-date, "maintenance" of the pitcher filters in these systems has been limited to provision of (1) instructions to the customer on POU use, (2) a supply of replacement filters for the pitcher, sufficient for the intended period of performance, and (3) a point-of-contact for assistance. The experience of systems with this level of maintenance and research by other systems considering providing pitcher filters have identified several challenges:

1. Confirming delivery of the pitcher to the intended recipient – When pitchers are left behind by field crews or delivered by third-party providers, there are instances of theft, failure to deliver, failure to deliver in a timely manner, and other issues one would associate with leaving a package on a doorstep.
2. Adequate supply of NSF certified devices – At times, the available supply of NSF-certified filter products has been limited. Surges in demand that are unanticipated by the available manufacturers can lead to shortages and delays in filter delivery to the water system (or fulfillment center) for subsequent delivery to customers.
3. Potential legal liability for failure of the customer to properly use the device – It is conceivable that claims could be brought against a water system if a customer failed to adequately maintain the pitcher filter and subsequently claimed an illness was attributable to the water from the pitcher.
4. Impact on household behavior – It is not clear to what degree households will take seriously a recommendation to use and properly maintain a pitcher filter.

Benefit of providing pitcher filters is no more certain than benefit from routine flushing. Based on EPA's comments, the use of a pitcher filter in this situation would not trigger current guidance for maintaining and guaranteeing the performance of pitcher filters as described by EPA guidance.[25] As with flushing,

[25] EPA, Point-of-Use or Point-of-Entry Treatment Options for Small Drinking Water Systems, EPA 815-R-06-010, April 2006. Available 1/26/2018 at https://www.epa.gov/sites/production/files/2015-09/documents/guide_smallsystems_pou-poe_june6-2006.pdf.

AWWA is not aware of any research demonstrating the effectiveness of pitcher filters reflecting actual customer behavior.

Introducing as regulatory requirement creates a new barrier to implementation. With respect to primacy agency oversight of such a requirement, a traceable record to demonstrate delivery of pitchers within the specific criteria included in the rule language would be required. A regulatory requirement to provide filters, therefore, has the unintended impact of creating a new set of bureaucratic requirements that are a distraction and barrier to timely situation-specific risk mitigation.

The Water Research Foundation is currently sponsoring research into managing lead in drinking water and related issues.[26] This research agenda includes an ongoing effort to better understand flushing protocols around lead service line replacement

1. WRF # 4584, Evaluation of Flushing to Reduce Lead Levels and
2. WRF # 4713, Full Lead Service Line Replacement Guidance.[27, 28]

AWWA's standard review process will consider the information from these projects in the regular review and updating of AWWA Standard C810-17.

COST OF LEAD SERVICE LINE REPLACEMENT

EPA's proposed estimate, $4,700 per individual lead service line replacement, is too low.[29] There is substantial system-to-system and home-to-home variability in the cost of lead service line replacement. Replacement cost includes two components. The first is the administrative infrastructure (e.g., personnel time, business systems and field work) to identify and engage individual customers in lead service line replacement. As water systems make these systems more customer-focused, the cost of this administrative infrastructure rises. Engagement during a replacement may include dialogue with both a property owner and a resident, both of whom have a role throughout the preparation, execution and follow-through on a service line replacement. Water systems do not typically track administrative costs in a manner that supports quantifying administrative infrastructure. One partial example is the lead service line replacement program oversight contract for Flint, Michigan's ongoing program. Available program data from the 2017 Flint replacement program puts the administrative cost per service line removed at roughly $760.[30] Preliminary data presented by Denver Water in November 2017 on its lead service line replacement program suggests that the administrative cost per service line removed is approximately $600.[31] These two estimates illustrate (1) that administrative is a significant element of replacement program cost that must be considered, (2) there is program-to-program variability due to program structure, elements, and maturity, (3) best estimates at present are imperfect and likely underestimate actual program start-up costs and financial burden on departments beyond the water utility, and (4)

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[26] WRF, Lead and Copper Corrosion: An Overview of WRF Research, October 2017, Available 1/26/2018 at http://www.waterrf.org/resources/StateOfTheScienceReports/LeadCorrosion.pdf.

[27] WRF, Evaluation of Flushing to Reduce Lead Levels, Available 1/26/2018 at http://www.waterrf.org/Pages/Projects.aspx?PID=4584.

[28] WRF, Full Lead Service Line Replacement Guidance, Available 1/26/2018 at http://www.waterrf.org/Pages/Projects.aspx?PID=4713.

[29] EPA, Presentation to Federalism Consultation, January 8, 2018, Available 02/22/2018 at https://www.epa.gov/dwstandardsregulations/icr-federalism-consultation.

[30] Mlive, Flint lead pipe replacement program to switch hands in 2018, December 1, 2017. Available 02/22/2018 at http://www.mlive.com/news/flint/index.ssf/2017/12/flint_lead_pipe_replacement_pr.html.

[31] Price, Steve, From 0 to 60,000: Denver Water Gets a Leadfoot, AWWA, Water Quality Technology Conference, November 2017.

current estimates represent "low hanging fruit" of easy replacements. Over time, remaining lead service lines will entail increasingly costly outreach and coordination.

The second component is the cost of replacing the lead service. This latter cost is what is typically reported, and the cost per replacement varies based on many factors including:

1. Steps that can be taken to reduce mobilization cost (e.g., integrate into a larger construction project, execute in a systematic program, utilize existing crews during other operations and maintenance tasks).
2. Level of collaboration with customer (e.g., the number of field teams required to complete the entire replacement rather than coordination among multiple teams, including the customer's plumber and electrician, involved).
3. Site-specific constraints (e.g., the built environment in which the replacement is occurring)

Looking just at the field work costs associated with lead service line replacement, $4,700 is likely a low estimate (see Figure 1).[32] When estimating the cost of field work, EPA needs to be sure the estimates capture:

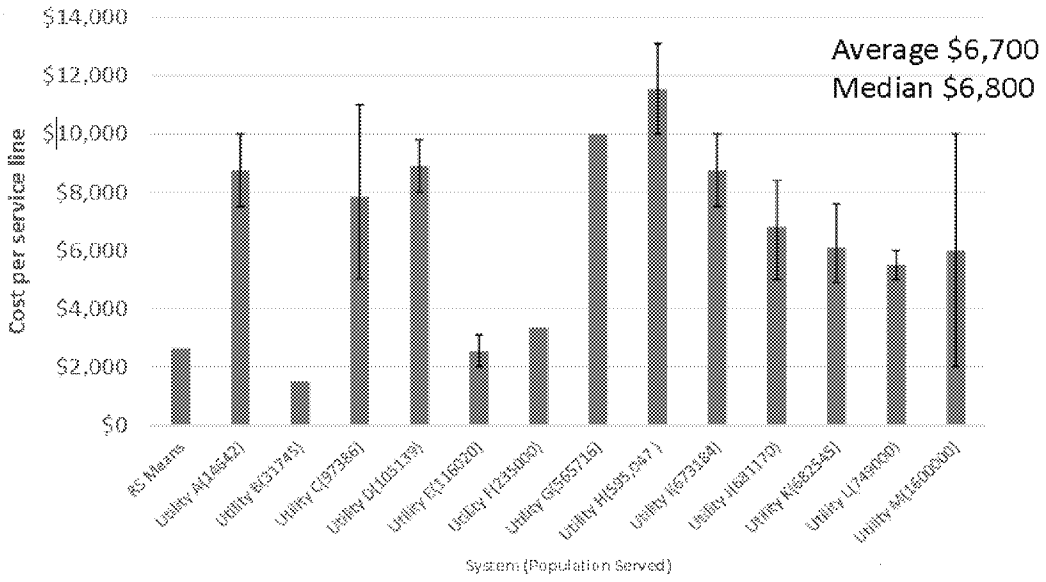

Figure 1 – Cost of full lead service line replacement fieldwork[33]

1. Both the replacement of the water system and the customer owned portions of the service line (these values may be tracked separately),
2. Mobilization costs, as well as time and materials costs, while on site at a specific house, and
3. Troublesome replacement and ideal replacement scenarios.

[32] AWWA, Ongoing data collection effort. Data as of 02/22/2018 reflecting information from 14 community water systems.
[33] Ibid.

Corrosion Control

The NDWAC recommendations could form the basis for LT-LCR revisions with respect to improving corrosion control practice. Today, under the current LCR, all systems may not install "optimized corrosion control" but all systems implement practices that reduce corrosion. The specific practices on which EPA and the sector rely when active corrosion control treatment for lead is needed are (1) pH and alkalinity adjustment and (2) phosphate addition. The current regulatory framework requires these specific treatments at systems that serve more than 50,000 persons and smaller systems that exceed the action level. When revising the LCR EPA should acknowledge that thousands of systems have made choices that reliably maintain 90th percentile lead levels below 15 µg/L. Systems are, in fact, taking corrosivity into account:

1. When selecting water sources,
2. In selecting treatment processes,
3. In making changes to water chemistry during treatment or adjusting treatment practice, and
4. Through the application of corrosion inhibitors and sequestration agents.

The rule framework and guidance should recognize the connections between distribution system operation and maintenance practices and corrosion control benefits, e.g., managing water age, lining of cast iron mains, unidirectional flushing programs, maintaining water quality in finished water storage, flushing stagnant water, etc. These and other practices contribute to limiting conditions that exacerbate corrosivity and complicate chemical corrosion control treatment.

It is important to incentivize sound practices for maintaining distribution system water quality and infrastructure. The NDWAC recommendations recognized that it was important for water systems to more explicitly explore how current practice was impacting corrosion control for lead and to use that information to improve corrosion control over time. This is in contrast with a regulatory model that focuses on either regulatory bright lines or treatment requirements rather than considering the underlying principles behind the regulatory requirements. The following NDWAC recommendations for improving corrosion control should form the basis for LT-LCR revisions, in which:

1. Corrosion control remain a central water system responsibility under the LCR.

2. Water quality parameter monitoring is expanded to include more frequent monitoring and monitoring at a more extensive set of locations, by integrating water quality parameter monitoring with monitoring in the distribution system for other regulations.

   While WQPs cannot predict the lead level at the tap, this is not their primary purpose. A water system sets WQPs to guide operational practices that produce water quality conditions which minimize corrosivity. Monitoring WQPs is used to ensure the system is operating within those target conditions. As with any process control strategy, there should be an ongoing feedback loop through which the system evaluates the data collected and continues to refine its performance.

3. Statistical control charts of WQP data are used for analysis to inform target conditions.[34, 35]

4. Improving and refining WQP parameter selection and target conditions should be supported by special studies to understand system-specific factors influencing corrosion control (e.g., stability

[34] Cornwell, David; Brown, Richard; McTigue, Nancy, Controlling Lead and Copper Rule Water Quality Parameters, Journal AWWA Vol. 107:2 p. E86-E96, http://dx.doi.org/10.5942/jawwa.2015.107.0011.

[35] AWWA, Manual 58. Internal Corrosion Control in Water Distribution Systems, Second Edition, 2017.

of existing scales, impact of historical sequestering agent use, corrosion of existing materials of construction, etc.).

The NDWAC framework also provides a viable strategy for advancing corrosion control practice among smaller and consecutive water systems.

SYSTEMS TARGETED TO INSTALL AND OPTIMIZE CORROSION CONTROL

The framework should focus first on improvement of systems that are only marginally compliant to fully evaluate and address gaps in their corrosion control practices. EPA's question might be restated to ask, "Which systems warrant the most attention now, as we revise the LCR?" A regulatory framework is not efficient if it focuses on systems which are already reliably compliant in documenting and enhancing their corrosion control practices.

SYSTEM SIZE THRESHOLD

NDWAC's proposed approach to improving corrosion control offers a viable path for expanding corrosion control to all systems over time. The NDWAC recommendation was intended, in AWWA's view, to overcome the primary barriers associated with increasing expectations on small systems. The NDWAC proposal focused on actions that:

1. Are based in known science and sound water system practice,
2. Utilize data streams that are readily acquired with available staff and expertise,
3. Foster use of good process control practice and improvements in technology available to small systems at an affordable cost,
4. Provide system-specific information that the system and state can utilize to make changes over time, and
5. Provide a vehicle to build awareness and practice in systems of all sizes around ensuring consistent water quality for all customers.

If EPA pursues a definition of corrosion control that emphasizes installation of active corrosion control treatment, then the Agency will need to stage rule implementation around primacy agencies' ability to manage the large number of small systems that would need to modify treatment. There currently are less than 1,000 water systems serving more than 50,000 persons; in total there are 10,600 systems of all sizes with optimized corrosion control under the current LCR.[36] In contrast, there are more than 5,700 medium-sized systems (population served between 3,300 and 10,000) without optimized corrosion control treatment, and roughly 63,600 smaller systems subject to the LCR that do not have optimized corrosion control treatment, e.g., a total of 69,300 systems that would need to develop and install OCCT per the rule requirements.[37] While some small systems are in suburban areas, many of these small systems serve rural communities.

Typical Agency practice follows one of several approaches:

1. An across-the-board requirement applied equally to all systems at the same time, typically three years after promulgation with the potential for a two-year extension for capital construction if approved by the primacy agency.
2. An across-the-board requirement, with implementation beginning with larger systems and moving over time to smaller system size categories.

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[36] EPA, Analysis of Impacts of Corrosion Control Treatment on Lead and Copper Levels over Time, (prepared by Cadmus Group; provided to NDWAC Workgroup), July 2010.
[37] Ibid.

3. A requirement limited to sizes or a combination of sizes and types of systems.
4. Triggered action, where monitoring is conducted and systems that exceed a trigger then initiate evaluation steps or proceed to installing treatment.

Variances are available under all the above approaches. However, as a practical matter, they are used infrequently. When they are used, they have the effect of adding workload on state primacy programs and complicating communication with customers in the impacted service area.

Treatment technique requirements should be appropriate to the type of public water system. AWWA's comments are primarily focused on community water systems, but the current LCR also applies to nontransient, noncommunity water systems. EPA could distinguish between CWSs and NTNCWSs (approximately, 17,800 NTNCWSs serve less than 10,000 persons) with respect to corrosion control / treatment technique compliance options. CWSs are most often responsible for delivering water to a customer, whose plumbing system contributes the lead that ultimate reaches the drinking water tap. In contrast, all potable water piping and fixtures associated with an NTNCWSs are owned by the same entity. "Appropriate" should also take ease of implementation into account. Drinking water is an ancillary activity for NTNCWSs and consequently few have dedicated staff that are expert in operating water treatment, consequently complex treatment that requires close attention is not a sound compliance option for these systems.

Oversight of Corrosion Control Optimization

Current OCCT decision-making framework is not feasible for state primacy agencies to oversee if applicable to all small systems. As noted previously, optimized corrosion control is defined as a few chemical treatments, and when framed as such, corrosion control treatment changes require extensive evaluation, time, resources and state oversight. Currently, EPA is recommending a year or longer pipe loop study to support installation of a new corrosion control treatment.[38] Under an "across-the-board requirement" regulatory approach, systems of all sizes would require state approval of the following within a three to five-year time window:

1. Identify a preliminary set of corrosion control options (e.g., combinations of pH, alkalinity, phosphate dose, etc.),
2. Develop a pilot loop test plan,
3. Execute the pipe loop test plan,
4. Develop a summary report and recommendations,
5. Conduct an evaluation of potential for unintended impacts as currently required by the LCR,
6. Develop test plans/recommendations to respond to impacts on system operation, particularly compliance with other regulatory requirements,
7. Prepare necessary plans and specifications for construction,
8. Engage in necessary public outreach around the treatment changes, construction, financing, etc.
9. Identify and obtain necessary funding,
10. Develop a test plan for new treatment start-up,
11. Execute the start-up test plan, maintain routine communication with state throughout, and adjust treatment to fix issues identified during start-up,
12. Prepare final as-builts and operations plan.

[38] EPA, Correspondence from Bryce Feighner to Karen Weaver, February, 2017, Available 1/26/2018 at https://www.epa.gov/sites/production/files/2017-02/documents/letter_to_honorable_karen_weaver_and_bryce_feighner_regarding_city_of_fl_0.pdf.

It is reasonable to expect that accomplishing these steps will require substantial training and state engagement directly with smaller systems. A query of the most recent posting of SDWIS found more than 6,300 substantive violations related direct to installation and operation of OCCT.[39] Less than 3% of those violations were associated with large systems; the largest group of violations were associated with very small systems (<3,300 persons served) – both community and noncommunity water systems. These violations suggest that the level of state oversight required for applying the current OCCT decision-making process to thousands of small systems will overwhelm state primacy agencies.

LEAD SERVICE LINES AS TARGET FOR CORROSION CONTROL

Corrosion control has been demonstrated to be effective reducing soluble lead. AWWA has sought input from experts in the field of corrosion control on several occasions to assess whether phosphate addition or pH/alkalinity adjustment would reliably control particulate lead. As recently as November 2017, the response has been that there is not a body of data supporting this conclusion.[40] EPA staff have acknowledged this point. Therefore, targeting water systems with lead service lines in order to control particulate lead is not appropriate.

Because corrosion control is well documented as a means of controlling soluble lead and, thereby, reducing elevated lead levels, EPA might prioritize systems based on the distribution of observed lead levels or consistency of system performance relative to the action level. Such a prioritization approach could inform the pace of state-system engagement on corrosion control described above using the NDWAC framework.

PLUMBED IN POINT-OF-USE DEVICES

Requiring water systems to install and maintain POU devices in customers' homes is not a viable regulatory option for addressing lead from lead service lines in community water systems. There are implementation considerations associated with utilizing plumbed-in POU devices beyond the burden imposed by the standard of performance described in EPA Guidance for SDWA compliance by installing POU devices. [41] They include:

1. Inability to gain access to 100% of homes with lead service lines to install, maintain and monitor filter performance.
2. Liability for harm to customer's property when installing devices (a frequent anticipated risk when installing POU devices on existing faucets and countertops).
3. Personnel safety when installing, maintaining and monitoring filter performance.
4. Inability to assure coordination with customer and consistent, adequate maintenance of the installed device.

Water systems do not own or maintain any plumbing components on customer property that entail as frequent entry into the home for maintenance as POU devices. Such entry presents both coordination challenges and risk to utility personnel.

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[39] EPA, Safe Drinking Water Act Information System, Available 1/26/2018 at https://ofmpub.epa.gov/apex/sfdw/f?p=108:9:::NO::P9_REPORT:VIO.

[40] AWWA, AWWA Expert Workshop-Sampling Fit for Purpose / Corrosion Control Treatment Going Forward, Washington, DC, November 12-13, 2017.

[41] EPA, Point-of-Use or Point-of-Entry Treatment Options for Small Drinking Water Systems, EPA 815-R-06-010, April 2006. Available 1/26/2018 at https://www.epa.gov/sites/production/files/2015-09/documents/guide_smallsystems_pou-poe_june6-2006.pdf.

A single-choice risk mitigation measure should not be written into regulation. No other federal SDWA regulation specifies a single-choice treatment option.

Installed POU devices are only a viable solution when the number of homes being treated is small and the inhabitants cooperate. As noted previously, EPA guidance for the use of POU devices describes a standard of care that includes proper selection and installation, ongoing maintenance and regular monitoring of performance. Historically, EPA has recognized that this treatment strategy was not a cost-effective risk reduction strategy compared to centralized treatment, other than for very small communities.

In Flint, Michigan, there was an extensive installed POU program. The teams responsible for outreach to customers on POU operation and performance were not able to access a significant number of homes for follow-up visits once the devices were installed. In March 2017, the program manager for the Flint outreach effort characterized the situation as follows:

> *"To date, CORE teams have attempted nearly 84,000 visits and connected with around 24,000 residents. We want to get that number up," Weaver said. "Our goal is for CORE workers to connect with a resident at every home in the city. We know some residents are leery about opening their doors to people they don't know, so we asked the workers and the CORE program director, Paul Newman, a long-time Flint resident himself, to come today so residents can see who they are and learn more about what it is they have been hired to do."*[42]

The City of Flint website hosts a video describing this extensive community-based outreach program, the challenges they see implementing the program, and the steps they are taking to overcome them. This program is an exceptionally strong outreach effort; the lack of customer engagement is not due to a lack of effort by the program.[43] Recently, Flint Neighbors United released a survey of Flint households capturing household understanding of POU devices, including maintenance. The survey illustrates that even with a substantial program to provide and support installation of POU devices, 15% of homes that responded to the survey (282 of 1,894 responses) did not have an installed POU. More than 9% of respondents with installed filters appear to not be maintaining the filter correctly. There is a separate question in the survey on when lead in tap water was most recently tested at respondent's homes; roughly 21% had not been tested in the last year.

The CORE program employed 160 field workers and 16 supervisors at hourly wages of $10 and $12 respectively, plus benefits.[44] This amounts to a personnel cost, plus estimated overhead cost of $8,985,600 per year. Assuming each of the 43,000 homes with active accounts in Flint received one filter and 3 replacement cartridges each year ($20 each) the cost for the filters per year is $3,440,000. An estimated annual cost for the CORE program is over $12.4 Million. While a remarkable, community-based effort supported by substantial state and federal subsidies (subsidies, which are unlikely to be available to other community water systems), the Flint POU program would not meet the requirements of EPA's current guidance for SDWA compliance using an installed POU program.

Requiring the water system to install and maintain a POU device to address a defect resulting in whole or in part by the property owner is not sound public policy. Mandatory installation of installed POU devices

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[42] City of Flint Press Release, March 22, 2017, Available 2/16/2018 at https://www.cityofflint.com/2017/03/22/video-released-to-inform-flint-residents-about-core-program-and-workers/.

[43] Ibid.

[44] Mlive.com, Officials say they want Flint residents to fill 160 water crisis jobs, 12/3/2016, Available 02/21/2018 at http://www.mlive.com/news/flint/index.ssf/2016/12/officials_looking_for_flint_re.html.

on taps in buildings would be an unwise national precedent that would have far-reaching consequences well beyond lead.

Optimal Corrosion Control

A DEFAULT CORROSION CONTROL TREATMENT

Water chemistry and pipe materials differ among water systems, so corrosion control strategies must be system-specific. As a practical matter, if EPA establishes a one-size-fits all default corrosion control treatment requirement, that will be the installed treatment. Few if any water systems will be able to successfully demonstrate "equivalent" treatment in the eyes of state regulators or regional EPA staff. One can look at a lack of innovation in both primary disinfection and filtration practice as examples of how conservatively primacy agencies will view a default corrosion control treatment strategy.

EPA has not described what a default corrosion control treatment might be. Most previous EPA statements about a default corrosion control treatment have been based on data reflecting soluble lead levels and limited consideration of particulate lead release.

For community water systems in the United States, corrosion control is more complex than simply complying with the LCR. Systems must:

1. Balance water qualities from multiple water sources,
2. Manage corrosivity to protect buried infrastructure,
3. Anticipate corrosive water impacts on a variety of materials in building plumbing,
4. Provide a stable water quality for industrial, manufacturing, and commercial, as well as residential uses,
5. Reduce the potential for scales interfering with system and plumbing component operation,
6. Reduce exposure to unwanted aesthetic issues such as iron and manganese, and
7. Collaborating with receiving wastewater treatment authorities with respect to the contribution of phosphate and metals reaching publicly owned treatment works.

Regulatory requirements must be achievable while all other aspects of water system operations are realized.

CONSEQUENCES FOR RECEIVING WASTEWATER SYSTEMS

The Office of Water cannot develop SDWA and CWA policies that are in conflict. Mandating the use of phosphorus for corrosion control and requiring elevated doses will have local consequences. At present, where phosphate is used for corrosion control in the U.S., it contributes 10–35% percent of the phosphorus loading to the wastewater treatment facility (based on 10 drinking water–wastewater system pairs).[45] As phosphorus limits become more stringent, the use of phosphate becomes not only a cost consideration for the wastewater treatment facility, but equally importantly, an issue of credibility in the relationship between the utilities and local governing bodies. As more communities partner to achieve economies of scale in water and wastewater service provision, the number of governing bodies impacted by this credibility dynamic also grows, further complicating efforts to develop regional partnerships.

For decades EPA has identified nutrient pollution as a significant challenge for natural water bodies and phosphate as a nutrient of concern for inland water, particularly lakes. Over the past two years EPA has emphasized nutrient control as a key tool in preventing harmful algal blooms, including blooms that

[45] Rodgers, Impact of Corrosion Control on Publicly Owned Treatment Works Water Quality Technology Conference, New Orleans, LA. 2014.

produce cyanotoxins. In 2016 EPA released health advisories for microcystins and cylindrospermopsin. When levels of these toxins are elevated in drinking water, the water system is expected to issue a "do not consume" order, which has significant implications for the community served by that water system. When evaluating the cost implications of phosphate addition on wastewater treatment plants, phosphate corrosion inhibitor addition leads to an incremental increase in wastewater treatment cost. It can also result in some wastewater treatment facilities facing a "cost wall" because it triggers a shift to a new wastewater treatment train design.

Currently, EPA's ATTAINS database indicates that almost 2 million acres of lakes and 55,000 miles of rivers and streams are impaired by phosphorus alone.[46] EPA estimates that by 2020, half of the states will have numeric nutrient water quality criteria for phosphorus under the Clean Water Act.[47] In addition to developing statewide nutrient criteria, EPA is working with states to develop practice around "interpreting" narrative nutrient criteria to set loading limits for nutrients.[48] Implementation of this latter effort appears to be proceeding even more rapidly than state adoption of statewide numeric nutrient criteria. It seems likely that this tension between the addition of phosphate and subsequent removal will only become more frequent with time and will take place where both the water system and wastewater treatment system are both attempting to make ever smaller marginal improvements in performance. Impacts on wastewater discharges is a constraint that should factor into optimized corrosion control treatment selection.

EXPECTATIONS MUST HAVE SOUND PREMISE

Benchtop and pipe loop studies are informative but not perfect predictors of full-scale success. Data from benchtop and pipe loop studies is a key tool in guiding corrosion control, but these test systems are not sufficiently accurate in their predictions as to fine tune corrosion control based on this data alone. Further research is needed to better relate test system results to full-scale performance and to understand variances in test data when interpreting full scale application.

More research with actual pipe scale formation is needed to justify high, sustained levels of phosphate addition. The principle justification for higher orthophosphate levels are solubility curves for a lead phosphate compound. Those curves for required orthophosphate dose are generally a function of an alkalinity (or inorganic carbon). The curves show that at higher alkalinity levels that orthophosphate doses of 1 mg/L as P (3 mg/L as PO_4) or above may be needed. While useful guidance, solubility curves do not fully describe the electrochemical reactions or coatings involved in corrosion. In fact, often the compound modeled is not often found in pipe scales.

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[46] EPA, National Summary of State Information, Available 02/15/2018 at https://ofmpub.epa.gov/waters10/attains_index.control#causes.

[47] EPA, State Progress Toward Developing Numeric Nutrient Water Quality Criteria for Nitrogen and Phosphorus, Available 02/15/2018 at https://www.epa.gov/nutrient-policy-data/state-progress-toward-developing-numeric-nutrient-water-quality-criteria.

[48] 2013, Correspondence Chris Hornback to Nancy Stoner, March 7, 2013. Available 2/15/2018 at https://www.nacwa.org/docs/default-source/default-document-library/letter-to-n-stoner-on-narrative-nutrient-criteria-3_2013.pdf?sfvrsn=0.

Although this analysis is preliminary, we are finding that the solubility models in common use overestimate the amount of phosphate needed. For example, the graph in Figure 2 shows the solubility curves often cited and the data points are from actual lead coupons at steady state.[49] As seen, inorganic carbon values in the mid-range of around 20 mg C/L fall close to the curve for a dissolved inorganic carbon of 5 mg C/L while the data for the DIC of 15 mg C/L is actually below the curve for a DIC of 5 mg C/L. These results are not surprising given experience in the field but point out a difficulty with making decisions for the rule (e.g., the necessity of high orthophosphate doses) and individual treatment decisions based largely on an understanding of corrosion based on the available solubility curves.

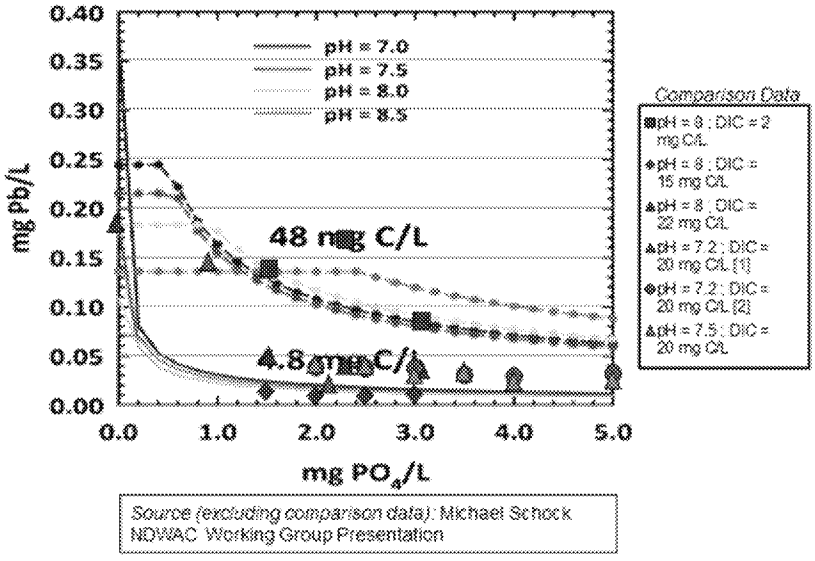

Figure 2: Theoretical lead solubility curves compared to benchtop tests using actual pipe materials.

The above example is not novel. Much earlier work came to a similar conclusion using a different methodology.[50] As Edwards et al. points out, other factors can have system-specific relevance. This point can also be extended to include the over use of corrosion control indices. Generalized corrosion control models are an important aspect of managing scaling and initial evaluations of water stability, but, alone, they are not sufficient to guide adjusting corrosion control.[51]

REFERENCING PRACTICE IN UNITED KINGDOM

EPA cannot reference guidance for treatment in the United Kingdom without a complete understanding of actual practice. The view that elevated phosphate doses (e.g., 1.3 - 2 mg/L as P [4 – 6 mg/L as PO_4] or higher) are critical to effectively manage lead often cites corrosion control practice in the United Kingdom. Unlike the United States, the bulk of the U.K. is served by 12 water companies. After contacting water systems and U.K.-based drinking water treatment consultants, there is good reason to believe that

[49] Cornwell Engineering Group, Personal correspondence February 14, 2018.

[50] Edwards, Marc; Jacobs, Sara; Dodrill, Donna. Desktop Guidance for Mitigating Pb and Cu Corrosion By-Products. Journal AWWA Vol. 91, Num. 5. P. 66-77. https://www.awwa.org/publications/journal-awwa/abstract/articleid/14051.aspx.

[51] Hill, Christopher. Importance of Corrosion Indices and How to Use Them. Water Quality Technology Conference, 2017.

the levels of phosphate applied in the U.K. are not as different from those currently used in the U.S. as typically described. Our survey efforts are not complete, but to-date, it seems that as an ongoing target, systems tend to focus on 1 mg/L as P (3 mg/L as PO_4), though the target can range from 0.4 – 1.5 mg/L as P (1.2 – 4.6 mg/L as PO_4) on a site-specific basis. Observations to-date emphasize the use of orthophosphate over other forms of phosphate primarily based on cost considerations. This is not markedly different from the range of orthophosphate addition here in the U.S. 0.2 – 1.0 mg/L as P (0.5 – 3.0 mg/L as PO_4).

PERIODIC RE-EVALUATION OF CORROSION CONTROL

Corrosion control has and should continue to evolve based on science and field experience. The NDWAC recommended a periodic re-evaluation of corrosion control as a mechanism to respond to new knowledge acquired through research and practice. As a practical matter, AWWA has a Manual of Practice for Internal Corrosion Control in Water Distribution Systems.[52] That manual is updated periodically to reflect new developments. Like AWWA standards, it is developed through a consensus process, but it is not an ANSI document. Historically, EPA has revised guidance relevant to the LCR, and that guidance has been considered by states and systems (e.g., guidance published in 1992, 1995, 1999, 2001, 2003, 2007, and 2016.)[53]

One of the underlying tenets of corrosion control is a commitment to and consistent execution of a strategy. If EPA were to expect systems to re-evaluate current corrosion control practice periodically with an affirmative decision by the State that the system is using the appropriate strategy, then that state review must:

1. Be grounded in a sound understanding of corrosion control,
2. Consider sufficient system-specific information to facilitate sound decision making,
3. Lead to changes in practice when there are substantial opportunities for additional reductions in observed lead release, and
4. Include explicit consideration of unintended consequences from change.

Because changing corrosion control should be done carefully. The revised LCR should incentivize water systems to continually evaluate corrosion control rather than focus on rote regulatory compliance.

Sanitary surveys could serve as a mechanism for periodic review of corrosion control practice. All public water systems are required to have period sanitary surveys. For community water systems, these reviews must occur at least once every three years. These regularly occurring reviews of system practices, could include a review of ongoing corrosion control. And, as with other items evaluated in the sanitary survey, the primacy agency could identify potential revisions to evaluate and initiate as warranted based on a more substantive evaluation, necessary consultation, and appropriate permitting.

SUSTAINABLE OPERATIONS

In costing corrosion control, EPA needs to recognize the need for additional changes in treatment that are triggered by substantial changes in corrosion control. "Optimized corrosion control treatment" is a phrase that EPA appears to be preparing to re-define in the LT-LCR. EPA and state interpretation of the current rule allow for the considerations beyond simply reducing lead and copper concentrations. That same

[52] AWWA, M58 Internal Corrosion Control in Water Distribution Systems, Second Edition, 2017.
[53] EPA, Compliance Guidance Documents available 1/26/2018 at https://www.epa.gov/dwreginfo/lead-and-copper-rule#additional-resources.

flexibility is necessary in the LT-LCR. Examples of additional considerations in EPA's most recent guidance include:

1. "black or red water complaints due to oxidation of iron and manganese in the distribution system"[54]
2. "potential to form scales on the interior of piping systems that may reduce the effective diameter of the pipes, resulting in loss of hydraulic capacity and increases in system headloss and operational costs"[55]
3. "disinfection performance and compliance with Surface Water Treatment Rules and possibly the Ground Water Rule"[56]
4. "raising the pH and DIC may cause calcium carbonate to precipitate in the distribution system, clogging hot water heaters and producing cloudy water.[57]
5. "... there are limitations to their application. Two factors that could limit the use of phosphate-based corrosion inhibitors are (1) reactions with aluminum, and (2) impacts on wastewater treatment plants."[58]

Recognizing considerations beyond regulatory compliance when selecting optimal corrosion control treatment for a system is critical to the sustainability of community water system efforts to reliably assure water quality within a matrix of multiple objectives, and simultaneous efforts to maintain and improve system performance on multiple topics.

Reliable supply of affordable treatment chemicals required. Phosphate addition is a treatment strategy that, if pursued, must be maintained into the future. At present phosphate is an international commodity for which the primary sources are off-shore and dependent on unencumbered trade.[59] There are mines in the United States, but the principal sources from a global perspective are Morocco and China.[60, 61] Water systems only account for a small fraction of phosphate use in the United States (about 3%); the most significant use and international driver for commodity pricing is agricultural applications, which is not only a much larger use but also a less challenging product to deliver.[62] While currently there are not any shortages in supply, drinking water systems have seen periods of dramatic price increases in phosphate and some supply disruptions at individual utilities.[63] For example, a survey of 47 U.S. water systems found that these systems experienced an average phosphoric acid cost increase of 233% over the period from January 2008 to January 2009.[64]

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[54] EPA, OCCT Evaluation Technical Recommendations for Primacy Agencies and Public Water Systems, EPA 816-B-16-003, March 2016, p. 19.
[55] Ibid, p. 19.
[56] Ibid, p. 41.
[57] Ibid, p. 42.
[58] Ibid, p. 43.
[59] SEI, Sustainable Use of Phosphorus, October 2010.
[60] IFDC, World Phosphate Rock Reserves and Resources, 2010.
[61] USGS, Mineral Commodity Summaries 2017, Available 1/26/2018 at https://minerals.usgs.gov/minerals/pubs/mcs/2017/mcs2017.pdf.
[62] WRF, Supply of Critical Drinking Water and Wastewater Treatment Chemicals – A White Paper for Understanding Recent Chemical Price Increases and Shortages, 2009.
[63] Ibid
[64] Ibid

CONSECUTIVE SYSTEMS

Consecutive systems will bear costs of change to corrosion control practice as well as the wholesaler installing treatment. In organizing cost consequences for the LT-LCR, EPA faces a challenge like that presented by the disinfection byproducts and ground water rules. There are substantial dependencies between water wholesalers and consecutive systems. While each public water system (each PWSID) "stands alone" with respect to compliance, decisions made to optimize corrosion control for one system may or may not be the most cost-effective solution for other systems in the same extended network due to differences in home construction materials, condition of distribution systems, water age, and other factors. "Optimizing" for reducing lead and copper must be balanced across this extended network of systems on a local basis. Consequently, not only should the rule provide the necessary flexibility, but the Agency's economic analysis should reflect the associated costs for preliminary analysis, treatment, transition preparation, monitoring, customer outreach and oversight.

FINDING AND FIXING PROBLEMS IN CORROSION CONTROL

Exceeding community action level should trigger assessment and correction. One aspect of the current rule that has proved problematic is that systems that exceed the action level are triggered into a long list of action items. This list includes preliminary evaluation of corrosion control treatment. It appears that, at least in some instances, this lengthy process provides a window for the system to return to lead levels below the action level without having to complete an evaluation of corrosion control changes and make necessary corrections. The NDWAC recommendation that if investigation is triggered by the rule, then the evaluation should be fully completed, and the lessons learned be applied in corrective actions.

The details of the rule are important. The trigger for system-level evaluation and correction may exist separate from triggers for evaluation / additional support to individual homeowners who experience elevated lead levels. This concept of find-and-fix could be tied to system-specific water quality parameter monitoring plans, which are based on distribution system and water treatment process control monitoring. These plans would utilize statistical process control strategies to flag deviations that warrant investigation and corrective steps. It could also be triggered by multiple in-home tap samples exceeding a community "action level."

The framework utilized in the Revised Total Coliform Rule for assessment and correction of sanitary defects provides a useful parallel to find-and-fix under the LT-LCR. As with the RTCR, the process would begin with in-home sampling triggering a tiered response that first focuses on levels of lead in the structure, and based on the data, expands to include evaluation of system-wide issues.

Public Education

EPA should provide resources to support public outreach on lead risk and lead risk mitigation. Water systems should actively and transparently communicate with their customers, particularly customers with lead service lines, about lead risks and steps households can take to evaluate and reduce lead in drinking water. The NDWAC recommendations include development of a comprehensive resource to support communication with the public about lead and lead risk mitigation across all environmental exposures. Households need clear, holistic guidance on how to identify and reduce lead risks from all environmental exposures. Communicating to the public that lead risks need to be addressed and require action, while also helping the public recognize the timeframes and limitations of environmental exposure reduction strategies is a challenging task. Well-grounded and consistent communication materials that reflects the best information from CDC and other authoritative sources, is necessary to support revision of the LCR.

TARGETED OUTREACH TO CUSTOMERS WITH LEAD SERVICE LINES

Outreach to customers with lead service lines will need to use multiple delivery channels appropriate to that community as part of an ongoing communication program. The challenges associated with targeted outreach vary as a function of existing data systems, customer communication infrastructure, nature of the system's service area and customer behavior. Consequently, the NDWAC recommends the use of a comprehensive ongoing communication program. Some of the challenges of outreach targeted to customers with lead service line include:

1. Organizing outreach so that it reaches customers who are prepared to act, e.g., at the time of home purchase, when a home inspection report is available, when a new homebuyer is reviewing needed improvements. Unfortunately, the water system will not start a relationship with the new customer with respect to that address until after transfer of title.
2. Utilizing existing delivery mechanisms like bill stuffers, consumer confidence reports, and similar routine communication tools requires messaging that recognizes most customers do not have lead service lines.
3. Targeted messaging around lead service lines has two audiences: those who live in the home and those who own the home. Due to rentals and other housing situations, the primary point of contact for the water system may be different from the individuals in the home. Therefore, messages related to removing lead service lines may reach the appropriate individual but information about taking protective measures may not reach inhabitants.

NOTIFICATION OF EXCEEDING ACTION LEVEL

Notification under the WIIN Action should be to individual homes at which the water system has data that lead levels are elevated. EPA is required by the WIIN Act to address public notice. The WIIN Act does not have any accompanying report language that informs how to interpret its provisions, but it is clear from the resulting edits to SDWA that the 24-hour timeframe is limited to instances when there is a "potential to have serious adverse effects on human health as a result of short-term exposure."[65] This criterion is not consistent with the basis for the current LCR action level (i.e., communitywide 90th percentile concentration greater than 15 µg/L). It is not clear how EPA will utilize the ongoing analysis to identify a level of lead in water consistent with a short-term exposure scenario. Regardless of level, the implications of a 24-hour notification requirement include the following:

1. Ongoing water system public education programs about lead, currently only required of water systems that have exceeded the lead action level, will be necessary to provide context for households that receive this notice recommending immediate action, if such notices are to be impactful.
2. Water systems will need support from both state and local health experts to communicate the health effects of short-term exposures to lead and the appropriate action steps to take.

An alternative approach would be to focus on communicating with individual homes when observed lead concentrations are above the action level (i.e., homes in the compliance sample pool must be notified of elevated lead levels). This interpretation of the WIIN Act revisions would facilitate more targeted dialogue with occupants regarding observed lead levels in their home; a potentially more effective conversation.

Regardless of the numeric value of the action level, the implementation challenges include:

[65] SDWA, Sec. 1414(c)(2)(C)

1. An administrative burden on meeting notification requirement (e.g., assuring notice is provided, documenting successful notification, and backstopping primary mode of notification) limits when systems can take samples, thus prioritizing notification over collecting data in a timely or informative manner.
2. Need for additional administrative procedures, systems, and personnel to assure notice in time frame is achieved.
3. Close coordination with local public health staff with expertise in lead risk communication. Such coordination can be challenging in communities where the water and health departments exist within the same governing structure; it becomes increasingly difficult with separation in governance: e.g.,
    a. County health department, with town or village operated community water system,
    b. County or state health department with subdivision community water system,
    c. County subdivision with rural community water system owned or operated by a third-party provider (non-profit, cooperative, or investor-owned entity).
4. Notification by priority mail may not be possible within 24-hour timeframe, necessitating state acceptance of phone contact, email or other electronic media notification to affected households.
5. Rural and suburban communities have less access to priority mail delivery services requiring additional personnel hours to backstop documented delivery of required notice.
6. Administrative expectation for documenting notification limits the tools available for notification (e.g., a phone call, text message, or drive by interaction with customer absent further documentation may not suffice for regulatory compliance) and requires administrative systems and personnel time.

PUBLIC ACCESS TO INFORMATION

Results from In-Home Tap Sampling

Data should be readily available to the public without revealing exact address where sample was drawn.
Tap samples need to be drawn by residents to (1) assist the water system with compliance monitoring, (2) assist the water system in evaluating potential changes in treatment and (3) inform households of potential risks and protective actions. However, making data from sampling available to the public and connecting it to a specific structure may dissuade homeowners from collecting samples. Making all data from sampling available to the public is challenging, because the protocols for sampling may vary and lead to results that should not be compared directly. In Flint, individual addresses were revealed, but in presenting the data, considerable effort was taken to segregate it into comparable datasets.[66] It was necessary to (1) present pre-POU and post-POU data independently, (2) show compliance data monitoring separately, and (3) not present some data (for example, to-date lead service line profile data has not been presented in a readily accessible format).

Currently individual tap sample results are available to the public upon request. Beyond a local interest in transparency, the federal Freedom of Information Act as well as state and local policies require information release by publicly-owned water systems. Investor-owned water systems may have less certain legal requirements for release of information. In states where water systems submit individual LCR sample results, the data from all water systems is available through FOIA of the state program. What is often not made available under current practice is the exact street addresses associated with individual

[66] State of Michigan, Taking Action on Flint Water website, Available 2/1/2018 at http://www.michigan.gov/flintwater/0,6092,7-345-76292_76294_76297---,00.html.

sample results. This is primarily due to homeowner privacy concerns, and the need to recruit customers to participate in compliance monitoring.

EPA indicates it will be implementing PRIME in 2018. PRIME has been described as a vehicle for public access to individual observations submitted in compliance monitoring. It is not clear when EPA intends to fully implement PRIME in this manner. Currently, not all states maintain a Safe Drinking Water Information System record of actual observed lead values. In either a state or federal public data access strategy, the regulatory community would not only need to acquire and upload the data in a timely fashion, but it would also need to determine if the Agency (EPA or state) would take responsibility for publicizing lead and copper observations associated with particular addresses (e.g., privacy concerns, liability for imperfect data being presented, etc.).

Water systems currently summarize LCR compliance data in consumer confidence reports. CCRs are already viewed as dense technical documents by many members of the public, and adding tens to hundreds of individual lead observations would be at odds with ongoing efforts to improve them.

Water systems or states could make compliance monitoring data available through local websites, as the State of Michigan did and continues to do for Flint. Michigan posted both tabular data and maps of observed lead levels. EPA could engage Michigan to determine how much the state invested in developing and maintain public access to lead data through that website. It is worth noting that not all smaller water systems maintain a website or have access to the website for their local jurisdictions.

One of the failings of the current LCR is it may discourage sampling by the water system to facilitate diagnosis of water quality problems, particularly lead issues, in individual homes. Systems that take samples that:

1. Meet the general criteria for compliance data may be added to the compliance dataset by the State, even if multiple samples are from the same structure during an investigation of that structure.
2. Do not meet the criteria for use as compliance data, are expected to be judged by some as being deliberately drawn in an effort to misrepresent or hide lead occurrence.
3. Do not have a robust chain of custody and quality assurance prior to acceptance by the laboratory for analysis, can be added by the state into a system's compliance dataset.

Under the current rule, a few samples lead to (1) aggressive public education systemwide and (2) revisiting the fundamentals of corrosion control practice. Neither are insignificant challenges for a water system, hence an inability to directly assist individual homeowners. If the rule mandates public access to non-compliance data, then the rule will further discourage testing for lead by water systems and efforts by water systems to effectively engage customers.

Water Quality Parameter Monitoring

Providing the public WQP data should not be allowed to become a barrier to water systems expanding WQP monitoring. Water systems frequently provide basic information to customers, including generalized WQP data. This is data the public does find useful when caring for aquariums, deciding to install home treatment devices, planning the design of commercial / industrial process equipment, and other applications.

It is not clear what WQP data EPA anticipates providing to the public as a regulatory requirement. WQP monitoring as required by the current rule is infrequent and limited to a few locations. Providing the currently required data to the public in summary form would be feasible, particularly where the system has a website. This data as well as more frequent monitoring of relevant parameters are submitted to

the state in regular reports. The submitted data is available to the public currently through FOIA of the state or local water system. There are potentially security concerns with releasing detailed process control data to the public (e.g., ongoing chlorine concentrations if oxidation reduction potential was a WQP, etc.), so the provision of enhanced WQP monitoring as described by NDWAC may present challenges.

Other barriers and cost considerations that EPA will need to consider:

1. There is an opportunity to expand use of on-line monitoring devices, but
    a. Data from on-line instruments must be handled appropriately, with appropriate quality control and quality assurance prior to use by the water system or provision to the public.
    b. Presenting on-line monitoring to the public complicates the primary goal of increasing use of on-line devices for process control by placing an administrative focus on public access rather than utilization of the data stream.
    c. Effective use of on-line instrumentation for process control, regulatory triggers, and public awareness requires a commitment to instrument maintenance that is significantly higher than what might be employed for an initial demonstration of capability or a short-duration research project.
2. If WQPs (grab sample or on-line) are provided to the public, then information must be provided to illustrate the relevance of the data. Simply providing a data point at a given time and location is not informative unless one has a clear notion of what portion of the service area that data represents. Modelling and analysis necessary to present WQP data to the public in a manner that is informative to individual households would distract from the initial goal of gaining more understanding and control of WQPs in the distribution system.
3. Providing basic information to the public requires effective risk communication. Consumers face an array of do-it-yourself home treatment device options and ongoing news stories of studies and advocacy reports. In the absence of a cohesive public communication effort about what WQP data means, there is ample opportunity for consumers to misunderstand the implications of the data to which they would now have access.
4. Each of the above considerations has an associated cost component to overcoming.

Tap Sampling

The revised LCR should incentivize sampling and special studies to better understand corrosion control and make informed decisions about treatment changes.

Dramatic changes to the current in-home tap sample protocol will substantially delay revision of the LCR. The current sampling protocol is not consistent with modern standards for quality laboratory systems (e.g., inadequate chain-of-custody procedures, inability to know if samplers are employing proper sampling technique, and consequently lack of legal defensibility for the compliance laboratory).[67] Consequently, there is interest in changing the sampling protocol to address the current failings. Moving away from customer collected samples is not likely if the rule revision:

1. Continues to use the current LCR sample protocol (or an alternative stagnation sample),
2. Revises the sampling protocol to target water from the lead service line, or
3. Increases the number of required samples required and thus requiring access to more customers' kitchen taps to obtain the requisite number of samples.

[67] EPA, Manual Certification of Laboratories Analyzing Drinking Water 5th edition, Available 2/2/2018 at https://www.epa.gov/dwlabcert/laboratory-certification-manual-drinking-water.

If the purpose of compliance monitoring is solely to inform residents of lead levels at their taps, then these concerns are less troubling.

If the purpose of the sampling is consistent with the current LCR -- to trigger re-evaluation or installation of corrosion control treatment -- AWWA is not aware of any peer-reviewed studies to show how a new sampling protocol/increased sample pool would compare to the current protocol/sample pool.

EPA must clearly describe any required tap sample protocol. Samplers should be able to follow any tap sample monitoring and the protocol should be sufficient to eliminate "gaming" and forestall accusations of gaming sample results.

CURRENT SAMPLE PROTOCOL

Retaining current sample protocol as recently refined by EPA, may be the most expeditious option for EPA to pursue. The current sampling protocol, first liter following at least 6 hours stagnation, data has served community water systems well as a tool to reduce lead levels. The reductions in lead levels over the years has been well documented.[68]

Many water systems have been able to adjust their corrosion control program by assessing historical first liter samples. The sample procedure allows the system to compare data collected consistently over time and spatially because the samples are always collected the same way. Specific instructions bring some uniformity to the data facilitating this comparison. Multiple rounds of monitoring over time provides a historical benchmark for future actions. This historical data allows systems to spot changes either positive or negative and to make appropriate actions. Comparisons are relatively easily made between systems within a state when regulators want to make relative assessments of lead release across systems with similar water qualities.

First liter samples have also served to alert systems to major upsets. For example, the Flint 90th percentiles for first liter samples went over 100 µg/L. As orthophosphate and other WQ controls went into pace the improvements in first liter samples could be tracked and improvements seen as the 90th levels dropped to the current 6 µg/L level. A similar recognition, response, and downward trend occurred when Washington DC experienced elevated lead levels following its transition to chloramines.

While the first liter sample may not be the highest lead level found in samples from homes with lead lines, many homes and many cities do not have lead lines. Homes can still experience lead due to old brass, galvanized plumbing and lead solder. The first liter sample is actually very useful for sampling interior sources of lead.

Tap sample protocol representative of exposure

The current LCR sample protocol is not designed to be representative of exposure. Representing exposure will required more than changing when customers draw a one-liter sample. "Exposure" for risk assessment purposes occurs at three levels: individual, building and community. EPA has not provided information to understand which of these types of "exposure" this sampling framework would address. Consequently, it is not clear what combination of sample protocol, sample number, sample site location, and sample frequency the Agency is considering. As EPA considers presenting an LT-LCR monitoring plan as representative of exposure, it should:

[68] Richard A. Brown, Nancy E. Mctigue, And David A. Cornwell, Strategies for assessing optimized corrosion control treatment of lead and copper, Journal AWWA Vol. 105 No. 5 pages 62 – 75, May 2013.

1. Appropriately match the sampling requirements to the objective for the monitoring (e.g., a sample to inform customers about lead levels in their water should be geared toward taking a sample of water likely to be consumed).
2. Clearly present how the data would be used in the regulation in a manner consistent with SDWA (e.g., not create a duty on community water systems that is beyond the bounds of water system ownership).
3. Identify opportunities to shift the new compliance monitoring requirement to one that can be executed by trained technicians within the framework outlined by EPA's laboratory certification guidance.

AWWA is not aware of any new guidance from EPA or others to provide insights into how sampling at a structure can best inform risk reduction steps by homeowners or landlords.

Households sample when consuming water

AWWA is reluctant to comment on a single aspect of tap sampling monitoring in isolation. Instructing consumers to take a tap sample when they are preparing food or getting a drink of water could substantially alter the LCR routine compliance monitoring dataset by reducing the period of stagnation prior to sampling.

It is not clear from EPA's comments how changing the sampling protocol in this way would be accompanied by other considerations in the rule revision:

1. How large an increase in the sample pool size to "make up for" the lack of certainty in minimum stagnation period?
2. A change in the actual protocol (e.g., is a first-draw, one-liter sample anticipated)?
3. A change in the households targeted for sampling (e.g., all homes in pool being homes with lead service lines)?
4. A single sample for lead and copper observations?
5. A change in the evaluation metric (e.g., 90th percentile value of 15 µg/L)?
6. A change in the implications of exceeding the evaluation metric?

All these considerations are relevant to the effectiveness of the compliance monitoring regime. Consequently, AWWA is reluctant to comment on a single aspect of monitoring. If EPA proceeds with evaluating this option, it is important for the Agency to communicate to the public:

1. That lead levels vary and a single observation from a tap does not adequately represent exposure to that household.
2. A community-wide assessment of lead levels does not mean that homes with lead sources (e.g., old brass fixtures, lead service lines, lead solder, etc.) will not observe higher levels, even if the LCR monitoring program is biased toward more challenging homes.

While communication around the current LCR sampling protocol is very challenging, there are similar challenges associated with this sampling protocol:

1. Risk management by the household should occur regardless of observed value in water and include basic steps to mitigate risk from other exposures (e.g., dust, paint, etc.)
2. The water system is taking steps to manage the corrosivity of the water, but absent removal of all sources of lead in contact with water, some risk remains.

LOCATION OF TAP SAMPLES

Tap sampling and the questions of number, location, frequency and protocols all stem from the purpose of sampling required under the rule. There are several acknowledged uses for tap samples:

1. As a check on the need for / adequacy of corrosion control treatment,
2. Understanding the nature of lead release in a system to inform improvements to corrosion control, and
3. To inform / motivate customer action.

There is general agreement that no one sampling strategy and protocol is ideal for all three of these objectives.

There is also broad agreement that sampling for copper at locations identified solely to maximize the opportunity to find elevated lead levels is unlikely to recognize higher copper levels that can be associated with very new structures containing copper plumbing.

Each of the specific sampling strategies about which EPA requested input represent a balance among competing objectives for mandatory compliance monitoring. When evaluating any of these approaches, it is important to realize:

1. Intra-structure variability in observed lead levels can be substantial—observed lead levels vary as a function of water use patterns in the structure and other factors,
2. Inter-structure variability is also observed -- lead levels vary as a function of plumbing materials used, workmanship of that installation, presence of water treatment devices, and other factors, and
3. Variability of samplers contributes to cumulative variability in dataset – the degree samplers adhere to protocols.

Homes with Lead Solder

Eliminate date range criteria in current rule for homes with lead solder that may be included in in-home tap sample pool. The current LCR specifies sampling from Tier 1 homes followed by Tier 2 and Tier 3 homes. To be in Tier 1 and 2, the home must either have a lead service line or "copper pipes with lead solder installed after 1982 (but before the effective date of your State's lead ban)."[69] Tier 3 homes must have solder installed before 1983. These date ranges are now more than 35 years old and their use is no longer consistent with the underlying logic for their inclusion in the rule.

Customer Requested Tap Samples

Customers should have access to reliable sources of tap samples. Water systems can provide this service or direct customers to reliable laboratories. At present, there are entrepreneurs offering water tests that provide inadequate results. These tests could lead customers to make poor decisions and waste money. EPA should provide clear national guidance for consumers on analytical methods and laboratories with appropriate skills and processes to provide reliable lead test results.

Customers are not requesting samples to understand corrosion control. They are interested in questions about their exposure and their plumbing. EPA should prepare a guide for fit-for-purpose sampling to inform households and assist water systems communicate with their customers.

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[69] EPA, Lead and Copper Rule Monitoring and Reporting Guidance for Public Water Systems: EPA 816-R-10-004, March 2010.

Tap Samples at Schools

The Lead Contamination Control Act is an existing statute that directs the management of lead in schools. The LCCA "*Directs each State to establish a program, within nine months of this Act's enactment, to assist LEAs* [local education agencies] *in testing for, and remedying, lead contamination in school drinking water from coolers and from other sources of lead contamination. Requires that testing results be made available for public inspection in LEA administrative offices.*"[70] EPA has developed extensive guidance to schools on lead in schools.[71] But, the EPA website indicates that currently "*There is no federal law requiring testing of drinking water in schools and childcare facilities, except for those that have and/or operate their own public water system …*"[72] The website does not provide a basis for this last statement.

If EPA were to modify the LCR to require monitoring of lead in schools, it would have to (1) describe the purpose for the sampling, (2) the sampling program required to achieve that purpose, and (3) the responsible party for that sampling program.

With respect to these three tasks before the Agency:

1. Community water systems will not be able to use the data acquired through sampling in school buildings as a useful gauge for managing system-wide corrosion control. Rather, sampling in schools is an opportunity to (1) identify fixtures that warrant active flushing or replacement, (2) assess the success of in-building / in-campus water quality management, and (3) gather information to provide for parents, students, and staff.
2. Taking a single sample from a school is not informative and, importantly, can be misleading. For this reason, the current EPA guidance outlines testing of all outlets in a school in a prioritized fashion and follow-up sampling to facilitate diagnosis and remediation. The purpose and utility of such sampling is much different from SDWA compliance sampling.
3. Most school buildings are large, and consequently, they are very unlikely to have lead service lines. Therefore, it seems unnecessary to include school structures in a water system's LCR sampling pool.
4. As schools are large buildings, their inclusion in the sample pool raises the question of what sampling protocol is appropriate, further complicating rule implementation and data analysis.
5. "Schools" is not limited to public schools. It includes private and religious schools of all sizes, financial stability, staffing levels, and instructional setting (e.g., owned or rented space, stand-alone or integrated into another structure, etc.).

EPA should update its guidance on managing lead in schools as part of its support for schools. Given the likely use of the data, it seems the responsible party for monitoring will be schools. This has implication for (1) preparedness of school staff and contractors, (2) development of state primacy agency systems to track school compliance, and (3) school budgets.

It is important to note that individual states have initiated monitoring for lead in schools and in most instances, have decided to focus on sampling initiatives for schools and/or childcare facilities through direct oversight of the schools. States are taking a number of different approaches that best fit their circumstances. Recent examples include California, Illinois, Massachusetts, New Jersey, New York, Utah,

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[70] Summary: H.R.4939 — 100th Congress (1987-1988), Available 2/2/2018 at https://www.congress.gov/bill/100th-congress/house-bill/4939.

[71] EPA, Lead in Drinking Water in Schools and Childcare Facilities, Available 2/2/2018 at https://www.epa.gov/dwreginfo/lead-drinking-water-schools-and-childcare-facilities.

[72] Ibid

and Washington.[73, 74, 75, 76, 77, 78, 79] None of the approaches initiated include sampling in schools as a component of LCR compliance monitoring.

NUMBER OF TAP SAMPLES

If EPA anticipates changing compliance monitoring, including increasing the number of tap samples required, it will need to communicate how the increased monitoring will advance the health risk reduction.
The sampling burden even under triennial monitoring is significant. These data represent only "compliance" samples and do not include observations from:

1. Special studies to inform corrosion control practice,
2. Lead service line replacement, or
3. Customer assistance samples.

Anecdotal reports and AWWA members' experience are that:

1. Small system waivers are available to systems with fewer than 3,300 persons, but these waivers are seldom granted.
2. Many community water systems are now on triennial monitoring, though some states like New Jersey have re-emphasized LCR monitoring and instituted a new round of annual monitoring in 2017.[80]

The NDWAC advised improvement of corrosion control would be best achieved through more water quality parameter monitoring both at the water treatment plant(s) and in the distribution system, rather than modifying the sampling protocol. Recent EPA compliance assistance has emphasized the role of special studies to improve system/state understanding of lead release in order to evaluate changes in water treatment or water supply. The WRF has funded research to better understand observed lead release after lead service line replacement, and the utility of monitoring in that specific context.[81]

Household action level

EPA has not demonstrated that it is able to undertake the required task based on the available information.
The NDWAC recommended development of a household action level. The presentation of EPA's analysis and the peer-review comments illustrate that developing a household action level continues to be challenging for the Agency (see Appendix A). It is clear EPA is finding it difficult to set a level that is consistent with the NDWAC recommendations, e.g., a level of lead in water that warrants action by a

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[73] 2017. California. Available 2/15/2018 at https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/leadsamplinginschools.html.
[74] 2017. Illinois Public Act 99-0922. Available 2/15/2018 at http://www.dph.illinois.gov/content/school-water-testing.
[75] 2016. Massachusetts. Available 2/15/2018 at http://www.mass.gov/eea/agencies/massdep/water/drinking/lead-and-copper-in-school-drinking-water-sampling-results.html.
[76] 2016. New Jersey State Board of Education. Available 2/15/2018 at http://www.state.nj.us/education/lead/.
[77] 2016. New York Department of Health. Available 2/15/2018 at https://www.governor.ny.gov/sites/governor.ny.gov/files/atoms/files/LeadTestingRegs.pdf.
[78] 2017. Utah. Available 2/15/2018 at https://deq.utah.gov/Compliance/compliance/drinkingwater/lead-copper-rule/lead-sampling-in-schools.htm.
[79] 2016. Washington, Governor's Directive on Lead, 16-06 Department of Health Recommendations. Available 2/15/2018 at https://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/Contaminants/LeadinSchools.
[80] PROVIDE CITATION
[81] WRF, Evaluation of Flushing to Reduce Lead Levels – 4584, Project progress can be tracked at http://www.waterrf.org/Pages/Projects.aspx?PID=4584.

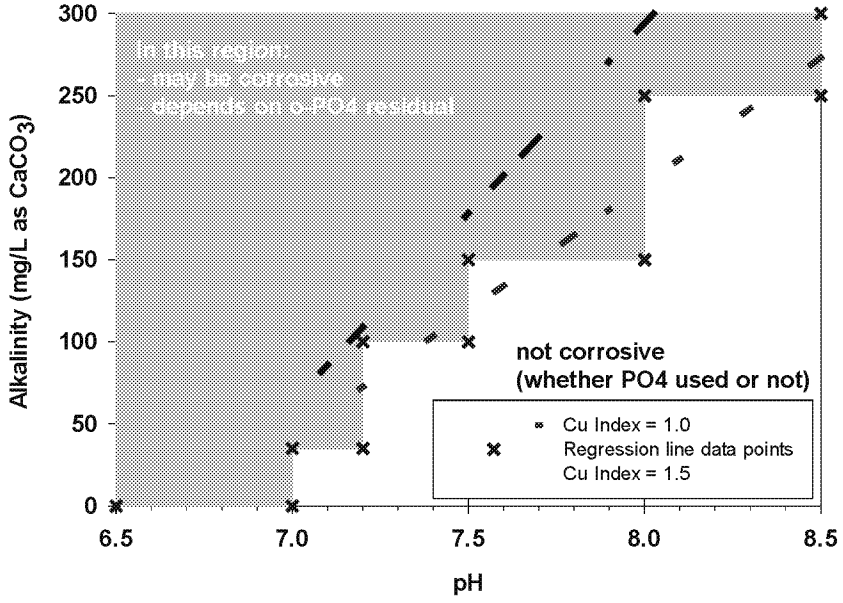
specific home above and beyond ongoing protective measures (i.e., corrosion control, lead service line replacement or other actions already being taken by home owner). While our societal goal is and should continue to be no exposure to lead, as a practical matter, parents and landlords need to know when lead levels in water represent an elevated risk to households, especially children. In the absence of a sound EPA analysis, using of "zero," "detectable lead," or a number below the community-wide action level as a household action level is not consistent with the balance of the LCR framework.

Copper

SCREEN FOR WATER AGGRESSIVE TO COPPER

Basing rule on a screen for water aggressive to copper will require different criteria than those proposed by NDWAC. During the NDWAC process, a preliminary classification of what water qualities would be corrosive to copper was developed with the idea that EPA would finalize the classification. Two preliminary classification charts were developed, one for strictly pH and alkalinity and one for systems using orthophosphate. The idea was that if a utility was classified as non-corrosive to copper, it would be relieved of many regulatory testing and sampling requirements. It was anticipated that most systems would be classified as non-corrosive to copper.

Figure 3 shows an example of the corrosivity classification that was developed for NDWAC. All pH and alkalinity combinations to the right of the shaded area would not be corrosive to copper. This figure also provides a basis for a simple index to determine a specific water quality's corrosiveness. The index is shown below the figure with any values having a Cu index < 1 being corrosive.



Note: Cu Index > 1 is defined as conducive to copper corrosion; For pH <7, water is corrosive to copper (irrespective of alkalinity); Cu Index = Alkalinity/regression = Alk/((A × pH) - b); A = 154.17 mg/L as CaCO3 / pH; b = 1,037.3 mg/L as CaCO3

Figure 3: Copper corrosivity index

AWWA conducted a survey of utilities to obtain water quality data and estimate the number of systems that would be classified as corrosive to copper. [82] The survey found that at the point of entry to the distribution system 50% of all systems (groundwater and surface water) and 70% of ground water systems surveyed would be classified, using the index, as corrosive to copper. That seemed like a large percentage and somewhat unrealistic since the U.S. generally does not have widespread copper problems. There was some concern if the survey was accurate.

Recently, the U.S. Geological Survey collected data on well water quality throughout the U.S. [83] The data base was for private and public wells. There was sufficient water quality data collected to allow calculation of the copper corrosion index for the wells. Figure 4 is a map by EPA region showing the results for the percentage of utilities on GW that are corrosive to copper according to the index as compared to the USGS results. The two are quite comparable. As seen in Table 1 by population size and totals, the overall U.S. corrosivity to copper by the survey was 70% and by USGS data it was 79%. Note that the survey is based on point-of-entry or distribution system and therefore represents treated groundwater, while the USGS data is raw well water. Treatment did not appear to alter the percentage significantly.

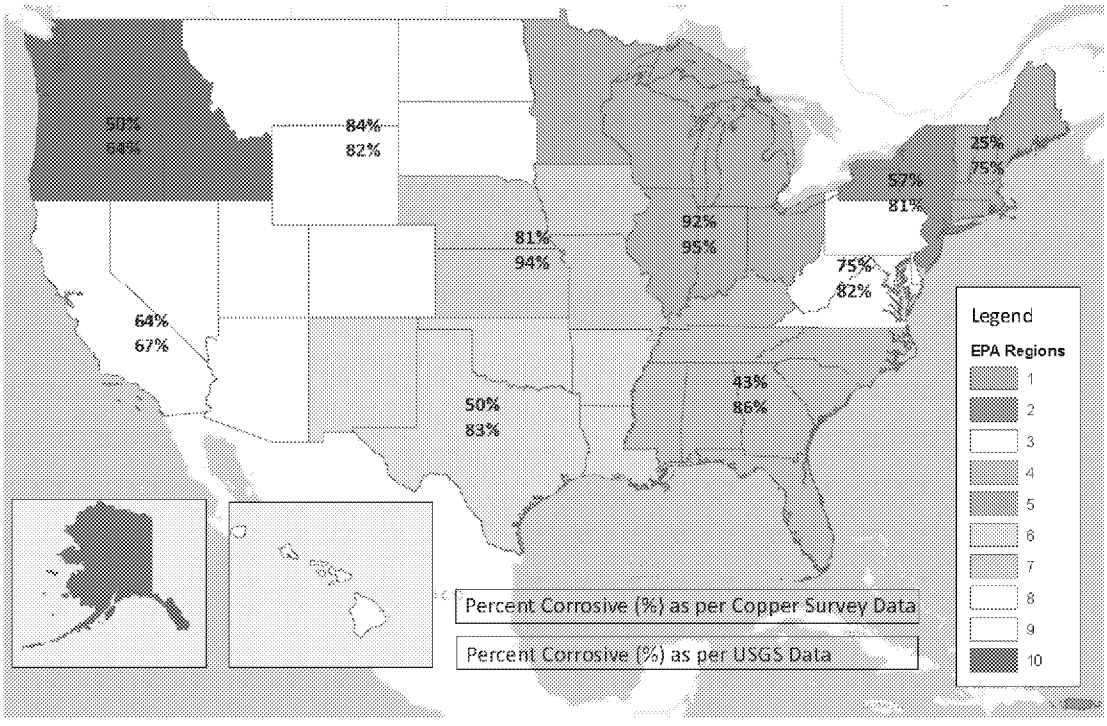


Figure 4: Groundwater Corrosive to Copper Using NDWAC Criteria (from Roth et al. and an analysis of data underlying USGS

[82] Roth et al., Copper Corrosion Under the Lead and Copper Rule Long-Term Revisions, Journal AWWA, April 2016, http://dx.doi.org/10.5942/jawwa.2016.108.0062.

[83] Belitz, Kenneth, Jurgens, B.C., and Johnson, T.D., 2016, Potential corrosivity of untreated groundwater in the United States: U.S. Geological Survey Scientific Investigations Report 2016–5092, 16 p., http://dx.doi.org/10.3133/sir20165092.

Population Class	Percent Corrosive (Cu - Index)			
	<10K	10-50K	>50K	Total
	Impact of PO_4 not included			
Cu Survey - POE	80%	56%	48%	71%
Cu Survey - DS	78%	53%	45%	69%
USGS				79%

Table 1: Percent Corrosive per Population Class for Copper Survey and USGS Data

The Roth et al. and USGS data raise an important question: "Is the NDWAC corrosivity classification correct, since it is not realistic that this many systems are experiencing high levels of copper?" The index is based on the solubility of Cu(II) for either cupric hydroxide or malachite. While solubility diagrams can be important in understanding reactions and interactions, they do not model the electrochemical reactions of corrosion or the scales that form on the pipe and reduce further copper release. Although preliminary in nature, a database on copper levels from fresh copper in various water qualities offers insight into utility of making decisions based solely on the current classification approach. Figure 5 is an example of two results. The smooth curves are the solubility values, and the two orange boxes are the experimental data. The experiment giving a copper level of 0.14 mg/L would be predicted to result in copper of about 5 mg/L, and the 0.09 data point would be predicted to be about 1.2 mg/L. Additional work will be needed to fully develop a reliable indicator of copper corrosivity, but it may be the current approach based on available solubility curves is overestimating potential copper levels.

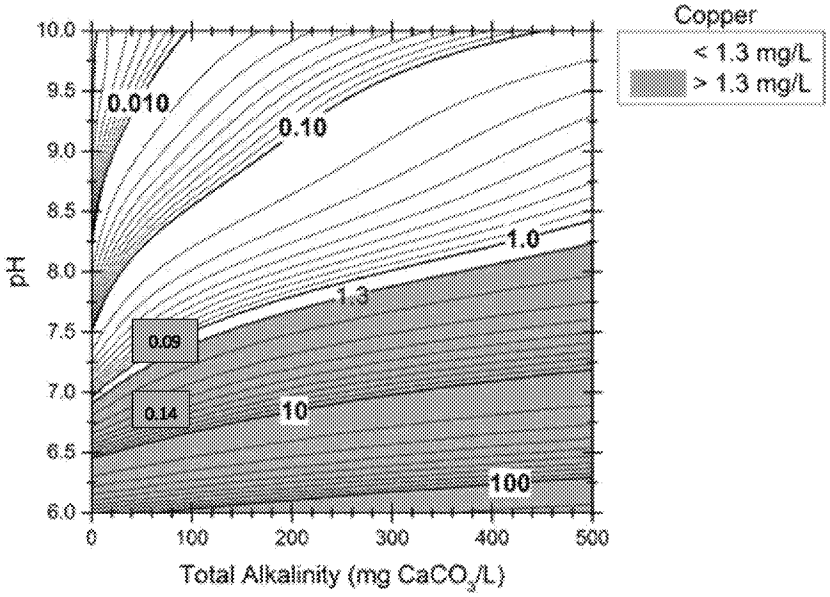


Figure 5: Theoretical copper solubility diagram with overlaid observations

While the USGS analysis suggests that the most corrosive ground waters are limited to the southeastern U.S., Mid-Atlantic and New England, the NDWAC criteria would classify the overwhelming majority of groundwater systems in all regions of the U.S. as corrosive to copper. Also, roughly 40% of systems that are corrosive in the Roth et al. were already applying phosphate and still considered corrosive, according to the NDWAC index. Implications of this analysis for EPA's analysis of LT-LCR are multiple:

1. The proposed change would require thousands of small water systems, many of which are located in rural areas, to re-evaluate corrosion control to control the corrosivity of their water to copper.
    a. A significant number of small systems with corrosion control in place would be directed to change corrosion control practice.
    b. A large number of small systems would be required to add corrosion control.
2. State programs would need to evaluate:
    a. Current decision-making processes to understand why current practice is leading to non-optimal corrosion control practice for copper as well as lead.
    b. A very large number of corrosion control studies, corrosion control treatment installations and permit revisions, with associated oversight of implementation schedules and compliance metrics.
    c. Oversight practices and staffing to an increased number of small water systems employing active treatment, particularly where addition of corrosion control becomes a threshold treatment that sets the stage for additional unit operations (e.g., manganese or iron removal, disinfection, etc.).
    d. Changes to operator certification for small systems to ensure adequate training to oversee more complex groundwater treatment.

AWWA supports the NDWAC recommendation to focus efforts to prevent release of copper into water where the water is corrosive to copper. However, when we consider the above two analyses in the context of observed copper levels from compliance monitoring, the data illustrate that the assumptions underpinning the NDWAC corrosivity criteria are very conservative and warrant refinement before such a framework is included in regulation.

COPPER – TRIGGERED ACTIONS

The marginal return in public health benefit must be sufficient to warrant new triggered requirements under the LCR. If a system's water is deemed to be corrosive, then required actions could take one or more forms, including public education, additional monitoring and corrosion control treatment. The NDWAC recommendations ask a threshold question: Is there a substantial opportunity for additional risk reduction by contemplating changes to the copper requirements? The NDWAC workgroup discussion also focused on aligning the final lead and copper monitoring and response framework in the rule so that it did not create conflicting objectives, undue burden or oversight challenges.

From a community water system perspective, both metals should be adequately managed. Moving forward, implementation challenges include:

1. Implementing and communicating to customers about a compliance monitoring dataset drawn from "fresh" copper (e.g., new homes), particularly in small rural communities where the number of "new" homes can be very limited.
2. Coordinating with local municipal building permit programs where a water system (public, investor owned/operated, non-incorporated rural subdivision) does not have an immediate governmental tie to that department.

3. Absence of local government planning/building permit information systems that align street addresses with water system service area boundaries.
4. Effectively identifying new-home buyers/renters of newly constructed homes that have copper plumbing and reaching them in a timely fashion with information on the importance of allowing copper to passivate and how to improve water quality in new homes.

PUBLIC EDUCATION ON COPPER

Providing informational material to new customers, plumbers, and developers on the release of copper prior to passivation is an educational opportunity for EPA and water systems. There are opportunities to provide general communication materials on copper passivation. NDWAC recommended a strong reliance on public education as the next step in improving copper risk reduction. Given the nature of the sensitive subpopulation for copper, the need to include a public education requirement on copper in drinking water in the LCR revisions will depend on the initial evaluation of the threshold question as to the risk reduction opportunity afforded by increased focus on copper in the LCR.

MODIFY TAP SAMPLING TO REQUIRE SEPARATE SAMPLING SITES FOR COPPER

The appeal of a workable copper corrosivity index is that it reduces the challenge of developing a separate tap sampling protocol for copper. Answering the question of whether a dedicated sample pool is necessary for copper is highly dependent on the balance of the rule option being considered. If the rule option requires weighting the sample pool heavily toward structures with lead service lines, then unpassivated copper is less likely to be present than in other alternatives. Again, the threshold question is whether there is a need for a more sensitive copper monitoring sample in most systems given the opportunity for health risk reduction:

1. Not all systems have significant numbers of lead service lines,
2. There is the opportunity to enhance risk reduction through public education targeting structures with fresh copper piping, and
3. The amount of installed copper pipe has decreased substantially since LCR was first promulgated (see Figure 6, tons of tube sold to all uses as a surrogate for use in plumbing alone).

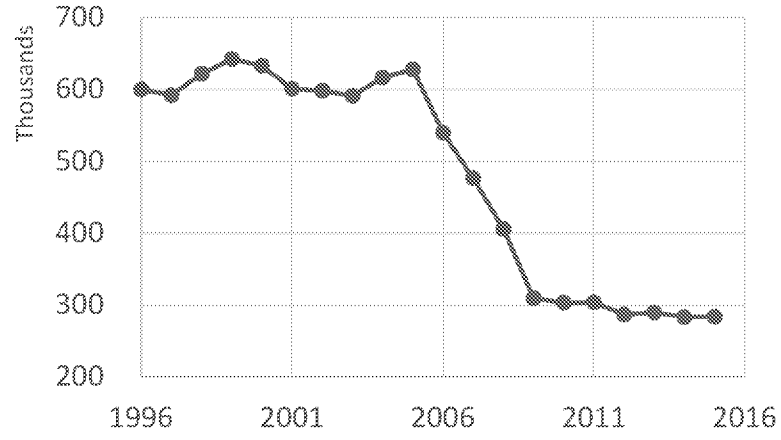


Figure 6: Tons of copper tube consumption in end-use markets[84]

[84] Copper Development Association, Annual Data 2017, Copper Supply & Consumption — 1996–2016. 2017, Available 2/16/2018 at www.copper.org/resources/market_data/pdfs/annual_data.pdf.

Appendix A. Observations on EPA Modelling to Calculate a Household Action Level

The following are observations regarding EPA's development of a household action level, prepared by Dr. Douglas Crawford-Brown.

RELIANCE ON LCR COMPLIANCE MONITORING DATA

I assume here that some variant of Figures 4A and 4B from the EPA's Environmental Health Perspectives paper would form the basis of any proposed health-based benchmark. If Figure B is used – since it involves aggregate exposure assessment and not only exposure via water – The water concentration corresponding an aggregate BLL value of 5 ug/dL in the 97.5th percentile is approximately 4 ugPb/Lwater.

However, this figure relies on use of the Six-Year review data on Pb in water. This is not a representative sample of the US population, but rather a sample of first draw results in a subpopulation identified by water providers as being most at risk from waterborne Pb. The three approaches being considered by the EPA in establishing a health-based benchmark, however, all rely on the national exposures.

Data presented by the EPA in the supporting documents for the EHP paper suggest a ratio of first draw concentration over daily average water concentration of between 2 and 4. It is unknown how biased (high) the sampled population of homes is within the overall distribution of homes. At the least, therefore, the 4 ugPb/Lwater value mentioned above should be raised to between 8 and 16 ugPb/Lwater based solely on the issue of using a database of first draw samples. This range encompasses the value of 15 ugPb/Lwater currently forming the basis of risk mitigation decisions under the LCR.

RELIABILITY OF ESTIMATE AT EXTREMES OF EXPOSURE DISTRIBUTION

Additionally, Figures 4Aand 4B reflect exposures at the 97.5th percentile. While it would be highly protective to use such a high percentile value, Figure 2 demonstrates that the curve of percentile versus BLL is characterized by a very high slope above the 90th percentile, being almost vertical. Very small errors in the curve, introduced by small errors in the uptake rates for the different pathways, would result in very large shifts in the water concentration associated with a given BLL (3.5 or 5 ug/dL) at this percentile. Use of the 95th percentile would increase the benchmark concentration further above the range of 8 to 16 ugPb/Lwater mentioned above (see Table 1 of the EHP paper, comparing the 95th and 97.5th percentile values).

This issue, coupled with that in item 1 above, suggests that the current value of 15 ugPb/Lwater as an 'action level' of some kind is already protective of the 'representative child' mentioned directly in Approaches 1 and 2 of the Modeling Review Panel charges.

REPRESENTATIVE CHILD OR ANOTHER TARGET SUBGROUP

Continuing with the issue of the nature of the Six-Year review water data, it is not defined anywhere in the EPA risk assessment (including the EHP paper mentioned above) what specific subpopulation is represented by those data in regard to waterborne exposures. Again, the values in the database are clearly dominated by first draw samples (known to be higher on average than a true nationally representative sample) in homes suspected of being at greater-than-average risk of waterborne Pb exposures. This is not consistent with the idea of using a 'representative child' in Approaches 1 and 2, and does not produce an accurate probabilistic analysis under the methods in the EHP paper.

While the AWWA has been able to fully reproduce the results of the EHP paper, including the Monte Carlo (probabilistic) analysis, the EHP paper does not describe the nature of the subpopulation exposed to water at these levels, or the percentile of the US population of children represented in the probabilistic results in the paper. Instead, the EHP paper provides the 95th and 97.5th (and other) percentiles for the SAMPLED population under the Six-Year review data, which is not the same as a nationally representative sample. In establishing a health benchmark based on any of the three proposed Approaches, the EPA should consider how it will enhance the database of water exposures to reflect the nationally-representative population characteristics mentioned in the three Approaches.

TRANSLATING BLOOD LEAD LEVEL TO IQ DECREMENT

The underlying health concern for Pb exposure of children is the impact on IQ during development. The epidemiological studies cited by the EPA use BLL value and IQ as the regression variables. However, the IQ measure is in children at the upper end of ages considered in the current analyses (including the EHP paper), as is the exposure (or dose) measure of BLL.

From these epidemiological studies, one can discern the value of the BLL that corresponds to a given increment of IQ, relative to very low BLL values. That is scientifically sound methodology. However, the EHP paper (and related documents) calculate the BLL at other, younger, ages, such as 0 to 6 months and 1 to 2 years.

Based on usual regulatory practice, there will be a tendency to use the value of the BLL associated with a given IQ decrement (as determined from the higher childhood ages noted above), and apply this limiting value to the two younger age groups, keeping all age groups below the assigned BLL. This would not be correct because the impact of BLL on IQ is cumulative over the period from birth (in fact, from fetus) to the age at which the BLL-IQ relationship was measured. This relationship already includes the impact of exposures at the younger ages. It is more scientifically correct, therefore, to assess the BLL throughout the period from birth (or fetus) to the age of measurement of IQ in the epidemiological studies.

COMPARING BENCHMARK APPROACHES

Continuing with the issue of the non-representative nature of the current water concentration database used in EPA analyses, consider the three health benchmark Approaches under consideration at the EPA:

The level of lead in drinking water that results in an individual infant or child's probability of an Elevated Blood Lead Level (EBLL) being increased by 1 or 5 percent.

The level of lead in drinking water that results in an individual infant or child's BLL increasing by 0.5 or 1 µg/dL.

The level of lead in drinking water that results in the 95th or 97.5th percentile of predicted BLLs in the U.S. population of infants or children being equal to 3.5 or 5 µg/dL.

Note that Approach 3, which is the Approach used in the EPA's EHP paper mentioned above, requires the representative national distribution (which is not currently available). However, Approaches 1 and 2 do not, as they seek a maximum water Pb concentration consistent with the stated aim. In addition, Approach 1 formulates the benchmark in terms of a percentage increase in BLL, which has little scientific basis and would be difficult to justify publicly as it is not related to any specific health outcome. Approach 2 is therefore the only one of the three that is both scientifically defensible (being related to a numerical decrease in IQ amongst a nationally representative population) and avoids the need for a representative water concentration distribution.

Approach 2 also comes closest to the recommendation of the NDWAC if one considers a 'representative' or 'average' child's increase in BLL. Using the regression equations underlying Figure 4A of the EHP paper, the water concentration that produces an increment of 1 ug/dL at the 97.5th percentile is 7.4 ugPb/Lwater (3.7 ugPb/Lwater for 0.5 ug/dL). However, these two values are for an individual at the 97.5th percentile, and therefore not 'representative'. Table 1 of the EHP paper displays the BLL values calculated for the 50th (representative) and 97.5th percentiles in the case of aggregate exposure. The ratio of these two values (97.5th/50th) is approximately 4.6/1.3 or 3.5. The water concentration corresponding to a 1 ug/dL increment in the 50th (representative) percentile is therefore 26 ugPb/Lwater (13 ugPb/Lwater for 0.5 ug/dL increment). If one considers only variability due to water uptake, these values are approximately 20 ugPb/Lwater (10 ugPb/Lwater for 0.5 ug/dL increment).

USE OF RESULTING VALUE

Bear in mind also that all of the above potential target values refer to a volume-weighted average of water concentration in exposed individuals, and not a 'first-draw' sample. This is consistent with the nature of the exposure index in the epidemiological studies. The target value (or health benchmark, or whatever term is used in the end) of water concentration therefore should be compared against this volume-weighted average rather than a 'first-draw' value.

Prepared by Dr. Douglas Crawford-Brown

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